

Quantitative Analysis of Consumption Trends and Their Economic Effects Based on a Multi-Temporal Double-Difference Approach

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ABSTRACT

This paper examines how digital entertainment consumption drives China's economic growth from multiple dimensions. Using panel data from 260 prefecture-level cities (2020–2022) and a multi-temporal double-difference method, the study finds that digital entertainment consumption significantly promotes economic growth, with a direct effect coefficient of 0.748. Robustness tests via the PSM-DID method confirm this effect, with a coefficient of 0.714, significant at the 5% level. In the low digital divide group, the regression coefficient is 6.325, while it is significantly lower in the high digital divide group, indicating that the digital divide weakens the effect. Heterogeneity analysis shows that enhancing consumer experience, generating new businesses, and boosting cultural influence positively impact growth. The findings provide insights for the sustainable development of the entertainment industry and the digital economy.

Keywords: Digital entertainment consumption, Panel data, Multi-temporal double difference, Economic effect, Heterogeneity analysis

1. Introduction

With the current rapid development of information technology and the rise of the Internet economy, which makes the digital economy develop very rapidly, the human society has fully stepped into the digital era [15, 11]. This epochal change has not only profoundly affected people's lifestyles, but also greatly reshaped the pattern and consumption mode of the entertainment industry, making the dissemination of entertainment content more rapid and extensive [12]. Secondly, digitization has also

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given rise to a new type of entertainment industry ecosystem, while the digital era has also given rise to a new type of entertainment consumption pattern. The traditional offline entertainment consumption is being transferred to online, and people can purchase tickets through the Internet, watch movies online and other ways to carry out entertainment consumption, which greatly facilitates consumers [14]. The entertainment consumption mode presents new features such as diversification, convenience and personalization, and is growing at an unprecedented rate, becoming a new force to promote economic development [18, 10]. This paper constructs a baseline regression model based on four core hypotheses, in which the explanatory variables are economic growth variables, specifically the level of digital entertainment consumption, while the control variables include demographic structure, technological advancement, consumer confidence, the level of residents' income, and the policy environment [17]. Based on the panel data of 260 prefecture-level cities in China from 2020 to 2022, utilizing the multi-temporal double-difference method aims to deeply explore the entertainment consumption and its economic effects in the digital era.

2. Research Assumptions and Benchmark Modeling

2.1. *Research hypothesis*

With the deep development of digital technology, the market scale of digital entertainment consumption continues to expand, covering a wide range of fields such as online games, electronic audio and video, webcasting, virtual reality experience, etc [5]. Directly and indirectly, it promotes economic growth. Klavuts, I. The study emphasizes the important role of digital technology in optimizing resource allocation, improving consumption efficiency and promoting economic transformation and upgrading. Digital consumption not only greatly enriches people's consumption mode and content, but also effectively boosts the growth of domestic demand by optimizing the consumption structure and improving the efficiency of consumption, etc. [9]. Hongxi, C explored the application of new digital management methods in resource consumption and regarded it as a technological impetus to promote the economic growth of the member countries of the Organization of Scottish Cooperation (OSC). It analyzes how the innovation of digital management technology can optimize the allocation of resources and thus promote economic growth [8]. On the one hand, digital entertainment consumption directly drives the development of related industries such as the Internet, information technology and media. On the other hand, through the linkage effect of the upstream and downstream of the industrial chain, digital entertainment consumption also promotes the prosperity of many industries such as manufacturing and service industries, thus positively affecting the entire economic system. This paper puts forward the following hypotheses:

H1: The development of digital entertainment consumption positively promotes China's economic growth.

