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# Project cost + integrated cooperation path with project management in the new era

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## **Abstract**

With the total cancellation of cost qualification in China, the first batch of private engineering cost consulting enterprises generally established around 2000 ushered in a watershed: the market entered the era of "no threshold", and fierce price competition made enterprises either eliminated or embarked on the new track of comprehensive cooperation. "Engineering cost +" is a strategic idea formed in 2020, and it is also a new attempt for consulting companies to seek project management in the new era, which brings some new ideas to the industry integrated project delivery. This paper discusses how China's engineering consulting industry steps out of the path of international quality improvement, comprehensive cooperation and high quality development from three aspects: the ideological origin of "engineering cost +", product formation, practical application and inspiration.

## **Keywords**

Engineering cost +, project management, integrated collaboration, project delivery

## **1 Introduction**

In recent years, China's engineering consulting industry has ushered in several major changes: The cost qualification is completely cancelled, the budget quota is no longer issued, the double "60 cancellation", "the whole process of engineering consulting has become the mainstream trend", etc. In this context of market transformation, traditional cost consulting enterprises need to emancipate their minds, timely transformation, and break the thinking boundary of cost engineers. Only in this way can they withstand the wind and waves in the fiercely competitive market environment, based on this, The strategic thought of "engineering cost +" came into being, and "engineering cost + project management" has also become a new attempt of integrated project management cooperation in engineering consulting enterprises in the new era.

## **2 The idea of "project cost +" originated**

### **2.1 Development history of engineering consulting industry in China**

Engineering consulting has a history of more than 100 years in the world. With the reform and opening up, the concept of engineering consulting was introduced into China. Today, many engineering consulting companies came into being, in line with the trend of social and times development. The development of China's engineering consulting industry can be roughly divided into four stages.

### *2.1.1 Before reform and opening up*

In the nearly 30 years from the founding of New China to the reform and opening up, China only had the concept of engineering survey and design, but no concept of engineering consultation. The preliminary work of all construction projects is almost undertaken by different forms of project preparation institutions, and part of the preliminary work of a few special projects is commissioned by the construction unit to complete the survey and design unit of the professional counterpart. Project construction management is mainly implemented by sending "Party A representatives" to the construction site.

### *2.1.2 Reform and opening up to the 1990s*

The emergence and rise of the engineering consulting industry in the modern sense of China began in the early 1980s. On the one hand, with the entry of foreign capital, especially the projects using loans from the World Bank, the Asian Development Bank and other international financial organizations, it is stipulated that the project must be reviewed and approved by qualified engineering consulting institutions before signing the loan agreement, which is a mandatory evaluation, so that China will relax policy restrictions and allow international engineering consulting institutions to enter the domestic market. On the other hand, in the implementation of the construction industry and construction management system reform at the same time, in order to strengthen the preliminary work of the project to improve investment efficiency, on the basis of learning from foreign experience, gradually formed the first consultation, then decision-making system. During this period, China began to set up its own engineering consulting institutions, but the engineering consulting tasks were mostly focused on the demonstration of the preliminary project.

In August 1982, the State Planning Commission (now the National Development and Reform Commission) established the China International Engineering Consulting Company, and then provinces, autonomous regions and municipalities directly under the central government have set up more than 40 provincial engineering consulting companies under the centralized management of the National Development and Reform Commission, specializing in the preparation and evaluation of project proposals, feasibility study reports and other investment consulting services in the early stage of project construction. After that, engineering supervision, bidding and other related consulting services were also born.

### *2.1.3 The 1990s to the 21st century*

In the early days of reform and opening up, the engineering consulting business that was separated from the government mostly belonged to the pre-project demonstration. It was not until 1992 that the national industrial policy explicitly included engineering consulting in the service industry. After 1992, with the gradual implementation and improvement of the project bidding system and the construction project consulting system, the engineering consulting industry has been developing rapidly, and the engineering consulting market in China has been expanding and becoming standardized. Engineering supervision, technical consulting, cost consulting and other different professional engineering consulting institutions have developed rapidly. The industrialization of engineering consulting and the marketization of engineering consulting institutions have been significantly accelerated, the scale of the industry has been significantly expanded, the quality of personnel has been continuously improved, and the quality and level of service have been steadily improved. In general, through nearly 30 years of development, the engineering consulting industry has formed a certain scale, trained a strong talent team, and played an important role in the national economic construction. However,

compared with the development history of the engineering consulting industry in developed countries, China's engineering consulting industry is still in the growth stage.

