

Legal Risk Evaluation of Cultural and Creative Enterprises Based on Fuzzy Analytic Hierarchy Process

Li Ma

School of General Education of Xi'an Eurasia University, Xi'an 710065, Shaanxi, China

Abstract

With the changes of macroeconomic situation, enterprises are facing more and more legal risks. On the basis of combing the research on legal risk of enterprises at home and abroad, this author studies the legal risks of cultural and creative enterprises. According to the assessment process of legal risks, he identifies the legal risk factors faced by enterprises, establishes the assessment index system of legal risks, uses fuzzy analytic hierarchy process to evaluate the legal risks, takes a cultural and creative enterprise as an example for empirical research, and then puts forward countermeasures and suggestions for preventing legal risks.

Key words: Legal Risk, Fuzzy Analytic Hierarchy Process, Risk Assessment

1. INTRODUCTION

With the development of market economy and economic globalization, the legal risks faced by enterprises are more diversified. In particular, macroeconomic situation has been complicated and volatile since 2008. The number of civil disputes involving enterprises and the amount of the bids have risen sharply. Many enterprises suffer heavy losses or even fatal battles owing to neglect of legal risks. In recent years, the cultural and creative industries have developed rapidly and their status has been on the rise in the national economy. However, due to the immature market of cultural and creative industry, cultural and creative enterprises are facing high legal risks. According to statistics, there will be serious risks in 80% of cultural and creative enterprises set up only two years. Therefore, it is of great significance for the long-term development of cultural and creative enterprises to identify the risk factors, scientifically evaluate the legal risks and establish an effective risk system for prevention and control.

Domestic and foreign scholars conducted extensive and in-depth research on legal risks in accordance with the law and the development of the market. Most of the researches on legal risk in foreign countries are included in the research of risk management, and there are few researches on legal risks. Y Yang (2015) researched the legal risks of related enterprises in the construction industry, put forward countermeasures and suggestions on improving qualification management, changing unreasonable bans and improving insurance system; Hyun Jun Park et al. (2016) reviewed and analyzed 55 cases of medical litigation, and then pointed out that hospitals can effectively reduce legal risks by implementing systematic medical management; Catalano et al. (2017) provided suggestions for nurses on how to avoid legal risks in intensive care. Domestic research on legal risks is relatively late. After the first formal legal risk was introduced in the *Measures for the Administration of Legal Consultants of State-owned Enterprises* in 2004, many domestic experts and scholars began to study legal risks from different perspectives. Wang Zhongyuan and Wei Fajie (2015) used the IFAHP-DEMATEL method to identify and analyze the importance of the legal risk of military enterprises and found that the key factors were the subject, confidentiality, intellectual property rights and external risks; Gu SZ et al. (2017) studied how to prevent and resolve legal risks that Chinese enterprises may encounter during the implementation of "the Belt and Road Initiative"; and Guan Y(2016) constructed the systematic kinetic model from the three modules, the strength of enterprise, business process of patent application and national policy environment, and used legal risk to study the patent of enterprises.

The existing researches involve all walks of life, mainly in the fields of banking, construction and other fields, and a little research on the legal risks of cultural and creative enterprises. The research method is based on the theoretical research of experience summary, and is few on empirical studies. A systematic research system has not been formed in the existing research on legal risk. There is a need for further study on establishing an objective, standard and quantitative legal risk assessment and prevention system for enterprises in different industries. According to the relevant laws of the country, the author draws lessons from the existing research results, takes cultural and creative enterprises as the research object, follows the risk assessment process of "Guide of Enterprise Legal Risk Management" promulgated by the National Standards Commission, sets up analytical model of legal risk from the analysis of legal risk, quantifies various legal risks with different legal nature scattering in different fields and departments on the basis of qualitative analysis, and makes risks comparable in order to distinguish the priority of legal risks, so that people can find the entry point from the prevention in advance to the relief.

