Journal of Coastal Research	SI	107	262–267	Coconut Creek, Florida	2020

What are the Most Influential Factors on the Development of Cultural Industry in China's Coastal Areas?

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ABSTRACT

Dai, J.H.; Guo, X.; Chi, J.Y., and Li, J.L., 2020. What are the most influential factors on the development of cultural industry in China's coastal areas? *In:* Qiu, Y.; Zhu, H., and Fang, X. (eds.), *Current Advancements in Marine and Coastal Research for Technological and Sociological Applications*. *Journal of Coastal Research*, Special Issue No. 107, pp. 262-267. Coconut Creek (Florida), ISSN 0749-0208.

As a special cultural and economic form, the cultural industry has become an economic pillar of this century. The development of cultural industry in China's coastal areas is influenced and restricted by many factors, which interact with each other and thus affect the value-added of cultural industry. This article analyzes the factors that affect the development of cultural industry in China's coastal areas, takes the analysis of the influence of each factor on the development of cultural industry in coastal areas as the target. According to empirical analysis, the three most important factors affecting cultural industry in China's coastal areas are as patent, consumption, employment. Therefore, to promote cultural technology represented by cultural patents, optimize the industrial structure to increase consumption, encourage cultural innovation and independent entrepreneurship to increase the number of people employed in the cultural industry, will significantly promote the development of cultural industries in China's coastal areas.

ADDITIONAL INDEX WORDS: *Cultural industry, influential factors, coastal areas.*

INTRODUCTION

China's "13th Five-Year" Plan for Cultural Development and Reform clearly points out that China should further stimulate the vitality of the cultural market, actively build a cultural brand with international competitiveness, and strive to promote the cultural industry to become the pillar industry of China at the end of the plan.

As a special cultural and economic form, cultural industry has influenced people's grasp of the essence of cultural industry. Scott (2004) pointed out that cultural industry was created to satisfy consumers' preferences, affirm its own value and seek for self-expression, and the main forms of cultural industry output were entertainment products, education services and information services.

In recent years, China's cultural industry has shown a very strong development trend. The proportion of value-added of cultural industry in GDP has been increasing year by year, and it increased from 2.15% in 2004 to 4.29% in 2017, up 12.8% over the previous year and 1.6 percentage points higher than the nominal GDP growth in the same period. It can be seen that cultural industry plays an increasingly significant role in promoting social economy (data are from National Bureau of Statistics of China).

The development of cultural industry in China's coastal areas is influenced and restricted by many factors, which interact with each other and thus affect the value-added of cultural industry. Therefore, this paper analyzes the factors that affect the development of cultural industry in China's coastal areas, takes the analysis of the influence of each factor on the development of cultural industry in coastal areas as the target, and puts forward the countermeasures and suggestions for the development of cultural industry in coastal areas from the analysis results.

LITERATURE REVIEW

In the process of production and circulation of cultural industry, there are complex and extensive economic relations with other industries. Therefore, the development of cultural industry will inevitably affect other industries and be affected by other cultural industries.

Scott (1997) believed that the production sector of cultural products and other related industrial sectors run through the value chain of cultural industry, indicating that the cultural industry is not an isolated industry, but closely related to the national economy.

Cunningham (2002) analyzed the relationship between cultural industry and other industries, and concluded that cultural industry is an industry closely related to other industries.

Potts (2011) took technology and human capital as the starting point to analyze the impact of technology level and human capital on the development of cultural industry.

Chou (2012) based on endogenous economic growth and new geography theory, concluded that there is a close relationship between cultural industry cluster and economic growth, and cultural industry cluster in the creative cluster with internal

DOI: 10.2112/JCR-SI107-065.1 received 19 May 2020; accepted in revision 16 June 2020.
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economic production system whose development depends on the specialization and consumption of human capital in the cluster.

From the perspective of cultural industry practitioners, Weng and Li (2016) studied the influence of cultural industry practitioners on the development of cultural industry, and came up with the countermeasures to accelerate the development of cultural industry by vigorously developing the cultivation of professional talents.

