Research on the Development Strategy of Engineering Cost Consulting Industry under the "Internet +" Background

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Abstract: With the rapid development of big data, artificial intelligence, cloud computing, and computer network communication technology in the new era, it will become possible to build a unified national engineering cost consulting information platform. Under the "Internet +" background, the development opportunities and challenges of the engineering cost consulting industry coexist. The article introduces the development opportunities of the industry and analyzes the problems and challenges in the development process. It proposes countermeasures in terms of improving services and improving the industry's integrity system; improving organization and strengthening the standardization of the industry; cultivating talents to form the core competitiveness of enterprises; strengthening management and building an enterprise engineering cost case library; using new technologies, changing working models, and improving service levels. These suggestions is to promote sustainable development of the industry.

1. Introduction
In popular understanding, "Internet +" means "Internet + major traditional industries". However, this is not a mechanical and simple addition, but a full use of the current advanced information technology tools and Internet information platforms, innovative development concepts, docking the new era of Internet technology with traditional fields, and achieving deep integration. "Internet +" is not a subversion of traditional industries and fields, but is an endowment of advanced technology elements, achieving upgrading, especially the innovation of traditional consulting and service industries.

Engineering cost consulting, as a traditional intelligence service industry plus the Internet, what will the results be? The electronicization of various quota specifications, the network of project pricing groups, and the systemization of the inquiry process will surely achieve the assistance, standardization and rigor of various work processes. It is a typical engineering construction project feasibility study, survey, design, construction, The entire process of completion acceptance and post-evaluation, a platform that integrates safety, quality, schedule, all elements of cost, multi-dimensional and dynamic task assignment, communication, and collaboration. This is an important subject worthy of research and exploration by practitioners, and it will certainly bring huge opportunities and challenges to the industry.

2. Development Opportunities of Engineering Cost Consulting Industry under the "Internet +" Background

2.1 Globalization, whole process, and refined cost consulting have become new requirements for the development of the industry
At present, the process of economic globalization is accelerating, and the trend of world economic integration is becoming increasingly apparent. The globalized engineering and construction market is increasingly forming. It is a large-scale enterprise in various countries to invest and build businesses abroad, contract business, and seek markets worldwide. The inevitable choice of the group. Correspondingly, different political, economic, and management environments have brought huge additional risks to investors and project contractors; inconsistent standards and regulations in various countries, imperfect engineering insurance systems, and frequent fluctuations in the international currency market 2. The lack of comprehensive project management talents has troubled all project construction participants. All participating entities urgently need comprehensive engineering consulting companies that understand international practices and are proficient in international engineering project consulting business to provide business consulting and services[1].

Moreover, following the analysis from the perspective of the construction unit, its own management methods, management methods, and management levels have not been continuously improved, and the requirements for the entire process and refined service of consulting companies have become increasingly strict. The traditional fragmented and single extensive engineering cost consulting model has completely failed to meet the requirements of the demand subject. The demand for full-process, systematic, precise, and full-factor engineering cost consulting is increasing day by day, and it is worn in project feasibility analysis, survey design, bidding The whole process of construction, installation, completion acceptance and post-evaluation, and "process control, element management, dynamic tracking" are the objective requirements of most owners. Optimizing engineering design, budget estimates for specific investment projects, achieving precise construction drawing budgets, strict engineering changes, fine project claims, step-by-step optimization, and layer-by-layer checks are all new businesses for new-generation engineering cost consulting companies.

2.2 BIM technology, cloud computing and big data have become new driving forces for industry development

The informatization of engineering cost consulting is the general trend of the development of the industry, which provides development convenience for enterprises such as micro market entities, and is also an objective requirement of macro management by governments at all levels and industry authorities. At the micro level, the enterprise and the micro subjects of each project make full use of modern information technology, computer and network technology to collect, obtain, arrange, process, store, transfer and use the engineering cost information of each link and each subject to achieve the engineering cost. The whole process and all-factor management are scientific, refined and standardized to improve the efficiency and quality of engineering cost consulting.