2. THE EVALUATION INDEX SYSTEM OF LEGAL RISK FOR CULTURAL AND CREATIVE ENTERPRISES

2.1 *The Identification and Analysis of Legal Risks*

According to the *Guide for Legal Risk Management of Enterprises*, legal risk of enterprise refers to the legal risk with an impact on the enterprise objective due to the external environment of the enterprise and its changes, or the acts and omissions of the enterprise and its stakeholders, based on legal requirements, regulatory requirements or contractual stipulations. Starting from the concept for legal risk of enterprise, the author combines with the existing research on legal risk of enterprise, and investigates and analyzes the risk status of cultural creative enterprises. According to the provisions of China's market subject law, *Law of Contract Law*, *Intellectual Property Law*, *Tax Law* and *Financial Law*, legal risks can be identified and analyzed. The legal risks of cultural creative enterprises can be divided into the following six types of manifestations: enterprise risk, contract risk, intellectual property risk, human resource management risk, financial tax risk and investment and financing risk.

2.1.1 *The Subject Risk of Enterprises*

According to the provisions of the subject law in the country, administrative approval for cultural and creative enterprises, like setting up, changing and terminating, is complicated in permitting procedures, and some cultural and creative projects are hard to access to the market. The legal risk of the subject law for cultural and creative enterprises mainly exists in two aspects: one is the risk existing in the establishment or dissolution of the enterprise; and the other is the risk of governance structure in cooperate.

2.1.2 *The Contract Risk*

According to the relevant provisions of the *Contract Law*, contract risk refers to the possibility of one or both of the parties being damaged in signing, performing, changing or terminating the contract. Contract risk mainly exists in three aspects: (1) the risk in the process of contract formation, (2) the risk in the performance of the contract, and (3) the risk in the process of contractual relief.

2.1.3 *The Intellectual Property Risk*

In light of the relevant provisions of the *Intellectual Property Law of the People's Republic of China*, the protection system of intellectual property and creative ownership for cultural and creative enterprises are not perfect enough and infringement is serious. Intellectual property of cultural and creative enterprises mainly exists in three aspects: (1) trademark risk, (2) patent risk, and (3) copyright risk.

2.1.4 *The Human Resource Management Risk*

According to the *Labor Law of the People's Republic of China*, any non-compliance with laws and regulations may bring labor disputes to the enterprises in the human resource management of enterprises, which may adversely affect the enterprises. The legal risk of human resource management in cultural and creative enterprises mainly exists in the following three aspects: (1) labor contract risk, (2) social security risk, and (3) labor dispute risk.

2.1.5 *The Financial Tax Risk*

Financial tax management is crucial to the survival and development of enterprises. With the continuous improvement of laws and regulations, there are more and more potential legal risks in the management of corporate financial taxes. Financial tax risks of cultural and creative enterprises are mainly financial management risk and tax management risk.

2.1.6 *The Investment and Financing Risk*

As a newly emerging asset-light industry, cultural and creative industry has less state capital support and cautious private capital. As a result, the cultural and creative industry has difficulties in financing and the risks in the process of investment and financing are constantly increasing. The legal risks of investment and financing in cultural and creative enterprises mainly exist in the following three aspects: (1) the risks of establishing subsidiaries, (2) the risks of mergers and acquisitions, and (3) the financing risks.

2.2 *The Index System of Risk Assessment for Cultural and Creative Enterprises*

On the basis of identifying and analyzing the legal risks of cultural creative enterprises and combining with the existing research on the evaluation index system of legal risk for enterprises, the author establishes the assessment index system of legal risks for cultural creative enterprises, in which he takes the legal risk of cultural and creative enterprises as the target level and the six aspects of principal risk, contract risk, intellectual property risk, human resource management risk, financial tax risk and investment and financing risk as the guidelines, combines with the characteristics of cultural and creative enterprises to select the appropriate

evaluation index, and then builds a legal risk index system of cultural and creative enterprises, as shown in Table 1.

