Original Research Article

Research on the Construction of the Performance Evaluation Index System of the Engineering Agency Construction in the Army Barracks

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Abstract: Based on the understanding of engineering construction management and military agency construction mode, this paper proposes performance evaluation indicators based on the principle of balanced scorecard, uses Delphi method and statistical analysis method to screen indicators, and finally establishes the evaluation indicator system. The construction of this system not only provides a reliable statistical tool for the quantitative evaluation of performance, but also has important practical significance for promoting the healthy development of the military agency construction model.

Keywords: Balanced scorecard; Delphi method; Army barracks engineering; Agency construction;

Performance evaluation index.

1. Introduction

The construction of military barracks engineering is an important factor in ensuring the combat effectiveness of the military. In order to adapt to the rapid development of engineering construction management mode, the military issued the "Implementation Plan for Military Facility Construction Project Agency Management" [1] in 2019, which specifies that, except for sporadic projects, all types of new construction, renovation, expansion, renovation and renovation projects in the military that implement project management should be implemented through engineering agency construction in principle, Ensure that specialized people do specialized things. Under the proxy construction management mode, military camp construction projects are divided into military proxy construction, enterprise proxy construction, and government proxy construction based on project size and funding channels, usually dominated by military proxy construction. The military construction agency is under the guidance of the engineering construction management department, and is carried out by the Engineering Construction Agency Management Office (hereinafter referred to as the Agency Office) to fulfill the responsibilities of the construction unit, organize engineering construction management, and deliver it to the military for use after completion[2].

As a new construction management model, the construction agency system is applied to the construction of military barracks, promoting the direction of professional, scientific, and standardized engineering construction management. However, due to the short implementation time, lack of management experience, and weak professional strength of the construction agency system, there are still problems such as low construction quality and delayed construction period in some military camp engineering projects that have been built and put into use. In addition, there is a lack of effective evaluation and constraint mechanisms, which makes it difficult for the construction agency to conduct comprehensive and in-depth reflection after the project is completed, and cannot provide useful reference for improving management methods and enhancing construction efficiency, "There is only one lesson, no second experience" is the biggest test facing the current construction agency. This article aims to use the balanced scorecard theory and Delphi method to establish a performance evaluation index system, providing effective technical means for comprehensive, objective, and systematic evaluation of the various work of the construction agency in engineering construction management, in order to improve management level, construction capacity, and construction efficiency.

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2. Theory and Methods

2.1 Balanced Scorecard Theory

The Balanced Scorecard (BSC) theory was proposed by Robert Kaplan of Harvard Business School and David Norton, founder of the Renaissance Global Strategy Group, during their research on "Future Organizational Performance Measurement Methods" in the early 1990s[3]. This theory breaks the traditional performance evaluation model mainly based on financial indicators. On the basis of financial indicators, non-financial evaluation indicators are introduced, and an indicator system is designed around the organization's strategic goals and common vision system. Based on the organizational structure, strategic goals are decomposed into four levels: finance, customers, internal processes, and learning and growth for analysis. Key driving factors that affect the achievement of goals at each level are identified, and several performance goals with certain correlations are further refined through these key driving factors. Through the causal relationship between each level, organizational strategies are jointly driven into organizational actions, and performance management is used to promote and achieve the organization's strategic goals.

2.2 Delphi Method

The Delphi method, also known as the expert survey method[4], was first applied by the Rand Corporation in 1946. Due to its excellent superiority and practicality in use, it has been favored by many researchers and quickly and widely applied in fields such as commerce, education, military, and healthcare. The core is to invite some experts or experienced managers in a certain field to make predictions on a certain issue, solicit expert opinions through anonymous letters, then synthesize, organize, summarize, statistically analyze, and anonymously provide feedback to the experts. After soliciting opinions again, they are further synthesized, counted, and fed back. After multiple rounds, a consistent and reliable opinion is obtained.

