

Research on the Influencing Factors of Performance Management Innovation in Inspection Institutions on Enterprise Standardization Construction

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Abstract: As Chinese market economy develops rapidly, the market competing toward that of highlighting product quality level has become increasingly competitive, and enterprise standardization management also starts to play a more critical role in the competition. There is a statement of “extra-superior enterprises sell standards” favored in the business circle, as standard is the magic weapon to improve the market competition of an enterprise and win the competition. In this paper, it firstly analyzes the current development conditions in domestic and foreign inspection institutions, and then studies the influencing factors of performance management innovation in inspection institutions on the enterprise standardization capacity. By analyzing factors influencing performance management innovation, it puts forward the hypothesis for the influence of performance management innovation in inspection institutions on the enterprise standardization construction, and draws a conclusion that the performance management innovation in inspection institutions can exert a positive influence on enterprise standardization capacity.

Keywords: Inspection institutions; Performance management; Enterprise standardization

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1 Introduction

As Chinese market economy develops fast, market competition featured of highlighting product quality

level has become increasingly competitive, and the enterprise standardization management also starts to play a more critical role in the battle. In respect of the current enterprise standardization in our country, it is a long-term and arduous task to establish a standardized management ideology suitable to the current development status of market economy in enterprise management and operation, apply the principle, method and approach of standardization, constantly promote the technical development progress of enterprises, improve product quality grade, and the working efficiency and scientific level of enterprises, decrease resource loss, and avoid unnecessary wastes. There is a statement of “extra-superior enterprise selling standard” favored in the business circle, for standard is the magic weapon to improve the market competition of an enterprise and win the competition. However, most enterprises in our country still lack of recognition on the importance of standardization, which can be summarized as the result of our hysteretic evaluation on standardization economic effect^[1].

2 Overview to the Development of Domestic and Overseas Inspection Industry

2.1 Development trend of global inspection industry

A British certification authority, BSI (British Standards Institution) carried out quality management system certification at the end of 1970s, and developed quality assurance activities to third-party certification from second-party (customer) audit, and accelerated the marketization process of the inspection industry. Nowadays, relatively normalized inspection market has

been formed in European countries, Japan, America, etc., along with a batch of well-known and authoritative third-party inspection institutions internationally.

Global inspection market scale increases fast as technical progress and product quality standard increase continuously, product upgrading accelerates and international trade activities become active gradually. Currently, inspection format around the world is still led by European and American inspection institutions, but in the emerging market, such as China, India and other Southeast Asia countries as well as third-party inspection institutions, development shows the trend of fast increase.

Global inspection industry has lower concentration ratio, relatively scattered competition pattern, more industry subdivisions and certain regionalism. CR10 is smaller than 20.0%. As can be seen from the market share conditions of global inspection institutions, the inspection institution with the biggest global market share is Societe Generale de Surveillance (SGS), for which the market share is 3.7%, followed by Bureau Veritas (BV), for which the market share is 3%. Besides, institutions with above 2% market shares also include Intertek and DEKRA.

Global inspection market can be mainly divided into the inspection of the industry, life science food, environment, consumables and commodities. Industrial inspection occupies the biggest share, i.e., 52%. Our country is the country with the biggest potential market space in global inspection industry. According to HIS prediction, three regions with the biggest potential market scale worldwide will be China (EUR 59 billion), Europe (EUR 40 billion) and America (EUR 34 billion) respectively in 2020. Asian market shares increase fast, and since business is relatively mature in North America and European market, the overall growth slows down, and market shares decrease slightly. The market share in Asian market increases fast under the influence of industrial transfer and marketization process acceleration.

Third-party inspection institutions are established on the basis of national laws and regulations, carry out relevant inspection, including sample inspection, examination, detection and identification upon the entrustment of import& export trade related personnel or other units, and provide services for all trading parties^[2].

2.2 Third-party inspection rises in China, and the market size proportion continues to increase

Inspection industry in our country in our country is gradually developed based on gradual deregulation, and its development course is closely related to the industrial policy. Before 1989, our country published policies restricting the quality inspection of relevant products, which must be uniformly checked by national quality inspection institutions. After 1989, policies were opened gradually, so private enterprises of quality inspection industry started to develop, and over a decade, private inspection institutions have increased fast, with lower industrial concentration rate. As quality inspection standard increases constantly, many enterprises in the industry may be eliminated, and after natural screening, it is expected to form a free and competitive market pattern in 2020, and the industrial development will be increasingly mature.