Based on the above literatures, this paper establishes a model from the five main aspects: cultural industry's demand, government support, manpower support, related industry support, cultural technology level, and puts forward other factors affecting the development of cultural industry.

MAIN FACTORS AFFECTING THE CULTURE DEVELOPMENT IN COASTAL AREAS

In the 1980s, Michael E. Porter established the "Diamond Model" competitive advantage theory. The model is used to analyze the competitive advantage of an industry in a certain region.

This paper studies the influencing factors of the development of cultural industry in China's coastal areas, comprehensively considers porter's "Diamond Model" and the current situation of the development of cultural industry in coastal areas, and selects indicators from five aspects: development of cultural industry, demand of cultural industry, government support, manpower support and related industries support.

Cultural Industry's Demand Factor

The development of cultural industry mainly depends on the development of local economy and the stimulation of local cultural demand. Indicators are selected for the demand of cultural industry: per capita GDP, per capita consumption expenditure on culture and recreation (Figure 1), number of cultural institutions, and total collections of public libraries (Figure 2).

Government Support Factor

The government should give full play to the responsibility of "invisible hand", maintain the order of the cultural market, and ensure fair competition, sound and orderly development in the cultural market. At the same time, the government can provide financial support to cultural relics institutions and give cultural enterprises more and looser financing policy support. Indicators are selected for government support: investment in fixed assets of culture and related industries, expenditure for culture, sport and media (Figure 3).

Manpower Support Factor

Talent is an important factor to enhance the core competitiveness of the industry, and cultural industry is no exception. Therefore, the support of professional talents is the key factor for the development of cultural industry. Indicators are selected for manpower support: employees in urban units of culture, sports and entertainment, and students in colleges and universities (Figure 4).

Related Industry Support Factor

The development of the education industry can improve the cultural quality of the whole province, not only provide professional talents for the cultural industry, but also provide

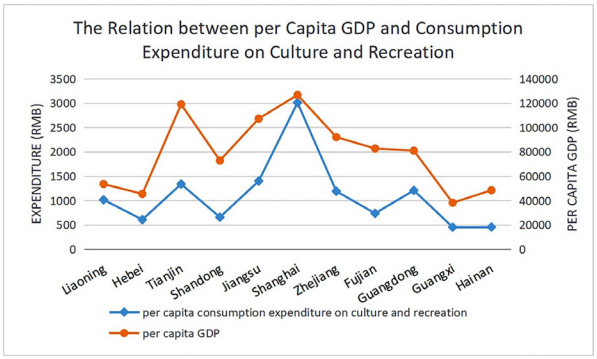
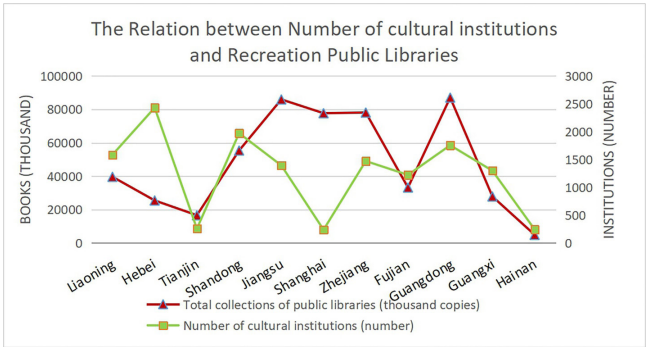


Figure 1.



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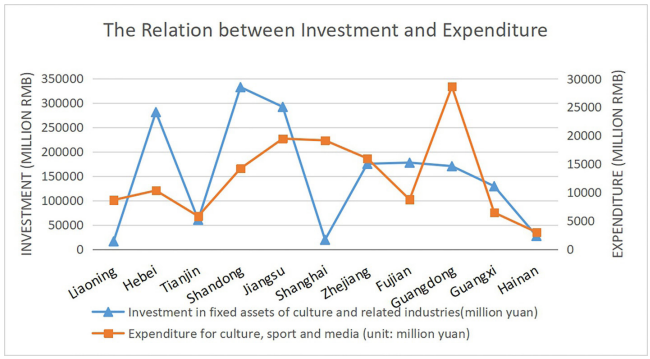

Figure 3.