Basaran, D. and Ventura, K use a qualitative research methodology to explore the application of digital marketing in the entertainment industry, where digital entertainment consumption significantly enhances the consumer experience through innovative technology and marketing strategies. This enhanced experience not only meets the increasingly diverse needs of consumers, but also promotes the upgrading of consumer behavior, making consumers more willing to pay for high-quality digital entertainment content and services. Through the innovative application of digital marketing tools, digital entertainment platforms are able to continuously optimize the consumer experience, thereby attracting and retaining more users. With growing consumer demand, the digital enter-

tainment industry can become a driving force for sustained economic development [4]. Tran, D. K explores the importance of smartphone advertising on consumer purchase intentions in emerging economies and provides evidence using Vietnam as an example. The study analyzes how smartphone advertising influences consumers' purchasing decisions. With the help of digital devices such as smartphones, digital entertainment consumption provides consumers with a more convenient and personalized entertainment experience, which greatly enriches their lives. It enhances consumer satisfaction and loyalty, while promoting consumption upgrading [16]. Consumption upgrading not only improves the quality of life of residents, but also promotes the optimization of industrial structure and the transformation of economic growth mode. This paper puts forward the following hypotheses:

H2: Digital entertainment consumption promotes consumption upgrading through enhanced consumer experience, which in turn promotes high-quality economic development.

The deepening integration of the entertainment industry with other industries has given rise to numerous new forms and modes. It enriches the supply of entertainment consumption and also drives the development of related industries. Ashmarina, S. I pointed out that digital platforms are changing the original work model by providing flexible work opportunities and diversified sources of income. Digital platforms not only provide consumers with rich entertainment content, but also create new job opportunities and sources of income for workers. By providing convenient and personalized entertainment services, digital platforms not only meet the diverse needs of consumers, but also give rise to emerging businesses such as webcasting and short video creation, which stimulate the potential for economic growth [3]. Dunn et al. provide an in-depth discussion of the impact of the digital economy on the new labor market, especially the changes in employment, skills demand, and innovative human resource technologies. The rise of the digital economy is reshaping the labor market and generating new jobs. New forms of digital entertainment consumption also promote cross-border cooperation and industrial upgrading, injecting new vitality into sustained economic growth [6]. This paper proposes the following hypotheses:

H3: Digital Entertainment Consumption Further Energizes Economic Growth by Spawning New Businesses.

Abidi, Y examines the contribution of Togo's high-technology exports to economic growth over the period 2008-2017. For this purpose, a simple regression model was applied to estimate the contribution of Togo's high-technology exports to economic growth. By analyzing data on Togo's high-tech exports during this period, it is explored how exports of high-tech products have been an important driver of economic growth. The results of the study reveal the role of high-tech exports in optimizing the structure of the Togolese economy and their potential to contribute to economic growth. From the perspective of digital entertainment consumption, cross-cultural exchanges play an important role in enhancing the international influence of Chinese culture. High-tech products not only have a huge domestic consumer market, but also go international through cross-cultural exchanges, attracting a large number of overseas users. This cross-cultural consumption of digital entertainment not only enriches the international cultural market, but also promotes the dissemination and exchange of Chinese culture and boosts economic growth [1]. Akhmetova, M reveals the key role of the information society in promoting economic prosperity by analyzing the experience of EU countries. In the current context of globalization, digital entertainment consumption not only provides people with a rich way of leisure, but also promotes the international dissemination of Chinese culture and enhances the international influence of Chinese culture [2]. This paper proposes the following hypothesis:

H4: Digital entertainment consumption enhances the international influence of Chinese culture through cross-cultural communication and indirectly promotes economic growth

2.2. Benchmark model construction

This paper first analyzes the impact of consumer finance development on economic growth. The regression model is shown in Eq:

$$pgdp_{it} = \alpha_0 + \alpha_1ccb_{it} + \alpha_2icf + \alpha_3control_{it} + \varepsilon_{it}. \tag{1}$$

In the formula, the subscripts *it* of the variables denote the province and the year, respectively. Explained variable *pgdp_{it}*, is the economic growth variable, *ccb_{it}* is the level of digital entertainment consumption, which is the variable to focus on to verify its impact on economic growth. *control_{it}* is each control variable including, demographics, technological progress, consumer confidence, the level of income of residents, and the policy environment [13]. The model is used to test the total effect of digital entertainment consumption on economic growth, where α_1 represents the size of the total effect. It is expected that α_1 is significantly positive, i.e., the development of digital entertainment consumption will positively drive China’s economic growth, thus verifying Hypothesis 1. If the estimation of α_1 is in line with the expectation, it suggests that digital entertainment consumption is indeed an important driving force for China’s economic growth.