State Administration for Market Regulation organized 2018 Statistics Work of Inspection Service Industry throughout the country in March 2019. According to the statistical result, up till the end of 2018, our country totally had 39,472 inspection institutions, which were increased by 8.66% than 2017, and the annual operating incomes were RMB 281.05 billion, with 1.1743 million employees and 6.3377 million sets of instruments and equipment, RMB 319.554 billion initial asset value of instruments and equipment, and 428 million test reports in 2018. Both the quantity of inspection institutions and the inspection market scale have kept simultaneous growth in our country. Besides, as can be seen from the output value per household, the output value per capita, and the quantity of inspection reports issued per household, etc., our inspection industry showed a good development trend as a whole in 2018, and obvious improvement than 2017.

Inspection industry has shown constant promising trend over the years, but the “small, scattered and weak” states haven’t changed at all. From the perspective of the scale of institutions, there were 38,023 inspection institutions with less than 100 employees in 2018, which occupied 96.3% of total institutions. Most inspection institutions have small scale. In respect of the service radius, the ratio of inspection institutions carrying out inspection services in the province can reach to 76.94%. Most inspection institutions are “local”

inspection institutions, and lack of the capacity to carry out services nationwide. From the perspective of the output per capita, the operating incomes per capita for inspection institutions in our country are RMB 239,300 and the operating status isn't ideal. In respect of the international market expansion, there are only 273 institutions that can carry out inspection activities beyond China, with weak international influence and the status isn't optimistic^[3].

There are still few attentions paid to scientific research and innovation. In 2018, the total (R&D) expenditure of the entire industry in research and test development was totally RMB 15.838 billion and RMB 401,000 per household. There were 31,627 scientific research projects in total and 1 project per household. 1,861 inspection institutions were identified by high-tech enterprises throughout the country in 2018, which only occupied 4.71% of total inspection institutions nationwide. Most small and micro inspection institutions have no scientific research or innovation capacity, and lack of relevant input.

3 Definition of Relevant Concepts

3.1 Third-party inspection

Third-party inspection is also called as fair inspection and refers to the commodity inspection activity carried out by a third party beyond the business interests (such as full-time supervision and inspection institution) in accordance with relevant laws, standards or contract as a fair and authoritative stranger. Third-party inspection institutions have many advantages: strong specialty; as a third party independent of the involved party, it must be fair and objective; it is used to offset the insufficiencies of public resource inspection. Meanwhile, third-party inspection institutions are favored by the market because of the cheaper cost and better service.

Third-party inspection institutions are established on the basis of national laws and regulations. They are engaged in carrying out relevant inspections, including sample inspection, goods acceptance, inspection identification and other services upon the entrustment of import& export trade related personnel or other units, and providing services for all trading institutions.

3.2 Performance management

Performance management is only specific to manager and employees. This management method is formulated, to ensure that these two subjects can realize consistent objective and increase enterprise benefits.

Such method can improve the working enthusiasm of employees, increase the working efficiency, and bring more economic benefits to employees and enterprises.

3.3 Standardization

Simply speaking, standardization refers to formulating standards for some working content in enterprises for perfection (Wang Chunyan, Liuyuan, 2006). Standardization can also be understood as activities carried out based on standards (Zhuo Yue, 2016). The state has published the *Working Guidance for Standardization*, in which standardization is defined as the activity to formulate regulatory clauses that can be jointly or repeatedly used, in respect of realistic or potential problems.

Standardization can be reflected in many modes. First of all, we should know about the standardization of service, which mainly refers to the process of formulating service standard in enterprises based on the principal of standardization, to realize better service quality, more normalized service methods, and qualified service at last. According to Zhuo Yue's research in 2016, it has dynamic, unified and economic features. Secondly, it is the standardization of technologies, according to the research of Allen & SriramThe in 2000, the essence for the standardization of technologies is the process to summarize formats that are easy to convert, and then implement advanced technologies in enterprises. Luoh, Tsaur, Tang defined working standardization in the research dated in 2014. According to them, the essence of working standardization is to formulate working standards, ensure employees can work by referring to work regulations, and ensure higher efficiency. Baud-Lavigne also defined the standardization of products in the study dated in 2012. Product standardization is mainly specific to manufacturers, and the ultimate objective is to ensure more excellent products by formulating certain standards^[4].

