

Multiple concurrent causal relationships and multiple paths analysis of the construction of first class undergraduate majors in local universities under the background of the Double Ten Thousand Plan - based on the QCA analysis of first class undergraduate majors in local universities in Liaoning province

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Abstract: The implementation of the Double Ten Thousand Plan aims to improve the quality of professional construction in universities. This article takes local universities in Liaoning Province with first-class undergraduate major construction pilots as samples and uses qualitative comparative analysis (QCA) to compare and analyze individual conditional variables and combinations of conditional variables. The research results indicate that universities should cultivate a dual-teacher teaching team and improve the level of practical teaching, increase investment in school-enterprise cooperation and promote the integration of industry and education, thus overcoming the path dependence of document governance and project governance, and improving institutional construction.

Key words: professional construction; qualitative comparative analysis methods; first-class professional

1 Introduction

Local universities (provincial universities), are affiliated with various provinces, autonomous regions, municipalities directly under the Central Government, and Hong Kong and Macao Special Administrative Regions. Their daily operations rely on local financial support. As the main part of China's higher education system, local universities are the main force serving the local economy, with local characteristics, focusing on cultivating high-quality talents for the local areas. Based on the availability of information, this article selects 30 local universities in Liaoning Province from all top professional construction pilots as research samples.

2 Research summary

2.1 Literature review

Professional factors refer to the key factors that control the quality of professional construction. The influencing factors of professional construction based on professional factors are divided into macro and micro aspects. Macro influencing

factors refer to abstract and conceptual influencing factors, micro influencing factors refer to specific and measurable influencing factors, and micro influencing factors refer to the concretization of macro influencing factors. The operational effectiveness of each link in professional construction affects the quality of professional construction, and the life cycle of professional construction has its inherent logic and is interconnected. The improvement of professional construction efficiency puts higher requirements on the quality and investment of professional construction, in order to achieve the goal of obtaining high quality with low investment in professional construction. The research focuses on four aspects: the influencing factors of professional construction based on macro professional elements, the influencing factors of professional construction based on micro professional elements, the influencing factors of professional construction based on processes, and the analysis of influencing factors of professional construction efficiency.

2.2 Qualitative comparative analysis (QCA) method

The qualitative comparative analysis method was proposed by Ragin in 1987, based on Boolean algebra and set theory [1]. Through comparative analysis of the causal relationship between cases, it explores the multiple causal relationships and multiple sets of conditional configurations between conditional variables and outcome variables. Clearly setting Qualitative Comparative Analysis (csQCA) is the first QCA technique developed by Charles Ragin and Kriss Drass. csQCA converts variables into binary tables with values of 0 and 1 [2].

3 Sample selection and determination of research variables

3.1 Determination of conditional variables

The objects of management for determining conditional variables are divided into human, finance, material, time, space, information, and events. Therefore, the goal of improving the quality of professional construction is achieved through the management of professional objects such as human, finance, material, time, information, and events. In addition, the process of professional construction requires institutional guarantees, and needs to have rules to follow. Based on the research results of scholars in the previous review and the theory of management objects, this article selects human, finance, material, and institutional variables as the category of conditional variables.

3.2 The determination of the outcome variable

As a phased achievement of professional construction in universities, the number of first-class professional construction points represents the quality level of professional construction in universities. According to data released on the undergraduate information platform of Liaoning Province, as of June 21, 2019, two batches of first-class majors have been selected in Liaoning Province. This article uses the sum of the two batches of provincial-level first-class professional construction pilots as the result variable of this article.

4 QCA single variable necessity analysis and truth table analysis

4.1 Univariate necessity analysis

During the necessity test process, it can be concluded that in the consistency test with the result variable "1", the consistency of the proportion of teachers with doctoral degrees (PTP) is 0.90, which is greater than 0.85, and the consistency of the other conditional variables is lower than 0.85, indicating that the proportion of teachers with doctoral degrees (PTP) is a necessary condition for the result variable. In the coverage test, the proportion of teachers with doctoral degrees (PTP) had a coverage of 0.64, which did not exceed 0.85, indicating weak explanatory power. In the consistency test with the result variable of "0", all values were below 0.85.

