

Whole-process Engineering Consulting Services - Research on Evaluation of Competence - Nantong Jianchen Engineering Consulting Co., LTD

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Abstract: At present, with the continuous rapid growth of China's fixed asset investment and the gradual improvement of project construction level, the relatively independent, single and fragmented special consulting mode has been unable to meet the needs of investors or construction units of high quality, high efficiency and low price, and the demand for comprehensive, cross-stage and integrated consulting services is increasing. At the same time, in order to accelerate the development of whole-process engineering consulting services at the government level, relevant departments have issued a series of supporting documents and actively carried out pilot work of whole-process engineering consulting. In this context, this paper takes the whole-process engineering consulting capability evaluation as the research objective, in order to help enterprises find the optimal path for the development of whole-process engineering consulting services. Taking Nantong Jianchen Engineering Consulting Co., Ltd. as an example, this paper firstly introduces the background of the whole process of engineering consulting, and points out the purpose and significance of this research. At the same time, the relevant literature is reviewed and reviewed, and then the ability evaluation system of the whole process engineering consulting service of Nantong Jianchen Engineering Consulting Co., Ltd. is constructed, and the data collected by the questionnaire is analyzed and summarized by this system. Finally, the core improvement strategy of the whole process engineering consulting service of Nantong Jianchen Engineering Consulting Co., LTD. According to the above evaluation results and combined with the actual situation of Nantong Jianchen Engineering Consulting Co., LTD., the corresponding countermeasures for the development of the whole process engineering consulting service are given.

Keywords: Whole-process Engineering Consulting, Ability Assessment, Fuzzy Comprehensive Evaluation.

1. Introduction

1.1. Background of Research

Under the current situation of multiple project management modes in parallel, engineering consulting services are often segmented by different stages and specialties. Various engineering consulting services are taken charge by different consulting institutions, which are only responsible for their own business and seldom consider the extensibility of services and lack the overall control of construction projects from beginning to end, thus dividing the internal connection of the whole construction project (Fu, 2018). To a large extent, the investment efficiency of construction projects is reduced. With the continuous and rapid growth of China's fixed asset investment and the gradual improvement of project construction level, the relatively independent, single and fragmented special consulting mode has been unable to meet the demands of investors or construction units for high quality, high efficiency and low price, while the demand for comprehensive, cross-stage and integrated consulting services is increasing (Pi, 2017).

To sum up, the development of the whole process of engineering consulting is the only way for the development of China's engineering consulting industry, and also the rigid demand for the development of the construction industry, no matter at the level of market demand or policy (Zhang, 2017). In this context, the evaluation and research on the core competence of engineering consulting enterprises in the whole process of engineering consulting is helpful for

consulting enterprises to check themselves and seek the optimal path for the development of engineering consulting services in the whole process.

1.2. Research Problems

Whether in terms of market demand or policy, the development of the whole process of engineering consulting is the only way for the development of China's engineering consulting industry. In this context, the evaluation and research on the whole process engineering consulting capability of engineering consulting enterprises can help consulting enterprises find deficiencies and improve their service capability. Therefore, this paper takes Nantong Jianchen Company as an example to evaluate and study its whole-process engineering consulting service ability, and finally puts forward the strategy of improving its service ability.

1.3. Objective of the study

The main purpose of this paper is to evaluate the whole process engineering consulting capability of engineering consulting enterprises. The specific goals can be divided into three points. One is to summarize the influencing factors of the whole process of consulting service ability, and evaluate the system accordingly. The second is to use fuzzy comprehensive evaluation strategy to evaluate the whole process of Jianchen company's consulting service capability; Third, according to the evaluation results, the strategy of the whole process of Jianchen consulting service ability improvement is proposed.