The quantitative model of digital entertainment consumption and economic effects is shown in Figure 1, and the direct effect is hypothesis 1 The development of digital entertainment consumption positively promotes China’s economic growth, and in the context of digitization, the boundaries of the entertainment industry have been expanding, expanding from the traditional movies, music, and games to the emerging fields of online video, live broadcasting, and virtual and augmented reality. The rapid development of these emerging industries not only enriches people’s entertainment life, but also directly contributes to the expansion of the digital entertainment consumption market. The indirect effect is hypothesis two, digital entertainment consumption promotes consumption upgrading by enhancing consumer experience, which in turn promotes high-quality economic development. As well as hypothesis three. Digital entertainment consumption further energizes economic growth by giving rise to new business models. Hypothesis four is that digital entertainment consumption indirectly promotes economic growth by enhancing the international influence of Chinese culture through cross-cultural exchanges. Digital entertainment consumption shows its value in promoting economic growth, facilitating consumption upgrading, generating new industries, and enhancing the international influence of culture. In this paper, we will start from the above hypotheses to explore the economic effects of digital entertainment consumption and its realization path.

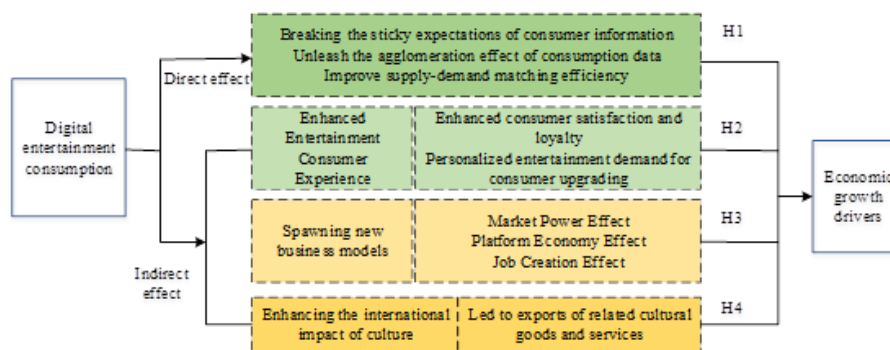


Fig. 1. Quantitative model of digital entertainment consumption and economic effects

3. Research Design

3.1. Data sources and description of variables

The data examined in this paper comes from the 2020-2022 Chinese provincial panel data, and the explanatory variables are selected as GDP per capita, or pgdp for short, as a proxy for economic growth, and the data comes from the China Statistical Yearbook. To ensure that the estimation results are robust, the growth rate of prefecture-level city GDP, abbreviated as pgdp, and the logarithm of prefecture-level city GDP taken, abbreviated as lngdp indicators are used to provide an alternative characterization of the economic growth level of the explanatory variables [7].

The level of consumption of digital entertainment is a key factor that directly affects economic growth, as the core variable. It represents the consumer spending on digital entertainment products and services, reflecting the activity of the digital entertainment market and the purchasing power of consumers.

In order to accurately and effectively estimate the net effect of the policy of digital consumption on urban economic growth, the following control variables are identified:

- (a) Demographic structure includes age, gender, education level and other demographic characteristics, which have an important impact on economic growth and consumption demand.
- (b) Technological progress indicates the level of scientific and technological innovation and application, which is an important factor driving economic growth. Consumer confidence reflects consumers' expectations of the economic outlook and their own financial situation, and affects consumer behavior and economic growth.
- (c) Income level of the population indicates the average income status of the population, which is a key factor in determining consumption capacity and consumption level.

Together, these variables constitute an analytical framework for the trend of entertainment consumption and its economic effects in the digital era, and through in-depth study of the relationship between these variables, a more comprehensive understanding of the mechanism and path of the impact of digital entertainment consumption on economic growth can be achieved.

3.2. Descriptive statistics of variables

All data come from the China Statistical Yearbook of past years, statistical yearbooks of each region, and data published on the official website of each regional statistical bureau, etc. Before the empirical analysis, the sample data were processed. The descriptive statistics are shown in Table 1.