4.2 Core condition analysis

Drawing on the logical scheme table proposed by scholar Ragin for organizing results, the conditional variables are summarized and analyzed, and the conditional configurations of intermediate solutions are analyzed and summarized [3].

The combination of conditions that promote the application of first-class majors and hinder the application of first-class majors are obtained, respectively. For universities with a result variable of 1, the core conditions for the result variable are the proportion of teachers with doctoral degrees, undergraduate special teaching funds, the number of practical teaching and internship training bases, and the text of rules and regulations. The proportion of teachers with doctoral degrees as the core condition appears twice, respectively in the presence of conditions and the absence of conditions. Undergraduate special teaching funds have appeared as the core condition twice, both of which are due to the lack of conditions. The number of practical teaching and internship training bases, as well as the text of rules and regulations, have both appeared once in the combination as core conditions, namely the existence of conditions and the absence of conditions.

For universities with a result variable of 0, the core conditions for the result variable are the proportion of teachers with doctoral degrees, undergraduate special teaching funds, and the number of practical teaching and internship training bases. The proportion of doctoral degree teachers as the core condition appeared three times in the combination, all of which were in the absence of conditions. Undergraduate special teaching funds, as the core condition, appeared once in the combination when the conditions existed. The number of practical teaching and internship training bases, as the core condition, appears once in the combination, which exists in the absence of conditions.

5 Policy recommendations

5.1 Cultivating a double-qualified teacher team and improving the practical teaching level of universities

Colleges and universities need to design reasonable dual-teacher training programs and evaluation standards, while developing scientifically sound incentive mechanisms to enhance the endogenous motivation of dual-teacher teachers in universities. From the internal development of the school, dual-teacher teachers should be developed. On the other hand, universities should introduce industry and vocational education leaders, and enterprise technical skills masters to work in the college, forming a teaching force that combines operational practical teachers and research-oriented professional teachers and forming a high-level "coach type" teacher team and an "expert type" teacher research group.

5.2 Increasing investment in school-enterprise cooperation and promoting the integration of industry and education

To promote the integration of industry and education and serve the local economy, the integration of industry and education refers to the deep cooperation between university education and industrial practice, achieving the pre-cultivation of industrial talents and the industrialization of university scientific research capabilities. By increasing investment in the construction of internship and training teaching bases, utilizing the internship resources of internship and training teaching bases and the curriculum research and development capabilities of universities, practical courses are prearranged throughout the entire learning stage, tailoring courses for students and achieving a combination of theory and practice.

5.3 Overcoming the path dependence of document governance and project governance, and improving institutional construction

New institutionalist scholar John Meyer found that many of the rules and regulations formulated by organizations have no relation to their internal operations when studying the relationship between organizations and institutions [4]. To improve the quality of professional construction in universities, the first step is to reduce the number of institutional documents for professional construction. The formulated institutional documents should be refined rather than excessive, giving universities more autonomy in professional construction. Professional construction in universities should be analyzed in detail, and appropriate development paths should be selected based on the individual situation of the university [5].

6 Conclusion

The implementation of the "Double First-Class Plan" by the Ministry of Education is a deepening of the connotative development policy of higher education in the new era, and a specific policy behavior at the government level aimed at building first-class undergraduate majors. In the context of the construction of first-class majors, local universities in Liaoning Province should seize the opportunity and actively support the application and construction of national first-class undergraduate majors in various majors. Focusing on the needs of local economic development and characteristic development, a professional practice teaching platform has been established through school-enterprise cooperation, multidisciplinary collaboration within the school, construction of comprehensive innovative experimental courses, and active organization of discipline competitions, to build a national first-class undergraduate major, and promote the construction of local colleges and universities to a higher level.

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Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

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