1.4. Scope of the study

This paper takes the whole-process engineering consulting service as the research object, takes Nantong Jianchen Engineering Consulting Co., Ltd. as an example, and evaluates the whole-process engineering consulting service ability of the company. Firstly, the background, purpose and significance of this paper are expounded. Then, on the basis of literature review, the influencing factors of the whole process of consulting service capability are summarized, and the evaluation system is established accordingly. Finally, the fuzzy comprehensive evaluation strategy is used to evaluate the whole process consulting service capability of Jianchen Company, and the corresponding improvement countermeasures are proposed according to the evaluation results.

1.5. Research Significance

It is beneficial to optimize the efficiency of enterprise management. The integrated management of the whole process of engineering consulting services effectively avoids business segmentation, management fragmentation and other

problems, and effectively improves the management efficiency of the company by strengthening internal coordination and optimizing the organizational management mode. It is beneficial to strengthen the market competitiveness of enterprises. At present, few enterprises are able to carry out whole-process engineering consulting services or have already carried out whole-process engineering consulting services. The countermeasures for the development of whole-process engineering consulting services are studied, so that enterprises can walk in the forefront of the engineering consulting industry and enhance their market competitiveness.

1.6. Theoretical framework

The strategy used in this paper is fuzzy comprehensive evaluation. The evaluation system is established to evaluate the whole process engineering consulting service capability of Nantong Jianchen Company from five aspects: basic conditions, organization and management, teamwork, information application and marketing. The evaluation system is listed below.

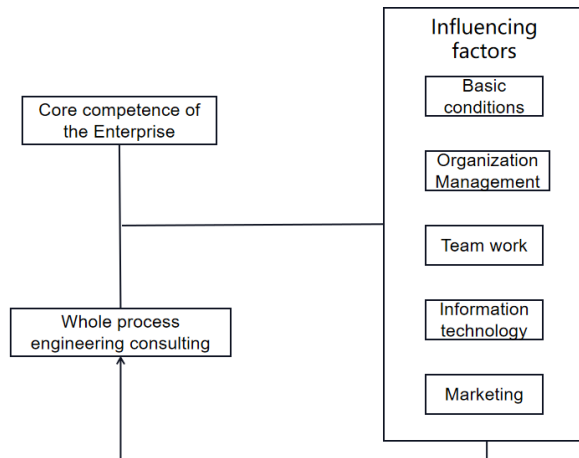


Table 1. Evaluation System

1.7. Hypotheses

Hypothesis 1: Nantong Jianchen Engineering Consulting Co., LTD. 's whole-process consulting service capability is poor due to its poor basic conditions.

Hypothesis 2: Nantong Jianchen Engineering Consulting Co., LTD. 's whole-process consulting service capability is poor due to its poor organization and management.

Hypothesis 3: Nantong Jianchen Engineering Consulting Co., LTD. 's whole-process consulting service capability is poor due to its poor teamwork.

Hypothesis 4: Nantong Jianchen Engineering Consulting Co., LTD. 's whole-process consulting service capability is poor due to the poor application of informatization in its whole-process consulting service capability.

Hypothesis 5: Nantong Jianchen Engineering Consulting Co., Ltd. has poor marketing in its whole-process consulting service capability, resulting in its poor whole-process consulting service capability.

2. Literature Review

Whole-process engineering consulting refers to the broad

engineering consulting, which is the engineering consulting service for the management, organization, coordination, economy and technology of the whole life cycle of the construction project decision making and the implementation and operation of the project(Sun, 2021).When consulting services can meet the "start-to-end" time span of consulting, it is called whole-process engineering consulting (Wang, 2019). The whole process engineering consulting service is an engineering consulting agency or a number of consulting agencies formed a consortium to accept the commission, the completion of the project's preliminary consulting, design consulting, bidding agency and other related services (Hou, 2019). The whole process of engineering consulting services shall cover all stages and whole process of engineering project management consulting services, such as preliminary planning consulting, pre-construction preparation, construction process, completion acceptance inspection, operation warranty, etc (Zhang, 2020).

