Research on career development for undergraduates in cost engineering

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Abstract. The research introduced career anchor theory to explicit career orientation and career development for the undergraduates in the cost engineering and apply all kinds of career anchor types to the cost engineering industry, and also analysis career anchor types which can be used to measure the professional talents in cost engineering; At the same time test the accuracy and rationality of the career anchor types by empirical investigation and obtain the types of employment organizations and the path of career development suitable for undergraduates through the combination of theory and practice. The paper has significance on students' employment and career development, also has certain inspiration function to the education workers.

Keywords: Cost engineering; Career anchor; Employment; Career development.

1. Introduction

In 2003, the Ministry of Higher Education formally approved the establishment of undergraduate Cost Engineering in Tianjin University of Technology, marking the major of Cost Engineering is officially recognized as a construction technology.it usually uses to measure quantities and price of construction project and control cost and management in the whole process [1]. Therefore, the Engineer cost of undergraduate majors can be developed rapidly. From 2003 to 2012, the number of undergraduate colleges has been increased, and the number of undergraduate majors has increased to 40 by 2012. Especially Implementation of the *Undergraduate Course Catalog for Universities and Colleges (2012)* and *Regulations for Undergraduates Majoring in Universities and Colleges* by the Ministry of Education, the Cost Engineering catalogue was changed from the Ministry of Education to the undergraduate majors, and opened in 2013 and 2014. In this two years the number of undergraduate professional institutions suddenly increased, reaching the number of 51 and 45 respectively. According to the professional employment statistics from the China Education Online website, although the employment rate of undergraduate engineering cost is higher, there are many problems in the course of employment, such as blind employment and broken contracts and jumps. Applying Career Anchor theory become increasingly important for career guidance and career development of undergraduate students [2].

2. Analysis of Career Anchor Type

The concept of career anchor proposed by Edgar H. Schein of the Massachusetts Institute of Technology (MIT), refers to the career preferences of individuals due to their personalities and willingness [3].The core of career anchor theory is to identify the exact position of self-occupation based on the ability to determine the self, needs and values. There are eight types of career anchor proposed by Schoen: technical / functional, managerial, creative, safe / stable, autonomous / independent, service-oriented, life-oriented and challenging [4].

The types of career anchor measuring engaged in cost engineer of undergraduate students include: technical, management-based, service-oriented, and challenging and life-type. The first three types of career anchor are divided by their different types of work. The latter two are in accordance with their attitude towards the work, the different values of the division [5] Details are as follows:

(1) Undergraduates of technical-type occupational anchors prefer to work in technical work, focusing on the technical part of the project cost-related business, will focus on the technical part of the work, so as to obtain self-engineering enterprises Value recognition, will be in the field of engineering cost technology to continuously upgrade their professional and technical capabilities.

(2) Management career anchor type of undergraduate students prefer to engaged in management work and have a strong desire to become managers. They will comprehensively enhance their abilities in management positions, including interpersonal processing capability, program analysis capability and other operational teams required abilities. The required capability to carry out all the work will be regarded as a ladder of career progress in the process of enterprise decision-making process to obtain the value of self-recognition.

(3) Service-oriented career anchor type of undergraduate students prefer to work in a service-oriented manner, focusing on internal and external co-ordination and coordination within the project cost enterprise. The work is usually to eliminate the instability in the enterprise, The daily administrative operation more smoothly, although the content and the management of occupational anchor part of the coincidence, but there is no strong desire to forge ahead, the content of their work tend to support the nature of the operation is to assist enterprises to obtain the value of self-recognition.

(4) Challenging career anchor type of undergraduates preferred in the challenging work, the more challenging means that the higher the resulting return, the focus is to solve the engineering cost of the difficulties encountered by enterprises , And therefore need to improve their ability to solve all kinds of difficulties in order to solve the difficulties of enterprises to quickly obtain the value of self-recognition, in the process of solving challenging tasks in the process of training and self-training work ability.

(5) Undergraduates of life-type occupational anchors prefer to work in a family-oriented way, and seek a balance among individuals, families and occupations in practical work, and cultivate and exercise themselves for the purpose of family care Work ability, which can well ensure the successful completion of the work.

Each type of undergraduate anchor career anchor have their own focus, and in the enterprise have different self-positioning. The first three kinds of professional anchor type, technology-based career anchor undergraduate students can provide technical support for enterprises is to carry out the core business; management anchor career undergraduate students through the decision-making for the development of a clear direction; service-oriented career anchor Undergraduates can work to make the organization run smoother. In the latter two types of career anchors, undergraduates of the Challenging Career Anchor aim to solve the difficulties faced by the organization system and enable the enterprise to develop well. The undergraduates of the life-type vocational anchors are the most reliable part of the enterprise, Enterprise organizational structure of the stable state [6].

3. Empirical Investigation on the Employment Situation of Undergraduate Cost Engineering

3.1 The job of Cost Engineer composition

In order to analyze the working environment of undergraduates after employment, select the typical cost engineering related enterprises to investigate. According to the basic structure of the construction industry, related enterprises includes construction company, building company and consulting company, so these three types of organizations related to cost engineering requirements analysis. The results are shown in Table 1.

