

Research on the Public Cultural Service Upgrade Based on Structural Equation

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Abstract

According to the theory proposed by former researcher, this paper puts forward the assumptions of public cultural services upgrading and builds a conceptual model. Data collected with the method of survey. The proposed path hypotheses are tested by structural equation modeling. And ultimately, the path relationship of enhancing the level of public cultural services is obtained

Keywords: Public Cultural Service, Structural equation model, Promoting Path

1. Introduction

With the development of economic and income levels, wider participation in cultural activities, a richer cultural life is increasingly becoming the desire of the people. Since 2005, constructing public cultural service system as a strategic plan was first proposed in the party's Fifth Session of Sixteenth CPC. The party and the government have always attached great importance to the construction of public cultural service system, especially since the Sixteenth Party Congress. Chinese Communist party has always considered the cultural construction as an important strategic position in the party and the country. To meet people's basic cultural needs are treated as the basic task of socialist cultural construction. The public cultural services belong to the government's public service functions, which calls efforts to improve public cultural services' overall strength and comprehensive level. However, despite Chinese government continued to increase the public cultural services investment and per capita cultural operating expenses showed a rising trend year by year. However, compared with the rapid economic development, there are insufficient investments in public cultural service areas, uneven regional development and low utilization of investment resource, *etc.* This paper proposes to enhance the level of public cultural services path assumptions based on the related theoretical studies, and build a conceptual model. Then, it uses structural equation modeling to test the proposed hypotheses path. Ultimately this study got the path relationship which may improve the level of public cultural services.

2. Research Hypothesis

Path assumptions on investment in public cultural services to enhance the level of public cultural services are proposed. Scientific and reasonable investment level is the guarantee for promoting the sustainable and healthy development of public cultural services. Under the current state of vigorously public cultural development, improving the investment protection mechanism of public cultural undertaking performs practical significance [1]. Ren Yiming pointed out that the government's public investment in public culture plays an important role in cultural level rising and services assurance. And "moderate update" cultural facilities are the key of sustainable and healthy development of public cultural service [2]. The empirical analysis of Guo Guofeng *etc.* on cultural industries development affecting factors of mechanism action and the related path, using

structural equation modeling to simulate the cultural industry input - output active route, obtained that essential inputs not only have a direct impact on the effect of output, but also have some impact through the output scale indirectly [3]. Based on the above analysis, this paper puts forward the hypothesis:

H1: increased investment in public cultural services will contribute to improving public cultural service guarantee

H2: increased investment in public cultural services will contribute to increasing output level of public cultural activities

H3: increased investment in public cultural services will lead to enhance public participation in public cultural services

H4: increased investment in public cultural services will improve the overall evaluation level of public cultural services

Path assumptions on protection of public cultural services to enhance the level of public cultural services are put forward. Improving and perfecting the mechanism of public cultural services are important for developing the standardization and guarantee equal public cultural services, and to meet the real basic cultural needs of the public. E Jing's research on mechanism of public cultural services conducted that service support mechanisms played an important role in establishing public culture system construction. Only in the ways of building protection mechanisms, strengthening the hardware construction of public cultural service institutions, developing qualified personnel, establishing appropriate safeguards mechanism for recurrent cultural investment, the culture can really melt in people's daily life, therefore, the public culture may become an indispensable part. The researcher states specifically from three aspects: the financial guarantee, organizational guarantee and supervisory mechanisms [4]. Based on the above analysis, this research puts forward the hypothesis:

H5: improved public cultural services assurance will boost public cultural activities' outputs

H6: improved public cultural service protection will promote the overall evaluation level of the public cultural services

Path assumptions on public cultural service activities output enhancing the public cultural services level are stated. Public cultural activities are non-occupational important social culture type which guided and supported by the government. Public cultural activities' outputs are direct services and the quantity and quality of product based on certain investment, by conducting public cultural service activities. It is the only way to change the investment into results, whose essence is a public cultural service organization to fulfill its duties. Specifically, they are available to the general public of the various products, services and activities to meet public cultural needs. Some scholars set community cultural construction as an example, illustrate the necessity to provide content-rich, diverse forms of cultural activities, which not only can meet the public's cultural aspirations, but also can raise the level of participation in public community cultural construction. Han Yongbin proposes strengthening the masses cultural activities is the booster to promote cultural development and to build a sound public cultural service system [5]. Based on the above analysis, this paper puts forward the hypothesis:

H7: increased public cultural activities outputs will advance public participation in public cultural service level

H8: increased public cultural activities output will improve the comprehensive evaluation level of public cultural services

