2 The global film industry index research report, 2019

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The revision of the theoretical model of the comprehensive index of the film industry

There is no clear definition of the film industry in film scholarship, and a statistical standard for the film industry with relevant statistics does not exist. For instance, the Classification of National Economy Industry (GB/T 4754–2017) used presently by China follows the classification method of the International Standard Industrial Classification (ISIC) of All Economic Activities (United Nations, 2012) issued by the United Nations Statistics Division. According to the classification of the main category, film belongs to “R which includes culture, sport and the industry of entertainment” (ibid.), so film is just part of this category, which is integrated with many other industries. There is a category for broadcasting, television, film and sound recording, but no independent categories for “film production,” “film distribution” and “film screening.”

In addition, the statistics of the film industry at present are not comprehensive enough because they do not cover all the links in the film industry and many significant parts are missing, such as scriptwriting and the film production-related service sectors, film investment and finance-related sectors, the contribution of film theme parks, film tax, film education and employment in the film industry, etc. In China, the only film output data are found in the *China Statistical Yearbook* but not even box office data are included there.

In order to scientifically evaluate the development status of the film industry, it is necessary to clearly define the extent of the film industry. It is equally important to construct a set of theoretical models, on the basis of which a set of comprehensive film evaluation index systems can be established, in order to conduct a comparative analysis of the developmental status of film industries in many different countries. In the meantime, the availability and representativeness of the data should also be taken into consideration.

The value chain model of the film industry

The value chain theory is often used when analyzing the contents of film production in international film scholarship. Although the definition of the film

value chain varies from one scholar to another, it is generally agreed that the core phases are:

- 1 Pre-production
- 2 Production
- 3 Post-production
- 4 Distribution and exhibition
- 5 Film derivatives or peripheral products, etc.

The author of this chapter has considered the actual situation of film industry and has constructed a film industry value chain model which is very close to the actual situation of film industry. The model not only covers the core value chain which includes production, distribution and exhibition and its expansion sectors, but also considers the supporting and constraining elements of the development of film industry. However, there are still flaws in the present model. As a result, on the basis of previous studies, this chapter further extends the film industry value chain and considers that a complete film industry value chain includes pre-production, production, post-production, distribution and exhibition, film derivatives and the film service industry.

The *pre-production stage* involves the planning of the film project, feasibility research and financing. The *production stage* is the phase of filming and production of the film. Post-production is also included in this period. For *film promotion and publicity*, the marketing and distribution of the film are major tasks. The *film construction project* mainly involves the construction of cinemas, film parks and film shooting locations. The *film production industry* includes the equipment manufacture industry, which is related to shooting and exhibition, and the *film service industry*, including the education and training of film agents and talents.

The film industry comprehensive evaluation model

Measuring the development status of the film industry is not what a film value chain model deals with but an issue that the film evaluation theory should describe. We have constructed a film industry comprehensive evaluation model, entitled “Comprehensive Evaluation and Empirical Analysis of Chinese Films” (Zhengshan, 2018), which mainly discusses “the environment and supporting conditions of the film industry,” “the film industry scale” and “the efficiency and the influence of the film industry.” The film industry comprehensive evaluation model is shown in Figure 2.1.

The film industry’s environment and supporting conditions

In theory, the development of the film industry cannot be separated from the economy, policy and environment of the nation. The first element is the environment because the economic foundation is critical. According to “the

Figure 2.1 The film industry comprehensive evaluation model.

lipstick effect,” advanced by earlier research, the film box office increases when the economic situation is in a depression. However, with research and investigation, we found that this effect is not applicable in all cases. On the contrary, the development status of the film industry of a country (measured by overall box office) is positively related to the economic aggregate of that country. The second significant element is policy and regulation. By observing the development status of the film industry in many different countries in recent years, we find that the support of relevant policies and regulations, including all kinds of government grants, financial subsidies, tax reductions and exemptions play a significant role in promoting the film industry of that country or region, for example, the film industry in Germany and South Africa. The third element is technology. It is well known that film is the result of technological progress. In recent years, with the development of “Internet+,” online film ticket sales have prospered, and the production process of film is undergoing dramatic changes. In addition, it is highly likely that the development of the latest LED screens will trigger a technology revolution in film screening and exhibition, which will have a strong effect on the development of the film industry.

Besides the elements discussed above, there are some other supporting conditions, such as household consumption. For instance, recent research suggests that “young people from small towns” influence film consumption (see <https://baike.baidu.com>), and obviously that audiences are vital to a film’s performance at the box office. In other words, the box office is influenced by the choices of the moviegoers. Although we do not fully agree with the earlier statement regarding the relationship between film consumption and “young people from small towns,” public demand is indeed the determining factor of a film’s performance at the box office, which is closely related to the degree of

urbanization, increasing disposable income and the change in residents' consumption structure.