#### *2.1.4 Since 2010*

In February 2010, the National Development and Reform Commission issued the Notice on Issuing the Outline of the 2010-2015 Development Plan for the Engineering Consulting Industry (No. 264 of Development and Reform Investment [2010]) as a guiding document for the development of the engineering consulting industry during 2010-2015. Further clarify the guiding ideology, principles, objectives and main tasks of the development of engineering consulting industry, establish and implement safeguard measures, focus on solving the key problems restricting the development of engineering consulting industry, vigorously promote the development of engineering consulting industry, and better play the important role of engineering consulting in promoting economic and social development.

On February 21, 2017, the "Opinions on Promoting the Sustainable and Healthy Development of the Construction Industry" issued by The General Office of the State Council (2017) No. 19) proposed to cultivate the whole process of engineering consulting institutions. Therefore, for the engineering consulting industry, this is both a challenge and an opportunity. The challenge lies in the further liberalization of the marketization of the engineering consulting industry, the increasing requirements of investment subjects and governments on consulting services, and the need for engineering consulting institutions to be calm; The opportunity lies in the fact that with the increasing risk and responsibility of investment decision-making, the multi-faceted and multi-angle participation of the engineering consulting industry is more needed, and more opportunities are given to engineering consulting institutions to innovate and develop.

## **2.2 Current situation of engineering consulting industry in China**

At present, the scale of China's engineering consulting industry is expanding day by day. With the increasing standardization and gradual improvement of national policies and regulations, the role of engineering consulting industry in engineering construction has gradually emerged, and the degree of attention has been continuously improved. However, compared with developed countries, China's engineering consulting industry started late, the foundation is weak, the overall development level and the requirements of rapid economic and social development are not fully adapted to the problems restricting the development of the industry is still more prominent: on the one hand, the engineering consulting industry covers a wide range of content. Due to the particularity of the construction industry, a large number of participants increase the difficulty of organization and management, form a barrier of information and resources, and reduce the coordination and cooperation between different participants. Meanwhile, due to the lack of performance and experience, owners can only be provided with "fragmented" consulting services, which affects the efficiency and quality of construction projects. On the other hand, the whole society has insufficient understanding of engineering consulting. The concept of engineering consulting is vague, which is inconsistent with the internationally accepted idea of providing the whole process service for investment and construction. The lack of complementarity and testing of different professional work contents increases the risk of project implementation; At the same time, the sustainable development ability of engineering consulting units needs to be strengthened, the motivation for innovation is insufficient, the quality of consulting services needs to be improved, the lack of high-end talents, the inflexibility of the system and mechanism, the lagging information construction, and the low level of internationalization.

At present, China is at a critical stage of building a moderately prosperous society in an all-round way. The process of industrialization, IT application, urbanization, marketization and internationalization is accelerating. Institutional reforms in investment and administrative management are gradually deepening. Putting people first, balancing urban and rural development, regional development, economic and social development, harmonious development between man and nature, domestic development and opening up to the outside world, and achieving comprehensive, coordinated and sustainable economic and social development are more prominent requirements. This has brought important opportunities for the engineering consulting industry, but also put forward higher requirements, accelerate the innovation and development of the engineering consulting industry more urgent.

Therefore, the implementation of consulting project management comprehensive cooperation is the current social and industry development needs. The comprehensive cooperation of consulting project management is an important measure to improve the level of engineering construction management, enhance the concentration degree of the industry, ensure the quality of the project and investment efficiency, and standardize the order of the construction market. At the same time, it is also an inevitable requirement for China's existing investment consulting, survey, design, supervision, cost, construction and other enterprises to adjust their business structure, plan transformation and upgrading, enhance comprehensive strength, and speed up integration with international construction management services.