Path assumptions on cultural services public participation enhancing the public cultural services level are maintained. To measure the level of public cultural service quality, researchers should not only focus on the degree of infrastructure investment and public cultural activities in museums, libraries, cultural centers, but also focus on the utilization of the facilities and public participation. The result is the final part of the input-output, and it's an important basis for judging the effect of public cultural services. Therefore, in

the public cultural service system, stimulating public participation and promoting positive interaction will enhance social responsibility and cultural identity of citizens. And this way may stimulate participation in various public cultural activities and enthusiasm initiative. Governments and relevant departments should take effective measures to protect the basic cultural rights of citizens, meet their cultural needs, stimulate public participation enthusiasm, and enhance the effectiveness of public cultural services. Liu Shu and Mao Jianhong studied Ningxia residents' weak sense of participation of public cultural activities and noted that the active participation of the people is a key element to improve public cultural service system. They proposed the government should guide and supervise cultural activities [6]. Based on the above analysis, the hypothesis is put forward:

H9: the increase of public participation in public cultural services will improve the overall evaluation of the public cultural services level.

3. Conceptual Model

Public cultural services provide public cultural products and services to the community through "input - output" model. Analysis on combined input and output of public cultural services is very important for improving public cultural services and performance levels. According to the path assumptions of enhancing the level of public cultural services, conceptual models are built to enhance the public cultural services level, as shown in Figure 1.

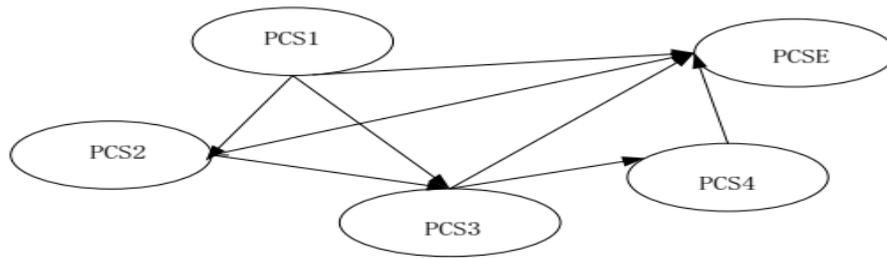


Figure 1. Conceptual Model to Enhance the Level of Public Cultural Services

4. Questionnaire Design and Testing

Finance investment, infrastructure investment and investment in human resources are analyzed as one influence affecter. In addition, the existing services assurance, activities' outputs and public participation are analyzed and evaluated. The final questionnaire contains five subscales, namely public cultural services engagement Table (six questions), public cultural service guarantee Table (4 questions), public cultural activities output Table (3 questions), public participation in public cultural service Table (3 questions) and the overall level of public cultural services Table (3 questions), see Table 1. 317 valid questionnaire samples obtained through a Likert's standard seven scaling method and CATI, namely, computer-assisted telephone interview way.

Table 1. Variable Categories in Model

Latent variable code	Latent variable	Observation of latent variable	Observation variable
PCS1	Public cultural	A1	Investment intensity in cultural industry from government

	service investment	A2	The number of mass art gallery, community center, community station
		A3	The number of computer in e-reading room of public library
		A4	Whether the number of museum can meet publics' needs
		A5	Whether the librarian of public library can satisfy the need of readers
		A6	Whether staff of masses art gallery, community center and community station can meet the public needs
PCS2	Public cultural service protection	B1	Whether the space of masses art gallery, community center and community station can meet the public needs
		B2	Whether the librarian of public library can provide professional service
		B3	Professional quality of masses art gallery, community center and community station
		B4	Whether the staff of museum can provide professional service
PCS3	Public cultural activities' output	C1	The number of literary and artistic activities organized by masses art gallery, community center and community station
		C2	Session of art performance troupes and stadium
		C3	The number of exhibition held by museum
PCS4	Public culture service activities' participation	D1	The participation number of training in masses art gallery, community center and community station
		D2	The attendance of watching art performance from troupes and stadium
		D3	The attendance of lecture in public library
PCSE	Evaluation of public cultural service level	J1	Higher level of overall public cultural service
		J2	Public cultural service enriches public's spiritual life and satisfies public cultural needs
		J3	The wide development of public cultural service stimulated social and economy development

Reliability and validity of the sample data should be inspected before starting structural equation model fitting with the questionnaire data, which may ensure the internal consistency and reliability of the sample data. This process can lead to the scientific and rational model fitting results. This paper tests the reliability coefficient of the questionnaire data with the statistical software SPSS17.0. The result shows that each questionnaire-based subscale coefficients α are greater than the critical value of 0.7, Table 2 shows the design of the questionnaire performing high reliability levels.