Film industry scale

In theory, the measurement of the film industry scale should include the entire film industrial process, which is the whole film industry value chain, including pre-production, production, publicity, distribution and exhibition and other related film service sectors.

THE PRE-PRODUCTION PERIOD

The pre-production stage involves financing, the preparation period or development. There are an increasing number of channels and a variety of modes in film financing. With regard to channels, there are bank loans, private equity, film funding of special projects, Internet financing and government funding. The mode of financing includes state financing, equity financing, cross-collateral and pre-sales financing.

Project planning, feasibility research and evaluation assess the originality of the film or television project, then develop the screenplay and select suitable projects as alternatives. There is also the verification of the screenplay and confirmation of investments as well as the overall investment scale. Project planning is the film investor's assumption of the film project's marketability before a final decision is made. This involves a macroscopic analysis of the project value and considers whether the target project complies with market needs and the policies, as well as the legal regulations, of the country. In addition, investment value and economic conditions are also taken into consideration. Based on the proposal for the project, the feasibility study takes all of a project's relevant factors into account, and considers the feasibility and rationality of the target project. The project evaluation is the basis for the decision after analyzing and assessing the feasibility study report. It is called the "Green Light System" in Hollywood.

In the project preparation period, after confirming the project, decisions are made about how it is going to proceed. Key members of the production team are confirmed at this stage. Other work in this period includes financing, verification and calculation of the budget, the crew and the shooting duration.

THE PRODUCTION STAGE

This stage includes the establishment of the camera crew, the management of the personnel, the funds and the shooting process. All this is to make sure that the progress of the film's production follows the plan, which sets out the coordination for post-production, the production of the final version after approval by relevant government departments, the cooperation and

negotiation with film distribution and publicity parties, and the preparation for distribution and exhibition.

THE PUBLICITY PERIOD

This period mainly involves film distribution, film marketing and the international film trade. According to different means of transmission, films are distributed through cinemas, the Internet platform, or screening on television. The distribution stage also includes copyrighting audio and video products. Distribution in a narrow sense refers to the way that member cinemas receive the films from their cinema chain and screen them to their moviegoers. This can only happen when a cinema chain obtains the screening rights for a film for its membership cinemas, for a certain period of time from the distribution company that has secured the copyright of the film from the film production company.

Film marketing is the promotional process of film. Publicity for the film includes the creation of a film promotion plan, confirmation of the advertising channels, selection of media partners, the production and presentation of film publicity materials, film premiere ceremonies at film festivals, and all kinds of promotional activities, such as press conferences, star interviews, etc.

Commercial development mainly is a commercial marketing service for its clients, such as product placement and advertisements before the screening of film, and the sponsorship of the film's premiere, etc. The international film trade is the process of importing foreign films and the marketing of domestic films to the overseas market.

FILM EXHIBITION

Film exhibition mainly involves cinema chains and their investment and business activities. The cinema chain companies have developed as independent management units that connect the film distribution team and the film exhibition teams, and ensure the uniformity of film arrangements, operations and management to the member cinemas.

Cinemas mainly provide the screening service and other film-related supporting services, including the sale of products and derivatives or other value-added services.

THE DERIVATIVE MARKET

The derivative market is based on the development and sales of peripheral products related to film products, such as toys, stage property and souvenirs. Theme parks also belong in this category, for instance, Disneyland in different countries, Universal Studios and others.

FILM CONSTRUCTION, PRODUCTION AND THE SERVICE INDUSTRY

Film construction projects mainly involve the construction of cinemas, film theme parks and film locations. The film production sector refers to the equipment manufacturing sector related to film shooting and screening. The film service sector includes the sales of filmmaking equipment, such as cameras and lamps, etc. and post-production. Also the sales of film screening equipment, such as a digital screening system and stereo system, installation and debugging, after-sales service, the ticketing system of cinemas, the R&D of the management systems, the sales and technology service, and the technology service of the cinema construction project, etc. In addition, it covers film and entertainment brokerage and education and training of film talent.

The efficiency of the film industry

Many scholars of industrial economics have adopted the data envelopment analysis (DEA) model to evaluate industry efficiency. This is a data analysis method based on input and output indexes and applies a linear programming method to conduct a relative efficiency evaluation of the units that are comparable and belong to the same category.