At the same time, the advent of the era of big data and the widespread use of BIM technology have further enriched the connotation of engineering cost consulting informatization. Big data provides strong support for the construction of cloud cost. Through big data, various types of original cost data are accurately identified, automatically classified, scientifically stored and dynamically updated, and analysis reports and development trends are displayed in the form of pictures and visualization. Realize intelligent cost data. BIM technology integrates the entire process, main body and all elements of the construction project into a whole through the model, and implements linked management. The data of each module integrated by cloud computing and cloud cost can be fully coordinated with the BIM system to ensure the dynamic adjustment, precision and precision of the entire BIM data[2]. The promotion of big data technology, cloud computing, and BIM technology has opened a new era of engineering cost consulting services and injected new impetus into the development of the industry.

2.3 Prefabricated, “One Belt, One Road” policy, becoming a new space for industry development

The prefabricated building structure form is a new model of the current construction industry, which has obvious construction period advantages, and is very beneficial for saving resources and protecting the environment. However, the high cost and difficult control have hindered the rapid development of
prefabricated buildings to a certain extent. Compared to the traditional cast-in-situ construction model, the prefabricated building has immature construction technology, incomplete standards and specifications, and unclear laws and regulations. The various consumption quotas are not specific, and the traditional engineering cost valuation model cannot estimate its cost, nor can it achieve effective control and process management. For the implementation of prefabricated buildings, customers now require more sophisticated and professional engineering cost consulting companies to serve them, especially in the areas of building material preparation, prefabricated processing of prefabricated components, transportation hoisting, and installation in place. High requirements.

The proposition and implementation of the “Belt and Road” policy has further accelerated the pace of internationalization and globalization of the construction industry. Correspondingly, as an engineering cost consulting company that provides consulting services for the construction industry, it has also ushered in new development opportunities, going abroad, and constantly expanding overseas markets along the line. The countries along the “Belt and Road” are generally backward in infrastructure and basic construction, and their development is not balanced, and the contradiction between supply and demand is still relatively prominent. In a certain period of time, China’s engineering cost consulting enterprises have provided a broad business space for “contending for market and going global”. Another business growth point of the engineering cost consulting industry[3].

3. Problems and challenges in the engineering cost consulting industry under the "Internet +" background

3.1 The scope of consulting services is narrow and the quality of consulting results documents is generally low

Regarding various external environment and engineering cost consulting enterprises' own conditions, most consulting agencies still regard the preparation of construction drawing budgets, engineering quantity lists, bidding control prices, and review of project settlement as their main business. In recent years, the amount of investment in engineering construction projects has gradually increased. Compared with the determination and control of engineering costs throughout the entire life cycle, various consulting services in the implementation stage have short time and small investment, and the income and profit are not low. Therefore, the service scope of many engineering cost consulting enterprises mainly focuses on the preparation of construction drawing budgets, construction quantity lists, bidding agents, and settlement review[4]. In terms of the quality of consulting results, in order to save costs, many consulting companies arrange college graduate interns, trainees and inexperienced costers to complete the consulting business. Some companies even lack sufficient technical power, service equipment, and office space. The consulting business was subcontracted to the “studio” to complete. There was no “three-level” review staff to check, resulting in a generally low quality of consulting service results.

3.2 Limited technical methods for engineering cost consulting services

The characteristics of long construction period, large number of participants, and complex influencing factors determine the complexity of the engineering cost consulting business. Objectively, cost practitioners are required to continuously learn, innovate concepts, and improve working methods. At present, most engineering cost consulting enterprises are limited to subjective and objective reasons, and for increasingly complex cost consulting business, cost management is still conducted by means of preparing bidding control prices, construction drawing budgets, reviewing project budgets, and settlement. Other more advanced and complicated technical methods are not enough involved, such as BIM technology, determination and control of the cost of the whole process and life cycle, technical and economic analysis and demonstration in the early stage of the project, and claim control and management during the project implementation process[5]. In the long run, it is difficult to ensure the
cost control effect in the early decision-making phase, design phase and construction implementation phase of the project.