3.4 Enterprise standardization

The definition of enterprise standardization is made after there is the professional field of standardization. Currently, we have consistent definition of enterprise standardization, i.e., enterprise standardization refers to formulating standards for current or potential problems in enterprises mainly specific to production activities, operational activities and activities within the management scope of the enterprise, and then realize the effect of avoiding risks, and maximizing profits.

Enterprise standardization can improve the economic benefits of enterprises to the largest extent, realize more standard production, management, and technologies inside the enterprise, so we can see that enterprise standardization is very important for enterprises. By formulating suitable enterprise standardization, we can improve the management level of the enterprise, improve product quality, and increase the economic benefit of the enterprise. As long as the production link of the enterprise can be connected by management and technologies, we can improve the working efficiency of the enterprise to a large extent^[5]. While formulating enterprise standardization, enterprises must combine with its actual conditions, and focus on production and management.

Enterprises establish standardization to improve their economic benefits and the efficiency in production management, so it is not formulated specific to standards simply and cannot be completed in a short term. Standardization construction is a complicated work that consists of various standardization activities, so it is requested to formulate based on the actual conditions of the enterprise^[6]. Only when enterprise manager and operator can see the huge benefits brought by enterprise standardization can they take an active part in standardization construction.

4 Research Conception and Hypothesis

4.1 Research conception

Performance management innovation in inspection institutions can largely enterprise benefits to a large extent, and then provide better services to people. Our country is now facing a severe situation, so inspection institutions should try their best to change function mode, and promote the reform and innovation of performance management, so as to change the working style of the institution, further improve the working efficiency of the enterprise in a better way, and promote the government to implement relevant work in the inspection institution center^[7].

4.2 Research hypothesis

As for inspection institutions, performance management refers to establishing certain standardization procedures and methods for enterprises, to improve working efficiency and overall economic benefits, while carrying out corresponding evaluation management

for the working capacity, working performance and achievements of administrative departments, including the inspection institution, find out obstacles influencing the progress of the institution, and put forward corresponding suggestions. Factors influencing the performance management innovation mainly include the following aspects:

4.2.1 The factor of civil servants

In respect of administrative departments, such as the inspection institution, civil servants, the factor of civil servants can exert big influence. Only when civil servants can take active actions with due diligence can they improve working efficiency and overall working benefits in essence^[8].

4.2.2 The factor of performance objective

Along with the constant development of the era, the function of inspection institutions has changed to service functions from management functions, so such changes will also exert critical influence on the performance objective of the institution.

4.2.3 The factor of systems and mechanisms

Factors such as systems and mechanisms can also influence the working efficiency of inspection institutions and departments. If institution managers can formulate systems and mechanisms in combination with the current environment of the institution, the institution can improve the working efficiency of employees under the system, realize better working state, and then improve the overall working efficiency^[9].

4.2.4 The factor of organization structure

Simply speaking, organization structure is the organization form of internal power in administrative departments, and mainly consists of civil servants, management objective and the allocation of rights and liabilities, so the rationality of organization structure can directly influence whether we can realize the performance objective of inspection institutions^[10].

Safety supervision behaviors have been constantly reinforced by our government, which have largely improved the supervision level of enterprise standard, and lots of funds are input in building supervision institutions, but the quality safety problems haven't been improved in essence, so the state has introduced third-party inspection institutions (hereinafter referred to as the third party) in the quality supervision, which have

offset the insufficient supervision of the government to some extent. Meanwhile, it has also formed supplementary and coordination relationship with the government, and can provide more authoritative basis for consumers, and meet the government and social demand to ensure enterprise standard safety^[11].

To sum up, we can put forward the hypothesis for the influence of performance management innovation in inspection institutions on the enterprise standardization construction:

H: The performance management innovation in inspection institutions can exert a positive influence on enterprise standardization construction

H1: Civil servants for performance management innovation in inspection institutions can exert a positive influence on enterprise standardization construction

H2: The performance objective for performance management innovation in inspection institutions can exert a positive influence on enterprise standardization construction

H3: The performance management innovation systems and mechanisms in inspection institutions can exert a positive influence on enterprise standardization construction

H4: The organization structure for performance management innovation in inspection institutions can exert a positive influence on enterprise standardization construction

5 Data Analysis and Hypothesis Inspection

Table 1. Reliability Measuring Conditions of All Variables for Performance Management Innovation in Inspection Institutions

Variable dimension	Dimensional Cronbachet value	Overall Cronbaeha value
Performance objective	0.74	0.89
Institutional mechanism	0.76	
Civil servants	0.73	
Organization structure	0.79	

Table 1 is the analysis result for the scale reliability of performance management innovation. As shown in the table, a value in all sub-dimensions is above 0.7, with better reliability, and the overall Cronbacha value is 0.89. The scale has a good reliability as a whole.