In essence, the DEA model is a kind of optimization algorithm, and what it calculates is the optimal input-output ratio under a constraint condition, so this method could be adopted as a comprehensive evaluation. It is also applicable to the indicators that measure input and output efficiency. For instance, by conducting a literature review from different countries, we can see that the best indicators reflecting film industry efficiency are the gross box office per indoor screen and the admissions per indoor screen.

An objective attitude should be taken toward the gross box office per indoor screen and the admissions per indoor screen. When conducting film industry analysis in cities in China, it is of note that though the box office scale of many cities is not large and there are not many screens, their gross box office takings per indoor screen are even higher than that of some highly developed regions. This is because there are fewer screens in those regions. In conclusion, the commercial film environment of these cities is relatively undeveloped, though the film industry efficiency is very high.

We can also look at the indicators dynamically. For instance, the film industry efficiency of some regions is in flux, but in other regions is stable. This shows that the film industry efficiency of the former is more dynamic than the latter.

The influence of the film industry

Although the analysis shows that a film industry could become the dominant industry of a country or region, it is very difficult for it to become the main pillar industry, because the scale of the film industry is relatively

limited, compared to other industries. For instance, though the film box office in China ranked in second place in the world in 2018 and its box office takings exceeded 60 billion yuan, the production value of the film industry in China is even less than the annual consumption of crayfish of Chinese residents.

However, a small industry can also have significant influence. A national cinema is the carrier of national culture and also reflects a nation's economic power. The influence of the film industry is a very important aspect of this, and we can focus on two indicators: the internal and the external. The internal indicator refers to the domestic box office whose success is critical to the protection and spread of traditional culture. The second indicator is the overseas market. If national films win prizes at international film festivals, national cinema, in this case, becomes a source of soft power.

The comprehensive index and the indicator system in the film industry

Similar to the index in other industries, the basic idea behind the establishment of the comprehensive index and indicator system in the film industry is to turn the multi-indicators directly into data that can be processed by statistical analysis and technology, and to create single data to show the development status of the film industry.

Principles for the design of a comprehensive index for the film industry

In *The Construction and Analysis of the World Film Industry Index* (Zhengshan 2018), the index design principles were discussed. Since these principles are relatively constant, they are applicable in this chapter. These principles are:

- The indicator system should possess scientific validity.
- The indicator system should be comprehensive.
- The indicator system should be feasible.
- The indicator system should present comparables.
- The indicator system should reflect the entire dynamic process.

Scientific validity

This means that the selected indicator should correspond to the given evaluation target. It should be able not only to comprehensively reflect the industry being evaluated (to cover as many dimensions of the industry evaluation as possible, for instance, the four dimensionalities selected in this research project) but should also emphasize the core issues. We cannot include all the indicators (except by complicated calculation, while the existence of multicollinearity is possible).

Comprehensive

With more than a hundred years of development, the global film industry has become a comprehensive cultural industry. Therefore, we should follow the principle of comprehensiveness before selecting the indicators which are to be incorporated into all the links of the film industry. These indicators include the production, distribution and exhibition of films. However, comprehensiveness does not mean that we can cover all aspects. Taking the representativeness of the index into consideration, we should adopt a statistical method to conduct a dimension reduction process.

Feasible

When designing the indicator's contents, we should consider not only their scientific validity and comprehensiveness, but also take the availability or feasibility of index data into consideration. In fact, the majority of research institutions have to exclude some ideal indicators because of the lack of research budget, research personnel and data collecting ability. Besides, there are some indicators which are theoretically important but lack relevant statistical data. In this case, we had to exclude such indicators because it is very hard to collect the relevant data. In view of this situation, our previous theoretical model was an ideal model which incorporated almost every aspect that should be considered in a comprehensive evaluation of the film industry. But this theoretical model did not take the availability of the relevant data into consideration. As a result, in the data system outlined in this chapter, only available data are used.

Comparables

The evaluation indicators should reflect the common features of the film industry, which means not only can they measure certain aspects of the film industry but also they can make a horizontal comparison between different regions. Regarding comparability, on the one hand, the data selected are independent (in the sense of statistics); on the other, many of the indicators cannot be compared and or calculated in practice. For instance, box office income is measured by currency unit; however, the number of screens is not a currency unit, so it is meaningless to directly compare these two indicators or compile statistics. Instead, dimensionless methods should be adopted to analyze the indicators.