3.3 Few case summaries and lack of case data base
From the perspective of the current engineering cost consulting market, only a few large-scale engineering consulting organizations make reasonable determination and effective control of the life-cycle cost, and provide a true full-process cost consulting business. This small number of enterprises have the ability to systematically summarize the existing engineering construction project cases in a timely manner, compile them into typical engineering cases, and establish their own database of engineering consulting cases. In addition, the business of most engineering consulting companies involves only a certain link or stage of an engineering construction project, and some are only a small part of a certain stage. Its specific business is limited to the preparation of construction drawing budgets, bills of quantities, and the preparation and review of project completion settlements, while other life-cycle and full-process cost consulting services, such as investment estimation at the feasibility study stage and design in the design stage Estimates, contract management during construction of the project, on-site visa claims, and analysis of project investment effects involve less. In this kind of operating situation, most of the engineering cost consulting companies are unable (of course, not capable) to analyze and summarize the existing engineering construction project cases, and cannot form their own typical case base. Under the background of the bill of quantities valuation, it is seriously restricted with the development of scale, high-end and modernization of engineering cost consulting enterprises.

3.4 The frontier theoretical research of the engineering cost consulting industry is less and the market is less sensitive
For a long period of time, engineering cost was limited to its various conditions and the vicious competition in the market. The cutting-edge theory, cutting-edge methods, and research on engineering cost consulting were weak. We are unable to provide high-quality consulting service products. Under the traditional pricing model, the business of most engineering cost consulting companies is mainly focused on auditing of project budgets and project completion settlements. The pricing quotas, calculation rules, and price information issued by the competent construction department are the main basis of these traditional businesses. Engineering cost consulting units only need to perform relatively simple and pure statistics and accounting work. These tasks can be operated only on the basis of understanding of quota rules and specifications. Their technical content is not high, the amount of information is small, the method is relatively simple, and the service process is relatively fixed. Therefore, the integration of engineering cost practitioners The requirements for capacity and business level are also relatively low.

In recent years, with the implementation of the bill of quantities pricing model, pricing methods are increasingly in line with international standards, new theories, new methods, and new rules continue to emerge. Investment entities in the capital construction sector have become increasingly diversified. The investment consciousness has been further strengthened, coupled with the increase in the pricing power of the contract parties, the endless stream of new materials and new technologies in the construction field, rapid market changes, and the rapid development of advanced information technology. Demand is getting stronger. The technical requirements and service levels of services are also getting higher and higher. Scientific, systematic and high-tech engineering project management solutions and engineering consulting products are urgent needs of most project owners and contractors. This undoubtedly raises urgent and complex new topics for the engineering cost consulting practitioners, and requires the engineering cost consulting industry to carry out systematic, specialized, and long-term development research, analyze the new situation, propose new solutions, and provide new products. To carry out this work, objectively requires engineering cost consulting enterprises and their employees to deeply understand advanced engineering valuation rules, master cutting-edge project management theory, be proficient in relevant contract terms and contracting conditions at
home and abroad, and develop and use advanced information technology. Means, scientifically and systematically designing work processes and scientific and reasonable market research feedback systems. The current engineering cost consulting market and engineering consulting companies, even some franchised large companies and large groups, rarely consciously carry out this project, and most engineering consulting companies simply do not have the ability to carry out this work independently. Severely restrict the development of the engineering cost industry[6].