Type of variable	Variable name	Variable Symbol	Sample size	Mean	Standard	Min value	Max value
Explained Variables	Economic growth	GDP_GROW	100	4.741	2.127	0.000	32.146
Core Explanatory Variables	Level of digital entertainment consumption	DEC_LEV	100	1.74	0.358	0.000	1.000
Mechanism Variables	Consumption upgrading speed	CU_SPEED	100	0.487	0.108	0.255	0.6
	Advanced industrial structure	HTI	100	68.241	12.012	0.000	0.658
	Influence of cultural communication channels	CCI	100	11.785	29.541	-58.149	120.017
Control Variables	Population Structure	POP_STRU	100	0.451	0.194	0.228	0.644
	Technological Advancement	TECH_ADV	100	0.669	0.295	0.231	0.149
	Consumer confidence	CONS_CONF	100	80.054	10.223	51.547	90.254
	Resident Income Level	RES_INC	100	70.019	10.149	50.002	32.147
	Policy Environment	POL_ENV	100	0.623	0.214	0.258	0.947

Table 1. Descriptive statistics

4. Quantitative Empirical Analysis of Digital Entertainment Consumption and Economic Effects

4.1. Benchmark regression results

Table 2 shows the results of the benchmark regression of the economic growth effect of digital entertainment consumption. Columns 1 to 6 show that the explanatory power of the model is enhanced with the inclusion of fixed effects and control variables, and R gradually becomes larger. Starting from column 1, it can be seen that the digital consumption level DEC_LEV has a significant positive impact on economic growth with a coefficient of 2.487, the digital consumption level DEC_LEV has a significant positive impact on economic growth in all the six models, and the impact of the digital consumption level on economic growth is still evident. Although the coefficients have decreased, which suggests that the level of digital consumption is an important driver of economic growth. The coefficients of digital consumption level in columns two through six are significant at 0.847, 0.756, 0.714, 0.711, and 0.745, respectively. This indicates that despite considering other factors such as demographic POP_STRU, technological progress TECH_ADV, consumer confidence CONS_CONF, resource income RES_INC, and policy environment POL_ENV, the impact of digital consumption level on economic growth, although reduced, still maintains a significant positive relationship, suggesting that the increase in consumer confidence helps to promote economic growth. Finally, and with the increase of control variables, the model's goodness of fit R2 gradually improves with the increase of variables, from 0.50 to 0.75, the model fits the data more and more, and the explanatory ability is increasing. H1 is verified, indicating that the level of digital consumption, as well as several other factors, have a significant impact on economic growth.

Norm	(1)	(2)	(3)	(4)	(5)	(6)
	GDP_GROW					
DEC_LEV	2.487***	0.847***	0.756***	0.714***	0.711***	0.748**
POP_STRU	-	2.547***	0.857***	0.233***	0.128***	0.711***
TECH_ADV	-	-	2.485***	2.698***	0.128***	0.711***
CONS_CONF	-	-	-	0.598***	0.591***	0.128***
RES_INC	-	-	-	-	-0.857*	-0.233*
POL_ENV	-	-	-	-	-	1.259***
Constant term	5.128*** (0.152)	0.966*** (0.324)	0.403*** (0.587)	-3.589*** (0.269)	-3.698*** (0.419)	8.255** (1.223)
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
City fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Sample size	1000	1000	1000	1000	1000	1000
Goodness of fit (R2)	0.50	0.60	0.65	0.70	0.72	0.75

Table 2. Benchmark regression results for economic growth effects

4.2. Robustness tests

For the robustness test, the propensity score matching-double difference method was chosen to estimate the economic growth effect of digital entertainment consumption again. Combining the propensity score matching PSM and double difference DID accurately estimates the policy effect, Figure 2 shows the results before and after matching of the 2PSM-DID method applicability test, which shows that the key variables of demographics 0.52, technological advancement 7.36, consumer confidence 9.85, income level of the population 12.39, and the policy environment 3.64 are used to find a similar control group using the PSM method for the treatment group, i.e., the group that is affected by

the digital entertainment consumption policies to find a similar control group. The data of each variable after matching, 91.42 for demographic structure, 60.21 for technological progress, 45.32 for consumer confidence, 41.23 for residents' income level, and 17.36 for policy environment, etc., after matching the state of the PSM method, show that the treatment group has reached a high level of similarity. The PSM-DID method is suitable for this study because it can effectively deal with the changes before and after the implementation of the policy, as well as controlling for other potential influences, which provides a strong support for estimating the policy effect of the consumption of digital entertainment on the growth of the economy more accurately.