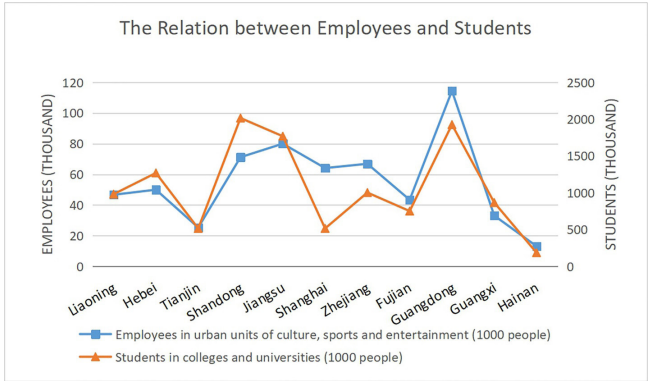

Figure 4.

consumers for the cultural industry. Indicators are selected for related industry support factor: foreign exchange earnings from international tourism (Figure 5).

Cultural Technology Level Factor

Today's Internet has become the most effective way to realize the development of cultural industry, and also the most effective way to promote cultural innovation and industrial upgrading. This paper takes total granted patent applications on culture and related industries as its measurement indicator (Figure 5).

METHODS

The cross-sectional data from the China Statistical Yearbook on Culture and Related Industries were used. Using the data of coastal provinces and municipalities directly under the Central Government in 2015-2017 to build the model, we try to find out the most influential factors on the cultural industry in China's coastal areas. In the economic activities of the market, the development and change of a certain market phenomenon often depends on several factors, that is, a dependent variable and several independent variables have a dependent relationship. Through the correlation analysis of the above independent variables and dependent variables, a model is established by using the multiple linear regression method to predict the dependency relationship between dependent variables and independent variables.

Based on the above analysis, multiple regression model is established. This paper takes the value-added of culture and related industries as the dependent variable, and independent variable including per capita GDP, per capita consumption expenditure on culture and recreation, number of cultural institutions, amount of books in public libraries, investment in fixed assets of culture and related industries, expenditure for culture, sport and media, employees in urban units of culture, sports and entertainment, students in colleges and universities, foreign exchange earnings from international tourism, and total granted patent applications on culture and related industries.

Model

We establish a econometric model:

$$\ln\_value = \beta_0 + \beta_1 \ln\_gdp + \beta_2 \ln\_consumption + \beta_3 \ln\_institution + \beta_4 \ln\_book + \beta_5 \ln\_investment + \beta_6 \ln\_exenditure + \beta_7 \ln\_employment + \beta_8 \ln\_student + \beta_9 \ln\_tourism + \beta_{10} \ln\_patent + \varepsilon$$

In this equation, ε is the error term.

Independent variables:

ln_*gdp*: per capita GDP;

ln_*consumption*: per capita consumption expenditure on culture and recreation;

ln_*institution*: number of cultural institutions;

ln_*book*: total collections of public libraries;

ln_*investment*: investment in fixed assets of culture and related industries;

ln_*expenditure*: expenditure for culture, sport and media;

ln_*employment*: employees in urban units of culture, sports and entertainment;

ln_*student*: students in colleges and universities;

ln_*tourism*: foreign exchange earnings from international tourism;

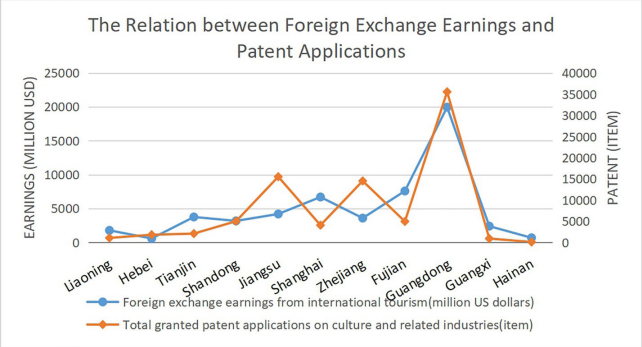

Figure 5.

