Research on the Application of Factor Analysis Model

Tingting Liu*
School of Economics, Guangzhou College of Commerce, Guangzhou Guangdong 511363, China

*Corresponding author e-mail: 20190090@gcc.edu.cn

Abstract. This article uses a factor analysis model to conduct an empirical analysis using data analysis. The data comes from a questionnaire survey. The subjects of the survey are college students in Guangxi, China. The research topic is the dual "3+1" training model for compound talents. Based on the SPSS analysis that KMO=0.812 and spherical Bartlett=0.000, the contribution rates of the extracted 8 common factor variances are: \( H_1 = 13.487\% , \ H_2 = 8.535\% , \ H_3 = 8.303\% , \ H_4 = 6.152\% , \ H_5 = 5.814\% , \ H_6 = 5.622\% , \ H_7 = 4.925\% , \ H_8 = 4.870\% \), the above data results indicate: government support and social support, school publicity, government and university implementation efforts, student satisfaction with the training model, students' willingness for future development, etc. The Factor Analysis Model provides reference and enriches the theoretical basis.

Keywords: Factor analysis; Common Factor Variance; Double "3+1" Training Model; Reform and Innovation.

1. Introduction
For a long time, China's higher education has been influenced by the training model of the former Soviet Union, emphasizing the education of specialized talents, the transfer of knowledge, and the training of abilities; the emphasis is on single-type talents, and light on compound talents. This "professional" talent training model has played an active role in the context of China's relatively backward productivity and the urgent need for various specialized talents in all walks of life. However, with the rapid development of market economy and technology, the single training model of specialized talents that has been advocated has been difficult to meet the needs of current economic and social development, forcing universities to change the drawbacks of the traditional "professional" talent training model and fully implement them. To implement the outline of China's education reform and development plan, Guangxi urgently needs to build a compound talent training model that meets the needs of the society and reflects the characteristics of the times.

In 2010, with the comprehensive completion of the China-ASEAN Free Trade Area, Guangxi has become a bridgehead for China-ASEAN cooperation, and the economic and trade exchanges with ASEAN have become closer, and there is an urgent need for a large number of interdisciplinary talents. However, Guangxi's economy is relatively backward, lack of attractiveness to talents, insufficient talent development environment, incomplete talent training, exchange and cooperation mechanisms, and insufficient talent structure distribution, especially high-level and compound talents that meet the needs
of market economy development. Such serious scarcity has become a bottleneck restricting Guangxi’s economic and social development. Therefore, the economic and social development of Guangxi and the construction of the China-ASEAN Free Trade Area are not only vigorously attracting foreign talents, but also must rely on the strength of Guangxi universities to cultivate a group of excellent compound talents. Therefore, it is proposed to develop the double "3+1" training model for compound talents, the attitudes and views of college students in Guangxi, China on the implementation of the double “3+1” training model for compound talents, and the institute for the double “3+1” training model for compound talents. The necessary conditions and support are all worthy of further consideration and study.

2. Research Significance

1. One to further enhance the competitiveness of disciplines. Through the reform of the "3+1" training model for compound talents, the teaching and research level of related disciplines will be improved, and the competitiveness of the disciplines will be enhanced. Considering the training model of innovative compound talents under the premise of combining theory and practice, this research focuses more on applying, monitoring and evaluating the effects of this talent training model, summing up experience, in order to obtain greater benefits.

2. Further enrich the theory and practice of the training model for compound talents. The dual "3+1" training model is a major innovation in the talent training model of Guangxi University for Nationalities in China, which further enriches the compound talent training model, and can form a systematic and comprehensive education guide for the cultivation of compound talents for colleges and universities. Program.

3. It is helpful to cultivate compound talents who understand management and good practice, and send more outstanding talents in short supply for the economic and social development of Guangxi and the construction of China-ASEAN Free Trade Area. The economic and social development of Guangxi and the construction of the China-ASEAN Free Trade Area urgently need a large number of talents, especially excellent interdisciplinary talents. The implementation of this project can send a large number of excellent talents to the economic and social development of Guangxi and the construction of the China-ASEAN Free Trade Area.

4. Through the double "3+1" training model innovation, further improve the quality of talents. Taking Guangxi University for Nationalities as an example, a "3+1" is to take advantage of the non-universal foreign language undergraduate talent training base of Guangxi University for Nationalities and its geographical advantages with Southeast Asian countries, with the adjacent Southeast Asian countries’ unique disciplines such as language and ethnology. The advantage is the foundation, the Southeast Asian linguistics and ethnology disciplines are organically combined with the disciplines of Guangxi University for Nationalities, forming a 3+1 talent training model, that is, students study in China for 3 years and study in the target country for 1 year; +1” study theory courses in the first 3 years, and in the last year to intern in a company that has established a cooperative relationship with the college. Through the two "3+1" models, we will cultivate compound talents who understand majors, understand foreign languages, and emphasize practice.