Entire dynamic framework

The establishment of the index system for the film industry should reflect the entire process of the operation of the film industry. With the rapid advances in technology and the development of new media, the forms of film are

Table 2.1 The comprehensive index and indicator system of the international film industry

<i>First-level indicator</i>	<i>Second-level indicator</i>
Industry environment and supporting conditions	Growth rate of urban and town population Per capita GNI The proportion of research and development expenditure in GDP
Industry scale	Number of screens Box office income Admissions
Industry efficiency	Admissions per indoor screen Gross box office per indoor screen
Industry influence	Global box office share Domestic market occupancy Mainstream film festival awards

changing all the time. So, when selecting a comprehensive evaluation index for the film industry, we should have both inclusive thinking and dynamic adjustment. The index system eventually adopted in this study is different from the ones employed in previous studies.

The index and indicator framework of the international film industry

Taking the theoretical model and the index design principles (especially the availability or feasibility of data) of the film industry evaluation into consideration, the index framework of the international film industry in this study is shown in Table 2.1, with two levels. The first-level indicators are the general headings and the second-level indicators probe deeper into the process of film production.

The industry environment and supporting conditions

In theory, the industry environment and the supporting conditions should include the environment, the economy, policy and regulation, technology, and other supporting conditions, such as household consumption, etc. However, taking the availability of the data into consideration, we finally chose the growth rate of city and town populations, the GNI (gross national income) per capita, and the proportion of R&D (research and development) expenditure in gross domestic product (GDP), as the representative indicators. These indicators basically reflect the development of the film industry and supporting conditions. According to the World Bank, per capita GNI is obtained by dividing the gross national income by the mid-year population. GNI is generally made up of three parts, which is the total added value created by all the resident workers, all the product taxes (with

allowances deducted) which are not included in the production value estimation, and the net earnings of original income (salary of employees and property income) from overseas business. The World Bank generally classifies the per capita GNI into high income, middle income and low income. The study reveals that there is strong connection between income level and the development of the film industry, so the per capita GNI is adopted in this study as one of the indicators measuring the potential or the supporting condition of the film industry's development in a country or region. As a matter of fact, Abraham Maslow's Hierarchy of Needs had revealed this connection long ago: It is only when people's income has reached a certain level that the needs of film, which is the kind of product with a relatively large price elasticity of demand, will achieve a breakthrough.

The growth rate of urban and town populations is based on the urbanization rate figures provided by the population predictions of the *World Urbanization Prospects* (United Nations, 2014) and the World Bank. This indicator is also able to reflect the supporting conditions and the environment of film industry development. Under normal conditions, the faster the urban population growth of a country or region, the larger its demand for cultural consumption, such as films.

The proportion of R&D expenditure in GDP (data also from the World Bank) reflects the R&D status of a country or region and is a method of measuring innovation ability. Film is the product of the advances in technology, and the progress of technology is going to further update the film industry. For instance, previous technological progress has brought us color and talking pictures, and contributed to significant advances in the global film industry. Despite competition from television, technological progress such as 3D and IMAX brought consumers back into the cinemas. In South Korea, cinema attendance has increased by around 20 percent due to the installation of LED screens in recent years.

Industry scale

Theoretically, the indicator of industry scale is supposed to include pre-production, production, publicity, distribution and exhibition, derivative products, and film-related sectors, etc. However, as the necessary statistical data for many sectors of the film industry in many different countries are lacking, and it costs too much to investigate and obtain the data, a sample of representative indicators, which can be obtained and evaluated (such as box office income, number of screens, number of moviegoer admissions) have been selected to reflect the size of the film industry. The number of screens is able to directly reflect the hardware ability or supply capacity of the film market of a country or region. The box office income reflects the film industry development of a country or region, and the number of moviegoer admissions is a very important indicator which can objectively reflect the film market size of a country or region, though it partially overlaps with box office income.

Industry efficiency

As mentioned earlier, it is feasible to adopt the two representative indicators of admissions per indoor screen and gross box office per indoor screen. Admissions per indoor screen indicate the utilization efficiency of the screen, and gross box office per indoor screen reflects the efficiency of the film box office income. However, considering the deficiency of these two indicators which was analyzed earlier, their importance in the evaluation is not considerable.

The influence of the film industry

In the analysis, the following elements were used: the domestic market occupancy of native films, indicators such as the awards won by native films in mainstream film festivals or film exhibitions, and the percentage of native film box office at the global box office, to reflect the influence of the film industry of a country or region. The value of the awards given by mainstream film festivals or film exhibitions is rated according to the grade of the awards, such as Academy Awards, awards from the three major film festivals in Europe (Cannes, Berlin and Venice), and awards from A-class international film festivals. For instance, the grade for Best Picture (Academy Award) and Best Foreign Language Film (Academy Award) is 10. The grade for Best Director, Best Scriptwriter, Best Actor in a Leading Role, and the Best Actress in a Leading Role is 6, and the grade for Best Actor in a Supporting Role is 3.