Table 2. Reliability of Each Subscale

Subscale	Cronbach's α coefficient
Public cultural service investment	0.782
Public cultural service protection	0.912
Output of public cultural activities	0.845
Public cultural service participation	0.923

Evaluation of public cultural service level	0.796
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Construct validity is used to test the questionnaire and principal component analysis is used to examine the importance of the designed problem. Variance contribution rate of the first principal component represents the contribution of the measurable entries to the latent variables. The larger the variance contribution rate of the first principal component, indicating the close relationship between the entry and the research question. Generally, when the first principle component variance contribution rate is more than 0.4 is better. Questionnaire data are factor analyzed with SPSS17.0. The results of variance contribution rate from each latent variable of the first principal component are shown in Table 3. All the variance contribution rates are larger than the standard 0.4, therefore, the validity is acceptable.

Table 3. Variance Contribution Rate of the First Principle Component

Latent variable	Variance contribution rate (%)
η_1	43.72
η_2	48.25
η_3	50.13
η_4	55.74
ζ_1	48.91

5. Model Building and Testing

According to theoretical assumptions, initial structural equation model which is suitable for AMOS17.0 is established as shown in Figure 2. In addition to the variable latent variables, observed variables, there are residual variables. The path coefficient of residual variables default value is 1. In the figure, ellipse indicates latent variables, rectangle represents the observed variables, and the residual variable is represented by circle. Meanwhile, lines with arrows represent the relationship between variables [7-9]. If the variables are connected with lines, there is correlativity between variables. If the connection is connected with bidirectional arrow that represents there is a relationship between the variables; if the connection is unidirectional arrow that indicates a causal relationship between the variables. The direction of arrow reflects from the reason variable to the outcome variable. Nine single-line arrows indicate nine path assumptions to be tested in the model.

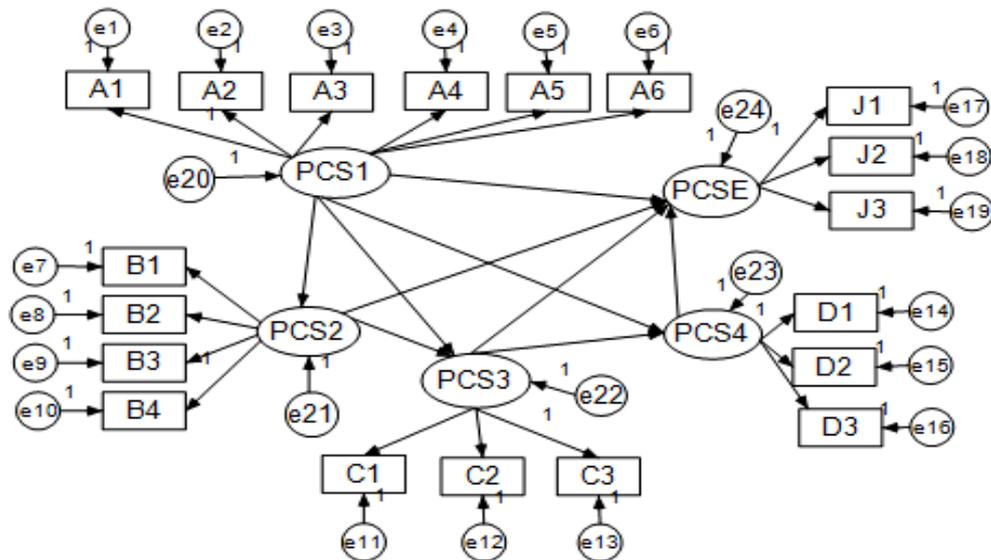


Figure 2. Initial Structural Equation Path Map

The core of the model tests is the initial structural equation model fitting test. The initial structural equation model is analyzed with AMOS software. The results are shown in Table 4.

Table 4. The Initial Model Fitting Test Result

Fitting index	Model value	Criteria
chi-square value/ variance(degree of freedom) $\chi^2 / d.f.$	1.078	Less than 3.0
Goodness of fit index (GFI)	0.953	Be equal to or greater than 0.9
Adjusted goodness of fit index (AGFI)	0.915	Be equal to or greater than 0.8
Root mean square error of approximation (RMSEA)	0.018	Be equal to or less than 0.1
Relative fit index (CFI)	0.674	Be equal to or greater than 0.9
Non-normal fit index TFI	0.584	Be equal to or greater than 0.9
Increasing fit index (IFI)	0.849	Be equal to or greater than 0.9
Parsimony normed fit index (PNFI)	0.662	Be equal to or greater than 0.5
Parsimony goodness of fit index (PGFI)	0.659	Be equal to or greater than 0.5

Analyzed from Table 2, the majority of fit index passed the test. Only three indicators did not pass the initial model test. The initial structural equation model needs to be improved. Model adjustment process needs to be completed according to the operation results. The process eliminates bias path by repeatedly adjusting the relationship between the variables. Finally the research obtains the desired modification model fitting results [10-12]. AMOS model repeated changes and adjustment process is omitted. The covariance relationship between residuals and the path relationship between variables needed to be increased are shown in Table 5.