4. Development countermeasures of engineering cost consulting industry

4.1 Improve service and improve industry integrity system

The engineering cost consulting industry is a typical intermediary service industry. The integrity of enterprises and their employees in the practice process is directly related to the service quality of engineering cost consulting. First, we should establish a corporate credit information release mechanism. China Construction Engineering Cost Management Association should timely supervise and improve the release mechanism of corporate credit information, use multiple platforms for supervision, disclose the results of integrity checks in a timely manner, update corporate credit information, improve the level of industry supervision and management, and strengthen integrity construction efforts. Establishing an enterprise credit information release mechanism can effectively solve the problem of market information asymmetry between the client and the commissioned party, increase the dishonesty cost of the engineering cost consulting enterprise, and have a better restraint on the misconduct of the enterprise. Second, establish a personal credit file for consulting firms. As a cost engineer of engineering cost consulting practitioners, its credit file is an important manifestation and effective proof of personal credit status, which is an important basis for the client to choose an employment target. More importantly, the establishment of personal credit files for engineering cost consulting practitioners can encourage and promote employees to strengthen the concept of good faith, strengthen the sense of credit responsibility, and carry out civilized practice, which is conducive to purifying the engineering cost consulting market environment. Third, strengthen supervision and management of engineering cost consulting agencies. Engineering cost consulting enterprises are part of the main body of the market economy, and profit is their innate instinct. It is necessary to strengthen supervision and management. Comprehensive use market, economy, law, and even necessary administrative methods to severely punish bad behaviors and purify the market; establish and improve market supervision mechanisms. Through reasonable, scientific and sound supervision. Ensure the implementation of various specifications, strengthen the company's own strength, and actively and orderly participate in market competition.

4.2 Improve organization and strengthen industry standardization

With the promulgation and implementation of the "Bill of Valuation for Engineering Quantity List" and the further deepening of the reform of engineering cost management, the standardized construction of engineering cost is obviously particularly important. First of all, it is necessary to strengthen the organization and construction. The Construction Cost Management Association should set up a standard construction committee or a standard department to make overall arrangements for standard construction and management. Compared with other ministries, industry associations and professional committees, China Construction Engineering Cost Management Association currently only has five functional departments, including the office, research information department, education and training department, qualification registration department, and journal editing department. There is no standard department. Regulations, quality specifications and other tasks are completed by the Qualification Registration Department. The China Construction Engineering Cost Management Association can learn from the relevant experience of the Chinese Institute of Certified Public Accountants and the China Assets Evaluation Association to strengthen the organization and establish the Standards Department. It is necessary to formulate an industry standard system for engineering cost consulting as soon as possible. Although the engineering cost consulting industry has established
industry standards such as the "Code of Conduct Practice for Engineering Cost Consulting Units" and other standards, compared with other industry associations, its multi-level standard system needs to be improved. It is necessary to promptly and actively revise the old standards and formulate new standards. While further improving the engineering cost consulting industry standards, it is recommended to speed up the formulation of new standards, such as "Construction Cost Terms Standard" and "Construction Engineering Cost Consulting Specifications" to further standardize the terms and meanings in the field of engineering cost and unify the engineering cost The expression form of the outcome document, archival standards, and quality requirements for practice. Actively carry out standard publicity and training; prepare and publish samples of standard compilation in time. China Construction Engineering Cost Management Association should actively do standard training and publicity work, and guide local and professional committees to implement policies and standards[7].

4.3 Cultivate talents and form core competitiveness of enterprises
Talent is the core of enterprise development, and so is the engineering cost consulting enterprise. Facing the great changes in BIM technology, the assembly structure system and the great background of “One Belt, One Road” going global, and the popularity of advanced technologies such as cloud cost and big data, the task of talent training in the engineering cost consulting industry is very arduous and time is very urgent. The engineering cost consulting industry must continue to do a good job in traditional engineering construction consulting business, but also needs to take the initiative to respond and actively participate in the new technological changes in engineering construction. The whole process, refinement, internationalization, and dynamics are the new era of engineering cost consulting. New requirements. Especially with the active promotion of the “Belt and Road” initiative, the engineering cost consulting industry is becoming increasingly international, and it is urgent to be proficient in various advanced technologies, familiar with engineering quotas, pricing models, pricing methods, laws and regulations of high-end engineering cost talents in countries along the route. The development of business and the growth of enterprises are inseparable from talents; it is very important to have a deep understanding of the development situation of the engineering cost consulting industry and to train and reserve talents in a targeted manner[8]. Only with the guarantee of talents can the core competitiveness of an enterprise be gradually formed and stabilized, and the engineering cost consulting enterprise can develop steadily in the competition.

