

Research on the Compilation Ability of Technicians in Construction Enterprises for Innovative Data

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Abstract. In order to study the participation of front-line technicians in construction enterprises in technological innovation activities of enterprises, the cognition of innovation data compilation, the method of each element of innovation data writing, the ability of literature retrieval and the difficulties encountered in the process of writing. In this paper, the questionnaire survey is used to investigate the first-line general contracting project departments of large-scale central enterprises whose main business is energy and power, water resources and environmental engineering, infrastructure construction, design, supervision, investment, and operation management in the past five years. 23 professional and technical personnel with intermediate professional titles were surveyed. The research results show that: 23% of technicians are aware of innovation activities and actively participate in them; 77% of technicians are not aware of innovation activities and have not been guided to participate by the organization, so they do not know much about technological innovation activities; from the perspective of individual technicians, 45% of technicians believe that participation in innovation is optional and has little impact on themselves; 36% of technicians believe that it is necessary to participate in technological innovation activities, but completing their own work is more important and more in line with their actual benefits.

Keywords: Technical personnel, Innovative materials, Literature retrieval, Compilation ability.

1. Introduction

Construction enterprises are the main body of technological innovation in the industry. The premise of technological innovation is not to deviate from the actual needs of the industry and abandon the construction process. That has the most say in the development of technological innovation activities such as "four new" technology application QC activities, patent development, and construction method research in construction operations[1~5]. The high-quality innovation materials compiled by technicians can clearly express the innovative research results obtained in theoretical research and scientific experiments during the construction of actual engineering projects. Such results can not only promote the progress of similar engineering technologies, but also solve practical engineering problems. On-site problems during project construction. This requires innovation materials to not only describe the innovation of the results, but also pay attention to the technical personnel's ability to prepare well, so that other technical personnel can read, be interested in, and resonate with their innovation results[6~8]. Therefore, the technical personnel engaged in the compilation of innovative data in construction enterprises, as the main force in the research and development and promotion of scientific and technological innovation achievements of the enterprise, must have the ability and method of innovative data compilation.

2. Research Surveys

2.1 Objects and Methods

Through self-designed and self-compiled survey samples, this research conducted a survey on the first-line general contracting project departments of large-scale central enterprises whose main business is energy and power, water resources and environmental engineering, infrastructure construction, design, supervision, investment, and operation management in the past five years. 23 professional and technical personnel with junior and intermediate professional titles were recruited

for the survey, and the age range was 26-31 years old. Through the survey, we can learn about their participation in the technological innovation activities of enterprises, their cognition of the preparation of innovation materials, the methods of writing elements of innovation materials, the ability to retrieve documents, and the difficulties encountered in the writing process.

This questionnaire was filled out anonymously, and was collected on site after distribution and filling. A total of 23 questionnaires were distributed and 23 were returned. The questionnaire recovery rate was 100%, of which 22 were valid questionnaires, with an effective recovery rate of 96%.

2.2 Survey Results

Survey Sample Composition List.

Table 1. Sample composition

Project	Frequency	Proportion(%)	Project	Frequency	Proportion(%)
Whether to Participate in Innovation			Job Title		
Yes	5	23	Primary	17	77
No	17	77	Intermediate	5	23
Age			Attitude Towards Innovation		
26 years old	10	46	Like	8	36
28 years old	7	31	Generally	10	45
31 years old	5	23	No Sense	2	9
Ease of Innovation			Innovation Troubles		
Difficult	17	77	Research Purposes	20	90
Generally	5	23	Work Method	15	68
Easy	0	0	Main Controlling Factor	20	90
			Conclusion Summary	20	90

2.3 Analysis of results

2.3.1 Survey results of technologists' understanding of innovation activities

This research investigates from three aspects: the development, guidance and independent participation of the innovative activities of the project department. The survey results show that 23% of technologists are aware of innovation activities and actively participate. 77% of technicians are not aware of innovation activities and have not been guided to participate by the organization, so they do not know much about technological innovation activities.

2.3.2 Survey results of technicians' cognition of innovation activities

The survey results show that from the perspective of individual technicians, 45% of technicians believe that participation in innovation is optional and has little impact on themselves; 36% of technicians believe that it is necessary to participate in technological innovation activities, but to complete their jobs. more important and more in line with their actual benefits.

At present, the difficulties and existing problems faced by technicians in technological innovation activities are mainly reflected in the following two aspects.

(1) Although the vast majority of technicians believe that it is necessary to participate in technological innovation activities, it is more important and more in line with their own actual benefits to complete their own work. I do not understand the specific preparation process, I am afraid

of making mistakes, and then I feel that the innovative preparation work has no clue, and it is impossible to start or it is difficult to carry out the preparation work.

(2) Due to the good social status and treatment of central enterprises, 23 junior and intermediate professional and technical personnel all graduated from 211, 985 or the corresponding majors of undergraduate colleges and universities such as the former Ministry of Water and Electricity (22 majors in engineering technology and 1 in administrative management). Major), through the study of university system theory and the writing of graduation thesis, 22 technicians have mastered the research objectives, methods, ideas, design of routes and content of engineering technology papers, and are familiar with statistics. Principle The method of processing data. However, through interviews, we learned that the practical work application and innovative content of technicians have higher requirements than theoretical knowledge and a larger research scope. Therefore, the key points of innovation cannot be found in the links of topic selection, data collection, and compilation, and there is a lack of methods for systematically compiling key content.