3. Preliminary Construction of Performance Evaluation Index System Based on Balanced Scorecard Theory

3.1 Determine strategic objectives

The construction project of military barracks is an important carrier for military training and preparation, and also a "driver" to enhance combat effectiveness. Therefore, the strategic goals of the construction agency must be in line with the goal of strengthening the military, accurately reflecting its achievable development goals in the next 3 to 5 years or even longer. Based on the understanding of the development of military construction and the management of construction agencies, The strategic goal of the construction agency should be to establish a first-class construction management team, achieve first-class construction management capabilities, resolutely and successfully complete the mission and tasks assigned by superiors, and help achieve the goal of building a strong military.

3.2 Design Performance Evaluation Index System

The performance evaluation index system for the construction of military barracks must revolve around the strategic goals of modern construction, comprehensively balance financial and non-financial, long-term and short-term goals, external and internal factors, and design according to the principle of balanced scorecard. Due to the particularity of military camp engineering construction, it is necessary to adjust and transform the balanced scorecard at all levels according to the characteristics of military construction. This is the premise and core of constructing a performance evaluation index system for military camp engineering construction. Under the strategic objectives, establish four levels to achieve the goals of agency construction (converted from the financial level), stakeholders (converted from the customer level), internal processes, and talent teams (converted

from the learning and growth level), which are the first level indicators; Based on the specific connotations of each level, referring to the current guidelines for military construction agency work and engineering construction management methods, combined with the characteristics of engineering construction management and the actual construction agency work, 20 key driving factors, namely secondary indicators, are designed and proposed; Adopting a combination of qualitative and quantitative methods, the key driving factors are further refined and decomposed into 45 specific evaluation indicators, namely three-level indicators, to preliminarily construct a performance evaluation indicator system.

4. Determine the evaluation index system based on the Delphi method

4.1 Method Steps

4.1.1 Expert Selection

The selection of experts is one of the key factors for the success of indicator screening. This study selects personnel with high professional competence and rich practical experience in the field of engineering construction, who are familiar with construction agency work and have been engaged in related work for more than 5 years. They mainly come from engineering management departments, construction agency offices, grassroots barracks management departments, as well as supervision, construction and other units.

4.1.2 Preparation of Questionnaire

Design two rounds of survey questionnaires based on the preliminary selection of indicators.

(1) The first round of questionnaire. It consists of four parts: The first part is the basic information of the experts, including their affiliation, educational level, personnel category, years of employment, and other background information. The second part is the evaluation of indicator importance, which includes 20 secondary indicators and 45 tertiary indicators. Using the Likert five level scale method, experts are required to evaluate the importance of each indicator, divide it into 5 levels and assign values, including 5 points for very important, 4 points for relatively important, 3 points for general important, 2 points for less important, and 1 point for unimportant. Considering that the primary indicator requires 4 levels to achieve strategic goals. Therefore, it will not be rated. The third part is the authoritative statistics of experts, including two aspects: expert familiarity and judgment basis. Expert familiarity is divided into five levels: familiar, relatively familiar, average, not very familiar, and not familiar, with values of 1.0, 0.8, 0.6, 0.4, and 0.2 respectively. The criteria for judgment are divided into four categories: practical experience, theoretical analysis, peer understanding, and intuitive perception. Practical experience is assigned values of 0.5, 0.4, and 0.3 according to the degree of severity, while theoretical analysis is assigned values of 0.3, 0.2, and 0.1 according to the degree of severity. Peer understanding and intuitive perception are assigned values of 0.1, 0.1, and 0.1 respectively according to the degree of severity. The fourth part is about supplements and suggestions. Experts are requested to provide modification suggestions for the existing unreasonable indicators and provide additional suggestions for the indicators that need to be added.

(1) The second round of questionnaire. Based on the feedback from experts in the first round, some indicators have been added, deleted, and modified as the basis for the development of the second round questionnaire. The second round of the questionnaire includes statistical results and suggestions from the first round of consultation, providing reference for experts to conduct the second round of evaluation. The rest of the content remains unchanged.

4.1.3 Statistical Analysis Methods

Using Excel 2019 software for data entry and organization, establishing an expert consultation database, and SPSS 26.0 software for data processing and analysis. The statistical analysis of the basic information of experts and evaluation indicators at all levels includes frequency, composition ratio, expert enthusiasm coefficient, expert authority coefficient, mean importance, coefficient of variation, and expert coordination coefficient.