Table 1. *Descriptive statistics of main variables.*

variable	mean	p50	sd	min	max
ln_value	7.080	7.082	1.039	4.703	8.480
ln_gdp	11.14	11.20	0.386	10.47	11.75
ln_consumption	6.798	6.888	0.528	5.958	8.009
ln_institution	6.862	7.241	0.869	5.429	7.796
ln_book	8.161	8.276	0.835	6.049	9.072
ln_investment	16.06	16.38	1.011	14.30	17.32
ln_expenditure	4.605	4.484	0.604	3.238	5.656
ln_employment	1.560	1.703	0.607	0.148	2.467
ln_student	4.473	4.596	0.678	2.906	5.306
ln_tourism	7.961	8.101	1.084	5.516	9.902
ln_patent	7.944	8.187	1.570	4.489	10.48

ln_*patent*: total granted patent applications on culture and related industries.

Dependent variable:

ln_*value*: value-added of culture and related industries.

In order to alleviate the possible heteroskedasticity in regression, we take the natural logarithm for all variables and then carry out regression. We list the descriptive statistics of the main variables in Table 1.

Then, we list the correlation efficient matrix of each main variable in Table 2. Each major variable has a significant correlation with the dependent variable ln_*value*.

Regression Analysis

Our data is a three-year strongly balanced panel. In regression, we use random effect model. And feasible generalized least square (FGLS) method is used to estimate FE model. We list the results of the baseline model in Table 3.

In column (1) of Table 3, we only add gdp to regression and find that the coefficient sign of this variable is positive, and it is statistical significance at 1% level. This is consistent with our expectation that value-added of the culture and related industries is affected by the overall economic development level. In China's coastal areas, the higher the per capita GDP, the more developed the cultural industry.

In column (2), we add all the independent variables except gdp to the regression. The results show that the coefficients of book, investment and patent are all significantly positive. Note that

Table 2. *Correlation efficient matrix.*

	ln_ value	ln_gdp	ln_ consumption	ln_ institution	ln_book	ln_ investment	ln_ expenditure	ln_ employment	ln_ student	ln_ tourism	ln_patent
ln_value	1										
ln_gdp	0.5831*	1									
ln_ consumption	0.6042*	0.8681*	1								
ln_institution	0.4792*	-0.340	-0.261	1							
ln_book	0.9118*	0.5111*	0.6761*	0.4636*	1						
ln_ investment	0.6332*	0.00880	-0.159	0.7684*	0.4353*	1					
ln_ expenditure	0.9523*	0.4442*	0.5752*	0.5532*	0.9453*	0.5683*	1				
ln_ employment	0.9222*	0.327	0.4988*	0.6524*	0.9307*	0.5779*	0.9691*	1			
ln_student	0.8123*	0.113	0.172	0.8415*	0.7647*	0.7959*	0.8318*	0.8778*	1		
ln_tourism	0.7295*	0.6449*	0.6482*	0.118	0.7424*	0.236	0.7004*	0.6504*	0.4617*	1	
ln_patent	0.9619*	0.6088*	0.6061*	0.4365*	0.8662*	0.5941*	0.9112*	0.8686*	0.7469*	0.8109*	1

Note: * indicates statistical significance at 5% level.

Table 3. *Results for baseline model*.