3. Research Status

The issue of talent training has become a hot topic of concern and discussion in all countries in the world. Not only are there obvious differences in the ideas and measures of each country, but they are also aware of the need to place interdisciplinary and compound in a prominent position. "Harvard University in the United States clearly proposes to train national leaders, not professionals; Massachusetts Institute of Technology in the 1950s proposed to train engineers with scientific backgrounds, and now it has clearly proposed that it should turn to training in the global economic context Engineer; Japan proposes to establish a "social science and engineering", combining different disciplines into one discipline to cultivate compound talents" [1]. Universities from all over the world are breaking down the barriers between disciplines, developing comprehensive wide-caliber courses, implementing comprehensive teaching of interdisciplinary training, developing new majors, creating new courses, adopting multi-
disciplinary professional teachers as undergraduate teaching, and devoting to cultivating compound talents.

From the 1990s to the present, the "Higher Education Facing the 21st Century Teaching Content and Curriculum System Reform Plan" implemented by the Ministry of Education of China is a sign of the reform of the talent training model in universities and has achieved remarkable results. According to the reading and sorting of the literature, scholars' research viewpoints are mainly as follows:

Analysis and exploration of talent training model. Tan Bing (2013) In order to achieve the goal of quality education, build a "2+1+1" economics talent training model based on application ability training, provide a multi-level, flexible, and open practical teaching environment and training platform to enhance students' learning ability, practical ability and innovation ability[2]. Lian Yuanqiang (2015) analyzed the characteristics of cross-border e-commerce for talents and job skill requirements, discussed the innovation of cross-border e-commerce talent training models in colleges and universities, and proposed to build an "ecological alliance" and "eco alliance" for cross-border e-commerce talent training. Countermeasures and suggestions such as "Crowd Creation Space"[3]. Xu Bing (2019) clarified the importance and feasibility of the industry-university-research model in the current process of talent training in colleges and universities based on the current situation and existing shortcomings of my country's colleges and universities in the context of enrollment expansion, and put forward suggestions for constructing a college-industry-research talent training model [4].

Talent training system and mechanism. He Zhengdong (2017) The talent training mechanism of higher vocational colleges of agriculture and animal husbandry has problems such as insufficient integration of production and education and insufficient school-enterprise collaborative education mechanism. Adopting the "double-layer" deep integration development mechanism of production and education inside and outside the school, talent training model and construction Measures such as the production and education integration talent training guarantee system have solved these problems through mechanism innovation[5]. Zhang Chaohui et al. (2018) studied and obtained the best plan for the cultivation of practical medical talents from the perspective of the demand for talents in the medical field. Through the establishment of scientific analytic hierarchy model and data evaluation and analysis, the core goal of medical practical talent education is to cultivate students' innovative ability and practical application ability[6]. Ma Dongling et al. (2019) studied the existing training system based on the insufficient engineering capabilities of the surveying and mapping engineering applied talents cultivated by local applied undergraduate colleges and universities, and proposed to build applications based on applied skills and oriented by innovation capabilities. Training and teaching system for talented people[7].

Talent training and teaching reform. Wang Ling (2013) researched that the reform of applied and compound talent training is a new demand for talents in China's economic transition period, a new requirement for higher education institutions to choose a dual-track system of higher education, and a new pursuit and a new demand for diversified quality. The reform of application-oriented and compound-oriented talent training needs to solve seven problems, such as the positioning of talent training goals and the reform of teaching models[8]. Cui Xuerong et al. (2016) proposed nine specific teaching reform measures, so as to implement the specific course teaching process into the latest undergraduate training system, which has certain reference value for the education and teaching reform and the cultivation of innovative talents in my country's colleges and universities[9]. Xie Qiuli, Cheng Yong (2017) "Double-creation" talents are comprehensive talents with quality as the foundation, innovative and entrepreneurial awareness and ability. Cultivating "double innovation" talents is the need of my country's economic development and higher education reforms, building a talent training system that combines production, teaching and research, and exploring new models of innovative and entrepreneurial talent training[10].

Talent training path and strategy. Wang Ying (2016) The construction of an innovative country requires universities to update educational concepts and reform talent training models, and strengthen the cultivation of students' innovative spirit and ability. To solve existing problems and cultivate applied innovative talents, colleges and universities should build a practice-based innovative talent training
system and explore various forms of school-enterprise cooperation[11]. Ren Wenxia (2017) analyzes my country's requirements for pharmacy talents and their current status of pharmacy education, and explores the path of pharmacy talent training under the collaborative perspective of "medicine, teaching, and research". An innovative model that can be replicated has been explored, and the quality of pharmacy personnel training has been continuously improved, providing a necessary guarantee for the implementation of the "Healthy China" strategy[12]. The program (2017) postgraduate training model is an important part of the construction of innovative talent cultivation mechanism in my country's universities. To innovate the postgraduate training model, it is necessary to solve the existing constraints in the current mechanism and seek new ideas and countermeasures[13]. Peng Xinping (2019) College students should improve the cultivation of entrepreneurial ability and improve their overall quality. It analyzes the qualities that college students should have in entrepreneurship and the problems in the cultivation of college students' entrepreneurial talents, and proposes corresponding countermeasures[14].