4.2 Statistical Results

4.2.1 Basic Information of Experts

A total of 18 experts were invited to participate in this questionnaire survey. In the first round, 18 questionnaires were distributed, and 16 valid questionnaires were collected, with a response rate of 88.9%. In the second round, 16 questionnaires were distributed and 16 valid questionnaires were collected, with a 100% response rate. The basic information statistics of experts are shown in Table 1.

Table 1 Basic statistics of experts.

Investigation project		Number of people	Proportion
Affiliated unit	Engineering Management Department	4	25%
	Agency Construction Office	4	25%
	Engineering Quality Supervision Station	2	12.5%
	Grassroots Camp Management Department	2	12.5%
	Construction control unit	2	12.5%
	Construction unit	2	12.5%
Educational level	Doctor	2	12.5%
	Master	6	37.5%
	Undergraduate	6	37.5%
	Undergraduate or below	2	12.5%
Personnel category	Senior management personnel	2	12.5%
	Middle manager	4	25%
	Professional technical personnel	6	37.5%
	General Assistant Staff	4	25%
Entire period of actual operation	>15 year	3	18.75%
	11 ~15 year	11	68.75%
	5~10 year	2	12.5%

4.2.2 Expert Enthusiasm

Evaluate the level of expert positivity using the expert positivity coefficient. Usually expressed as questionnaire response rate, it mainly reflects the degree of importance that experts attach to participating in questionnaire surveys. The larger the coefficient, the higher the degree of attention that experts pay to evaluation indicators. According to the previous text, the positivity coefficient of the experts in the first round was 88.9%, and in the second round it was 100%. The positivity level of the experts in the two rounds of the survey was relatively high.

4.2.3 Expert Authority Level

The authority and reliability of experts are reflected by the expert authority coefficient (C_r), which is determined by the expert's judgment basis coefficient (C_a) and familiarity coefficient (C_s), and its expression is: $C_r = (C_a + C_s)/2$. Among them, the coefficient of judgment basis (C_a) is the sum of four coefficients: theoretical analysis, practical experience, peer understanding, and intuitive perception.

In general, if $C_r \geq 7$, it is considered that the research results are reliable[5]. According to the statistical results, the judgment basis coefficients (C_a) for the two rounds of expert consultation are 0.8938 and 0.8938, the familiarity coefficients (C_s) are 0.7875 and 0.825, and the authority coefficients (C_r) are 0.8407 and 0.8594, respectively. The survey results are based on the expert's practical experience and theoretical analysis, as well as their familiarity with the indicators, and have high reliability.

4.2.4 Expert Coordination Level

Use coefficient of variation (CV) and expert coordination coefficient (W) to represent the degree of coordination of experts towards all indicators, that is, whether their judgments on the indicators are consistent. The smaller the coefficient of variation (CV), the more consistent the opinions of experts on a certain indicator

tend to be. The range of expert coordination coefficient values is 0~1, and the larger the value, the higher the degree of expert coordination and the smaller the disagreement. When the expert coordination coefficient χ^2 test shows significance, it is considered that the expert evaluation is reliable and the result is acceptable[6]. After two rounds of expert consultation, the coefficient of variation (CV) range of the secondary indicator decreased from 0.1~0.27 to 0.08~0.17, and the coefficient of variation (CV) range of the tertiary indicator decreased from 0.1~0.28 to 0.08~0.27. Calculate the expert coordination coefficient (W), with secondary indicators of 0.203 and 0.321, and tertiary indicators of 0.196 and 0.307, respectively. The second round showed an increase compared to the first round, and the P-values were all less than 0.05, indicating a statistically significant difference. The correlation coefficients are shown in Table 2.

Table 2 Expert coordination coefficient table.

Index	Consultation round	W	χ^2	P
Secondary indicators	Round 1	0.203	61.694	0.000
	Round 2	0.321	82.157	0.000
Third level indicators	Round 1	0.196	137.997	0.000
	Round 2	0.307	191.713	0.000

4.2.5 Indicator Screening Criteria

Using indicators with an average importance greater than 3.5 and $CV < 0.2$ as statistical screening criteria[7], in order to further improve the representativeness of the indicators, key considerations will be given to indicators that do not meet the standards. Qualitative and quantitative analysis will be conducted based on expert opinions, and a decision will be made on the selection of indicators.