Table 1 The Evaluation Index System of Legal Risk for Cultural and Creative Enterprises

Target Layer U	Guideline Layer U_i	Indicator Layer U_{ik}	Indicator Description
Legal Risk of Cultural and Creative Enterprises	U_1 : The Subject Risk of the Enterprise	U_{11} : Risk of Administrative License	Risk of Not Obtaining Administrative License
		U_{12} : Risk of Anonymous Funding	Risk of the Inconsistence Between the Actual Investor and the Registration
		U_{13} : Constitutional Risk	Risk of Improper Setting in Constitution
	U_2 : Contract Risk	U_{21} : Risk of Contracting Negligence	Risk of Wrong Contract
		U_{22} : Default Risk	Risk of Violating Contract
		U_{23} : Risk of Force Majeure	Risk of Not Being Implemented due to Force Majeure
	U_3 : Intellectual Property Risk	U_{31} : Risk of Ownership Identification	Risk of Being Unable to Obtain Intellectual Property
		U_{32} : Infringement Risk	Infringement Risk of Intellectual Property
		U_{33} : Risk of Being Imitated	Risk of Being Imitated or Plagiarized
	U_4 : Risk of Human Resource Management	U_{41} : Risk of Labor Contract Management	Risk from Improper Management of Labor Contract
		U_{42} : Social Security Risk	Risk of Not Paying Social Security According to Law
		U_{43} : Labor Arbitration Risk	Risk of Disputes with Workers
	U_5 : Financial Tax Risk	U_{51} : Financial Management Risk	Risk of Unstandardized Financial Management
		U_{52} : Tax Management Risk	Risk of Not Paying Taxes According to Law
	U_6 : Investment and Financing Risk	U_{61} : Risk of Setting up Subsidiaries	Risk of Investment Failure in Setting up Subsidiaries
U_{62} : Risk of Mergers and Acquisitions		Risk of Mergers and Acquisitions	
U_{63} : Financing Risk		Risk of Direct or Indirect Financing	

3. THE MODEL OF FUZZY HIERARCHY COMPREHENSIVE EVALUATION

In the construction of evaluation model, there are many methods to assess risks, which can be divided into two categories according to the evaluation objectives, evaluation index system and the use of evaluation method: one is based on knowledge or experience, like subjective scoring method, decision tree method, Delphi method; the other is based on model analysis, mainly including analytic hierarchy process, gray comprehensive evaluation, fuzzy comprehensive evaluation, BP neural network and so on. Knowledge-based assessment methods are qualitative analysis methods, which are often need to rely on the evaluator's experience to judge and is strong in subjectivity. Model-based analysis methods attempt to quantify various elements of risks. The quantification of legal risk can help decision-makers make decisions intuitively, which is the result that enterprise managers want to see most. Among the model-based analysis methods, AHP is the most commonly used method in multi-attribute decision-making. It can integrate and quantify the complex factors and the individual factors of decision-makers hierarchically, which is convenient for decision analysis. However, the legal risk of enterprise is perceived and fuzzy. In the process of quantifying the legal risk, many factors cannot be expressed by exact numerical values, which need to be judged by the evaluator's experience. There is a great subjectivity and uncertainty in the assessment of risk factors. Fuzzy AHP has the advantages of traditional analytic hierarchy process and allows to judge fuzziness. Therefore, this author uses fuzzy analytic hierarchy process to evaluate the legal risk of cultural and creative enterprises.

Fuzzy AHP (fuzzy analytic hierarchy process) is a combination of fuzzy mathematics and AHP method, which is an ideal multi-criteria decision-making model. The specific steps are as follows:

(1) Setting up a set of evaluation indicators $U = (U_1, U_2, \dots, U_m)$, in which U_i indicates the first level of indicators; $U_i = (u_{i1}, u_{i2}, \dots, u_{in})$ means that each U_i consists of n second-level indicators. Determining the evaluation set $V = (V_1, V_2, \dots, V_m)$ implies that there are m kinds of comments.

(2) Making a comment on every factor u_{ij} in the evaluation index concentration U . Determining the membership function of each factor scoring, and obtaining the membership degree and the fuzzy judgment matrix R .

(3) Determining the weight set W of each factor through the fuzzy judgment matrix R .

(4) Calculating the relative weight of each factor relative to the target layer, that is, the total order of the layers.

4. THE EMPIRICAL ANALYSIS

Company A is a large-scale integrated cultural and creative enterprise mainly engaged in the publication, distribution and sale of stationery for books, publications and audio-visual products. It is a typical representative in studying the legal risks of cultural and creative industries. Taking company A as an example, this author uses Fuzzy AHP to carry on legal risk appraisal. The specific steps are as follows.

