

Study on construction quality Evaluation Index of prefabricated Buildings and Identification of Workers' occupational literacy Evaluation Index

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Abstract. This study through reading to sort out quality management and quality inspection standards and specifications, identify five the prefabricated building quality specifications and workers professional quality of 16 factors, and then using the theory of quality management theory, labor productivity, literature research, identify quality evaluation specifications and general factors of professional workers, using the method of case analysis and expert interview to collect quality evaluation specification and workers professional quality characteristic factors, identify common workers professional quality influencing factors of 4 first-level indicators, 16 secondary indexes, prefabricated building quality five evaluation indexes, and further to a total of 21 indexes both generality and individual character classification, found 11, 10 personality. The extraction and analysis of the key factors affecting workers' occupational literacy on the quality of assembly construction provide a research basis.

1 Introduction

Construction labor productivity refers to the efficiency of construction workers producing construction products during the reporting period. It is expressed by the ratio of the output or value of construction products and the corresponding labor consumption. It is an important index to evaluate the improvement of production efficiency and labor saving of construction enterprises. Under the same input labor force, the more value the enterprise creates, the higher labor productivity, if not, it is lower. The commonly used labor productivity indicators of construction enterprises include the labor productivity calculated by the gross output value of construction industry and the added value of construction industry^[1].

Relevant studies show that labor workers' expenses in the construction industry are only about 20% of the product value, and construction labor productivity is still at a low level.

With the continuous development of prefabricated buildings, the evaluation of the quality of prefabricated buildings also needs very comprehensive indicators^[2]. Among them, the professional quality of prefabricated construction personnel is the most important factor affecting the quality of prefabricated construction. How to evaluate the professional quality of an assembly construction personnel needs a comprehensive evaluation system. By extracting evaluation indexes of prefabricated building quality and professional quality of construction

personnel, this study provides necessary basis for talent training in the transformation and development of the construction industry.

2 Factor identification method

2.1 Selection of factor identification methods

The influencing factors of workers' occupational literacy on the quality of prefabricated construction are mainly divided into two categories. One is the common factor, that is, the factor which coincides with the construction project management theory, and this factor is mainly identified by theoretical induction method and literature research method. The second type is personality factors, which are mainly identified by the existing prefabricated building case analysis method and expert interview method^[3,4]. The factors extracted by case analysis method may not be universal, so it is necessary to conduct further verification by expert interview to form personality factors for the study of workers' occupational literacy in this study. Finally, the common factors and personality factors are combined to form the research factors of workers' occupational literacy in this study. The same prefabricated construction quality evaluation index is still extracted from the relevant standard books by theoretical induction, literature research, case analysis, expert interview method and other comprehensive extraction^[5].

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2.2 Step of factor identification method

This study under the perspective of professional workers to identify factors influencing the quality of prefabricated construction in the process of using a variety of methods, covers the theory of induction, literature research, case analysis, expert interviews and other methods, at last, through comprehensive analysis the influence factors of the final of this study, the role of the recognition step and the method as shown in figure 1.