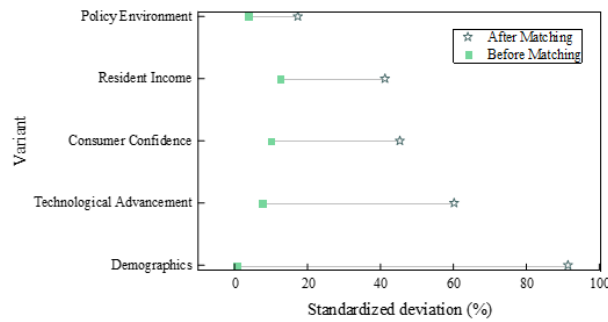


Fig. 2. PSM-DID method applicability test

Considering the time lag effect of policies Combined with the results of the dynamic effect analysis, it can be found that there is a two-period lag in the promotion effect of digital consumption on economic growth. In order to exclude the lag effect of the pilot policy, the explanatory variables are lagged by two periods. Table 3 shows the robustness test. Column 1 takes into account the time lag effect of the policy and treats the explanatory variables with a two-period lag, and the regression results show that the promotion effect of the digital entertainment consumption level on economic growth is still significant, with a coefficient of 0.695, which is significant at the 5% level. Column 2 uses the PSM-DID method for robustness testing, and the robustness regression results also show that the level of digital entertainment consumption has a significant promotion effect on economic growth, with a coefficient of 0.714, also significant at the 5% level. This suggests that the core findings remain robust after excluding policy time lag effects and using different estimation methods. It still shows that the development of digital entertainment consumption is positively driving China's economic growth, and that China's economy is becoming increasingly significant as one of the key drivers of economic growth.

Indicator	GDP_GROW lagged by two periods	PSM-DID
	(1)	(2)
DEC_LEV	0.695**	0.714**
Standard error	(0.068)	(0.067)
Control Variables	Yes	Yes
Time Fixed Effects	Yes	Yes
City fixed effects	Yes (0.068)	Yes
Sample size	3731	3731
Goodness of fit (R ²)	0.678	0.680

Table 3. Robustness test

4.3. Heterogeneity analysis

Digital entertainment consumption has the potential to be both an engine of dividend growth and a source of new divisions by exacerbating income and wealth inequalities. Thus, the objective existence of the digital divide, especially the unequal distribution of digital infrastructure, constitutes an obstacle to consumers' full participation in digital consumption and may further catalyze the digital consumption divide. The study specifically focuses on the secondary digital divide, i.e. the potential negative impact of differences in the level of digital adoption on the economic growth effect of digital consumption. In order to quantify this effect, the percentage of people employed in the information transmission, computer services and software industry is selected as a measure of urban digital application literacy, and a proxy variable for urban digital divide is constructed by reversing this indicator. On this basis, the total urban sample is divided into two sub-samples according to the significance of the digital divide, and the difference of the coefficients between the two groups is tested by using the likelihood of uncorrelation regression method, and regression analyses are carried out separately to calculate the role of the digital divide in the relationship between digital entertainment consumption and economic growth.

Table 4 shows the digital entertainment consumption digital divide heterogeneity, and by comparing the samples in the low digital divide and high digital divide groups, the different roles of digital divide in the relationship between digital entertainment consumption and economic growth can be analyzed in detail. In the low digital divide group, the regression coefficients of the level of digital entertainment consumption on the quality of economic growth, the competitiveness of economic development and the quantity of economic growth are 6.325, 1.589 and 5.214, which suggests that digital entertainment consumption has a significant role in promoting economic growth in cities with a low digital divide. In the high digital divide group, although the regression coefficients of the level of digital entertainment consumption on the quality of economic growth, the competitiveness of economic development and the quantity of economic growth are also all positive, respectively 0.598, 0.718 and 4.369, and most of them are statistically significant, their coefficient values are significantly lower than those of the low digital divide group, indicating that the objective existence of the digital entertainment divide has caused a digital consumption to promote the incremental improvement of the quantity and quality of economic development negative impact. The sample sizes are all 2598. The negative impact of the digital divide on the economic growth effect of digital entertainment consumption is further confirmed, i.e., in environments with a large digital divide, the promotion of economic growth by digital entertainment consumption is significantly affected.