The whole-process consulting service is of great significance to the development of China's construction industry, which has been elaborated by many scholars.Process consulting service integrates all special consulting capabilities together, gives full play to the overall advantages,

and makes the consulting service reflect better comprehensive value (Xie, 2019). The whole process engineering consulting service can help the owner to better control the project, the implementation of the general contract needs the support of the whole process engineering consulting service (Zheng, 2019). The transformation of the whole process of engineering consulting business is not only to meet the needs of the reform of the construction industry, but also to meet the needs of market development, accelerating the integration of the consulting industry with international standards, and expanding the international market of the consulting industry (Zhao&Gao, 2019). Whole-process consulting services are of great significance in improving investment benefits, breaking barriers, ensuring project compliance, facilitating government supervision, strengthening risk control and prevention, reducing project risks, improving project quality and enhancing industry value (Zhou, 2019). Nie (2020) used fuzzy comprehensive evaluation strategy to evaluate the whole process of government investment project consulting risk.

The application time of whole-process consulting service in China is relatively short, and there are still some problems in practice. Many scholars have studied the existing problems. There are some problems in China's engineering consulting industry, such as low degree of marketization, small competition, certain region and poor independent innovation ability of enterprises (Chen, 2019). The marketization degree of whole-process engineering consulting services in China is insufficient, and the internal management mode of consulting enterprises is not

perfect(Xiao,2020).

3. Research Methods

Mixed study method. Not only the qualitative analysis of the whole process of Nantong Jianchen Engineering Consulting Co., LTD., the establishment of five aspects including basic conditions, organization and management, team cooperation, information application, marketing evaluation system; The fuzzy comprehensive evaluation method is adopted to investigate the internal personnel of Nantong Jianchen Engineering Consulting Co., LTD., the same industry personnel and the personnel receiving the whole process engineering consulting service by means of questionnaire, and to evaluate the whole process engineering consulting service capability of Nantong Jianchen Engineering Consulting Co., LTD. In a quantitative way.

Fuzzy comprehensive evaluation method is based on fuzzy mathematics, the evaluator based on the membership degree theory to the specific things or objects restricted by a variety of factors according to the pre-determined weight method to make a comprehensive evaluation. The randomness, time uncertainty and fuzziness of the evaluated object are replaced by the size of index or score, and a number of indexes are evaluated quantitatively. According to the weight of all kinds of fuzzy, quantified difficult qualitative factors, through the selected method of quantitative calculation, get an accurate numerical representation of the comprehensive evaluation results containing various constraints, make the evaluation results more clear, to solve a variety of uncertain problems.

Table 2. Survey statistics

	Very good	good	generally	poor	Very bad
The whole process of professional consulting ability	0	182	64	70	244
Office equipment supporting degree	41	57	105	233	124
Enterprise qualification level	13	170	122	190	65
Degree of organization networking	108	109	124	33	186
Corporate cultural identity degree	10	10	264	100	176
Reasonable division of labor and responsibility	75	58	61	322	44
The whole process of engineering consulting management system is reasonable	84	49	120	280	27
The whole process of engineering consulting operation is normative	2	10	419	88	41
All professional communication skills throughout the process	90	72	98	202	98
The whole process of professional cooperation consciousness	198	222	81	22	37
Member executive ability	128	220	149	45	18
Leadership process control ability	93	225	191	42	9
Information awareness of team members	91	265	144	41	19
Timely delivery of results at all stages of the whole process	130	178	162	66	24
All stages of the process results submit integrity	29	91	256	119	65
Degree of functional perfection of information platform	274	116	85	53	32
The information platform is easy to operate	32	184	176	102	66
Corporate reputation	78	84	75	202	121
Market share	96	99	102	56	207
Market development ability	34	172	186	102	66
Customer loyalty	175	207	107	37	34

4. Finding and Conclusion

The data in this paper are from questionnaires. In order to reduce the subjective feelings of respondents and ensure the reliability of questionnaires and the accuracy of research results, the author pays attention to the following points: (1) Survey objects. The respondents of this questionnaire are internal staff of G company, staff in the same industry and staff receiving engineering consulting services in the whole process. (2) In order to make the respondents understand the purpose and content of the survey, get their cooperation and support, reduce the subjective judgment of the respondents, and minimize the influence of errors, we first briefly explained the specific survey items of the questionnaire to the respondents; (3) A total of 580 questionnaires were issued and 567 were collected, among which 560 were valid. The results of the survey were calculated and the following statistical table was obtained.

