Research on Competency Model of Chief Quality Officer

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Abstract: Chief Quality Officer (CQO) is a new thing for many manufacturing enterprises in China. There is a gap in how to select and evaluate the competency of CQO. This research investigates the selection and assessment of the chief quality officer of BYD Company. Based on the senior management of enterprises and the expert opinions of universities, using the analytic hierarchy process, 10 secondary indicators are set up from four aspects: post leadership, knowledge and skills, personal characteristics and values. Finally, the competency model of the chief quality officer is constructed. . The model can match the performance appraisal data of BYD's chief quality officer and the scoring situation of experts. It has certain practical value and reference value.

1. Introduction

With the development of science and technology and market economy, product quality has become the core element of market competitiveness of manufacturing enterprises and the evaluation factor of national innovation ability, manufacturing ability and comprehensive national strength. Concern about product quality has long been concerned by domestic and foreign manufacturing enterprises. For example, BYD Company is the first beneficiary of the Chief Quality Officer System. With the help of Shenzhen Quality Promotion Association, BYD Company has established nearly 300 quality management teams and Chief Quality Officer System, which makes BYD's product quality. Quantity has made continuous breakthroughs and successive business orders from Huawei, greatly improving the market competitiveness of BYD's manufacturing products. This study investigates the selection and assessment of the chief quality officer of BYD Company, and combines the expert opinions of enterprises and universities, constructs and improves the competency model of the chief quality officer, with a view to providing reference for the selection and assessment of the quality officer of manufacturing enterprises.

2. Analysis of the Competency of Chief Quality Officer

Building competency model based on post requirement is the inevitable requirement of enterprise transformation and upgrading in the new era, improving the quality and effectiveness of all aspects of work, and also the objective requirement of enterprise sustainable development. In the context of the sustained downturn of China's economy, only by strictly abiding by the quality barrier can enterprises ensure their core competitiveness in the market and grasp the opportunity of transformation and upgrading in the macroeconomic context. BYD is a well-known Chinese automobile manufacturer and substitute factory. It is a typical manufacturer. It has very strict requirements for the quality of products in all sectors of the company. Taking the survey data of BYD as an example, this paper studies the high persuasiveness and representativeness of the chief quality officer of the company.

2.1. Insufficient leadership of the Chief Quality Officer

The chief quality officer is not a quality supervisor who directs the production line. Team leadership and the development of other people's abilities are the primary evaluation elements of this position. But unfortunately, most of the Chief Quality Officers of manufacturing enterprises in China have been promoted from the quality supervision and management positions in the production line. Although they have professional and technical competence, the ability of team

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leadership and development of others is insufficient. Some enterprise chief quality officers are not good at using authorization or incentives to bring the subordinate quality management team to accomplish the task objectives, and rarely express the willingness to cultivate others. It is difficult to provide complete guidance for employees and to tap their potential.

2.2. Chief Quality Officer is difficult to meet job requirements

Due to the short development time of Chief Quality Officer (CQO) in China, some manufacturing enterprises do not even have quality supervision posts, which leads to a certain gap in the talent training of both enterprises and schools in quality supervision and management. The Chief Quality Officer (CQO) is either a part-time technical engineer or a first-line quality supervisor. This leads to the lack of knowledge, skills and management experience of some CQOs, which makes it difficult to meet the post requirements. How to select or cultivate quality officers with professional and technical ability, innovation ability, learning ability and team leadership is also a major problem faced by enterprises.

2.3. Chief Quality Officer's Self-motivation Insufficiency and High Departure Rate

Chief Quality Officers (QOs) often backfire for production safety accidents or product quality problems. The legal liability they face is a major factor in the high turnover rate of the post. However, for enterprises, the main reason for their departure is the shortcomings of the personal characteristics of the QOs. Firstly, the chief quality officer is already in the top management level of the enterprise in quality management. The position-oriented self-drive is no longer suitable for the growth of the position. The change to achievement-oriented requires the chief quality officer's personal interest in quality supervision and management. Secondly, the difficulty of Chief Quality Officer's work is not to find problems in the quality of production, but to maintain patience and resilience, communicate with the company repeatedly on related issues, and urge the company and related units to solve the problems found in quality supervision. Finally, the chief quality officer often looks at things with suspicion and lack of confidence in people and things is the most prominent feature of the position, which also makes some chief quality officers often choose to leave when feedback problems are not solved.

2.4. Chief Quality Officer's Service Awareness and Customer Orientation Awareness are not Strong

The essence of setting up a Chief Quality Officer is to customize quality supervision and management services to individuals or a team. Enterprises hope that the Chief Quality Officer who provides services can be customer-oriented and have a positive sense of service. However, the phenomenon that the service consciousness and customer orientation consciousness of the Chief Quality Officer are not strong still exists. When the Chief Quality Officer finds out the problem of quality supervision and asks some units to rectify, he often only gives the goal of rectification rather than the plan of rectification. When making the plan of rectification, he often neglects the implementation cost of the enterprise, which increases the difficulty of execution of the enterprise.