4.4 Strengthen management to build a database of enterprise engineering cost cases
Management of engineering cost consulting enterprises is a delicate project. To achieve an orderly and efficient operation of the enterprise, it is necessary to strengthen the standardized and systematic management of various elements and strengthen the accumulation of data, data, and cases. Traditional engineering cost consulting mode, companies are too busy with specific budget preparation, inventory preparation, project completion settlement, auditing, etc., have no ideology, and no human, material, and financial resources to collect, summarize, and organize the original data of completed projects, Excavation and analysis to form a cost analysis report and index system with its own characteristics. In particular, the price information of building materials, the growing development of the construction market, various new structures and new accessories change with each passing day, and their prices change frequently. According to the survey, many online companies have collected a large amount of material price information and tried to monopolize the material price data market, which is obviously not conducive to the development of engineering cost consulting enterprises.
Therefore, under the "Internet +" background, engineering cost consulting enterprises should summarize the experience and lessons, and take the reasonable determination and effective control of engineering costs in the whole process as the core, cooperate with all construction participants, and strengthen the collection of the entire process and all-factors engineering cost data. Organize and standardize work. Comprehensively integrate technical and economic data of project feasibility analysis, survey and design, bidding, construction and installation, completion and acceptance, etc., to
form organic "four calculations and two prices" price information; systematic and information on scattered and isolated fragmented cost data. To form an enterprise-specific case information database. The analysis and integration of project characteristics, engineering cases, and cost information are important and fundamental tasks for engineering cost consulting companies to occupy the market. A qualified consulting company may consider establishing a cost research department to carefully organize and form a system; promote the effective communication and sharing of enterprise engineering cost data and case information, provide strong information support for enterprises to expand their businesses and occupy the market, and give play to their commercial value [9].

4.5 Use new technology, change working mode and improve service level

At present, the construction field is undergoing huge technological changes. The application of BIM technology, the promotion of prefabricated structural systems, and the implementation of typical information technologies such as cloud computing and mobile platforms have provided extremely favorable conditions for the rapid development of engineering cost consulting enterprises. The traditional model of "seeing the picture and calculating the amount of money" will be replaced by the platform of "measurement and visualization" to realize the "full process, all elements, and experiential" cost consulting service; it has been largely ensured by the experience of cost engineers. The accuracy of the calculation of engineering quantities will become history, and information technology can realize the situation of "zero deviation" in engineering measurement results. The successful development of BIM cost consulting software will inevitably bring many conveniences to the industry. Project cost consulting enterprises must recognize the situation, strengthen learning, consciously use, accumulate various technical problems in the process of graphical measurement of engineering cost, and change the measurement method; conditional consulting companies can strengthen research and development capabilities and jointly develop with software development companies BIM cost management software[10]. Change thinking, innovative ideas, they boldly apply new technologies, and apply new technology applications to pre-project evaluation, survey and design, bidding, contract management and other links, and truly realize the transition from "passive to active", "before, during. "After the event" cost management throughout the process to improve the level of engineering cost consulting services.

The great new era has created great opportunities and put forward higher requirements. In the context of "Internet +", engineering cost consulting enterprises should recognize the situation, seize opportunities, strengthen management, face it actively, make full use of advanced information technology, realize the deep integration of "Internet +" and "engineering cost consulting", and realize the industry Healthy and sustainable development.

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