Indicator	(1)		(2)		(3)		(4)		(5)		(6)	
	Low Digital Divide	High digital divide	Low Digital Divide	High digital divide	Low Digital Divide	High digital divide	Low Digital Divide	High digital divide	Low Digital Divide	High digital divide	Low Digital Divide	High digital divide
	Quality of economic growth				Competitiveness of economic development				Quality of economic growth			
DEC_LEV	6.325***	0.598***	1.589***	0.718**	5.214***	4.369**						
Constant term	7.4153	0.658*	4.218**	2.369***	1.254***	0.419*						
Control variable	Hold	Hold	Hold	Hold	Hold	Hold						
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes						
City fixed effects	Yes	Yes	Yes	Yes	Yes	Yes						
Sample size	2598	2598	2598	2598	2598	2598						
Goodness of fit (R ²)	0.678	0.680	0.854	0.785	0.702	0.714						

Table 4. Digital entertainment consumption digital divide heterogeneity

4.4. Mechanism analysis

Table 5 shows the results of the validation of digital entertainment consumption for consumption, which examines the direct impact of the level of digital entertainment consumption on the level of economic growth as well as the level of economic growth after considering the impact of consumption upgrading. In column (1), the direct impact of digital entertainment consumption level on the level of economic growth is verified, and the coefficient of the digital entertainment consumption level pair is 0.213 and statistically significant, and the upgrading of the consumption level of digital entertainment can indeed directly promote economic growth. In column (2), the interaction term between digital entertainment consumption level and consumption upgrade is added. This interaction term has a significant positive effect on economic growth with a coefficient of 0.456 and is statistically significant. The goodness-of-fit R^2 is 0.678 and 0.789, respectively, and the model's interpretation of the data improves after considering the interaction of consumption upgrading. It shows that digital entertainment consumption indirectly promotes economic growth by promoting consumption upgrading, which verifies Hypothesis 2. Digital entertainment consumption promotes consumption upgrading by enhancing consumer experience, which in turn promotes high-quality economic development.

Indicator	GDP_GROW	Level of economic growth that takes into account consumption upgrading
	(1)	(2)
DEC_LEV	0.213**	-
Digital Entertainment Consumption Level x Consumption Upgrade	0.156**	0.456**
Constant term	1.234	0.567
Control Variables	Hold	Hold
Time fixed effects	Yes	Yes
City fixed effects	Yes	Yes
Sample size	1965	1965
Goodness of fit (R^2)	0.678	0.789

Table 5. Character entertainment consumption for consumption validation results

Table 6 shows the allocation of digital attention and the spawning of new industries, and it can be seen that the level of digital entertainment consumption has a significant positive impact on the level of economic growth, with a coefficient of 0.854, which is significant at the 1% level. The coefficient of the direct effect of the level of digital entertainment consumption on the spawning of new businesses is 6.025 and is significant at the 5% level. The goodness-of-fit R^2 is 0.702, indicating that the model explains 70.2% of the variation in the level of economic growth, and the model fits well. The coefficient of digital entertainment consumption level is 0.014 and significant***. This indicates that the level of digital entertainment consumption has a positive effect on the generation of new businesses, and the level of digital entertainment consumption can be increased to help generate new businesses. R^2 is 0.698, indicating that the model explains 69.8% of the variance of the new business, and the model fit is also good. It proves that the joint effect of digital entertainment consumption level and digital attention allocation has an important role in promoting economic growth, especially in giving rise to new business, and in digital entertainment consumption, the consumer's attention allocation is to enhance the consumption to promote economic growth, and there is a significant interaction effect between the two. Validating the hypothesis 2 proposed in this paper, digital entertainment consumption promotes consumption upgrading by enhancing consumer experience, which in turn promotes high-quality economic development.

