

The Application of System Analysis Methods in the Study of Corporate Social Responsibility System

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Abstract

System analysis studies how to make the whole system of each part coordinated, take on the whole to design to the optimal, the optimal operation. Corporate social responsibility (CSR) system involves the enterprise vision and mission, enterprise culture, enterprise development strategy, and the major task of enterprise long-term development. Along with the modern enterprise development, the integrated application is becoming wider, the method of system analysis is used in the construction of CSR system, to help enterprises to establish a more effective CSR system, to better fulfill the CSR, to fully embody the value of CSR, to achieve the goal of promoting enterprise value. In future development, system analysis and CSR system will be more closely related, therefore, the application of system analysis method in CSR system has a certain reference value and guiding role in the establishment of CSR system.

Keywords: system analysis methods corporate social responsibility system application

1. System Overview

System is widespread in the universe, from elementary particles to the river outside the galaxy, from the human society to the mind, from inorganic to organic world, from natural science to social science, system an ever-present, everywhere, there is. But there is currently no unified definition of domestic and foreign scholars on the system, according to the Merriam Webster dictionary, the founder of the general system theory Bertalanffy and the advocator of system engineering in our country Xuesen Qian, presents the definition of the system and its argument, though different, but are close to the meaning. Overall, the system is composed of some mutual connection and restriction of the number of elements, an organic whole with specific functions.

The system has certain structure. A system is a collection of its elements, these elements connect with each other, restrict each other. Within the system, stable contact between each factor and the internal organization order and control relationships, is the system's structure. Such as clock is by the gear, spring and pointer parts assembled in a certain way, but a pile of gear, a clock work, pointer together does not constitute a clock at random. The human body is composed of various organs, individual organs together simply cannot be a capable person. Only a collection of elements and element, in short, a collection of all kinds of relations between the two combine, can decide the concrete structure of a system with a specific function, none can be dispensed with.

2. System Analysis Method

2.1 Overview of System Analysis Method

System analysis is a kind of study strategy. In uncertain circumstances, it can determine the nature of the problem and cause, definite consulting target, find out all kinds of feasible solutions, and carry on the comparison to these solutions through certain standard, to help decision makers to make scientific decisions in complex problems and environments. After the system theory appeared in 40s century, the system analysis is widely used as an important scientific method. With the development of modern mathematics, statistics and computer and application, especially the development of space science and aerospace, has promoted the development of the system analysis method and the promotion, it can be said that now, any big projects or research topics use the method of system analysis to plan, organize and manage.

It inspects and studies the objective world from the view point of system, providing scientific theory and method for the human understanding and transforming the world. The emergence and development of it marked the scientific thinking of human by mainly centered "physical" gradually transition to the "system" for the center, is a landmark breakthrough of scientific thinking.

System method is a basic idea method to consider the research object as a system to analyze, design, creative which is in the further study of the concept and system, on the basis of the basic composition and properties., the essence of the method system is to use systematic thought and mathematical methods and computer tools to realize the modeling and optimization of the system, so as to system analysis and system design^[1].

2.2 The Principle of System Analysis

System is composed of many factors interact with each other and interdependent organic aggregate, it is under dynamic development, its internal and external environment in the close contact and communication, the complexity of these relationships, therefore, when carries on the system analysis, must deal with the complicated relationship, you need to follow the following principles:

- (1) The combination of external and internal conditions. Any existence and development of a social system, is affected by its internal conditions and external conditions, and between these two kinds of conditions has complicated and changeable substance, energy and information exchanges. Therefore, the analysis of a system is sure to combine with internal and external factors to make a comprehensive analysis, to get the right result.
- (2) The combination of the current interests and long-term interests. For a decision, choose an optimal solution, not only from the current interests, but also considering the interests of the future. If we adopt the scheme that is beneficial to the current and future, it, of course, is the ideal. But it often does not match the current interests and long-term interests, and even contradictory, this requires the current benefit to obey to the long-term benefit; combine two kinds of interests to analyze.
- (3) The combination of local and the overall benefits. System and the subsystem of the local benefits, basically should be consistent, the benefit of the subsystem are good, the benefit of the whole system must be ideal. However, in real life, subsystem of local benefits and overall efficiency of the system is also there will be inconsistent and even contrary; so, when carrying on the system analysis, local benefits are required to subject to the overall benefits, so as to achieve integral efficiency and optimization.
- (4) The combination of qualitative analysis and quantitative analysis. System analysis, both must carry on the quantitative analysis and qualitative analysis, the process we research and analyze all kinds of object system is to follow such a cycle process "qualitative, quantitative, and qualitative". Cycling is the universal law of system analysis, only to master the characteristics of the system in every aspect can set up the mathematical model which is used to discuss quantitative relationship. Therefore, only to combine qualitative analysis with quantitative analysis, both mutual crisscrosses can get the right result.

2.3 The Process of System Analysis Method

System analysis method for concrete steps include: limit problem, target, investigation and study collect data, propose alternatives and evaluation standard, alternative assessment and put forward the feasible scheme. Figure 1 for the specific process of system analysis method.

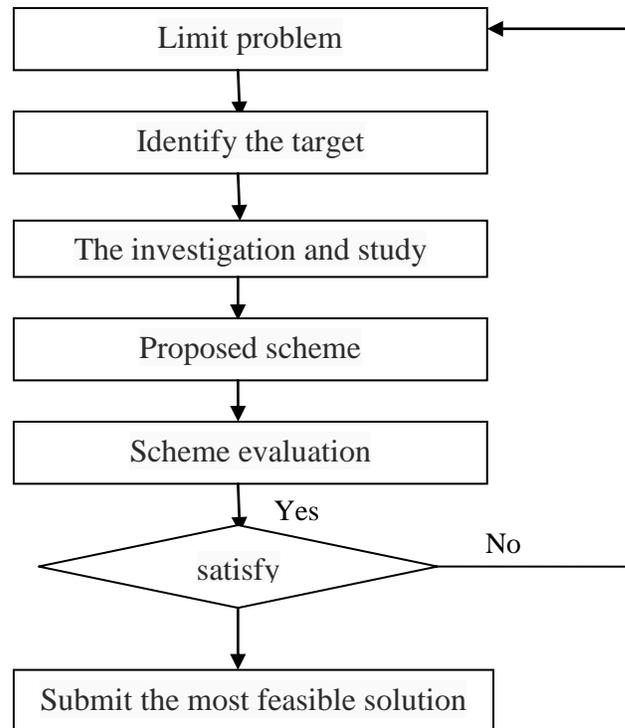


Figure 1: The Process of System Analysis Method

3. The Application of System Analysis Methods in the Study of Corporate Social Responsibility System

System analysis method study how to make the whole system of each local coordinated, takes on the whole to optimal design, optimal operation. The fulfillment of social responsibility is the important premise of building a harmonious society, playing a key role in the sustainable development of enterprises. According to the analysis of business environment, an enterprise wants to achieve the goal of sustainable development must undertake certain responsibility to various members when enjoying the resources provided by social members of the system, namely the social responsibility. Building a systematic social responsibility system can help enterprises to fulfill social responsibility more effectively, to better reflect the social responsibility value and realize the sustainable development of enterprises.

3.1 The Application of System Analysis Methods in the Construction of Social Responsibility Theory System

Corporate social responsibility theory system is a complex system, including several aspects' construction and improvement of enterprises, mainly reflected in the following:

3.1.1 Enterprise Mission

Corporate mission is to create and maintain a harmonious society. The value of growth that enterprise pursues should be balanced growth, be a variety of the sustainable growth including the common development of stakeholders, including the harmony of the three aspects: the first is the enterprise development in harmony with industry progress, carry out economic activities in a responsible and transparent manner, win the trust of customers, society, government, cooperation partners and all stakeholders; the second is the enterprise development is in harmony with social progress, make contributions to social progress in areas such as education, culture, and anti-poverty by its own business expertise and ongoing public participation; the third is the enterprise development is in harmony with environmental protection, pursuing a balanced development between the environmental protection and economic progress, promoting the development of social environmental protection career.