4.1 Determining the Evaluation Index Set and Evaluation Set

The legal risk of cultural and creative enterprises $U = (U_1, U_2, U_3, U_4, U_5, U_6)$, of which, U_1 stands for the subject risk of the enterprise, U_2 for contract risk, U_3 for intellectual property risk, U_4 for risk of human resource management, U_5 for financial tax risk and U_6 for investment and financing risk.

Subject risk of enterprise $U_1 = (u_{11}, u_{12}, u_{13})$, in which, u_{11} is for administrative license risk, u_{12} for anonymous funding risk and u_{13} for constitutional risk.

Contract risk $U_2 = (u_{21}, u_{22}, u_{23})$, of which, u_{21} is for risk of contracting negligence, u_{22} for default risk and u_{23} for risk of force majeure.

Intellectual property risk $U_3 = (u_{31}, u_{32}, u_{33})$, in which, u_{31} is for risk of ownership identification, u_{32} for infringement risk and u_{33} for risk of being imitated.

Human resource management risk $U_4 = (u_{41}, u_{42}, u_{43})$, among which, u_{41} is for management risk of labor contract, u_{42} for social security risk and u_{43} for labor arbitration risk.

Financial tax risk $U_5 = (u_{51}, u_{52})$, among them, u_{51} is for financial management risk and u_{52} for tax management risk.

Investment and financing risk $U_6 = (u_{61}, u_{62}, u_{63})$, of which, u_{61} is for risk of setting up a subsidiary, u_{62} for risk of mergers and acquisitions and u_{63} for risk of financing risk.

4.2 Determining the Weight of Evaluation Index Set

4.2.1 The Calculation Method for the Weight of Evaluation Index Set

(1) Constructing complementary fuzzy judgment matrix. Based on the assessment structural analysis of legal risk in cultural and creative enterprises, risk assessment experts are invited to make comparisons between the various factors of importance. Judgment matrix values are determined by using the evaluation scale standard (three-scale method, as shown in Table 2) that is often used in practice and academic research.

Table 2 The Three-scale Method and Its Meaning

Scale	Meaning
0	Two risk factors are compared, and one is higher than the other.
0.5	Two risk factors are compared, and one is the same as the other.
1	Two risk factors are compared, and one is lower than the other.

Constructing complementary fuzzy judgment matrix, that is, the matrix $F = (f_{ij})_{n \times n}$ is priority judged.

(2) Constructing fuzzy consistency judgment matrix. Figuring out the rank aggregation $r_i = \sum_{j=1}^n f_{ij}$,

using the conversion formula $r_{ij} = \frac{r_i - r_j}{2n} + 0.5$, and changing the fuzzy judgment matrix $F = (f_{ij})_{n \times n}$ into fuzzy consistency judgment matrix $R = (r_{ij})_{n \times n}$.

(3) Constructing reciprocal judgment matrix. Using the formula $e_{ij} = \frac{r_{ij}}{r_{ji}}$ to change the fuzzy consistency judgment matrix $R = (r_{ij})_{n \times n}$ to the reciprocal judgment matrix $E = (e_{ij})_{n \times n}$.

(4) Using normalizing rank aggregation to obtain the weight:

$$W = (w_1, w_2, \dots, w_n)^T = \left(\frac{\sum_{j=1}^n e_{1j}}{\sum_{i=1}^n \sum_{j=1}^n e_{ij}}, \frac{\sum_{j=1}^n e_{2j}}{\sum_{i=1}^n \sum_{j=1}^n e_{ij}}, \dots, \frac{\sum_{j=1}^n e_{nj}}{\sum_{i=1}^n \sum_{j=1}^n e_{ij}} \right)^T$$

4.2.2 Calculating the Weight of Criteria Layer

Legal risk assessment experts from cultural and creative enterprises are invited to evaluate the level of factors between each two by using three-scale method, the evaluation results as follows:

Table 3 The Judgment Matrix of Expert Scoring for Legal Risk Criteria

Judgment Matrix	Subject Risk	Contract Risk	Intellectual Property Risk	Human Resource Management Risk	Financial Tax Risk	Investment and Financing Risk
Subject Risk	0.5	1	1	1	1	1
Contract Risk	0	0.5	1	1	0	0
Intellectual Property Risk	0	0	0.5	0	0	0
Human Resource Management Risk	0	0	1	0.5	1	0
Financial Tax Risk	0	1	1	0	0.5	0
Investment and Financing Risk	0	1	1	1	1	0.5