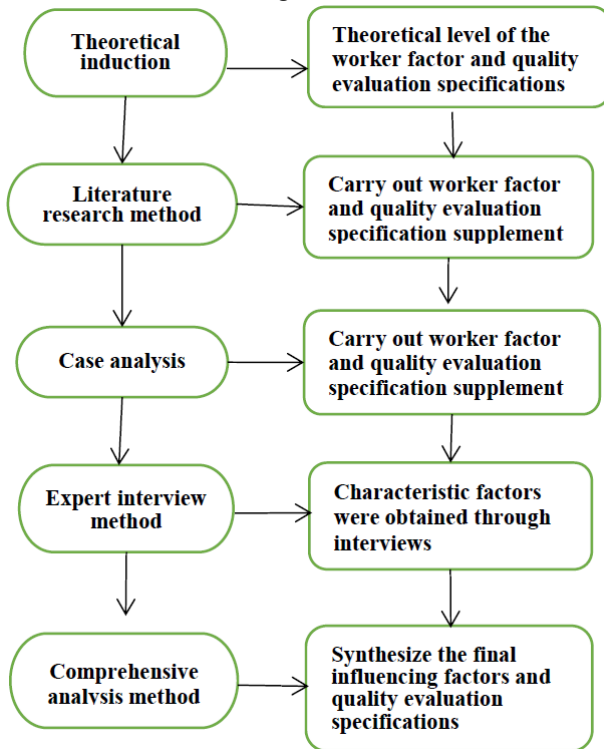


Figure1 Factor identification process

2.3. Prefabricated construction quality evaluation index identification

Based on the prefabricated construction theory, the influencing factors of quality were analyzed and supplemented from the aspects of standard specifications, books, literature retrieval and expert interview.

2.3.1. Standard specifications and books

In recent years, with the gradual warming of research and application in the field of prefabricated building in China, research and application of related technologies have been carried out. In order to meet the development needs of prefabricated building application, a series of national standards, industry standards and product standards have been compiled and revised^[6]. Based on the fact that workers mainly work in the prefabricated construction stage, combined with relevant standards and specifications, the prefabricated construction quality evaluation specifications are extracted from production, transportation, construction and installation. The main reference standards and specifications and books are 7 national standards, 4 industrial standards and 1 other management regulations^[7].

2.3.2. Literature retrieval

Based on the reference extraction of the existing standard specifications for prefabricated buildings, part of the quality management content can be extracted to evaluate specifications and understand the quality standards for prefabricated buildings^[8]. However, due to the limitations of practice and application degree, it is difficult to ensure the comprehensiveness and pertinence of quality management content to evaluate specifications only by relying on the standard specifications. Combined with 148 relevant literature studies in recent ten years, the quality management contents that are not reflected in the standard specifications are adjusted and analyzed from four aspects of quality inspection, quality cost, quality safety and environmental quality^[9].

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2.3.3 Case analysis and expert interview

This study enumerates the common quality problems of prefabricated buildings through case analysis, among which the individual influencing factors are consistent with the quality management theory, which can be directly used as the quality management content to evaluate specifications, and the rest can be verified by expert interview method^[10].

In addition, this study collected and understood the factors affecting the quality of prefabricated construction, including quality cost, construction schedule, environmental quality, on-time delivery rate, green building requirements and so on, through face-to-face interviews with professional and technical personnel or managers with years of work experience in construction enterprises.

In standard specification and books as the basic content of quality management as a benchmark, combined with the literature retrieval, and in case the empirical and expert interview considers unscrambles prefabricated construction quality from the following five aspects: F01 quality qualification, F02 quality cost, F03 quality safety accident frequency, F04 on time delivery rate, F05 clean environment quality.

2.4. Identification of influencing factors of workers' occupational literacy

2.4.1. Theoretical induction

Recognition for prefabricated construction quality evaluation specification factors at the same time, based on the theory of labor productivity, and cognitive biases,

and increase the workers related policies, summarized, analyzed and summarized, because workers professional quality will affect the quality of the prefabricated building factors, these factors will be needed by regression analysis model is established in this study potential variable factors.

Referring to the relevant specifications, it can be seen that influential factors with high frequency will be used as observation variables of this study. As can be seen from the above table, "labor intensity" has a low frequency and is not listed as observation variables of this study for the time being. "Safety education", "safety training", "certificate entry", "operation standard", "professional skills", "vocational training" and "professional knowledge" appear frequently. Combining these influencing factors with the quality management of prefabricated buildings, through analysis and summary, can form part of the observed variables of this study.

