The Mediating Role of Business Model Innovation in Value Co-creation and Enterprise Performance

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Abstract. Due to the outstanding theoretical value and practical appeal of value co-creation research, in recent years, the related results have become increasingly rich, but scholars have pointed out that the current academic results have shortcomings in the internal mechanism and action mechanism of value co-creation carried out with catering service enterprises as the research object. There is a lack of strong evidence and theoretical guidance for enterprises to establish the practice of value co-creation with consumers, and suitable quantitative research is urgently needed to fully verify the role and influence of value co-creation. In this paper, using SEM model analysis, it is concluded that business model innovation plays an intermediary role between value co-creation and enterprise performance.

Key words: value co-creation; Enterprise performance; Business model innovation; Catering Service Industry

1 Introduction

With the arrival of the digital economy era, all walks of life tend to digital development, and realize interconnection through the network under the background of big data. Data sharing breaks organizational boundaries, the relationship between partners is redefined, the production process of traditional value chains is subverted, and innovative production is no longer completed by enterprises alone. More and more agents in the value network provide the idea and design of service innovation for the enterprise, and participate in the cooperative production. From the passive recipients of the value creation of the enterprise, they gradually become the co-creators of the value of products or services. The COVID-19 epidemic in 2020 has had a great impact on the consumer economy represented by the catering industry, which has attracted great attention from China. Although the catering industry itself is seriously affected by the epidemic, its contribution to the economy has increased instead of decreasing. Therefore, the in-depth application of value co-creation theory in catering service enterprises is very necessary and meaningful to improve enterprise performance.

2 Literature Review

2.1 Research on the background of Value co-creation

(1) Research on value co-creation based on customer's perspective

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The value of the user is created or generated in the process of use, and the customer as the user is fully responsible for this process. If customers do not use the company's products in their lives, value will not emerge (Gronroos& Helle, 2010)[1]. Therefore, customers as users and resource integrators are the real creators of value. In the process of self-service, customers integrate and utilize some enterprise resources and other related resources to create value for themselves (Daniel,2021)[2].Fitzpatrick (2023) [3] systematically discussed the dimensional nature of customer value co-creation behavior. By developing and verifying the scale of customer value co-creation behavior, the multi-dimensional method was used to capture the research results of customer value co-creation behavior (Marko,2019)[4]. It was pointed out that customer value co-creation is composed of two dimensions of customer participation behavior and customer citizenship behavior.

(2) Research on value co-creation based on the perspective of enterprise strategy implementation

The existing research ignores the concept of "value co-creation" in the implementation of enterprise strategy. In the process of creating use value for customers, enterprises often play the role of value promoters (Gronroos& Helle, 2010). The development, design, manufacturing and delivery resources of the company are necessary to help customers create value, and these processes are conducive to the value creation of customers. Scholars Ranjan and Read (2016) [5]carried out theoretical analysis of value co-creation with "co-production and use value". Yu et al. (2019)[6] developed the IOVCC (Interaction Orientation of Value co-creation Theory) scale to insert the company into the daily life practice of its customers and co-create value with customers.

2.2 Research on the indirect effectiveness of value co-creation on enterprise performance with business model innovation as the intermediary

Referring to the division results of Clauss(2017)[7] on the dimensions of business model innovation, this dissertation discusses the effect of value co-creation on enterprise performance based on the three dimensions of value proposition, value creation and value capture, so as to improve enterprise performance while meeting customer needs.

The direct effect of business model innovation on enterprise performance. Angelini (2023) [8] pointed out that business model innovation can help enterprises stand out in the fierce market competition and effectively improve enterprise performance. Chen Juhong, Zhang Ruijun and Zhang Yaqi (2020) [9]revealed the impact path of servitization strategy on enterprise performance from the perspective of business model innovation, and constructed a theoretical model of the relationship between servitization strategy (product orientation and customer orientation), business model innovation and enterprise performance. It is believed that business model innovation plays a partial mediating role in the relationship between servitization strategy and enterprise performance (Piotr,2019)[10].

Based on the above analysis, this paper proposes the following hypotheses:

H1：Business model innovation plays a mediating role between co-production and enterprise performance.

H2：Business model innovation plays a mediating role between Use-value and enterprise performance.