### **2.3 "Project cost +" came into being**

Since 2019, China's engineering cost consulting industry has ushered in several rounds of major changes: National Development and Reform Commission and Ministry of Housing and Urban-Rural Development "Guidance on Promoting the Development of Whole Process Engineering Consulting Services" (Development and Reform Investment Regulations) [2019] No. 515 proposed that "The whole process of engineering construction consulting services should be implemented by a consulting unit with comprehensive capabilities. It can also be jointly implemented by a number of consulting units with different capabilities such as bidding agency, survey, design, supervision, cost, project management... In line with the principle of credibility and reliability, comprehensive ability and efficiency priority, select excellent teams to implement the whole process of project construction consulting according to law "; The "Project Cost Reform Work Plan" issued by the Ministry of Housing and Urban-Rural Development on July 24, 2020 proposes to "cancel the provision that the maximum bid limit price is priced according to the quota, gradually stop issuing budget quotas, and guide construction units to compile and determine the maximum bid limit price according to the project cost database, cost index index and market price information"; "Notice of The State Council on Deepening the reform of 'Separation of Licenses and Licenses' to Further Stimulate the Development vitality of Market players" issued by GuOFa [2021] No. 7 clearly states that "from July 1, 2021, the approval of cost qualification will be officially canceled nationwide, which means that the cost qualification will be completely canceled, and the competition of cost consulting enterprises will enter the credit era..... In the era of "no threshold" in the market, the fierce price competition makes enterprises face a huge impact, either to gradually launch the market in accordance with the old, or to reform and create a new blue ocean. Under this background, "engineering cost +" came into being and gradually matured.

## **2.4 The significance of "project cost +" to the comprehensive cooperation of project management**

"Engineering cost +" emphasizes breaking the thinking boundary of cost engineers, improving the integrated delivery ability of project management, and realizing the optimal allocation of resources.

Under the concept of "project cost +", the implementation of comprehensive project management cooperation, first, the practical needs of green development of construction projects, is conducive to solving the conflicts of project stakeholders, creating a working environment that seeks common ground while shelving differences, maintaining a good ecological environment and reducing pollution of construction projects; Second, the construction project inherits the task of The Times of traditional culture, strives to realize the creative transformation and innovative development of traditional culture, and is conducive to the integration of traditional and realistic culture; The third is the urgent need of intensive management of construction projects. Integrated cooperation of project management will integrate intensive thinking into construction projects, give full play to the role of comprehensive cooperation of project management, help improve the quality and efficiency of construction projects, and make the use of construction resources more scientific, reasonable and economical; The fourth is the concentrated embodiment of the value of the construction project, improve the level of engineering construction management, enhance the concentration of the industry, and ensure that the construction project obtains the maximum economic and use benefits.

In the process of construction project consulting service, "project cost +" guides project management. On the one hand, through coordinated management, information and resource barriers in the process are broken, communication efficiency is improved, smooth operation of the project is ensured, and the goal of maximizing the marginal benefit of the construction project is achieved. On the other hand, to realize the transformation and upgrading of engineering consulting institutions, enhance the comprehensive strength, and accelerate the integration with the international construction management service mode is an inevitable requirement to adapt to the development of socialist market economy.

## **3"Project cost +" product molding**

In the era of national anti-epidemic, Zhongli Engineering Consulting Co., Ltd. evaluates the situation, strategically puts forward the concept of "project cost +" with a courageous attitude, and invests enthusiastically and professionally in product research and development. After 4 years, the "engineering cost +" product has been iterated and upgraded, becoming more and more mature. "Engineering cost +" 1.0-4.0 is "engineering cost" as the gene, give play to the core ability of cost engineers as "specialists in investment control", and develop a series of new consulting product matrix based on the strategic concept of "engineering cost +".

### **3.1 "Project cost +" 1.0**

The "Engineering Cost +" 1.0 product was first proposed in 2020. The product involves the development blueprint and value prospect of a number of professional services such as "engineering cost + law, engineering cost + investment decision consulting, engineering cost + bidding planning, engineering cost + project management, engineering cost + design

optimization, engineering cost + dispute mediation, engineering cost + tracking audit, engineering cost + shareholder equity distribution consulting".