Table 7 shows the mechanism to analyze the hypothesized mechanism of digital entertainment consumption to indirectly promote economic growth through cross-cultural exchanges and enhancing the international influence of Chinese culture. In model (1), the direct effect of the level of digital

Indicator	GDP_GROW	HTI
	(1)	(2)
DEC_LEV	0.854***	-
Digital Entertainment Consumption Level x Digital Attention Allocation	6.025**	0.014***
Constant term	11.475***	0.146**
Control variables	Hold	Hold
Time fixed effects	Yes	Yes
City fixed effects	Yes	Yes
Sample size	1998	1998
Goodness of fit (R ²)	0.702	0.698

Table 6. Digital attention allocation, spawning new businesses

entertainment consumption on the level of economic growth is found to be statistically significant with a coefficient of 0.394. The goodness of fit R² of model (1) is 0.678, indicating that the model has a strong explanatory power for the level of economic growth. In model (2), the dependent variable is transformed and the international influence of culture is examined, resulting in a coefficient of 0.458, which is statistically significant. It indicates that for every unit increase in digital entertainment consumption, the international influence of culture is expected to increase by 0.321 units, indicating that the level of digital entertainment consumption has a positive impact on the international influence of culture, and the goodness-of-fit R² is improved to 0.789, with a stronger explanatory power of digital entertainment consumption on the international influence of culture. This enhancement indirectly supports the mediating effect in Hypothesis 4, that is, digital entertainment consumption may indirectly promote economic growth by enhancing the international influence of culture. Therefore, digital entertainment consumption does play an important role in cross-cultural exchange and can drive new drivers of economic growth.

Indicator	GDP_GROW	CCI
	(1)	(2)
DEC_LEV	0.394**	0.458**
Level of digital entertainment consumption x international influence of culture	0.286**	1.542*
Constant term	0.341	1.202
Control Variables	Hold	Hold
Time fixed effects	Yes	Yes
City fixed effects	Yes	Yes
Sample size	1524	1524
Goodness of fit (R ²)	0.694	0.722

Table 7. Digital entertainment consumption and china’s cultural international influence

5. Conclusion

The purpose of this paper is to explore the development of consumer finance, based on the panel data of 260 prefecture-level cities in China from 2020 to 2022, and utilizing the multi-temporal double-difference method to derive the impact of digital entertainment consumption on economic growth, the conclusions are as follows:

- (a) Digital entertainment consumption directly promotes economic growth, and the coefficient of the direct impact of the level of digital entertainment consumption on economic growth is a coefficient between 0.711 and 0.748 and statistically significant, indicating that an increase in the level of digital entertainment consumption can directly promote economic growth. After considering the policy time lag effect and using the PSM-DID method, the promotion effect of digital entertainment consumption level on economic growth is still significant, with coefficients of 0.695 and 0.714 respectively, and both are significant at the 5% level, indicating that the policy's promotion effect on digital entertainment consumption is significant and robust.
- (b) Digital entertainment consumption promotes consumption upgrading through enhanced consumer experience, and then promotes high-quality economic development. An interaction term between the level of digital entertainment consumption and consumption upgrading is added. The interaction term has a significant positive effect on economic growth with a coefficient of 0.456, indicating that the enhancement of digital consumer experience can indirectly promote economic growth.
- (c) The interaction term between the level of digital entertainment consumption and the allocation of digital attention has a significant positive effect on the generation of new business models, with a coefficient of 0.854.
- (d) Digital entertainment consumption enhances the international influence of culture and indirectly promotes economic growth: the level of digital entertainment consumption has a significant positive impact on the international influence of culture, with a coefficient of 0.458, which is statistically significant. This enhancement indirectly supports that digital entertainment consumption indirectly promotes economic growth by enhancing the international influence of culture.