2.4.2. Literature research method

Labor productivity level decides the comprehensive professional quality workers, plain is distinguish between work performance and the key to good work performance, whether to choose a scientific and reasonable professional characteristics, build effective and practical workers professional quality factors determine whether find workers professional quality cannot adapt to existing building industrialization, in order to find out the existing workers professional quality problem, Nearly a hundred articles were selected from cnKI, WIp, etc. in the form of subject search for "prefabricated construction quality" + "workers" and "migrant workers" respectively, taking into consideration the quality of research and journal quality. By analyzing the key factors affecting workers' professional quality in each article, 11 characteristics of workers' professional quality were extracted. Have a high level of education, professional knowledge, qualification certificate, have the awareness of the operation norms, have the sense of teamwork, have a responsible work attitude, have the awareness of quality assurance, through vocational training, familiar with the operation norms, rich work experience, with safety protection.

2.4.3Case analysis and expert interview

In this chapter, the case study on the quality problems of prefabricated construction shows that the influencing factors of workers' occupational literacy are consistent with the literature research method and can be directly used as the observed variables of this study, while the rest can be verified by the expert interview method. This study collected and understood the influencing factors of workers' occupational literacy by conducting face-to-face interviews with professional and technical personnel or managers with years of experience in production, construction and management of prefabricated buildings in construction enterprises. Including cost awareness and learning ability, hard-working quality, learning willingness and adaptability.

Can be determined through expert interview method integrated, professional workers for the construction of prefabricated construction quality is very important, at the same time building enterprise is faced with how to change now workers professional quality, to adapt it to the prefabricated construction development, the above investigation and interviews of experts are rich experience in the industry production and the construction technology and management personnel, has high credibility, In addition, some factors are the same as those pointed out in the case analysis in chapter 1 of this study, such as "workers have good cost consciousness", "workers have the quality of hard-working" and "workers need to have good learning ability", which can be directly used as the observation variables of this study. After sufficient investigation and research, the 16 influencing factors can be taken as the observational variables of this study.

3. Identification results and discussion

3.1 Identify the results

In this study, the identification of prefabricated building quality evaluation specifications and the identification of workers' occupational literacy factors were implemented through various methods. Based on the labor productivity theory and the competency model, a 4-dimensional index system was constructed to reflect workers' operational ability knowledge, attitude, professional skills and potential based on 16 influencing factors. Having a high level of education, professional knowledge, qualification certificates, operating norms cognition is divided into knowledge dimension, having the spirit of bearing hardships and standing hard work, having the consciousness of teamwork, having a responsible working attitude, having the consciousness of quality assurance, having the consciousness of cost control is divided into attitude dimension, Having undergone vocational training, being familiar with operation specifications, having rich working experience and having safety protection can be divided into professional skills dimension, and having strong learning ability, strong adaptability and strong learning willingness can be regarded as potential dimension.

3.2 The results discussed

Through the comprehensive application of a variety of methods, all the observed variables of this study are obtained, which are divided into two categories. The first category is the result identified by theoretical induction and literature research, which is a general factor of quality management and also applicable to the quality management of prefabricated buildings, belonging to the common factor. The standard and specification theory induction method and literature research method are consistent with professional knowledge, knowledge of the code of operation, qualification certificate, teamwork consciousness, familiarity with the code of operation and rich work experience. The focus of theoretical research

and analysis is consistent; The second type is the factors identified by case analysis and expert interview, which are unique factors in the overall evaluation of workers' development into industrial workers and the quality of assembly construction, and belong to individual factors.

4 The research conclusion

The purpose of this study is to identify the influencing factors of workers' professional literacy and the evaluation indexes of prefabricated construction quality. By reading the finishing quality management and quality inspection standards and specifications, identify five the prefabricated building quality specifications and workers professional quality of 16 factors, by using the theory of quality management, labor productivity, the method of literature research, case analysis and expert interview collection quality evaluation standard and staff professional quality characteristic factors, Determine the factors affecting the professional quality of ordinary workers 4 first-level indicators, second-level indicators 16, assembly building quality 5 evaluation indicators, further to a total of 21 indicators, both common and personality classification, 11 items, 10 items of personality. These factors form a scale, and then a questionnaire is distributed to the public, which lays a foundation for data collection, and provides a research foundation for extracting the key factors that affect workers' professional literacy on the quality of prefabricated buildings and the effectiveness of the regression model.

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