### **3.2 "Project cost +" 2.0**

The "Engineering cost +" 2.0 product will be upgraded and optimized in 2021, involving five items: "engineering cost + judicial appraisal, engineering cost + evidence management, engineering cost +BIM consulting, engineering cost + completion final accounts, and engineering cost + project supervision", which is committed to providing professional services with higher added value and improving the value of the whole life cycle of engineering construction projects.

### **3.3 "Project cost +" 3.0**

"Engineering cost +" 3.0 will continue to be upgraded and optimized in 2022, and the products involve seven items: "engineering cost + planning consulting, engineering cost + budget performance management, engineering cost + comprehensive development of the area, engineering cost + special debt consulting, engineering cost + expert assistant, engineering cost + dispute review (ruling), and engineering cost + construction project business management". Committed to the engineering cost industry to get rid of the quagmire, open up a broad new track.

### **3.4 "Project cost +" 4.0**

"Engineering cost +" 4.0 is a product launched in the post-epidemic era. The content involves "project cost + double carbon consulting, project cost + urban physical examination, project cost + sponge city, project cost + adjustment consulting, project cost + real estate rescue, project cost + standard formulation, project cost + urban renewal consulting and evaluation, project cost + industrial reform consulting, project cost + rural construction project planning and declaration, project cost + energy saving consulting" ten items. We are committed to continuously improving the concept of comprehensive collaboration, project delivery and cooperative innovation in the industry.

## **4 Practical application and enlightenment of "Engineering cost +" and integrated collaborative path of project management in the new era**

### **4.1 Practical application of "Engineering cost +" and integrated collaborative path of project management in the new era**

#### *4.1.1 Cost control of project management under "project cost +"*

In project management, on the one hand, contractors may lose the possibility of optimal design due to insufficient incentives from owners; on the other hand, contractors may carry out process design based on their own information advantages to pursue their own profit maximization, resulting in substandard project investment control objectives. In addition, because the general contractor of the project enjoys greater management authority and freedom in the project, in practice, the contractor may make the economic and technical indicators of the project as high

as possible on the premise of meeting the needs of the owner, resulting in increased investment and waste of resources.

The cost control of project management under project cost + "can be carried out from the following two aspects:

*(1) Carry out design scheme comparison*

When comparing the evaluation index of the design scheme, the evaluation of the design of the construction project scheme should consider the size, shape, facilities and other structural forms of the various use Spaces inside the building. Architectural plan, spatial layout and general layout; Architectural scheme and environment.

When comparing the control points of the design scheme selection, the main reference is based on the national and industry standards of engineering construction and the project design scheme and related information provided by the owner. During the selection process, appropriate engineering construction standards should be selected strictly according to the design scheme and related materials to ensure the correctness and rationality of the design scheme selection results.

*(2) Carry out quota design work*

For some projects with higher technical requirements, they are still in the concept stage, and many quotes and engineering quantities are still estimated based on experience. Doing a good job of quota design is very important for the cost control of project management under project cost + ". Under the premise of meeting the national norms, regulations and local standards, the project is demonstrated from the perspective of optimal design, review the design documents, check the design progress, and strictly control the design changes during the implementation of the project. Owners can employ qualified units for design management, limit design and optimization design from the perspective of investment control, in order to save costs.

*4.1.2 Risk control of project management under project cost + "*

The cycle of project management is generally long, starting from the inception stage of the project, it goes through the stages of project establishment, feasibility study, survey and design, procurement, etc., and generally lasts more than two years. At this stage, the economy, laws and regulations, exchange rate, climate, material price, etc. of the place where the project management is located may change, which increases the risk of project management. In addition, due to differences in human's limited rationality and foresight, it is impossible to predict all emergency events. Even if some risks are mediated by relevant provisions, various problems still arise from time to time in the project management process due to differences in presentation and understanding. In the face of this situation, how to control the risk is particularly important.

*(1) Reasonable risk sharing of project management under project cost + "*

The relationship governance paradigm is a risk-sharing paradigm based on trust, mainly because trust can reduce the number of owners' risk exemption clauses, and then have an impact on the formulation of risk-sharing schemes. The risk-based trust sharing can effectively reduce the negotiation time of the project parties. Therefore, after the occurrence of a risk event, the project partners can focus on the remediation of the risk event rather than the evasion of risk responsibility, effectively saving the negotiation cost and project duration.