3. Countermeasures and Suggestions

3.1 Construction enterprises should understand the actual needs of technical innovation of technicians

From an organizational point of view, enterprises should focus on professional and technical personnel engaged in technological innovation activities, especially about junior professional and technical personnel. They are young, have short working years after graduation, easily stimulate their enthusiasm for work, and have a plasticity of technological innovation awareness. If properly guided, participating in technological innovation activities in the form of "tutors leading apprentices" will not only help them deepen their understanding of disciplinary theoretical knowledge and improve their level of theoretical knowledge, but also promote their exploration of cutting-edge scientific and technological knowledge and autonomy in actual work in combination with the actual situation of engineering projects. Learn subject domain knowledge, improve the sensitivity of scientific research and innovation information collection and analysis and processing capabilities, and then transfer theoretical knowledge, summarize, continue research, and improve breakthroughs on the basis of forming solutions to practical engineering problems.

From an individual point of view, junior and intermediate professional and technical personnel should first correct their attitudes, reject mediocrity, and take the initiative to realize that innovative organization is an effective way to improve their professional and technical level and professional title promotion. Difficulties and solutions in the actual work process; take the initiative to consult technical leaders or technical experts, combine theoretical knowledge with practice, and focus on cultivating their ability to discover, analyze and solve problems in the process of practice.

3.2 Construction enterprises should cultivate the learning ability of technical personnel for technological innovation

Enterprises should strengthen the training of technical personnel's writing ability, and on the basis of daily project management, they should increase the writing ability of various technical contract documents, correspondence, meeting minutes, claim reports and other basic project texts. At the same time, basic text writing skills competitions and the submission of professional technical papers can be regularly organized. The content should involve topics such as topic selection, data integration, determination of theme arguments and article structure formats, etc. So that beginner and intermediate technical personnel can start from basic text writing. Develop good writing habits, rigorous writing attitude and enthusiasm to participate in innovative preparation. Combined with the content of thesis writing during the college period for junior and intermediate technical personnel, individual training can be carried out in a targeted manner.

3.3 The core elements of technical innovation for construction enterprises to train technical personnel

To compile technical innovation materials, firstly is to determine the key points of technological innovation, and then to carry out research around the innovation points. The main points of technological innovation are the core elements of compiling materials. Only around the core elements can we construct the purpose, method of use, data collected, results obtained, and conclusions that may be popularized, and the results obtained have certain promotion value. The conclusion is the only goal of construction enterprises to carry out technological innovation activities. Therefore, technicians must recognize the importance of the core elements of technical innovation data compilation, so as to continuously cultivate and enhance innovative thinking and improve the ability of technical innovation data compilation in the process of technical innovation.

3.3.1 Emphasis on research objectives

The survey found that there is a lack of on-site data collection and processing or investigation and research on existing literature materials in the compilation of technological innovation materials, resulting in the uncertainty of the purpose of compilation. When compiling, technicians should think about the difficulties that the existing literature has solved, and whether their process and methods for solving the difficulties can also deal with the problems of their own research. Therefore, to find the current research hotspots, analyze clearly how the research was done, and determine what to do, in order to clarify the purpose of technological innovation activities, and to enter the stage of obtaining results.

3.3.2 Establish research methods

The survey found that there are problems such as unclear form and unclear process in the formation method adopted by innovation compilation. The methods used in the innovation compilation process should be diverse and targeted. For example, in the process application innovation of engineering technology, its research method starts from the process. For the functional invention and innovation of equipment and materials, its research method is to start with the equipment and materials themselves. No matter what type of innovation process, after all, it is the process of telling everyone what method and means to obtain their own research results. The method and process of conducting research are clearly explained and detailed, and the reliability of the research data obtained by the experiment will increase. On the basis of data credibility, it is necessary to strengthen the norms for the use of research data. It is necessary to emphasize the location, scope, type and quantity of the original research data collection. The application of research data according to the actual influencing factors must be distinguished from the original research data.

3.3.3 Highlight the core of innovation

The core of technological innovation activities is to discuss and analyze the influencing factors of research content and results. Only through the analysis of influencing factors can technological innovation activities be continuously pushed to new heights. The work content of technological innovation activities has been upgraded from quantitative change to qualitative change, which is the focus of technological innovation activities and the difficulty of professional staffing. Only by integrating the preliminary data collected in the innovation process, the original experimental data, and the applied research data, and using the data model to dig deep into the internal laws in multiple dimensions, can the analysis be thorough and the results obvious. At present, the most common and relatively simple analysis method is the mathematical chart method. Use diagrams and basic mathematical formulas to rationally express your research results.

3.3.4 Rules for extracting conclusions

The conclusion should clearly reflect whether the research problem has been solved, whether the purpose of the research has been achieved, and whether the research results have value. At the same time, it also reflects the current shortcomings of the research results and the direction of future

development. Therefore, the conclusion should be composed of three parts, affirming that their innovative compilation results have solved their own problems; clarifying that their achievements have the value of popularization and application; examining their own achievements from the perspective of development and dialectics.

4. Conclusion

Research shows that: 23% of technicians are aware of innovation activities and take the initiative to participate; 77% of technicians are not aware of innovation activities and have not been guided to participate by the organization, so they do not know much about technological innovation activities; from the perspective of individual technicians, 45% Technicians believe that participation in innovation is optional and has little impact on themselves; 36% of technicians believe that it is necessary to participate in technological innovation activities, but completing their jobs is more important and more in line with their actual benefits. In response to the research results, the following countermeasures should be carried out: (1) Enterprises should hold special training activities of "innovative preparation", through understanding the real needs of technical personnel innovation preparation activities, cultivating technological innovation learning ability, and mastering the specific methods of technological innovation preparation. Improve the enthusiasm of technical personnel to participate in innovation preparation; (2) Provide excellent innovation preparation templates step by step, from easy to difficult, and give full analysis and explanation, clarify the content, main body and method of innovation, and continuously assign innovation preparation tasks without departing from the project. The actual work of the project, both practical innovation and theoretical innovation, increase cooperation with colleges and research institutes and invite experts for guidance.

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