3 Research Design

3.1 Model and Variable Definitions

Combined with literature review and analysis, this paper puts forward the theoretical framework of value co-creation on enterprise performance. The theoretical framework involves five variables, among which the independent variable is value co-creation, including two dimensions of co-production and use value. The intermediary variable was business model innovation, including three dimensions of value creation innovation, value proposition innovation and value acquisition innovation. The dependent variable is enterprise performance, including three dimensions of financial performance, market performance, customer relationship and employee feedback. The control variables mainly include the establishment time of the enterprise, the scale of assets, the nature of the enterprise, the type of business, the mode of operation and the form of service, as shown in Figure 1.

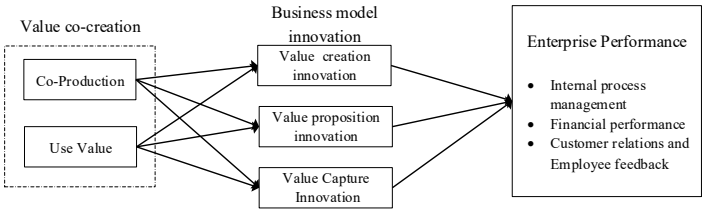

Fig. 1. Theoretical framework of Value co-creation, business model innovation, enterprise performance

3.2 Data Sources

This paper conducted a formal questionnaire survey from March to May 2023. A total of 1200 questionnaires were distributed and 932 questionnaires were collected. The distribution form is the online distribution form of Questionnaire Star. Part of the questionnaire is sent to the interviewees through wechat among the employees of Shanxi Binzhou Hotel, Shanxi Huiguan Catering Culture Co., LTD and Haidilao Hot pot chain restaurant. Another part of the questionnaire was sent online through the OA office software of the author's unit to employees of Shanxi Taizhong Hotel and Shanxi Xingye Life Service Center, which are affiliated companies.

In order to ensure the authenticity and reliability of the data, the authors screened the 932 collected questionnaires, and eliminated the invalid questionnaires including selecting the same answer for 10 consecutive questions, missing more than 10 questions, and there was a certain pattern in the selected answers. There were 918 valid questionnaires remaining, and the recovery rate of valid questionnaires was 85.87%.

4 Empirical analysis

4.1 Analysis of Sample Data

This paper mainly makes statistical analysis on the nature, establishment time, operation mode, service form and asset scale of the enterprise (Table 1). The Cronbach's a values of

value co-creation, enterprise performance and business model innovation scales was greater than 0.9, indicating that the reliability and quality of the research data of each variable scale were high, the KMO values of each variable scale was also greater than 0.7, and the p values in Bartlett's test was 0.000 (all less than 0.05). The above data results show that each scale has strong reliability and each dimension also has good validity.

Table 1. Descriptive statistical analysis of samples

Variables	Category	Fre	Per (%)	Variables	Category	Fre	Per(%)
Nature of enterprise	State-owned holding	45	4.90%	Service form	Convenience service	414	45.10%
	Private	348	37.91%		Upscale service	210	22.88%
	Joint venture	309	33.66%		Ambient-type service	294	32.03%
	Others	216	23.53%	Enterprise assets size	100,000 or less	114	12.42%
Establishment time	1 year or less	135	14.71%		100000-500000.	216	23.53%
	2 to 5 years	366	39.87%		500,000 -1 million	264	28.76%
	5-10 years	243	26.47%		1 million -5 million	177	19.28%
	10 years or more	174	18.95%		5 million and above	147	16.01%
Business type Business type	Tourist hotel	213	23.20%	Business model Business model	Online business	405	44.12%
	Restaurants (Chinese food, Western food)	360	39.22%		Operating offline	513	55.88%
	Buffet and box lunch industry	150	16.34%				
	Cold drinks industry	99	10.78%				
	Stallholders	96	10.46%				

4.2 The Mediating Effect of Business Model Innovation

In this paper, the AMOS26.0 software is used to draw the structural equation model of the relationship between value co-creation, business model innovation and enterprise performance (Figure 2). In this dissertation, the arithmetic average of each observed variable of the first-order construct was taken as the observed variable index of the second-order construct. The data analysis showed that the chi-2square degree of freedom ratio (χ/df) of the structural model was 2.004, which was less than 3. The RMR was 0.078, less than 0.05; RMSEA was 0.057, less than 0.08; GFI and AGFI were 0.985 and 0.961, respectively, which were both greater than 0.9. TLI and CFI were 0.950 and 0.955, respectively, which were both greater than 0.9. Therefore, the overall fitting effect of the model is good, that is, the overall fitting degree of the model in this study meets the required standard, and the model is acceptable.