## *(2) Customer value co-creation of project management under project cost +"*

In project management, the roles of the project participants will be changed, the owner is no longer a negative buyer of the construction project, but an active participant in the project management, based on this, the owner, contractor and other project participants will participate in the whole process of project construction and implementation. The owner actively participates in the contractor's design, construction and other processes to provide their own needs information to ensure that the final result presents more perfect functions and higher project value, and other project participants will also get more rewards for their active cooperation to achieve value co-creation.

### *4.1.3 Quality control of project management under Project cost +"*

Mr. John Bing's "Project Management" clearly tells you the three major objectives of project management: schedule control, cost control, quality control and other three major controls. The quality control of project management is the key of project management and the key to the success or failure of project construction.

The quality control of project management under "project cost +" should focus on the four factors of "human, material, machine and law".

"people" is the main body of production and business activities, but also the decision-makers, managers, operators of engineering construction projects, the whole process of engineering construction, such as project planning, decision-making, investigation, design and construction, are completed by people, the quality of personnel is the comprehensive quality of people's cultural level, decision-making ability, management ability and so on. Project management should ensure that the quality of personnel in the management process meets the requirements, which is the premise of quality control of project management under project cost +".

"material" refers to all kinds of building materials, components, finished products, etc. that constitute the entity of the project, which is the material condition of the project construction and the basis of the quality of the project. The key points of material control are to optimize the procurement personnel, master the material information, rationally organize the material supply, and strengthen the inspection and acceptance of materials.

"machine" is a variety of equipment and tools used in project management. Under project management under project cost +", construction conditions, building forms, construction techniques and schemes must be comprehensively considered to ensure reasonable use of machinery and equipment. At the same time, the operator must also carefully implement the rules and regulations, strictly abide by the operating procedures, and strengthen the repair, maintenance and management of construction machinery.

"Law" is the technical scheme, process flow, construction organization, etc., of the entire cycle of project management. Under the project management under project cost +", the appropriate technology, process and method should be selected from the aspects of technology, management, process and operation in combination with the actual project.



## **4.2 The significance of "Project cost +" and the comprehensive cooperation path of project management in the new era**

In order to better promote the integration of "project cost +" and project management in the new era, the author has the following three aspects of thinking.

### *4.2.1 Improve project cost + "and project management knowledge system*

The project management knowledge system is the knowledge base of the project management specialty and the ideological basis to guide the project management practice. Although China has established the basic knowledge system of project management, the knowledge system is not static, but needs to keep pace with The Times in combination with the new background needs. With the strategic thought of "project cost +", we can constantly improve the project cost + and project management knowledge system on the basis of absorbing relevant new practices and new knowledge, and combining with the specific development of project management in our country.

### *4.2.2 Promote the application field of engineering cost + and project management*

In the specific project practice, the project form and characteristics of different industries are different, and its scale and complexity are also significantly different. In addition, even in the same industry, the management process at different stages of the same project has different priorities. For project management in the field of engineering consulting under the guidance of the concept of "project cost +", the direction and objectives of project management can be set at the initial stage of the project to ensure that the project management has a more standardized procedure; At the stage of project planning, execution and control, large and complex projects across departments and regions may place more emphasis on planning and coordination. Therefore, the comprehensive cooperation between "project cost +" and project management needs to be continuously enriched and improved according to the characteristics of the project to ensure that the project management gets the "optimal solution".

### *4.2.3 Improve the internationalization of integrated cooperation between "project cost +" and project management*

At present, the project management integrated cooperation under "project cost +" can be in line with the national project management mode mainly includes the project legal person responsibility system, contract management system, project bidding responsibility system, construction project manager responsibility system and construction project supervision system implemented by the owner. As China gradually becomes stronger in the international arena, China's project management should also actively participate in international cooperation and competition. According to the market access rules and the commitment of the Chinese government, the project approval management, project investment management, project schedule management, project quality management, project safety management, project information management and project contract management are all aspects. Actively introduce the international advanced construction project management model.