Table 2. Measuring Conditions of Reliability for Enterprise Standardization Construction Variables

Variables	Overall Cronbacha value
Enterprise standardization construction STD	0.87

5.1 Data analysis

Questionnaire investigation mode is adopted in the research, and the official test is oriented to middle and senior management personnel in the relevant departments of enterprise quality management. Analyze the influence of performance management innovation in inspection institutions on enterprise standardization construction, the descriptive variables of sample, the reliability and validity of all measuring scales based on the stepwise regression in SPSS22.0, and check the correlation and research hypothesis of variables.

5.1.1 Sample selection and data collection

This research adopts the sample customization service of professional inspection institutions, and issues questionnaires through the resources and platforms of the inspection institutions, to find out research objectives and acquire data accurately. Besides, SO JUMP is responsible for issuing the official test of the research upon entrustment, and it is requested to control 1 participant in the same enterprise. 386 questionnaires were totally issued in the research, and 366 copies were recovered. After investigating the selected problems, data integrity and questionnaire distinction degree, 350 effective questionnaires were finally obtained.

5.1.2 Reliability inspection for all variables

Reliability Measuring Conditions of All Variables for Performance Management Innovation in Inspection Institutions is as shown in Table 1.

5.1.3 Reliability verification for enterprise standardization construction

The measuring conditions of reliability for enterprise standardization construction variables are as shown in Table 2.

The result of reliability verification for enterprise standardization construction is as shown in Table 2. The overall scale Cronbacha value is 0.87, with better reliability.

5.1.4 Scale reliability inspection for control variable

The control scale reliability inspection conditions are as shown in Table 3.

Table 3. Control Scale Validity Inspection Conditions

Variable	Overall Cronbacha value
Technical capacity	0.87
Industrial position	0.84

The result is as shown in Table 3. The overall Cronbacha value of technical capacity and industrial position is 0.87 and 0.84 respectively, with better reliability.

5.2 Hypothesis inspection

Analysis on the influence of inspection structure performance innovation on the enterprise standardization construction is as shown in Table 4 below.

Table 4. Hypothesis Inspection of Inspection Structure Performance Innovation for Enterprise Standardization Construction (n=350)

Variable	Enterprise standardization construction	
	Model I	Model II
Control variable		
Technical capacity	.48***	.25***
Industrial position	.42***	.13*
Age	-.07	-.06
Cultural degree	-.05	.02
Enterprise age	-.03	-.04
Enterprise scale	.11*	.07
Previous inspection number	-.03	.05
Independent variables		
Civil servants		.18**
Performance objectives		.18**
Systems and mechanisms		.19**
Organization structure		.17**
R2	.76	.84
Adjusted R2	.74	.82
Δ R2	.76	.08
F value	58.78***	59.92***

The research focuses on testing hypothesis H, hypothesis H1, H2, H3, and H4 in stepwise regression analysis, i.e., the influence of performance management innovation in inspection institutions and various dimensions on enterprise standardization construction.

First of all, put the seven control variables into the model, and obtain the result as shown in Table 4. Technical capacity, industrial position and enterprise scale can exert obvious positive influence on the enterprise standardization construction. R2 refers

to four dimensions of performance management innovation after putting 0.76 in model II. Technical capacity and industrial position can still exert a positive influence on enterprise standardization construction, R2 is 0.84, and model variation R2 is 0.08. Meanwhile, it can also be found out that all the four dimensions can exert a positive influence on enterprise standardization construction, and the standardization coefficient is 0.18, 0.18, 0.198 and 0.178. Model R2 is 0.84, and model variation R2 is 0.08. Hypothesis H1, H2, H3 and H4 are inspected, and hypothesis H is verified.

6 Hypothesis Inspection Result and Suggestions

6.1 Hypothesis inspection result

The following hypothesis inspection results are concluded as per empirical analysis:

6.1.1 The performance management innovation in inspection institutions can exert a positive influence on enterprise standardization construction

The key to ensure the performance management objective of inspection institutions is to change the concept of performance management, especially when facing incomplete performance management content and simple formats in the current inspection institutions, it is requested to further enrich performance management content in inspection institutions, innovate the evaluation mode of performance management, etc., and all these will exert a positive influence on the enterprise standardization construction.