References

- [1] Y. Abidi. Assessment of the contribution of high technology exports to the economic growth: the togo experience (2008-2017). *Available at SSRN 3519921*, 2020. <https://dx.doi.org/10.2139/ssrn.3519921>.
- [2] M. Akhmetova and A. Krutova. Information society development as a factor of economic growth: european union countries experience. *Medzinarodne vzťahy (Journal of International Relations)*, 18(4):335–353, 2020.
- [3] S. I. Ashmarina and V. V. Mantulenko. *Digital Economy and the New Labor Market: Jobs, Competences and Innovative HR Technologies*, volume 161. Springer Nature, 2020.
- [4] D. Basaran and K. Ventura. Exploring digital marketing in entertainment industry: a case of a digital music platform. *Journal of Management Marketing and Logistics*, 9(3):115–126, 2022. <https://doi.org/10.17261/Pressacademia.2022.1635>.
- [5] Ü. O. Duman and S. Das. The dynamic rise of digital brands' market mavens in digital entertainment: a complete know how for curious customers. *Digital Entertainment: The Next Evolution in Service Sector*:147–172, 2021. https://doi.org/10.1007/978-981-15-9724-4_8.
- [6] M. Dunn. Making gigs work: digital platforms, job quality and worker motivations. *New Technology, Work and Employment*, 35(2):232–249, 2020. <https://doi.org/10.1111/ntwe.12167>.

- [7] N. T. Giang. Long-run relationship of economic growth with consumption, unemployment rates and saving rates in developing countries: a case study of vietnam. *Journal of Business and Management Sciences*, 8:61–66, 2020. <https://doi.org/10.12691/jbms-8-2-4>.
- [8] C. Hongxi and P. Juan. Study on the dynamic relationship between digital financial development, social consumption and economic growth. *Journal of Economics and Public Finance*, 7:18–32, 2021. <http://dx.doi.org/10.22158/jepf.v7n3p56>.
- [9] I. Klavsuts. New methods of digital resource management as a technical driver of economic growth for sco member states. *Issues of the New Economy*, (1):58–65, 2021. https://doi.org/10.52170/1994-0556_2021_57_58.
- [10] H. Li. Application of k-means clustering algorithm in the analysis of college students' online entertainment consumption. In *Journal of Physics: Conference Series*, volume 1570 of number 1, page 012018. IOP Publishing, 2020. <https://doi.org/10.1088/1742-6596/1570/1/012018>.
- [11] N. Ma and Y. Deng. Synergistic governance of digital economy development and carbon reduction: evidence from chinese cities. *Ecological Chemistry and Engineering*, 31(2):203–213, 2024. <https://doi.org/10.2478/eces-2024-0014>.
- [12] H. Mai, X. Peng, and G. Zhao. Virtual marketing of the entertainment industry in the information age: building and promotion of ips—a case study of luo tianyi. *BCP Business & Management*, 2023.
- [13] H. Okamuro, Y. Hara, and Y. Iwaki. Impact of consumer awareness and behavior on business exits in the hospitality, tourism, entertainment, and culture industries under the covid-19 pandemic. *Administrative Sciences*, 12(4):169, 2022. <https://doi.org/10.3390/admsci12040169>.
- [14] K. Riskos, L. Hatzithomas, P. Dekoulou, and G. Tsourvakas. The influence of entertainment, utility and pass time on consumer brand engagement for news media brands: a mediation model. *Journal of Media Business Studies*, 19(1):1–28, 2022. <https://doi.org/10.1080/16522354.2021.1887439>.
- [15] L. M. Shcherba, V. G. Lisitsin, and J. N. Denisenko. Formation of social marketing communication channels in the development of digital technologies in the russian federation. In *Business 4.0 as a Subject of the Digital Economy*, pages 779–784. Springer, 2022. https://doi.org/10.1007/978-3-030-90324-4_126.
- [16] D. K. Tran. How is smartphone advertising important for consumers' purchase intention in an emerging economy? evidence from vietnam. In *Recent Developments in Vietnamese Business and Finance*, pages 579–610. World Scientific, 2021. https://doi.org/10.1142/9789811227158_0023.
- [17] Z. Wang. The influence of social security on the entertainment consumption of young and middle-aged population. In *2021 4th International Conference on Humanities Education and Social Sciences (ICHES 2021)*, pages 2013–2016. Atlantis Press, 2021. <https://doi.org/10.2991/assehr.k.211220.345>.
- [18] W. Zhang. Cultural entertainment consumption and empathy communication mechanism. *Frontiers in Psychology*, 13:897463, 2022. <https://doi.org/10.3389/fpsyg.2022.897463>.