Compiling the comprehensive index of the international film industry

Compilation of the comprehensive index of the international film industry mainly involves the nondimensionalized processing of original data, the weight setting for each indicator, and the final compound calculation of each indicator.

Standardized processing of indicators

Because of the different dimensions of indicators or the different units of measurement that have been selected, standardized processing of the original data has been conducted instead of analyzing the indicators themselves.

The standardized processing of indicator data adopted is as follows:

- With percentage indicators, if the maximum value or target value of the indicator could reach 100 percent, we adopted the observation principle as the standardized value.
- As for indicators which have a unit of measurement, if the indicators are forward pointers (the bigger the better), the equation employed is:

$$Z_i = \frac{X_i}{X_{\max}} \quad (2.1)$$

- For indicators which have a unit of measurement, if the indicators are contrary indicators (the smaller the better), the equation employed is:

$$Z_j = \frac{X_{\min}}{X_j} \quad (2.2)$$

- If the maximum value of indicators does not possess the above features, the standardized processing of objective indicators that have a unit of measurement will be employed.

All the indicators, after standardized processing, are distributed from 0 to 1, with 1 representing the highest level.

The determination of the weight of an indicator

The weight of an indicator is decided by its degree of importance in its index, which means the more important the indicator, the larger its assignment value. But it is very difficult to reach an agreement as to what kind of indicators are the most important. As a result, each indicators' weight in the index has been adopted on the basis of a combination of subjective weighting and the Delphi method. The weight distribution situation is shown in Table 2.2.

Table 2.2 The indicator weight distribution of the international film industry index

<i>First-level indicator (weight)</i>	<i>(%)</i>	<i>Second-level indicator (weight)</i>	<i>(%)</i>
Industry environment and supporting conditions	25	Growth rate of urban and town population	20
		Per capita GNI	45
		The proportion of research and development expenditure in GDP	(35%)
Industry scale	25	Number of screens	(20%)
		Box office income	40
		Admissions	40
Industry efficiency	20	Admissions per indoor screen	50
		Gross box office per indoor screen	50
Industry influence	30	Global box office share	30
		Domestic market occupancy	30
		Mainstream film festival awards	40

Compound calculation of the comprehensive index

The synthesis score of the entire evaluation system is obtained by totaling all the indicators processed by standardized processing.

The synthetic method of the sub-entry indexes

The sub-entry index is obtained by calculating the numerical value obtained from the nondimensionalization of all the indicators in the certain category and from its weight by applying Equation (2.3).

$$I_i = \frac{\sum Z_j W_j}{\sum W_j} \quad (2.3)$$

The synthetic method of the comprehensive index

The comprehensive index is obtained from the calculation of the numerical value based on the nondimensionalization of all indicators at different levels in the comprehensive index of film industry development and its value by applying Equation (2.4).

$$I = \frac{\sum_{i=1}^N Z_i W_i}{\sum_{i=1}^N W_i} \quad (2.4)$$

Index calculation results and analysis

Taking the feasibility of data collection into consideration, the analysis of the film industry situation is limited to the top nine countries in the world, showing the top nine box office earnings ranking. The nine countries are China, France, Germany, Japan, South Korea, Russia, India, the United Kingdom and the United States of America. We can obtain the comprehensive index and sub-entry index of the film industry of the nine countries from the indicator framework and calculation method described earlier.

The comprehensive index analysis of the film industry

According to Table 2.3, we can see that the comprehensive index value of the American film industry has continually occupied the first place, and that the country which enjoyed the most dramatic change is China, whose global ranking in the comprehensive index of the film industry in 2017 was in second place, an increase from its ranking of fifth in 2010.

Table 2.3 The comprehensive index of film industry of the nine countries, 2010–2017

Year	China	France	Germany	India	Japan	Korea	Russia	Britain	America
2010	0.28	0.26	0.28	0.41	0.35	0.21	0.17	0.20	0.63
2011	0.31	0.26	0.31	0.42	0.35	0.22	0.19	0.26	0.59
2012	0.31	0.28	0.30	0.41	0.36	0.33	0.16	0.21	0.60
2013	0.35	0.25	0.31	0.40	0.32	0.32	0.18	0.23	0.63
2014	0.39	0.24	0.30	0.37	0.32	0.32	0.17	0.22	0.64
2015	0.47	0.26	0.30	0.37	0.32	0.31	0.13	0.26	0.62
2016	0.45	0.22	0.30	0.39	0.33	0.30	0.12	0.22	0.62
2017	0.48	0.21	0.29	0.39	0.31	0.33	0.14	0.22	0.62

Note: The nine countries are classified into three classes according to K-means.