6.1.2 Civil servants for performance management innovation in inspection institutions can exert a positive influence on enterprise standardization construction

In respect of civil servants, the quality level of civil servants is also directly related to the performance objective of inspection departments. The professional ethics level of civil servants, their service level and professional technical level will provide powerful support and assurance for the improvement in the performance of inspection departments. Besides, it can also exert a positive influence on the enterprise standardization construction.

6.1.3 The performance objective for performance management innovation in inspection institutions can exert a positive influence on enterprise standardization construction

It is requested to implement function setup and power configuration in inspection institutions, in respect of the administrative systems, so as to promote the performance management innovation of inspection institutions. Meanwhile, we can effectively realize the performance objective of inspection institutions by improving and perfecting administrative systems and procedures, improving electronic government level, reinforcing performance evaluation and improvement,

and innovating performance management means. Therefore, the performance objective for performance management innovation in inspection institutions can exert a positive influence on enterprise standardization construction.

6.1.4 The performance management innovation systems and mechanisms in inspection institutions can exert a positive influence on enterprise standardization construction

In respect of the innovation systems, it is requested to focus on regroup the administrative procedures in inspection institutions, further reinforce the service and recombination functions of inspection departments, promote the constant improvement of management efficiency in administrative departments, focus on perfecting e-government, constantly improve the administrative service efficiency of inspection departments, and then accelerate enterprise standardization construction, so the performance management innovation systems and mechanisms in inspection institutions can exert a positive influence on enterprise standardization construction.

6.1.5 The organization structure for performance management innovation in inspection institutions can exert a positive influence on enterprise standardization construction

Organization structure will influence the future development of enterprises to a large extent, which requests that the organization structure must conform to the development strategy, and facilitate the enterprise to implement effectively and realize its future development objective. The core problem of organization structure is to solve the operating efficiency of the organization, and the core of organization structure design is coordination and control. Only when we can solve the coordination control of people, property, objects and operation can we successfully implement enterprise standardization construction. Therefore, the organization structure for performance management innovation in inspection institutions can exert a positive influence on enterprise standardization construction.

6.2 Suggestions

The performance management innovation of inspection institutions can improve the standardization level of middle and small-sized enterprises. We can start from the following aspects.

6.2.1 Do a good job in service assurance by focusing on enterprise standard

For inspection institutions, “without companies, there will be no product quality inspection business”, so business service must be the top task of career development. While promoting enterprise standardization construction, we should keep close contact with enterprises, focus on enterprise standardization construction demand, take active measures to give full play to advantages, and do a good job in service assurance practically^[12-13].

6.2.2 Improve product quality by professional capacity

Product quality inspection institutions will provide services for enterprises in daily work and all other aspects based on the inspection range and project. Middle and small-sized enterprises can mutually cooperate in joint product spot check based on advanced inspection equipment and professionals of inspection institutions, to ensure that product quality can be improved^[14-15].

6.2.3 Give full play to the leading role, and improve the overall quality

Quality is the basis of an enterprise, while management is the basis for it to survive. Enterprise is not only the market subject providing products and services, but also the subject responsible of quality improvement[16]. Enterprises and other product quality inspection institutions should give full play to their own advantages, actively organize relevant experts, to carry out “expert and enterprise” activities, provide solutions for enterprises, and help them improve service level and further reinforce market competitiveness^[17].

6.2.4 Promote quality governance by the innovation of technical cooperation

Product quality inspection institutions are the entry point of detection service field and should cooperate with scientific research department of enterprises in joint exploration and research, take active measures in organizing enterprise standardization construction, and guide enterprises to realize great-leap-forward development from “ensuring the percent of pass” to “seeking quality rate”^[18].

7 Conclusion

Enterprise standardization can provide technical

basis for product development, production and manufacturing, and promote the improvement of product quality and the progress of enterprise technology. It is the technical basis to improve enterprise management level and realize scientific management, the effective approach to promote the industry towards middle and high-end level, improve development quality and benefits, and also the technical means to improve enterprise market competition and economic benefits. In order to ensure that enterprise standardization can adapt to the demand of the new situation, and provide better service for enterprise product development, design, manufacturing and sales, we must further enhance the performance management innovation in inspection institutions. Inspection institutions in our country should adhere to independent innovation, constantly improve inspection technologies, improve core competitiveness, industrial credibility and international influence, and create a good image of China quality and China brand under the lead of the strategy of strengthening the state with quality.

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