3.1.2 Enterprise Values

Enterprise values are to continue to create greater value for society, for the enterprise. Enterprise values will be reflected in the behavior of different stakeholders, different stakeholders has different requirements for enterprise commercial, social and environmental responsibility, shareholders demand more economic returns, and, as the representative of social public interests, the government and community will put forward the requirements of environmental protection. Therefore, the enterprise should combine public welfare, social activities with the company's operating, in order to obtain sustainable development.

3.1.3 Enterprise Culture

The core theory of corporate culture is a common growth with society, and share success with stakeholders. From the point of enterprise culture, to create value for the stakeholders with the enterprise core is the competence of the foothold, seeking the balance between their own development and the social, environmental, employee, industry is the ultimate goal of enterprise. Enterprise culture should be solidified to the organization's processes, standards and procedures, in the performance appraisal principle of the enterprise culture fusion so as to make employees experience the spirit of enterprise culture in the work practice.

3.1.4 Enterprise Strategy

The strategy of the enterprise is to realize the sustainable development. From a strategic perspective, value is not only the value of enterprise; it also includes the value of employee value, shareholder value and social value. The four kinds of value is the dialectical unification, an integral whole, only four big values has a harmonious development can we truly achieve the sustainable development of enterprises.

3.2 The Application of System Analysis Method in the Social Responsibility Legal System Building

To strengthen the construction of legal system, to perfect enterprise society responsibility legal system concrete of our country is divided into three aspects: firstly is to formulate the basic law, building the basic outline of enterprise and fulfilling its social responsibility, the basic principle; Secondly is to perfect the department law, revising the related department law with corporate social responsibility, such as labor protection, environmental protection, etc.; Thirdly is to tease local laws and regulations, cleaning up the local laws and regulations related to corporate social responsibility which does not meet the international conventions, regulations are not clear and not practical labor security, safety and health and environmental protection, to improve by setting local legislation or government rules and regulations ^[2].

3.3 The Application of System Analysis Methods in the Social Responsibility Government Policy System Construction

By means of the market, giving full play to the role of the expenditure, and gradually in the government procurement, investment and government funding to the enterprise shall practice a system of corporate social responsibility standard authentication. Not to buy "sweatshop" products and services, refusing to make its funding. Government are big buyers of the market, the total amount of the government procurement budget can draw lessons from the practice of transnational corporations, set rules, perfect relevant laws and regulations on government procurement, investment and government funding for enterprises gradually implement corporate social responsibility in the local standard certification system, rules for standard certification of enterprise has priority under the same conditions ^[2].

4. The Application of Empirical Analysis of System Analysis Methods in the Study of Corporate Social Responsibility System

The content of the corporate social responsibility includes many aspects, after comprehensive analysis of the internal and external environment of the enterprise and the influencing factors of the enterprise value, the paper thinks that corporate social responsibility mainly includes the following four aspects: (1)Economic responsibility. This is one of the main responsibilities that enterprises should fulfill. (2) Employee responsibility. Employees as important stakeholders, their interests and destiny are closely related with the enterprise operating, staffs' agreement with enterprise's identity will bring more development potential for the enterprise. (3) Environmental responsibility. Resource overexploitation, resource waste and environmental pollution are important problems that society faces during the sustainable development, the enterprise activity is one of the important factors causing these problems, the enterprise should be responsible for environmental. (4) Public welfare responsibility.

In order to set up image, increase awareness in the society and the status in the public mind, enterprises often show the sense of responsibility to society through direct setting up charity or to social charity and charity donations, giving way to support the social public welfare undertakings. Therefore, the construction of corporate social responsibility system should set about from these aspects.

In order to make the corporate society responsibility reflects its value more effectively, this article analyzes the correlation between corporate social responsibility and enterprise value and the size of the correlation, according to the different correlation to provide the reference for the corporation social responsibility.

4.1 Research Hypothesis

Based on the above analysis, this paper puts forward the following hypothesis:

Hypothesis 1: enterprise value is positively associated with the implementation of economic responsibility.