4.2.6 Indicator Screening Results

In the first round of expert consultation, based on the feedback from experts, the indicator design is relatively comprehensive and basically covers all aspects of the construction work. However, there are still individual indicators with overlapping connotations, too detailed splitting, and inconsistency with reality in terms of details. Specifically, four experts (25%) believe that the second level indicator “bidding management” belongs to the scope of contract management. They suggest merging “bidding management” and “contract management” into “bidding and contract management”, and including the corresponding third level indicators. Six experts (37.5%) believe that the second level indicator “project progress” and “progress control” have overlapping connotations. It is recommended to remove “project progress” and the corresponding third level indicator “project progress status”, and retain the second level indicator “progress control” and its corresponding third level indicator. Five experts (31.25%) believe that due to factors such as military confidentiality, the construction of information technology in engineering management still needs time and the means of information technology are not yet complete. There is still a lot of room for improvement in the ability of the construction agency to use information technology to implement project management. Whether to retain the second level indicator “information technology level” and its corresponding third level indicators is still open to discussion; Four experts (25%) believe that the correlation between the second level indicator “management strength” and the corresponding third level indicator “due diligence” is not strong. They suggest renaming the second level indicator “management strength” to “due diligence” and renaming the third level indicator “due diligence” to “due diligence”.

From the statistical analysis results, it can be seen that in terms of importance mean, the second level indicator is greater than 3.5, the third level indicator “information coverage rate” is 3.44, and the “personnel information level” is 3.19. All other indicators are greater than 3.5; In terms of coefficient of variation, the second level indicator “informationization level” is 0.27, the third level indicator “engineering award situation” is 0.26, the “informationization coverage rate” is 0.25, the “personnel informationization level” is 0.28, the “informationization means application situation” is 0.22, and all other indicators are less than 0.2. According to the statistical screening criteria, the indicators that do not meet the standards mentioned above should be removed after the first round of consultation, which is basically consistent with the feedback from experts.

Table 3 Statistical Results of Expert Consultation on Performance Evaluation Indicators in Round 1 and Round 2.