	(1)	(2)	(3)	(4)	(5)	(6)
ln_gdp	1.044***		0.755***	0.755***	0.989***	0.755***
	(6.22)		(3.40)	(4.16)	(2.93)	(3.08)
ln_consumption		-0.033	-0.570**	-0.570***	-0.745**	-0.570*
		(-0.13)	(-2.53)	(-3.10)	(-2.51)	(-1.94)
ln_institution		-0.288	-0.358***	-0.358***	-0.336***	-0.358***
		(-1.58)	(-3.83)	(-4.69)	(-3.40)	(-3.39)
ln_book		0.460***	0.260**	0.260***	0.272**	0.260**
		(2.67)	(2.32)	(2.85)	(2.36)	(2.10)
ln_investment		0.176***	0.104	0.104*	0.064	0.104
		(2.90)	(1.48)	(1.82)	(0.76)	(1.04)
ln_expenditure		0.224	0.028	0.028	0.043	0.028
		(1.32)	(0.14)	(0.17)	(0.21)	(0.24)
ln_employment		0.107	0.951***	0.951***	1.033***	0.951***
		(0.40)	(4.43)	(5.43)	(4.37)	(4.14)
ln_student		0.253	0.171	0.171*	0.150	0.171
		(0.97)	(1.45)	(1.78)	(1.22)	(1.38)
ln_tourism		-0.057	-0.154***	-0.154***	-0.164***	-0.154**
		(-0.85)	(-3.26)	(-4.00)	(-3.32)	(-2.15)
ln_patent		0.259***	0.268***	0.268***	0.254***	0.268**
		(3.44)	(4.36)	(5.33)	(3.91)	(2.21)
_cons	-4.553**	-1.229	-2.085	-2.085	-2.994	-2.085
	(-2.41)	(-0.55)	(-1.15)	(-1.41)	(-1.43)	(-0.72)
N	33	33	33	33	33	33
	t statistics in parentheses					
="* p<0.1	** p<0.05		*** p<0.01"			

the two variables, investment and patent, respectively represent the capital and technology of cultural industry. This shows that in coastal areas, the development of cultural industry is closely related to the investment of capital and technology.

In column (3), all variables enter the regression. It can be seen that the coefficient of employment is positive and statistically significance at 1% level. This fully shows the importance of employment for the cultural industry.

According to the results of column (2) and column (3), we can know that value-added of cultural and related industries of provinces and cities in coastal areas is affected by the capital, technology and labor of the industry. Moreover, the value-added of culture and related industries is closely related to the overall development of the national economy.

In column (4) - (6), we carry out robustness checks for the above conclusion. In column 4, we use maximum likelihood estimation (MLE) to estimate the RE model. In column 5, we consider that GDP may be an endogenous variable, so per capita GDP is used as its instrument variable (IV). In column6, clustered standard error is used for estimation.

The results of these three columns are almost the same as for column 3, indicating that the result is robust.

Relative Importance Analysis

According to Table 3, we know that the value-added of culture and related industries in China's coastal areas is not only affected by the internal capital, labor, technology and other factors, but also closely related to the overall economic development level of the region. In order to know which factor is more important, we use dominance analysis method to explore the relative contribution of each factor to the value-added of cultural and related industries in China's coastal areas.

The principle of advantage analysis is to get the relative contribution of each explanatory variable by decomposing the R^2 obtained by regression. The essence of this method is to sort the relative importance of each explanatory variable. This requires constantly adding new explanatory variables to the regression and comparing the additional contributions of each variable. This extra contribution can be expressed as an increment of R^2 generated by the new regression. We present the results of the advantage analysis in Table 4.

In Table 4, we have carried out four regressions in total, and the explained variables are all value-added of culture and related industries, which is the same as the benchmark regression.

In column (1), three important variables are considered: gdp, investment and expenditure. The results show that among these three variables, the largest relative contribution to the value-added of culture and related industries is expenditure, and the smallest is gdp.

In column (2)-(4), we gradually add other explanatory variables. According to the results of column (4), the largest relative contribution to the value-added of culture and related industries is patent, which indicates technology is extremely important for the development of cultural industry. The second and third largest relative contributions are expenditure and employment. This shows that compared with other factors, government expenditure and employment have made a great contribution to the development of cultural industry in China's coastal areas.