Hypothesis 2: enterprise value is positively associated with the implementation of employee responsibility.

Hypothesis 3: enterprise value is positively associated with the implementation of environmental responsibility.

Hypothesis 4: enterprise value is positively associated with the implementation of public welfare responsibility.

Hypothesis 5: the order of the correlation between corporate value and the implementation of social responsibility is: public welfare responsibility, environmental responsibility, employee responsibility, and economic responsibility.

4.2 Research Design

4.2.1 Sample Selection

This article selects the data of the Shanghai mining company in 2013 as the research sample, eliminating discontinuity by ST data and incomplete data, finally got 32 mining companies as the research object. Variable data social responsibility fulfillment and corresponding index of enterprise value are obtained through sample annual reports in this paper, data from the tide of information network, using SPSS software to analyze data.

4.2.2 Variable Design

(1) The dependent variable

In this paper, the dependent variable is the enterprise value. Considering the variable index can be quantified and data availability, earnings per share is used to reflect the enterprise value.

(2) The independent variable

The independent variable of this article is the fulfillment of economic responsibility, employees responsibility, environmental responsibility and public welfare responsibility, in selecting the rate of return on net assets, employee welfare payments (employee wages and welfare proportion of enterprises operating income), environmental expenditure rate (environmental accounts for the proportion of operating revenue) and donor spending rate (donation accounts for the proportion of operating profit).

(3) The control variable

Research on the correlation between the fulfillment of social responsibility and enterprise value listed companies uses the company size, profitability, and financial leverage as control variables^[3]. Research on the relations between corporate social responsibility information disclosure quality and enterprise value applies the company size, the asset-liability ratio, the company industry as the control variable^[4]. Therefore, on the basis of existing research literature, this paper adopts company size (natural logarithm of total assets), asset-liability ratio, and total assets return rate as control variable.

4.3 Correlation Analysis between the Implementation of Corporate Social Responsibility and Enterprise Value

4.3.1 Descriptive Statistics

Table 1 has descriptive statistical analysis on the social responsibility and corporate value indicators.

The variables descriptive statistics of the sample company are shown in table 1. First of all, the sample enterprise's return on net assets is from the lowest - 15.97% to the highest 22.51%, range is bigger, that is a big gap between the return on equity of different enterprises, namely the different economic responsibility fulfillment situation of different enterprises.

Secondly, differences between different enterprise employee wages and welfare spending rate and the rate of environmental expenditure is also bigger, illustrate that different enterprise employees responsibility and environmental responsibility performance also has a big gap. Thirdly, giving spending rate from the lowest - 2.32% to the highest 5.72%, the difference is smaller, that is different enterprises all values the implementation of the responsibility for social public welfare undertakings. Finally, different enterprise's earnings per share from a minimum of 0.83683 to 2.29653, the differences are considerable.

The above analysis shows that the size of enterprise value is related to the execution of corporate social responsibility.

Table 1: Variables Descriptive Statistics

Variable	N	minimum	maximum	average	Standard deviation
Return on equity	32	-.1597	.2251	.060559	.0771529
Employee welfare spending rate	32	-.1351	.4151	.124535	.1465884
Environmental protection spending rate	32	.0000	1.5559	.057474	.2754666
Donation spending rate	32	-.0232	.0572	.004008	.0147226
Earnings per share	32	-.83683	2.29653	.3543153	.53042764
Total assets of the natural logarithm	32	18.65	33.00	23.9101	2.51497
Asset-liability ratio	32	.1379	.7391	.500063	.1292014
Return on total assets	32	-.0672	.1132	.029131	.0364684
Effective N (list)	32				

4.3.2 Correlation Statistics

Table 2 has carried on the concrete analysis of the correlation between the enterprise value and the fulfillment situation of corporation social responsibility.