The overall score of the evaluation of competence of the whole process engineering consulting service of Nantong Jianchen Engineering Consulting Co., Ltd. is 3.1479, which is between good and average.

Specifically, the scores of team cooperation and informatization application are high, respectively 3.5328 and 3.5101, which are between good and average. It can be seen that Nantong Jianchen Engineering Consulting Co., Ltd. has done a good job in team building and informatization application. So hypothesis 3 and hypothesis 4 are not valid.

Nantong Jianchen Engineering Consulting Co., LTD. 's score of basic conditions is only 2.5596, which is between unsatisfactory and general, and also the lowest score among the five criterion layers. Therefore, hypothesis 1 is valid.

The score for organization management was 2.6811, also between unsatisfactory and average, and ranked second from the bottom among the five criteria levels. So we know that hypothesis 2 is true.

The score of marketing is 2.8982, which is between unsatisfactory and general, indicating that Nantong Jianchen Engineering Consulting Co., Ltd. has not done enough in terms of market impact. Therefore, hypothesis 5 is valid.

According to the evaluation results, the following conclusions are drawn.

First, we need to stay ahead of the curve in basic conditions. Through model analysis, the basic conditions of Nantong Jianchen Engineering Consulting Co., Ltd. are relatively good, which is consistent with the results of the previous analysis of the whole-process engineering consulting service capability of Nantong Jianchen Engineering Consulting Co., LTD. As a whole-process consulting pilot enterprise in Chongqing, Nantong Jianchen Engineering Consulting Co., LTD., is relatively rich in performance and experience. Nantong Jianchen Engineering Consulting Co., LTD. 's high score in basic conditions is inseparable from the company's continuous investment, which makes the company's service scope cover investment consulting, cost, supervision, project management and other fields, at the same time, various professional qualifications, high credit level. Although Nantong Jianchen Engineering Consulting Co., LTD. 's current basic conditions are good, but the industry is developing very fast, therefore, the company must not lie in the past achievements, but should make continuous efforts to

keep up with the development trend of The Times and the industry.

Second, organizational management is in urgent need of improvement. Nantong Jianchen Engineering Consulting Co., Ltd. has a low score in organization and management, and its ability is relatively poor. When we combine organization and management with team cooperation, it is not difficult to find that the score of team cooperation is 3.5328, ranking the first place. The scores of the two closely related criterion layers are indeed quite different. It may be that the large scale of Nantong Jianchen Engineering Consulting Co., Ltd. leads to the "big company disease", which affects the efficiency of the company's organization and management. At the same time, this also confirms the above analysis of Nantong Jianchen Engineering Consulting Co., LTD. 's whole-process engineering consulting service capability. Although Nantong Jianchen Engineering Consulting Co., Ltd. has strong strength in many professional fields, it is not closely connected with each other and lacks the integration of internal resources, which leads to the low organizational management. It can be seen that Nantong Jianchen Engineering Consulting Co., Ltd. needs to make more efforts in organizational management, especially in the integration of internal resources, and make up for this shortcoming as soon as possible.