Evaluating indicator	Mean importance		Full score rate (%)		Coefficient of variation	
	Round 1	Round 2	Round 1	Round 2	Round 1	Round 2
Project quality objectives A_1	4.63	4.25	62.50	31.25	0.10	0.13
Project quality objectives A_2	4.31	4.81	43.75	81.25	0.16	0.08
Project quality objectives A_3	4.13	4.81	31.25	81.25	0.17	0.08
Project quality objectives A_4	4.06	4.31	25.00	31.25	0.16	0.11
Project Satisfaction B_1	4.56	4.81	56.25	81.25	0.11	0.08
Project Progress B_2	4.06	-	31.25	-	0.18	-
Comprehensive coordination B_3	4.00	4.06	25.00	25.00	0.18	0.16
Fulfilling basic construction procedures C_1	4.25	4.13	31.25	31.25	0.13	0.17
Bidding Management C_2▲	4.00	-	25.00	-	0.18	-
Quality Control C_3	4.63	4.50	62.50	50.00	0.10	0.11
Progress Control C_4	4.31	4.69	43.75	68.75	0.16	0.10
Investment Control C_5	4.06	4.81	25.00	81.25	0.16	0.08
Project acceptanceC_6	4.13	4.13	31.25	25.00	0.17	0.15
Tendering and Contract Management C_7★	4.06	4.19	31.25	25.00	0.18	0.13
Information Management C_8	4.06	4.13	25.00	12.50	0.16	0.08
Risk Management C_9	4.13	4.25	31.25	25.00	0.17	0.10
Team Organization D_1	4.13	4.19	37.50	31.25	0.19	0.15
Fulfilling Duties D_2★★	3.94	4.19	25.00	25.00	0.19	0.13
Informatization level D_3*	3.69	-	25.00	-	0.27	-
Talent cultivation D_4	3.63	4.13	12.50	25.00	0.19	0.15
Engineering Awards A_{11}*	3.63	-	18.75	-	0.26	-
Excellent engineering quality rate A_{12}	3.94	4.19	25.00	37.50	0.19	0.19
First time acceptance rate of engineering A_{13}	4.25	4.44	31.25	50.00	0.13	0.14
Progress deviation rate A_{21}	4.13	3.81	37.50	12.50	0.19	0.19
Investment deviation rate A_{31}	4.13	3.56	31.25	12.50	0.17	0.20
Number of safety accidents A_{41}	3.88	3.88	18.75	18.75	0.18	0.18
Number of major hazard complaints A_{42}	3.94	3.88	25.00	12.50	0.19	0.18
User Satisfaction B_{11}	4.63	4.25	62.50	37.50	0.10	0.16
Satisfaction of Engineering Management Department B_{12}	3.94	3.75	25.00	12.50	0.19	0.18
Problem rectification situation B_{13}	4.56	4.06	56.25	18.75	0.11	0.14
Project Progress Status B_{21}	3.94	-	25.00	-	0.19	-
Communication and coordination situation B_{31}	3.69	4.00	12.50	25.00	0.18	0.18
Meeting frequency B_{32}**	3.63	3.13	12.50	6.25	0.19	0.27
Fulfillment of Approval Procedures C_{11}	3.75	3.69	12.50	12.50	0.18	0.18
Preparation of commencement conditions C_{12}	3.75	3.63	12.50	12.50	0.18	0.19
Tender preparation C_{21}▲	4.00	3.31	31.25	6.25	0.20	0.18
Bidding Implementation C_{22}▲	4.19	3.38	37.50	6.25	0.17	0.18
Develop Quality Control Plan C_{31}	4.25	4.25	25.00	25.00	0.10	0.10
Check the condition of equipment and materials C_{32}	4.06	3.75	31.25	12.50	0.18	0.18
Implement quality assurance system C_{33}	4.63	4.25	62.50	37.50	0.10	0.16
Develop Progress Control Plan C_{41}	4.19	4.13	25.00	12.50	0.13	0.08
Tracking and Inspection Progress Plan C_{42}	4.38	4.38	37.50	37.50	0.11	0.11
Rectification of Progress Lag C_{43}	4.38	4.13	37.50	25.00	0.11	0.15
Investment Plan Development and Execution C_{51}	4.06	3.75	18.75	12.50	0.14	0.18
Construction scale and content C_{52}	4.13	4.25	31.25	25.00	0.17	0.10
Payment Review and Payment C_{53}**	3.69	2.56	12.50	0.00	0.18	0.27
Acceptance organization procedure C_{61}	4.25	4.25	25.00	25.00	0.10	0.10
Acceptance status C_{62}	4.25	4.00	25.00	25.00	0.10	0.18
Engineering Change and Certification C_{71}	4.44	4.25	43.75	25.00	0.11	0.10
Claims for breach of contract and counter claims C_{72}**	4.00	3.19	12.50	6.25	0.19	0.23
Engineering Information Management C_{81}	3.88	3.63	18.75	12.50	0.18	0.19
Engineering Data Management C_{82}	4.06	3.75	12.50	12.50	0.11	0.18
Project Management Document Management C_{83}	3.81	3.69	12.50	12.50	0.17	0.18
Risk identification analysis C_{91}	4.00	4.00	25.00	12.50	0.18	0.13
Risk response control C_{92}	4.13	4.13	25.00	25.00	0.15	0.15
Risk resolution rate C_{93}	4.38	4.50	37.50	75.00	0.11	0.19
Institutional setup D_{11}	3.75	3.81	12.50	18.75	0.18	0.19
Personnel allocation D_{12}	4.06	4.00	18.75	12.50	0.14	0.13
Teamwork D_{13}	3.81	4.25	12.50	37.50	0.19	0.16
Performance of Duty D_{21}★★★	3.94	4.25	18.75	37.50	0.17	0.16
Information coverage rate D_{31}*	3.44	-	12.50	-	0.25	-
Personnel Informatization Level D_{32}*	3.19	-	12.50	-	0.28	-
Application of Information Technology Methods D_{33}*	3.75	-	18.75	-	0.22	-
Personnel training rate D_{41}	3.38	3.81	6.25	12.50	0.18	0.17
Talent cultivation situation D_{42}	3.81	4.00	6.2%	12.50	0.14	0.13