Table 2 shows that the earnings per share and net assets yield positive correlation, the higher the return on net assets is, the higher the earnings per share, namely the enterprise value positively related to the economic responsibility. The better economic responsibility to perform, the higher the enterprise value is. Assumption 1 is to argument. Earnings per share is positive correlation with the staff salary and welfare spending rate, rate of environmental expenditure, donation spending rate, namely: the higher employee wages and welfare spending rate is, the higher the earnings per share. The higher the rate of environmental expenditure is, the higher the earnings per share; the higher the donation spending rate is, the higher the earnings per share. As a result, the implementation of employee responsibility, environmental responsibility, and public welfare responsibility is positively related to the enterprise value, hypothesis 2, hypothesis 3 and hypothesis 4 is able to demonstrate.

The correlation among earnings per share and return on equity, employee welfare spending rate, environmental protection spending rate, donation spending rate shows that the order of the correlation between corporate value and social responsibility is public welfare responsibility, environmental responsibility, employee responsibility and economic responsibility, hypothesis 5 to be able to demonstrate. This reflects the aim of modern society: the construction of a harmonious society. Therefore, modern enterprises should change the traditional that consider profit maximization as the goal, pay attention to the fulfillment of social responsibility, so as to maximize the enterprise value more effectively, realize the sustainable development of enterprises.

Table 2: The Correlation between the Implementation of the Corporate Social Responsibility and Enterprise Value

Control variables	Variable	correlation	Return on equity	Employee welfare spending rate	Environmental protection spending rate	Donation spending rate	Earnings per share
Total assets of the natural logarithm & Asset-liability ratio & Return on total assets	Return on equity	correlation Significant (both sides) df	1.000 .077 0	.077 .692 27	.037 .849 27	.324 .086 27	.023 .904 27
	Employee welfare spending rate	correlation Significant (both sides) df	.077 .692 27	1.000 .077 0	-.051 .792 27	-.216 .260 27	.059 .759 27
	Environmental protection spending rate	correlation Significant (both sides) df	.037 .849 27	-.051 .792 27	1.000 .077 0	-.051 .792 27	.067 .729 27
	Donation spending rate	correlation Significant (both sides) df	.324 .086 27	-.216 .260 27	-.051 .792 27	1.000 .077 0	.149 .440 27
	Earnings per share	correlation Significant (both sides) df	.023 .904 27	.059 .759 27	.067 .729 27	.149 .440 27	1.000 .077 0

4.4 Research Conclusion

Through the above analysis the conclusion can be showed that the implementation of enterprise value are positively related to the corporation social responsibility, and, in today's society, in order to maximize the enterprise value more effectively, enterprises should pay more attention to the fulfillment of social responsibility in the later development, especially the fulfillment of public welfare responsibility, environmental responsibility and employee responsibility, make efforts to differentiate the weight of all aspects of corporate social responsibility, better realize the sustainable development of enterprises, contribute to the construction of a harmonious society.

To establish corporate social responsibility system involves the enterprise vision and mission, enterprise culture and enterprise development strategy, bears on the major task of the enterprise long-term development. Enterprises in the process of constructing the system of social responsibility, should accurately grasp the weight of all aspects of social responsibility, to provide optimization of the most effective guidance for the steady development of enterprises.

5. Conclusion

In the 21st century, science and technology has vigorous development, the system analysis as an emerging edge science, as it can be applied to various fields of science and technology, can put forward satisfactory optimization measures, more combined with the rapid development of modern computer technology, the system analysis will get more extensive application, become one indispensable tool of management decision-making process. System analysis in university has become an important elective courses to many students of engineering specialty, and as a liberal arts student, understand the necessary knowledge of system analysis is also necessary. In economy, technology and the growing complexity of contemporary social development and the future, do not know the system analysis knowledge, can't use the system analysis of ideas and methods to solve complex problems, it will be difficult to become talents.

On the other hand, the present systematic analysis of the magnitude of the knowledge in the study of the system of social responsibility is not very big, in this respect we should learn from foreign advanced experience, foreign related research starts earlier than us, the theory is more mature, therefore, domestic has very big development space, we should make efforts toward this aspect, so as to make contribute to the establishment and improvement of corporate social responsibility system of our country.

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