Table 1 survey on the jobs of cost engineering

Post Position	Level Job	job
construction company	Primary Job	cost member, tender administrator , etc
	Intermediate post	Cost engineer, tendering engineers, contract compliance engineers, etc
	Senior position	The cost of competent manager, project manager, etc
consulting company	Primary Job	Bidding department assistant, cost member, etc
	Intermediate post	Cost engineer, engineering consultants, etc
	Senior position	The chief engineer, project manager, etc
building company	Primary Job	The builder, cost member, etc
	Intermediate post	Construction manager, cost engineer, etc
	Senior position	Technical director, project manager, etc

3.2 Survey on the matching situation of undergraduates' jobs and their career anchors

The purpose of this survey is to verify the accuracy and rationality of five types of career anchors matching the project cost positions. The contents of this survey are: First, to obtain the type of career anchor; Second, the current type of workplace.

The study questionnaire was therefore designed in two parts: The first part consisted of 40 items, the purpose of which was to determine the career anchor types of the testee; the second part consisting of 17 items, the purpose is to determine the nature of the measured job position, The current working status and future development planning.

The data sources of the survey are divided into two aspects: the first is from the network questionnaire, the design of the questionnaire into the questionnaire star website, invited to engage in the work of the project cost of professional staff to fill; the second aspect from the face-to-face questionnaires, mainly to participate in the registered cost engineer qualification examination training of technical staff to issue questionnaires On-site survey. The effective questionnaire was sorted out as shown in Figure 1 (excluding the incomplete, fuzzy random questionnaire).

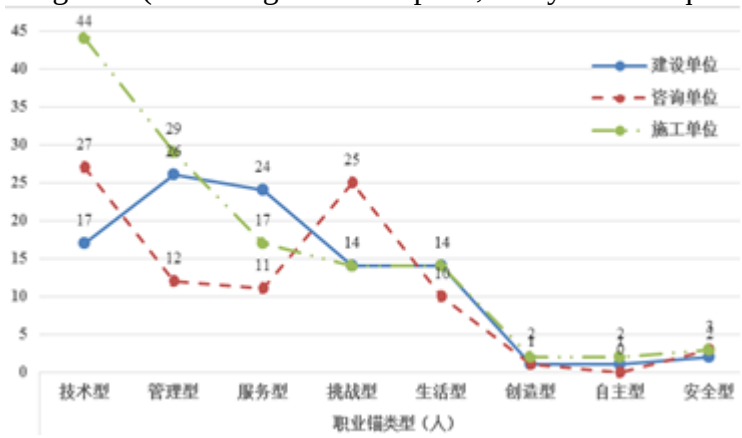

Figure 1.Career anchor all kinds of talents in engineering cost distribution of the enterprise

As shown in Figure 1, the sample of 3 to 10 years of employment in the distribution of work experience accounts for 79.94% of the total sample. This part of the sample has formed a fixed career anchor, and has accumulated a certain Work experience, their career planning needs a more mature view, to ensure that this study has a high research value. Among the professional types, 38.22% of junior positions, 56.05% of middle professional and middle management posts, 5.73% of senior professional posts and senior management positions, can reflect the actual work of the engineering cost professionals.

From the statistical situation of the sample, we can see that the proportion of technical talents in construction units, consulting units and construction units is relatively high; the proportion of management talents in construction units and construction units is higher; Talent in the construction unit in the proportion is higher; challenge talent in consulting units in the proportion is higher; life-type talent in construction units, consulting units, construction units in the uniform distribution.

While the number of creative, autonomous and safe talents is 4, 3, 8 respectively. The proportion of structure is 1.27%, 0.96% and 2.55% respectively.

4. Discussion of the findings

Technology-based career anchor talent is suitable for enterprise in the project cost the most qualified personnel, so the technical type of professional anchor talent is most suitable for the development of enterprises in the Engineering cost. Enterprises need strong organizational skills and emphasize on talent management capabilities. Therefore, three types of units need the management of professional anchor talent. Because the construction units need service-oriented career anchor talent to be the regulatory role, it is more suitable for the development of advisory enterprises.

Due to the diversity and complexity of clients in the consulting enterprise, its work is more challenging. Challenging career anchor talent is more suitable for the development of advisory enterprises. Because life-style anchor career professionals consider the balance between work and life and do not focused on the promotion of posts, so they will be the most solid part of cost-effective enterprises. Because the lack of creative, autonomous, safe career anchor talent in the he project cost enterprises, and they are not suitable for needs of enterprises. So these three types talent should try to satisfy the needs of the enterprise and improve the value of themselves if they want to continue to survive in the construction cost of enterprise.

5. Conclusion

The Enlightenment for Undergraduates' Employment and Career Development: Firstly, they should identify the type of career anchors of the self and have a clear understanding of self-ability so that they lay the foundation for playing the value of themselves. Secondly, according to the type of career anchor to choose their own career development for the type of business and career development, so that their career development in line with the needs of enterprises and achieve self-win-win business. Thirdly, they should develop their own career development plan according to the type of career anchor, so that they are suitable for the talent demand of project cost enterprises and increase their competitiveness.

The Enlightenment of Undergraduate Education: Firstly, we should encourage a cognitive course or lecture to join a student's development program and help students find a career anchor type of self. In addition, we should provide students with self-assessment tools and opportunities. Secondly, we should provide employment-oriented counseling and help students' choice type of employment based on their career and make career development plan so as to enhance the scientific nature of education.

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