- Classified by the comprehensive index of 2017, countries in the first class were the United States of America and China. Countries in the second class were France, the United Kingdom and Russia. South Korea, Japan, Germany and India belonged to the third class.
- The classification of the comprehensive index in 2010 is used to compare with the classification in 2017. In 2010, the United States of America was the only country in the first class. Countries in the second class were the United Kingdom, South Korea and Russia. Countries in the third class were France, Germany, Japan, China and India.

Based on the above comparison, the Chinese film industry has been developing rapidly in recent years and has moved from the third class of the global film industry up to the first class in seven years. The situation in other classes is that France was moving up but South Korea was moving down. India remained in the third class, though developing strongly.

In the film industry as a whole, American films were dominant not only in the American film market but also in the global film market, and even had a monolithic status in the film markets of many countries. As a result, the increase in the box office of American films was very steady, and the comprehensive index of American film remained constant in first place in the global ranking.

The UK was the first country to have an industrial revolution, and its economic power was the strongest in the world. However, after the Second World War, the UK was in recession and its film industry was in decline. When Prime Minister Margaret Thatcher was in power, the film industry in the UK was at a low ebb. In 1997, Prime Minister Tony Blair announced a policy for a “creative economy” and began to give support to the creative industries. As a result, the British film industry revived and began to rise again. Until now, according to box office data, the UK has steadily occupied the fourth place, with annual admissions of 170 million people and a yearly frequency of film watching of about 2.7 times per person. Statistics from the British Film Institute (BFI) reveal that the quality of UK film production is consistent

with its status as a major and powerful film country, since the number of awards won in mainstream international film festivals accounts for more than 15 percent of the total number of British films.

The development of the German film industry was not smooth either and was rapidly declining, especially after 2000. Since 2007, a series of policies and regulations regarding the film industry have been launched by the government, and they have contributed to the rise of German films. From 2007 to 2017, Germany produced about 200 films every year on average. Since 2009, the German film industry has entered a phase of steady and mature development. In 2017, the German box office income reached US\$1.2 billion, an increase of 5.3 percent compared to the box office in 2016.

Although the box office ranking of France in 2017 dropped from third place to fifth place in comparison with its ranking in 2010, the French film industry was prosperous. The box office of France in 2017 was the third best in the past 50 years, and France was the second largest film exporting country in the world, second only to America. The development of the French film industry was promoted by favorable policies to support French films, including the International Film Production Fund Policy (TRIP) and the international tax reduction policy, which attracted a large number of international production teams to produce their films in France. Both the film quota policy of France regarding reducing the “invasion” of Hollywood films to some extent, and the French films’ award-winning performance at international film festivals have contributed to the prosperity of the French film industry.

The South Korean film industry has been continually making progress. In 2010, the South Korean box office ranked eighth in the world, and its ranking went up one place to seventh in 2017. South Korea’s film policies to support the film industry were well acknowledged by film academics. However, since the size of South Korean film market is limited, the international influence of South Korean films has slightly declined in recent years.

The success of the Japanese film industry was mainly reflected in its animation films, and the Japanese film industry has been steadily developing. But compared to South Korea’s film industry, the pace of overseas market development for Japanese films was not very impressive because of Japan’s relatively small national market and certain limitations.

Indian films had an absolute advantage in its domestic market and its film industry is developing steadily. It also had a remarkable performance in film exports. Films such as *3 Idiots*, *P.K.*, *Dangal*, *Secret Superstar* and *Toilet – Ek Prem Katha* were familiar to Chinese moviegoers. But, generally speaking, Indian film was still ranked in the third class.

Analysis of the sub-entry index of the film industry

Table 2.4 indicates the sub-entry index result of the film industry environment and the supporting conditions of the nine countries. We can see that all the numerical values of this indicator are relatively stable except for China.

Table 2.4 The sub-entry index of the film industry environment and the supporting conditions of the nine countries, 2010–2017

Year	China	France	Germany	India	Japan	South Korea	Russia	Britain	America
2010	0.52	0.39	0.38	0.29	0.57	0.41	0.16	0.30	0.81
2011	0.57	0.39	0.41	0.31	0.58	0.45	0.19	0.31	0.82
2012	0.59	0.37	0.40	0.30	0.52	0.44	0.21	0.30	0.80
2013	0.61	0.34	0.40	0.29	0.50	0.42	0.17	0.29	0.77
2014	0.63	0.32	0.39	0.29	0.45	0.42	0.17	0.28	0.75
2015	0.64	0.31	0.39	0.29	0.43	0.42	0.15	0.29	0.75
2016	0.64	0.30	0.44	0.30	0.42	0.43	0.15	0.29	0.74
2017	0.66	0.30	0.38	0.29	0.41	0.43	0.14	0.28	0.75

Note: The nine countries were divided into three classes by applying a hierarchical clustering method.