Namely, complementary fuzzy judgment matrix $F = \begin{bmatrix} 0.5 & 1 & 1 & 1 & 1 & 1 \\ 0 & 0.5 & 1 & 1 & 0 & 0 \\ 0 & 0 & 0.5 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0.5 & 1 & 0 \\ 0 & 1 & 1 & 0 & 0.5 & 0 \\ 0 & 1 & 1 & 1 & 1 & 0.5 \end{bmatrix}$;

Using the conversion formula, the fuzzy judgment matrix F becomes fuzzy consistency judgment

matrix R , that is: $R = \begin{bmatrix} 0.50 & 0.75 & 0.92 & 0.75 & 0.75 & 0.58 \\ 0.25 & 0.50 & 0.67 & 0.50 & 0.50 & 0.33 \\ 0.08 & 0.33 & 0.50 & 0.33 & 0.33 & 0.17 \\ 0.25 & 0.50 & 0.67 & 0.50 & 0.50 & 0.33 \\ 0.25 & 0.50 & 0.67 & 0.50 & 0.50 & 0.33 \\ 0.42 & 0.67 & 0.83 & 0.67 & 0.67 & 0.50 \end{bmatrix}$;

and then obtaining the transmutation matrix E , that is $E = \begin{bmatrix} 0.5 & 3 & 11 & 3 & 3 & 1.4 \\ 0.33 & 0.5 & 2 & 1 & 1 & 0.5 \\ 0.09 & 0.5 & 0.5 & 0.5 & 0.5 & 0.2 \\ 0.33 & 1 & 2 & 0.5 & 1 & 0.5 \\ 0.33 & 1 & 2 & 1 & 0.5 & 0.5 \\ 0.71 & 2 & 5 & 2 & 2 & 0.5 \end{bmatrix}$

Using normalizing rank aggregation to calculate and finding the weight of the criteria layer $w_0 = (0.42, 0.10, 0.04, 0.10, 0.10, 0.23)$.

4.2.3 Calculating the Weight of Index Layer

The calculation method of weight by using the evaluation index set, then:

The weight of the subject risk U_1 is $w_1 = (0.10, 0.64, 0.26)$;

The weight of contract risk U_2 is $w_2 = (0.26, 0.10, 0.64)$

The weight of intellectual property risk U_3 is $w_3 = (0.64, 0.10, 0.26)$

The weight of human resource management risk U_4 is $w_4 = (0.43, 0.07, 0.50)$

The weight of financial tax risk U_5 is $w_5 = (0.71, 0.29)$

The weight of investment and financing risk U_6 is $w_6 = (0.10, 0.64, 0.26)$.

4.2.4 The Weight of Each Risk Factor

Through calculation, the weight of legal risk of each factor relative to the legal risks of cultural and creative enterprises at the target level is shown in Table 4.

Table 4 The Weight Distribution Table for Evaluation Index System of Legal Risks in Cultural and Creative Enterprises

Target Layer U	Criteria Layer U_i	Intra-layer Weight	Indicator Layer U_{ik}	Intra-layer Weight	Total Weight
Legal Risks of Cultural and Creative Enterprises	U_1 : Subject Risk	0.42	U_{11} : Administrative License Risk	0.10	0.043
			U_{12} : Anonymous Funding Risk	0.64	0.268
			U_{13} : Constitutional Risk	0.26	0.107
	U_2 : Contract Risk	0.10	U_{21} : Contracting Negligence Risk	0.26	0.026
			U_{22} : Default Risk	0.10	0.010
			U_{23} : Risk of Force Majeure	0.64	0.065
	U_3 : Intellectual Property Risk	0.04	U_{31} : Ownership Identification Risk	0.64	0.028
			U_{32} : Infringement Risk	0.10	0.004
			U_{33} : Being Imitated Risk	0.26	0.011
	U_4 : Human Resource Management Risk	0.10	U_{41} : Labor Contract Management Risk	0.43	0.044
			U_{42} : Social Security Risk	0.07	0.007
			U_{43} : Labor Arbitration Risk	0.50	0.051
	U_5 : Financial Tax Risk	0.10	U_{51} : Financial Management Risk	0.71	0.072
			U_{52} : Tax Management Risk	0.29	0.030
	U_6 : Investment and Financing Risk	0.23	U_{61} : Risk of Setting up Subsidiaries	0.10	0.024
U_{62} : Risks of Mergers and Acquisitions			0.64	0.149	
U_{63} : Financing Risk			0.26	0.060	