Note:* * *Indicators excluded from the first round of expert consultation $CV > 0.2$ ***; ** The indicators excluded from the second round of expert consultation*** $CV > 0.2$ ***; ▲ The indicators adjusted based on expert opinions in the first round of expert consultation; ★ The first round of expert consultation indicators is named "Contract Management"; ★★ The first round of expert consultation indicators is named "Management Strength"; ★★★ The name of the first round of expert consultation indicator is "due diligence".***

To prevent important indicators from being excluded due to non-compliance with the standards, interviews will be conducted with experts after the first round of consultation, and screening will be conducted based on their feedback and statistical analysis results. After comprehensive consideration, expert opinions suggest that the second level indicator "informationization level" and its corresponding third level indicators "informationization coverage rate", "personnel informationization level", and "informationization means application situation" should be adopted together. At present, they do not conform to the actual project management of the construction agency and have weak operability. Therefore, they will be removed after the end of this round. Finally, after the first round of consultation, the secondary indicators were adjusted from 20 to 17, and the tertiary indicators were adjusted from 45 to 40.

The second round of expert consultation will provide feedback on the results of the first round to the experts, who will then re-evaluate each indicator. Based on the collected information, the experts did not provide any modification suggestions for this round. From the statistical analysis results, it can be seen that the average importance of secondary indicators is greater than 3.5, and the coefficient of variation is less than 0.2. The opinions of experts on secondary indicators tend to be consistent. The average importance of the third level indicator "number of meetings held" is 3.13, with a coefficient of variation of 0.27. The average importance of "payment review and payment" is 2.56, with a coefficient of variation of 0.27. The average importance of "breach of contract claims and counter claims" is 3.19, with a coefficient of variation of 0.23. All three indicators do not meet the statistical screening criteria, while the average importance of the other indicators is greater than 3.5, with a coefficient of variation of less than 0.2. Through secondary interviews with experts, they generally believe that the above three indicators are not very important and have little evaluation significance, and can be removed. After comprehensive consideration, the expert opinions and suggestions are adopted.

The results of two rounds of expert consultation are shown in Table 3.

After the second round of expert consultation, the opinions of the experts have basically reached consensus. Experts generally believe that the indicator system has stabilized, and it is not meaningful to conduct another round of consultation. If further adjustments are made, they need to be combined with reality, optimized and improved based on data quality and evaluation status. Therefore, the expert consultation will end after the second round. Finally, a performance evaluation index system for military barracks engineering construction was established through four levels, including 17 key driving factors and 37 specific evaluation indicators. As shown in Table 4.

5. Conclusion

At present, for the evaluation of construction projects in military barracks, relying solely on daily supervision, inspections, and problem feedback from relevant higher-level departments cannot fully reflect and affirm the work done by the construction agency, nor is it conducive to the construction agency to deeply summarize experiences and lessons from projects, consolidate and improve its construction capabilities. Therefore, in response to the problem of the lack of a systematic, scientific, and effective evaluation index system for the construction of military barracks, this article starts from the reality and applies the principle of balanced scorecard to formulate strategic goals for the construction agency. It decomposes the levels and key driving factors that affect the achievement of strategic goals and have mutual causal relationships, and thus refines specific indicators with wide coverage. A preliminary evaluation index system framework is established, and on this basis. By using the Delphi method and conducting two rounds of expert consultation and scientific statistical analysis, we have selected indicators with strong pertinence, effectiveness, and operability, and ultimately established a complete and feasible performance evaluation index system. This will guide performance evaluation practices, improve construction methods, enhance construction capabilities, enhance construction efficiency, and promote the healthy development of the military construction model. It has certain practical value and important practical significance. The performance evaluation index system for military camp engineering

construction involves numerous evaluation points, and the creation of its indicators is a dynamic and complex process that needs to keep up with the times and continuously improve. In the future practice process, it is necessary to pay attention to collecting and mastering the use of evaluation, timely proposing improvement suggestions, and further exploring the objective current situation of military construction, looking forward to the development trend of military construction, in order to propose the best countermeasures for optimizing and improving the performance evaluation index system, ensuring the feasibility, practicality, completeness, and accuracy of evaluation.