- In 2010, only one country (America) was in the first class. Countries in the second class included Japan and China. Countries in the third class were France, Germany, South Korea, the UK, Russia and India.
- In 2017, the countries in the first class were the USA and China. Countries in the second class were the UK, France, Germany, Japan, South Korea and India. Russia was the only country in the third class.

As shown above, the change in the sub-entry index of the development environment and supporting conditions of the Chinese film industry was the most dramatic. The progress of the Chinese film industry from the second rank to the first rank was closely related to China's steady economic growth, the rapid increase of per capita GNI, and the continuing progress of urbanization. From the correlation coefficient between the comprehensive index and its relative variable, it is seen that the correlation coefficient of per capita GNI of 2017 and the comprehensive index of 2017 is 0.8776, and also that the correlation coefficient of GDP and the comprehensive index of 2017 is 0.8782. The growth in economic power and residents' income has created favorable conditions for the exploration of the Chinese film market's potential, improvement of the film industry's environment, and the guarantee of market support.

As shown in Table 2.5, China's film industry achieved its fastest growth in terms of industry size. In 2017, the index of Chinese film industry scale surpassed the USA and ranked first in the world. It is now expected that the Chinese film box office will have a chance to replace the USA as the first in the world around 2020. By that time, the sub-entry index of the Chinese film industry's size would also be ranked in first place.

It is agreed that the above progress is closely related to the improvement of the policy and the promotion of film infrastructure in China in recent years. For instance, the overall objective of the film industry and the construction

Table 2.5 The sub-entry index of the film industry size of the nine countries, 2010–2017

<i>Year</i>	<i>China</i>	<i>France</i>	<i>Germany</i>	<i>India</i>	<i>Japan</i>	<i>South Korea</i>	<i>Russia</i>	<i>Britain</i>	<i>America</i>
2010	0.13	0.12	0.09	0.50	0.12	0.08	0.07	0.10	0.79
2011	0.18	0.13	0.09	0.51	0.11	0.08	0.08	0.10	0.79
2012	0.23	0.12	0.09	0.52	0.12	0.09	0.07	0.10	0.78
2013	0.31	0.11	0.09	0.51	0.11	0.09	0.09	0.11	0.80
2014	0.48	0.13	0.09	0.51	0.12	0.11	0.10	0.12	0.87
2015	0.65	0.12	0.10	0.50	0.12	0.11	0.08	0.12	0.86
2016	0.67	0.12	0.08	0.52	0.14	0.10	0.08	0.10	0.84

of a public film service system by the end of 2015 were clearly stated in “The Instruction for Promoting the Prosperous Development of the Film Industry” (State Council Office, 2010), issued by the General Office of the State Council. The report to the Eighteenth National Congress of the Communist Party of China in 2012 states that the cultural industry ought to become a pillar industry of the national economy by 2020. In addition, 21 favorable policies and reforms by the Chinese government, such as the introduction of the “Notification of Some Economic Policies Supportive to Film Development” (Ministry of Finance & Ministry of Education, 2014), the implementation of “The Film Industry Promotion Law of the People’s Republic of China” in 2017, the institutional reform in the government in 2018, and the incorporation of the National Film Board into the Publicity Department of the Communist Party of China, all provide good foundations and support to the continuing and steady development of the film industry. In 2017, the number of film screens in China surpassed the combined numbers of film screens of both the USA and Canada, and ranked first in the world. In addition, it is clearly stated in “The Opinion about Promoting the Prosperous Development of the Film Market and Accelerating Cinema Construction” (National Film Board 2018), that the construction and investment of cinemas should be encouraged. The number of screens in China will exceed 80,000 in 2020.

It is indicated from Table 2.6 that the sub-entry index of Chinese film industry efficiency was below expectations, and it did not rise alongside the increase in box office revenue or the comprehensive strength of the film industry. It ranked last among the nine countries. In recent years, the development of the Chinese film industry has been characterized by extensive development driven by quantity.

Figure 2.2 shows that the Chinese film industry’s efficiency was generally declining after 2010, according to the gross box office per indoor screen, and so one of the major constraining factors in the development of the Chinese film industry was how to improve industry efficiency.