SUMMARY AND PROSPECT

The value-added of the cultural industry in China's coastal areas is affected by the internal factors such as labor, capital, technology and other factors, as well as the overall economic development level of the region.The three most important factors affecting the value-added of cultural industry in China's coastal areas are as follows: total granted patent applications on culture and related industries (patent), per capita consumption expenditure on culture and recreation (consumption), employees in urban units of culture, sports and entertainment (employment). These three factors respectively belong to the dimensions of cultural technology level, cultural industry's demand factor and manpower support factor. Figure 6 shows the relationship between the value-added of culture and related industries and patent applications on culture related industries for three consecutive years (2015, 2016, 2017).

Cultural technology represented by cultural patent is the first factor to promote the development of cultural industry. Relying on technology and innovation is an important force and basic way to realize the sustainable development of cultural industry. It is a difficult and complicated process to realize the transformation of industrial scientific and technological achievements into productive forces.

Per capita consumption expenditure on culture and recreation is the second factor affecting the development of cultural industry. With the rapid development of economy and society, people's demand for cultural consumption is growing and increasing. According to the previous analysis, we find that the development of cultural consumption in coastal areas will play a very important role in promoting the development of cultural industry and the growth of the whole economy. Therefore, the coastal areas should adjust the structure of cultural consumption reasonably, enrich the

Table 4. *Relative importance analysis*.

	(1)	(2)	(3)	(4)
gdp	19.73% [3]	11.85% [5]	10.44% [5]	6.72% [8]
investment	21.86% [2]	14.24% [3]	11.66% [4]	7.36% [7]
expenditure	58.41% [1]	28.85% [1]	21.94% [1]	14.62% [2]
consumption		12.08% [4]	9.61% [6]	6.34% [9]
institution		8.78% [6]	6.94% [7]	4.79% [10]
book		24.20% [2]	18.77% [3]	12.55% [4]
employment			20.64% [2]	13.73% [3]
student				10.36% [5]
tourism				7.57% [6]
patent				15.96% [1]

Note: the relative ranking of each variable is presented in brackets.

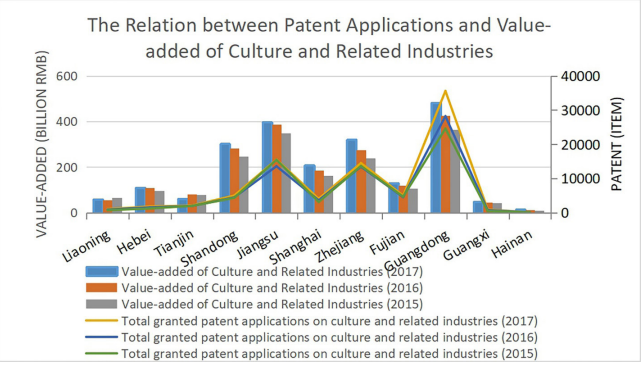

Figure 6.

content and level of cultural and entertainment products, enhance the cultural appreciation of residents, and give full play to the pulling effect of per capita consumption expenditure on culture and recreation on the development of cultural industry.

Employees in urban units of culture, sports and entertainment is the third factor affecting the development of cultural industry. Coastal areas should encourage cultural innovation and self-employment. The influence of employment on the development of cultural industry can be divided into direct employment effect and indirect employment effect. The direct employment effect of cultural industry refers to the change of employment caused by the development of cultural industry. At the same time, cultural industry can play its indirect employment effect by promoting economic growth. The indirect employment effect of cultural industry means that the development of cultural industry will lead to the change of other national economic variables, thus causing the change of labor employment.

ACKNOWLEDGEMENTS

The helpful comments of the editor and two anonymous referees are gratefully acknowledged. The work has been financially supported by National Social Science Fund Art Project (17BC059) and Beijing Social Science Fund Project (18YJA003).

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