Third, teamwork has been strengthened. The team cooperation score of Nantong Jianchen Engineering Consulting Co., Ltd. is the highest among the five factors, indicating that Nantong Jianchen Engineering Consulting Co., Ltd. is relatively good in team cooperation, which is inseparable from the talent reserve strategy of the company. After the development of the New Year, Nantong Jianchen Engineering Consulting Co., LTD., has reserved more professional talents for each specialty. This lays a talent foundation for efficient team cooperation in the project implementation process; In addition, thanks to the company's abundant projects, the team members constantly exercise and improve themselves in the process of project implementation, and also enhance the team's ability of division of labor and cooperation in practice. Nantong Jianchen Engineering Consulting Co., Ltd. still needs to constantly innovate, make persistent efforts, constantly strengthen team building, enhance team cohesion.

Fourth, information construction is urgent. Nantong Jianchen Engineering Consulting Co., Ltd. temporarily lags behind leading enterprises in informatization application, which is related to the lack of attention to informatization application of Nantong Jianchen Engineering Consulting Co., LTD. The application of information technology can solve the problems of numerous business processes and low information transmission efficiency for the whole process engineering consulting service, and eliminate the cost increase caused by the information asymmetry of the parties involved in the construction, so as to realize the comprehensive integration of the project. In addition, China's well-known leading enterprises attach great importance to the application of information technology, such as the research and development and application of big data, cloud computing, blockchain technology, information management platform, BIM and other related technologies. The application of the above emerging technologies provides important support for leading enterprises to maintain the lead. At the

same time, all walks of life are committed to the intelligent application of big data. Therefore, Nantong Jianchen Engineering Consulting Co., Ltd. should follow the trend of The Times, invest more manpower, material resources and financial resources in the application of information technology, improve its work efficiency in the whole process of consulting service, and reduce the cost increase caused by information asymmetry. We should actively cope with the competition brought by the head enterprise entering Chongqing market in the future.

Fifth, marketing still needs to improve. Nantong Jianchen Engineering Consulting Co., LTD. 's marketing ability is slightly inadequate, the main reason may be related to the nature of state-owned enterprises. State-owned enterprises are facing various restrictions in operation, and the market flexibility is slightly insufficient, which affects the marketing and promotion of the company to a certain extent. Therefore, Nantong Jianchen Engineering Consulting Co., Ltd. should actively explore, continue to make efforts in marketing, explore diversified marketing mode, improve their market development ability.

5. Recommendation

Nantong Jianchen Engineering Consulting Co., Ltd. has established the organizational structure of the whole process engineering consulting team according to its existing organizational structure and the characteristics of the whole process engineering consulting service.

At the present stage, Nantong Jianchen Engineering Consulting Co., Ltd. in the development of the whole process of engineering consulting process, to do market-oriented, constantly enhance their own marketing ability. First of all, ideological attention to marketing, do not have "wine is not afraid of the alley deep" backward thought; Secondly, it adheres to the market-oriented strategy and is based on market demand information, such as consumer demand, service quality demand and supply demand, and carries out reasonable design and planning according to the actual situation of the company, and makes corresponding marketing strategies, so as to meet the needs of customers for the whole process of engineering consulting.

According to the problems feedbacks from users in the use process, targeted development of information service functions is carried out. At present, Nantong Jianchen Engineering Consulting Co., Ltd. has insufficient investment in the construction of the whole process of engineering consulting information platform, so it is necessary to actively increase the investment and gradually increase the investment in the construction of information platform in a planned way. At the same time, it is also necessary to increase the investment in the training of talents in the whole process of engineering consulting informatization, to invest in talent training and information technology research and development in a planned way, and effectively improve the construction of the service function of the whole process of

engineering consulting informatization.

Teamwork is crucial to the whole process of engineering consulting. In order to solve the problems of delayed information transmission and delayed project construction caused by independent operation of each profession, improving the communication and cooperation ability of the whole process of engineering consulting team is an important means to break barriers and improve efficiency.

In order to improve the whole-process engineering consulting service ability, enterprises need to have diversified application talents, such as cross-type professionals in technology, economy, management and other fields, so as to meet the needs of the future market.

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