Table 4 Performance evaluation indicator system based on balanced scorecard and Delphi method.

Target layer (primary indicator)	Key driving factors (secondary indicators)	Evaluation indicators (Level 3 indicators)
Achieving the construction agency goal A	Project Quality Objective A_1	Excellent engineering quality rate A_{11} First time acceptance rate of engineering A_{12}
	Project Progress Goal A_2	Progress deviation rate A_{21}
	Project Investment Objective A_3	Investment deviation rate A_{31}
	Project Safety Objective A_4	Number of safety accidents A_{41} Number of major hazard complaints A_{42}
Stakeholder B	Project Satisfaction B_1	User Satisfaction B_{11} Satisfaction of Engineering Management Department B_{12} Problem rectification situation B_{13}
	Comprehensive Coordination B_2	Communication and coordination situation B_{21}
Internal Process C	Fulfilling basic construction proceduresC_1	Fulfillment of Approval Procedures C_{11} Preparation of commencement conditions C_{12}
	Quality Control C_2	Develop Quality Control Plan C_{21} Check the condition of equipment and materials C_{22} Implement quality assurance system C_{23}
	Progress Control C_3	Develop Progress Control Plan C_{31} Tracking and Inspection Progress Plan C_{32} Rectification of progress delay issue C_{33}
	Investment Control C_4	Investment Plan Development and Execution C_{41} Construction scale and content C_{42}
	Project Acceptance C_5	Acceptance Organization Procedure C_{51} Acceptance status C_{52}
	Tendering and Contract Management C_6	Bid preparation C_{61} Implementation of bidding C_{62} Engineering Change and Visa C_{63}
	Information Management C_7	Engineering Information Management C_{71} Engineering Data Management C_{72} Project Management Document Management C_{73}
	Risk Management C_8	Risk identification analysis C_{81} Risk response control C_{82} Risk resolution rate C_{83}
Talent Team D	Team Organization D_1	Institutional setup D_{11} Personnel allocation D_{12} Teamwork D_{13}
	Fulfilling Duties D_2	Performance of Duty D_{21}
	Talent cultivation D_3	Personnel training rate D_{31} Talent cultivation situation D_{32}

Conflict of Interest

The authors declare no conflict of interest.

References

1. Sun Xingwei, Li Haoran. Creating a New Situation in the Management of Military Facility Construction Project Agency Construction [N]. People's Liberation Army Daily, 2019-06-24.
2. Sun Xingwei, Li Haoran. Professional Management of Military Facility Construction Projects in the Whole

Army [N]. PLA Daily, 2019-06-12.
3. Li Zhiguo, Teng Huiping. Application of Balanced Scorecard in Strategic Management of EPC type Enterprises [J]. Construction Economics, 2012 (5): 73-75.
4. Zhang Suqin, Wang Zishuo, Ren Jian. Research on the Construction of Performance Evaluation Index System for Aviation Material Warehouse Based on Delphi Method [J]. Environmental Technology, 2021 (5): 210-226.
5. Lian Lu, Li Xinyi, Zou Murong, et al. Application of Improved Delphi Method to Construct a Health Service Capability Index System for Family Doctors in China [J]. China Health Resources, 2021 (4): 448-452.
6. Yang Shuo, Zhang Shujie, Xu Jing, et al. Constructing a performance evaluation index system for clinical doctors in hospitals in Heilongjiang Province based on the Delphi method [J]. China Health Economy, 2016 (11): 69-72.
7. Hou Yuxin, Wang Chong. Screening of credit evaluation indicators for college students based on Delphi method and factor analysis [J]. Journal of Sichuan Normal University (Social Science Edition), 2016 (5): 34-41.