3. Construction of Competency Model for Chief Quality Officer

3.1. Selection of Competency Model Indicators for Chief Quality Officers

Through the above research on the competency status of the Chief Quality Officer, it is found that the first-level indicators to evaluate the competency of the Chief Quality Officer are leadership, knowledge and skills, personal characteristics and values. In order to determine the secondary indicators of the competency of the chief quality officer, 40 questionnaires on the competency factors of the chief quality officer were distributed to senior leaders, chief quality officers, quality managers and quality managers of BYD Company. The recovery rate of the questionnaires was 100%, as shown in Figure 1.

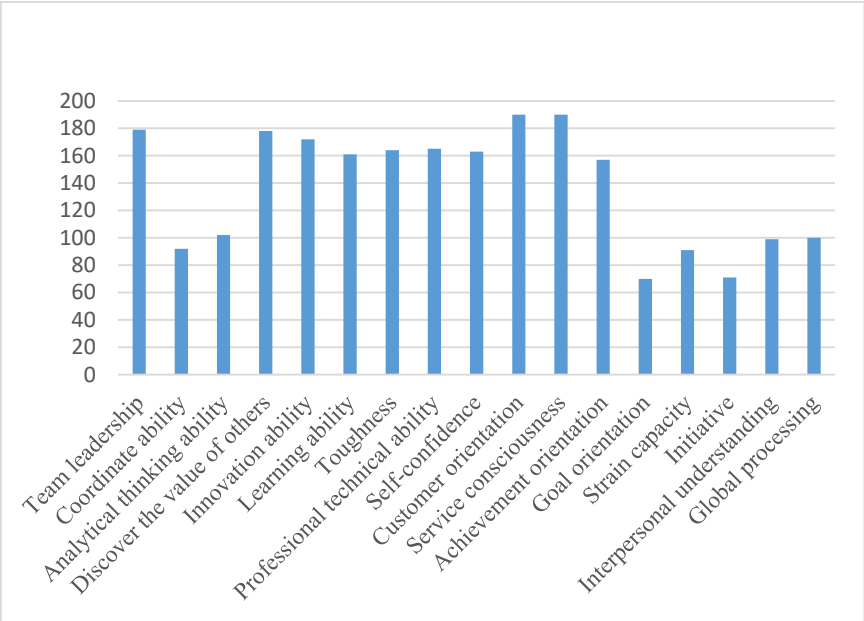

Figure 1 Statistical results of questionnaires

As can be seen from the figure, there are ten main factors to evaluate the competence of the chief quality officer, and the questionnaire scores of these ten factors are higher than 150. Organizational experts categorize these factors and use them as secondary indicators to evaluate the competence of the chief quality officer. The specific results are as follows: team leadership and exploring other people's value belong to leadership; innovation ability, professional and technical ability and learning ability belong to knowledge and skills; tenacity, achievement orientation and self-confidence belong to personal characteristics; Household orientation and service consciousness belong to values. Limited to length, these 10 indicators are omitted in detail.

3.2. Applying Analytic Hierarchy Process to Determine Weights of Various Factors

In this study, firstly, the hierarchical structure of the competency indicators of the Chief Quality Officer (CQO) is established by using the Analytic Hierarchy Process (AHP). The target level is the competency evaluation of the CQO, and the criteria level is leadership, knowledge and skills, personal characteristics and values. Ten factors are the program level, as shown in Table 1.

Table 1 Hierarchical structure of competency model for chief quality officers

Target Layer	Criteria Layer	Program Layer
Chief Quality Officer Competency Model Indicator A	Leadership B1	Team Leader C1
		Developing Others C2
	Knowledge and Skills B2	Professional and Technical Ability C3
		Innovation Capability C4
		Learning Ability C5
	Personal trait B3	Achievement-oriented C6
		Toughness C7
		Confidence C8
	Values B4	Customer-oriented C9
		Service Consciousness C10

After establishing the hierarchical structure of indicators, this study invited BYD senior leaders, chief quality officers, quality managers, quality managers and other experts from 20 universities in Hubei Province to grade them. The results of the scoring excluded the highest and lowest scores of the indicators, and then used the nine-level scale method to combine judgment. Matrix determines the weight of each index. Because of space limitation, the judgment matrix is not listed one by one, only the weight coefficients are listed as shown in Table 2.