4.3 The Result Analysis

By identifying, analyzing and assessing the legal risks of company A, the weight of the relevant legal risk factors on the degree of corporate risk has been obtained. According to the meaning of the three-scale method, the higher the value the lower the risk, and the lower the value the higher the risk. From the results, legal analysis of company A focuses on intellectual property, followed by contract risk, human resource management risk and financial tax risk. As of the risk factors, the weight of infringement risk, the highest risk, is 0.004, followed by the default risk with the weight value of 0.01.

In general, the assessment results are more representative, better reflecting the risks of producers and managers in cultural and creative enterprises. Cultural and creative enterprises are asset-light enterprises, and the intangible assets such as intellectual property and creativity are of great significance to the development of enterprises. The prevention of intellectual property risks is the most easily overlooked by business managers.

5. THE COUNTERMEASURES AND SUGGESTIONS FOR THE PREVENTION OF LEGAL RISKS

With the characteristics of cultural and creative enterprises as well as market subject law, *Contract Law*, *Intellectual Property Law*, *Tax Law*, *Labor Law* and *Guide for Enterprise Legal Risk Management* in China, the following things should be done in order to establish a perfect management system of legal risk prevention.

Firstly, management culture of legal risks should be fostered. A good risk management culture is a crucial step in preventing legal risks in advance and a precondition and basis for building a legal risk prevention system. In-depth legal education is badly need to promote public awareness and training in hope of improving risk prevention awareness of business managers and employees.

Secondly, the functional system of management organization for legal risks should be improved. Decision makers should fully recognize the importance of the legal department, and specially set up management position of legal risk wherever possible, who are responsible for the management of legal risks and enhancement of communication and collaboration with finance and other functional departments. The construction of management system is an important part of building a legal risk prevention system. The management system should be strengthened, such aspects should be paid attention as contract management, labor relations management and intellectual property management, in order to effectively prevent the legal risks of business management and improve the operation capabilities of enterprises.

Thirdly, a management information system of legal risk should be established. The management module of legal risk is set up in the information management system to quickly transfer the risk information and help enterprises manage legal risks.

Fourthly, the management and supervision mechanism of legal risk should be improved. The operation, management and investment and other activities are brought into the prevention system of legal risks. The legal argumentation system for major business decisions and foreign investment is implemented to ensure the legality and feasibility of major operations and investments in enterprises, so as to establish a supervision mechanism of legal risk management for enterprises.

REFERENCES

- Catalano, A Lori, Werdman, Eileen (2017) "Catalano, Eileen Werdman. Avoiding legal risks in critical care nursing", *Nursing Critical Care*, 12(4), pp.30-35.
- Gu SZ, Wu QQ, Zhuang QQ (2017) "Countermeasures of Promoting "the Belt and Road Initiative" and the "go Global" Strategies of Enterprises", *Economic Review*, 2017(2), pp.1-9.
- Guan Y (2016) "Two Important Issues in the Fourth Revision of Patent Law", *Intellectual Property*, 2013(3), pp.45-51, 129.
- Hyun Jun Park, Duk Young Cho, Yong Sug Park, Sun Wook Kim, Jae-Hong Park (2016) "Controlling Legal Risk for Effective Hospital Management", *The world journal of men's health*, 34(1), pp.56-63.
- Wang Z, Wei F (2015) "An Analysis of Identification of the Legal Risk in Military Enterprises Based on Ifahp and Dematel", *Management Review*, 27(6), pp.68-77.
- Yang Yang (2015) "Research on the Legal Risk and Governance for the Affiliated Business in the Construction Industry", *Chinese Studies*, 4(2), pp.64-68.