As shown in the sub-entry index of native film influence on the film industry in the nine countries in Table 2.7, the ranking of China was fluctuating, but

Table 2.6 The sub-entry index of film industry efficiency of the nine countries, 2010–2017

Year	China	France	Germany	India	Japan	South Korea	Russia	Britain	America
2010	0.27	0.31	0.74	0.61	0.59	0.15	0.45	0.39	0.27
2011	0.26	0.35	0.75	0.61	0.58	0.17	0.47	0.38	0.28
2012	0.21	0.29	0.72	0.57	0.58	0.64	0.32	0.35	0.26
2013	0.21	0.29	0.74	0.54	0.52	0.67	0.39	0.44	0.28
2014	0.23	0.31	0.72	0.44	0.53	0.68	0.34	0.46	0.28
2015	0.25	0.28	0.73	0.40	0.58	0.62	0.23	0.46	0.29
2016	0.17	0.23	0.65	0.50	0.60	0.54	0.20	0.33	0.25
2017	0.19	0.29	0.71	0.53	0.56	0.67	0.26	0.38	0.28

Figure 2.2 The gross box office per indoor screen of China, 2010–2017.

was generally rising. The advantages of China were mainly reflected in the occupancy of the domestic box office and international market share, but the overseas box office of native films was poor, and not as many awards were won at mainstream international film festivals as expected.

The nine countries are divided into three classes by applying the arithmetic of K-means.

- In 2010, America was the only country in the first class. Countries in the second class include the UK, Germany and Russia. Countries in the third class were China, France, India, Japan and South Korea.
- In 2017, America was the only country in the first class. Countries in the second class include Germany and Russia. Countries in the third class were China, France, India, Japan, South Korea and the UK. The comparison shows that France was the only country which has experienced

Table 2.7 The sub-entry index of native film influence of the film industry in the nine countries, 2010–2017

<i>Year</i>	<i>China</i>	<i>France</i>	<i>Germany</i>	<i>India</i>	<i>Japan</i>	<i>South Korea</i>	<i>Russia</i>	<i>Britain</i>	<i>America</i>
2010	0.20	0.22	0.06	0.31	0.20	0.18	0.06	0.09	0.59
2011	0.24	0.21	0.11	0.33	0.20	0.18	0.09	0.29	0.45
2012	0.20	0.35	0.13	0.31	0.27	0.24	0.07	0.12	0.50
2013	0.26	0.25	0.12	0.31	0.21	0.20	0.11	0.13	0.59
2014	0.22	0.21	0.13	0.29	0.24	0.17	0.13	0.11	0.59
2015	0.33	0.33	0.10	0.30	0.20	0.19	0.07	0.21	0.52
2016	0.30	0.22	0.15	0.28	0.23	0.20	0.09	0.18	0.59
2017	0.24	0.16	0.12	0.28	0.20	0.19	0.09	0.17	0.58

some changes in terms of film influence, and other countries generally stayed where they were and did not have any change in their classifications and categories.

Conclusion

Using the earlier evaluation theoretical model of the film industry and the framework of the comprehensive index, the findings have been revised to take account of the new research results, and a calculation and comparative analysis of the comprehensive index of the film industry of the nine countries, whose box office ranked from first to ninth place, have been conducted, by applying the newly collected data.

In terms of the comprehensive index, America had always occupied first place, but China has risen from fifth place in 2010 to second in 2017. Using K-means, the Chinese film industry in 2017 had entered the first class along with America.

Viewed from the perspective of the sub-entry index of the film industry environment and supporting conditions, the change in the Chinese film industry is the most dramatic, and it has entered the first class, but Russia has dropped to third class, which is influenced by the economic development, progress of urbanization and scientific and technological progress in Russia.

Based on the sub-entry index of film industry size, the growth of China is the fastest, and it has surpassed America to be the country whose film industry scale ranks first in the world. As viewed from the sub-entry of film industry efficiency, the ranking of China is below expectations, and it did not rise alongside the increase in the box office or the promotion of the film industry. Basically, it ranks last among the nine countries.

Viewed from the sub-entry index of film industry influence, the nine countries are divided into three classes by applying K-means. By comparing the data of 2017 and that of 2010, it shows that France is the only country which

experienced some changes in film influence and that other countries generally stayed where they were and did not change in ranking.

In addition, we also have verified the relationship between the film industry the comprehensive index and economic strength and found that the correlation coefficient of per capita GNI of 2017 and the comprehensive index of 2017 is 0.8776, and the correlation coefficient of GDP and the comprehensive index of 2017 is 0.8782. This shows that the comprehensive strength of film is consistent with economic strength. With the further development of China's economic strength, as the concentrated reflection of soft power, the film industry is undertaking more important missions. However, the film industry of China needs to make continuous efforts to promote its industry efficiency and international influence.

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