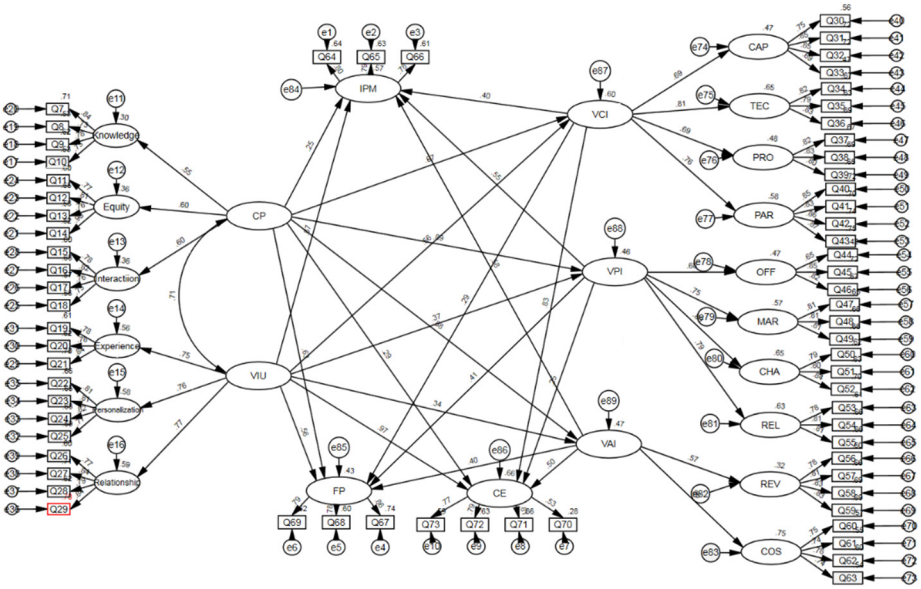

Fig. 2. Structural equation model diagram

AMOS26.0 software was used to test the hypothesis of the model. It can be seen from Table 2 and Table 3 that the estimated coefficients of each path are all positive values, indicating that the relationship between the variables conforms to the research hypothesis of positive influence relationship. From the significance results, all of the paths pass the significance test.

Table 2. Hypothesis test results of value co-creation and business model innovation

Hypothesis path	β	S.E.	p	Conclusion
Co-production → value creation innovation	0.671	0.172	***	Support
Co-production → Value proposition innovation	0.888	0.178	***	Support
Co-production → Value Capture Innovation	0.883	0.149	***	Support
Use value → Value creation innovation	0.558	0.093	***	Support
Use value → Value proposition innovation	0.373	0.084	**	support
Use Value → Value Capture innovation	0.335	0.072	**	Support

Table 3. Hypothesis test results of business model innovation and enterprise performance

Hypothesis path	β	S.E.	p	Conclusion
Value Creation Innovation→ Financial Performance	0.286	0.065	**	Support
Value Creation Innovation→ Internal process management	0.403	0.264	**	Support
Value Creation Innovation →Customer Relationship & Employee feedback	0.830	0.156	**	Support
Value Proposition Innovation → Financial Performance	0.408	0.165	***	Support

Value Proposition Innovation → Internal process management	0.550	0.064	**	Support
Value Proposition Innovation → Customer relationship & Employee feedback	0.251	0.117	**	Support
Value Capture Innovation → Financial Performance	0.395	0.164	***	Support
Value Capture Innovation → Internal process Management	0.583	0.087	***	Support
Value Capture Innovation → Customer Relationship & Employee feedback	0.498	0.136	***	Support

In order to test the mediating effect of each dimension of business model innovation in cooperative production -- enterprise performance, this dissertation takes cooperative production as the independent variable, value creation innovation, value proposition innovation and value capture innovation as the intermediary variable, and enterprise performance (financial performance, internal process management, customer relationship and employee feedback) as the dependent variable. Bootstrap method was used to test the mediating effect of the model, and the results are shown in Table 4.