Table 2 Weight Coefficient of Indicators in the Competency Model of Chief Quality Officer

Total Indicator A	Primary indicator B	Weight coefficient	Secondary indicator C	Weight coefficient	Weight Coefficient of Secondary Index relative to Total Index
Chief Quality Officer Competency Model Indicator A	B1	0.375	C1	0.667	0.250
			C2	0.333	0.125
	B2	0.157	C3	0.458	0.072
			C4	0.416	0.066
			C5	0.126	0.020
	B3	0.12	C6	0.550	0.064
			C7	0.240	0.029
			C8	0.210	0.025
	B4	0.349	C9	0.750	0.261
			C10	0.250	0.087

In order to evaluate the consistency of weight calculation results, this study defines consistency index CI, as shown in Formula 1, and random consistency marker CR, as shown in Formula 2, when CR is less than 0.1, the judgment matrix satisfies consistency test. RI represents the average random consistency index of the same order matrix, as shown in Table 3. Finally, the results of consistency test for each judgment matrix are shown in Table 4.

$$CI = \frac{\lambda_{max} - n}{n-1} \quad (1)$$

$$CR = \frac{CI}{RI} \quad (2)$$

Table 3 Mean Random Consistency Index RI of the Same Order Matrix

1	2	3	4	5
0.00	0.00	0.58	0.90	1.12
6	7	8	9	10
1.24	1.32	1.1.14	1.45	1.49

Table 4 Consistency Test Results of Judgment Matrix

	λ_{max}	CI	RI	CR
A-B Judgment Matrix	4.169	0.056	0.9	0.062
B1 Criterion Judgment Matrix	2	0	0	0
B2 Criterion Judgment Matrix	3.009	0.005	0.6	0.079
B3 Criterion Judgment Matrix	3.018	0.009	0.6	0.016
B4 Criterion Judgment Matrix	2	0	0	0

The table shows that the CR of each judgment matrix is less than 0.1, which shows that the competency model of the chief quality officer established in this study meets the requirements of consistency test and the index system is reasonable.

4. Research on the Application of Competency Model of Chief Quality Officer

In order to verify the actual effect of the competency model of the chief quality officer, this study validates the actual effect of the model by combining the data of the selection and assessment of the chief quality officer of BYD Company and the anonymous scoring data of 10 experts, such as company leaders and excellent quality supervisors. Experts scored candidate Chief Quality Officer A and candidate Chief Quality Officer B as shown in tables 4 and 5.

Multiplication of expert scoring result matrix and secondary index weight matrix shows that the comprehensive weights of expert scoring for candidate Chief Quality Officer A are (0.087, 0.200, 0.261, 0.261, 0.100), normalized treatment is (9.6%, 22.0%, 28.7%, 28.7%, 11%) and candidate Chief Quality Officer B is (0.261, 0.200, 0.261, 0.261, 11%). 0.250, 0.100), after normalization treatment (24.4%, 18.6%, 24.4%, 23.3%, 9.3%). In contrast, 28.7% of the candidate Chief Quality Officer (CQO) is at the expert level, while only 9.3% of the candidate CQO B is at the expert level; 68.4% of the candidate CQO A is at the intermediate level or above, while 57% of the candidate CQO B is at the intermediate level or above, so A is the chief. The comprehensive competence of

the quality officer is higher than that of B. A should be chosen as the chief quality officer of BYD. In fact, the same is true. In recent years, BYD Executives'performance appraisal results of A and B, A is better than B, which further proves the effectiveness and practicability of the competency model.

Table 5 Statistics of expert ratings for candidate Chief Quality Officer A

Secondary indicators	Unqualified	primary	intermediate	senior	Expert level
C1	0	2	4	3	1
C2	1	2	5	2	0
C3	1	1	4	3	1
C4	2	1	4	3	0
C5	0	1	5	2	2
C6	1	3	4	1	1
C7	1	2	5	1	1
C8	1	3	2	2	2
C9	0	1	4	5	0
C10	1	1	3	3	2

Table 6 Expert Scoring Results of Candidate Chief Quality Officer B

Secondary indicators	Unqualified	primary	intermediate	senior	Expert level
C1	2	1	4	3	0
C2	2	3	3	2	0
C3	1	2	4	2	1
C4	2	2	4	1	1
C5	3	3	1	1	2
C6	2	5	2	1	0
C7	1	2	3	3	1
C8	3	2	2	2	1
C9	2	2	3	2	1
C10	1	3	3	1	2

5. Conclusion

This study investigates the selection of the chief quality officer of BYD Company, and constructs the competency model of the chief quality officer by using analytic hierarchy process and statistical analysis combined with the opinions of experts from enterprises and universities. The model can provide reference for similar BYD manufacturing enterprises in the selection of chief quality officer, but the model also has some limitations. If the model does not include the specific requirements of corporate culture, quality objectives, strategic objectives and so on, it still needs to be adjusted to a certain extent according to the specific situation.

References

[1] Zeng Zhu, Wang Bin. Study on the Influencing Factor of Supplier Quality Engineer Competence: Taking Automobile Manufacturing Enterprises as an Example [J]. Jiangxi Social Science, 2014, 34 (05): 238-242.

[2] Li Jian. Research and development of competency model for quality supervisors in electronic enterprises [D]. Anhui University of Technology, 2013.

[3] Wang Xia, Sun Shilei. Competency model of quality controllers in civil aviation maintenance units [J]. China Safety Production Science and Technology, 2013, 9 (01): 64-69.

[4] Chen Fang, Luo Yun. Competency Model Research of Air Traffic Control Quality and Safety Supervisors [J]. China Safety Production Science and Technology, 2011, 7 (12): 140-144.