Table 5. The Revised Residual Covariance Relations and Path Relations of Variables Increased in Structural Equation Model

Increased covariance				
e19<-->e23	e1<-->e21	e6<-->e11	e15<-->e5	e5<-->e22
e11<-->e20	e19<-->e22	e7<-->e2	e20<-->e21	e17<-->e20
e6<-->e23	e8<-->e23	e12<-->e23	e9<-->e22	e7<-->e24
e14<-->e20	e12<-->e15	e4<-->e13	e22<-->e16	e5<-->e23
e24<-->e21	e5<-->e14	e6<-->e9	e11<-->e10	e21<-->e19
e24<-->e12	e17<-->e14	e18<-->e20	e18<-->e6	e19<-->e11
e4<-->e1	e24<-->e8	e12<-->e19	e15<-->e22	e21<-->e11
e20<-->e23	e3<-->e23	e11<-->e9	e3<-->e22	e1<-->e23
e5<-->e24	e6<-->e22	e20<-->e22	e7<-->e3	e15<-->e6
Path relations need to be added: service assurance -->public participation				

By assessing the fitting results of structural equation modeling, the results proved that it maintains a better fit condition. Not only can the observed variables explain the latent variables, normalized estimate of all parameters are relatively reasonable, as in following Table 6. In addition, the overall fit condition of the model is better. Absolute goodness of fit index, incremental goodness of fit index and parsimony goodness of fit indicators meet criteria.

Table 6. Revised Coefficients Estimation Results of Structural Equation Model

Variable factors	Estimate	S.E.	C.R.	<i>P</i>
A1<--- PCS1	0.920	0.212	4.338	***
A2<--- PCS1	1.044	0.149	7.012	***
A3<--- PCS1	1.421	0.306	4.646	***
A4<--- PCS1	1.000			
A5<--- PCS1	0.890	0.301	2.957	***
A6<--- PCS1	1.245	0.602	2.068	***
B1<--- PCS2	.679	.067	10.106	***
B2<--- PCS2	1.000			
B3<--- PCS2	.867	.069	12.588	***
B4<--- PCS2	.717	.070	10.243	***
C1<--- PCS3	1.000			
C2<--- PCS3	.875	.078	11.218	***
C3<--- PCS3	.897	.084	10.679	***
D1<--- PCS4	1.000			
D2<--- PCS4	1.057	.089	11.876	***

D3<--- PCS4	1.052	.096	10.958	***
J1<--- PCSE	1.000			
J2<--- PCSE	.365	.044	8.295	***
J3<--- PCSE	.544	.064	8.501	***

Note: *** indicates $P < 0.001$

Revised coefficients of latent variables path relations are referenced to verify the theoretical hypothesis. Table 7 shows the significance testing results of standardized estimates, critical ratio (CR) path relationship coefficients from the revised latent variables path coefficient relations.

Table 7. Revised Structural Model Parameter Estimation

Hypothesis	Path	Estimate	S.E.	C.R.	P	Hypothesis testing results
H1	PCS1→PCS2	.861	.161	5.348	**	pass
H2	PCS1→PCS3	.613	.122	5.024	***	pass
H3	PCS1→PCS4	-.146	.081	-5.135	**	fail
H4	PCS1→PCSE	.524	.201	2.607	***	pass
H5	PCS2→PCS3	.689	.143	4.818	**	pass
H6	PCS2→PCSE	.654	.167	3.916	***	pass
H7	PCS3→PCS4	.214	.071	3.014	***	pass
H8	PCS3→PCSE	.422	.068	6.206	***	pass
H9	PCS4→PCSE	.149	.058	3.086	***	pass
Add path 1	PCS2→PCS4	.289	.069	4.188	***	pass

Note : ***indicates $P < 0.001$; **indicates $P < 0.05$

The model analysis results in Table 7 show that:

Path hypothesis H1 stands, which indicates that investment in public cultural service has a positive effect on the protection of public cultural services. Increasing investment in public cultural services will lead to improve the service assurance. Path hypothesis H2 stands. That presents public cultural services have a positive effect on public cultural activities outputs. Increasing investment in public cultural services will increase public cultural activities output. Path hypothesis H3 does not hold, which indicates involvement of public cultural services investment performs no positive impact on public culture of public service. Increasing public investment in cultural services did not enhance public participation in cultural services. Path hypothesis H4 is established, which states cultural services investment and evaluation maintain a positive correlation. Investment increasing can promote the evaluation level of public cultural services. Path hypothesis H5 is established, which states that public culture service assurance and public cultural activities output have a positive correlation. And improving the protection level of public cultural services will boost public cultural activities outputs. Path hypothesis H6 is established, which states public cultural services guarantee a positive effect on the comprehensive evaluation of the public cultural services level. Improving security efforts of public cultural service can improve the overall evaluation of the public cultural service level. Path hypothesis H7 is established, indicates that public cultural activities have positive impact on the output of public participation. The output of public cultural service activities increase will enhance public participation. Path hypothesis H8 is established, which shows public culture outputs have positive impact on public cultural service evaluation. Increased public cultural service activities output can develop the evaluation

level of public cultural services. Path hypothesis H9 is established, which indicates public cultural services participation has a positive effect on the comprehensive evaluation level of public cultural services. Increasing public participation in public cultural services will directly improve the comprehensive evaluation level of public cultural services. Added Path 1 verified the path coefficient under 0.001 significant levels is significant. All the indicators are within a predetermined standard value. This shows enhancing public cultural services assurance has a positive effect on public participation. Improving the level of public cultural services assurance will encourage public participation.

The actual path analysis diagram obtained through AMOS17.0 is shown in Figure 3.

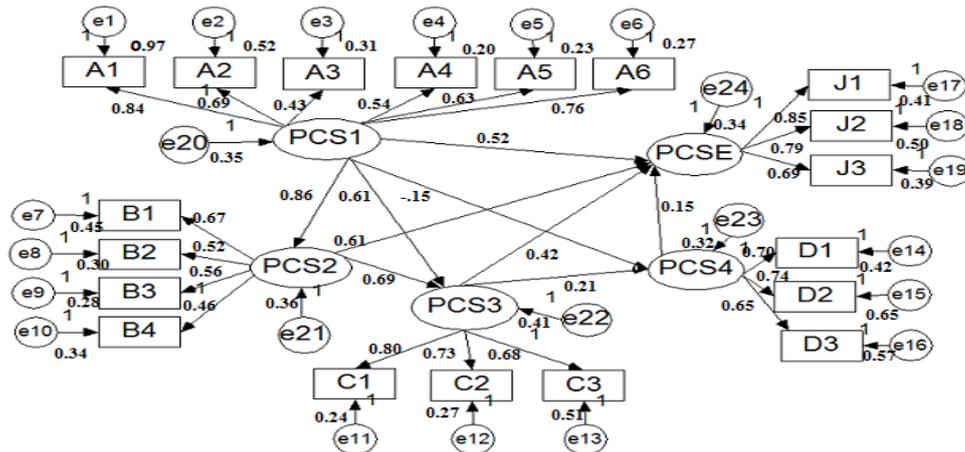


Figure 3. Path Map Calculated through AMOS

6. Conclusion

The results show that investment in public cultural services, services assurance, activities outputs, and public participation have a significant positive correlation with the promotion of the overall level of public cultural services. Namely, increasing investment in public cultural services, strengthening the protection level of public cultural services, increasing the number of public cultural service activities and expanding public participation in public cultural service can be effective in improving the overall level of public cultural services. According to path conceptual model, this research found that there is a strong causal relationship among public investment in cultural services, services assurance, activities outputs, and public participation these dimensions. Based on these findings, four major optimization measures to enhance public cultural services are put forward.

First, public cultural service as an important branch of government public service, investment level is a key element of it. Only to increase investment, improve and optimize the investment structure, can the government enhance the overall level of public cultural services ultimately, and can the public enjoy the benefits.

Second, public cultural services sectors should fully recognize the important role of security services for the overall public cultural services evaluation. They should continually strengthen and improve to enhance the overall level of public cultural services

Third, public cultural services sectors should be fully aware of the important role of activity output in overall evaluation of public cultural services. While strengthening government investment, they should insist on carrying out various forms of cultural events, exhibitions, lectures and training. These methods may maximally to meet the needs of a variety of public. Thus it may enhance the overall level of public cultural services.

Fourth, stimulating subjectivity, motivation and motility of public participation in public cultural services can balance the supply and demand of public cultural services, raise public awareness of public cultural services, and improve the effect of public cultural service.

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