Table 4. Mediation effect test of "Cooperative production -- Business model innovation -- Enterprise performance" model

Mediation model	Test Conclusions	a	b	a*b mediating effect	a*b (95% BootCI)	c 'direct effect
Co-production => Value capture innovation => Internal process management	Not supported	0.299**	0.121	0.036	-0.004 ~ 0.077	0.258**
Co-production => Value proposition innovation => Internal process management	Support	0.354**	0.202**	0.072	0.017 ~ 0.115	0.258**
Co-production => Value Creation innovation => Internal process management	Not supported	0.314**	0.090	0.028	-0.015 ~ 0.074	0.258**
Co-production => Value Capture innovation => Financial performance	Support	0.299**	0.146*	0.044	0.005 ~ 0.083	0.236**
Co-production => Value proposition innovation => Financial performance	Support	0.354**	0.275**	0.097	0.035 ~ 0.152	0.236**
Cooperative production => Value creation innovation => Financial performance	Not supported	0.314**	0.089	0.028	-0.018 ~ 0.077	0.236**
Co-production => Value Capture innovation => Customer relationship & employee feedback	Support	0.299**	0.231**	0.069	0.018 ~ 0.107	0.237**
Co-production => Value proposition innovation => Customer relationship and employee feedback	Not supported	0.354**	0.055	0.019	-0.026 ~ 0.066	0.237**
Cooperative production => Value Creation innovation => Customer relationship	Support	0.314**	0.296**	0.093	0.032 ~ 0.134	0.237**

Mediation model	Test Conclusions	a	b	a*b mediating effect	a*b (95% BootCI)	c 'direct effect
and employee feedback						

In order to test the mediating effect of each dimension of business model innovation on cooperative production -- enterprise performance, this dissertation takes use value as the independent variable, value creation innovation, value proposition innovation and value capture innovation as the intermediary variable, and enterprise performance as the dependent variable. Bootstrap method was used to test the mediating effect of the model, and the results are shown in Table 5.

Table 5. Mediation effect test of "Use value -- Business model innovation -- Enterprise performance" model

Mediation model	Test Conclusions	a	b	a*b mediating effect	a*b (95% BootCI)	c 'direct effect
Use value => Value capture innovation => Internal process management	Support	0.170**	0.132*	0.022	-0.001 ~ 0.054	0.221**
Use value => Value proposition innovation => Internal process management	Support	0.168**	0.240**	0.040	0.011 ~ 0.077	0.221**
Use value => Value Creation innovation => Internal process management	Not supported	0.153**	0.114	0.017	-0.004 ~ 0.049	0.221**
Value in use => Value Capture innovation => Financial performance	Support	0.170**	0.160**	0.027	0.004 ~ 0.062	0.176**
Use value => Value proposition innovation => Financial performance	Support	0.168**	0.314**	0.053	0.016 ~ 0.102	0.176**
Use value => Value Creation innovation => Financial performance	Not supported	0.153**	0.114	0.017	-0.006 ~ 0.049	0.176**
Use value => Value Capture innovation => Customer relationship & employee feedback	Support	0.170**	0.232**	0.039	0.010 ~ 0.075	0.268**
Use value => Value proposition innovation => Customer relationship and employee feedback	Not supported	0.168**	0.079	0.013	-0.011 ~ 0.040	0.268**
Use value => Value Creation innovation => Customer relationship and employee feedback	Support	0.153**	0.310**	0.048	0.013 ~ 0.089	0.268**

According to the above analysis results, business model innovation plays a partial mediating role between value co-creation and enterprise performance. Therefore, hypotheses H1, H2 are verified.

5 Conclusion and Suggestion

This requires catering service enterprises to pay attention to promote the innovation of business model of catering service enterprises under the guidance of value co-creation in the operation process. (1) Interactive services. Value co-creation encourages interactive service contacts, and food and beverage companies can involve customers in the preparation and presentation of dishes, turning mealtime into a memorable experience. For example, interactive cooking stations or chef tables can be introduced to allow customers to participate in the cooking process. (2) Cooperate with customers. Involve customers in co-designing menus or event themes. This collaboration ensures that the catering service is in line with the client's vision, making the event more personal and memorable. (3) Feedback mechanism. Food and beverage enterprises can establish employee feedback mechanisms, and food and beverage operators can collect customer feedback through surveys, reviews, and direct interaction to understand their needs and preferences, and this feedback can be used to improve services and products, and finally achieve a feedback loop.

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