In summary, many colleges and universities have realized the importance of cultivating interdisciplinary talents and strive to improve them. But it faces many difficulties, mainly: First, the professional caliber is relatively narrow. Most of the students currently trained are in a single discipline, especially in Guangxi, China, where the total number of first-level disciplines is relatively small, and the phenomenon of partial disciplines in the second-level disciplines is more serious, that is, the types of majors are uniform. This will not be conducive to the formation of an environment for cultivating interdisciplinary talents, and it is also not conducive to the development of interdisciplinary. Second, there is a serious disconnect between teaching and practice. Independent colleges aim at cultivating application-oriented talents and pay great attention to the importance of practice. At present, there is a serious disconnect between the theory and practice of undergraduate education in independent colleges, and there are few practice bases for students in independent colleges, and the time for internship students is short. To cultivate compound talents, practical teaching must be strengthened. Third, the simplification of teaching methods. At present, the teaching methods of undergraduate talents in independent colleges are mainly classroom teaching, which often ignores case teaching, experimental teaching, scenario simulation teaching, outreach training, etc., resulting in a dull learning atmosphere, low student interest in learning, and fewer teacher-student interactions,. Is not conducive to the initiative of students, and is not conducive to the cultivation of compound talents. Fourth, the construction of the teaching staff is not perfect. The cultivation of compound talents puts forward new requirements on the teaching staff, requiring a teaching staff with high knowledge level, comprehensive disciplinary background and strong practical ability. Finally, the trained talents do not have an international perspective, do not understand foreign policies, laws, and historical and cultural backgrounds, and cannot meet the needs of economic and social development.

4. Research Model

4.1. Factor model

There are n cases, and each case observes p measurement indicators, and there is a strong correlation between the p indicators. In order to facilitate research, the mean value of the variables after the standardized processing of the sample data is 0, and the variance is 1. The original variable and the standardized variable vector are both represented by X, and \( F_1, F_2, \ldots, F_m \) \((m < p)\) are used to represent standardized common factors.

If the following prerequisites are met:

1. \( X = (X_1, X_2, \ldots, X_p) \) is an observable random vector, and the mean vector \( E(X) = 0 \), the covariance matrix \( \text{cov} = \Sigma \), and the covariance matrix is equal to the correlation matrix R.

2. \( F = (F_1, F_2, \ldots, F_p) \) \((m < p)\) is an unobservable variable, its mean vector \( E(X) = 0 \), covariance matrix \( \text{cov}(X) = 1 \), then the components of the vector F are independent of each other.

3. \( \varepsilon = (\varepsilon_1, \varepsilon_2, \ldots, \varepsilon_p) \) and F are independent of each other, and the covariance matrix of \( E(\varepsilon) = 0 \), \( \varepsilon \) is a diagonal matrix and \( \Sigma \) is a diagonal square matrix, that is, the components of \( \varepsilon \) are also independent of each other.
And the factor model is:
\[
\begin{align*}
X_1 &= a_{11}F_1 + a_{12}F_2 + \cdots + a_{1m}F_m + \varepsilon_1 \\
X_2 &= a_{21}F_1 + a_{22}F_2 + \cdots + a_{2m}F_m + \varepsilon_2 \\
X_p &= a_{p1}F_1 + a_{p2}F_2 + \cdots + a_{pm}F_m + \varepsilon_p
\end{align*}
\] (1)

The matrix form of the factor model is:
\[
X = AF + \varepsilon
\]

4.2. Factor rotation
After the factor model is obtained, the common factors may not necessarily reflect the essential characteristics of the problem, and the goal can be achieved through factor rotation. The absolute value of the load factor \(b_{ij}\) of the new common factor after rotation should be close to 0 or 1. The factor's loading coefficient \(b_{ij}\) refers to the correlation coefficient between the \(i\)-th original variable \((X_i)\) and the \(j\)-th common factor \((F_j)\), which is the importance of \(X_i\) on \(F_j\). When \(b_{ij}\) is close to 0, it means that the correlation between \(F_j\) and \(X_i\) is very weak; when it is close to 1, it means that the correlation between \(F_j\) and \(X_i\) is very strong.

The matrix form of the factor model after rotation is:
\[
X = AF' + \varepsilon
\] (3)

4.3. Factor score
Factor analysis is to express variables as a linear combination of common factors, or a common factor is a linear combination of variables, that is, a factor score function, such as:
\[
F_j = \beta_{j1}X_1 + \beta_{j2}X_2 + \cdots + \beta_{jp}X_p \quad (j = 1,2,\ldots,m)
\] (4)

Among them, \(\beta_{jp}\) is the score of the \(j\)-th common factor on the \(p\)-th original variable.

5. Empirical Research
5.1. Propose hypothesis
There are many factors influencing the reform and innovation of the double "3+1" training model for compound talents in Guangxi universities in China. The study takes students of Guangxi University for Nationalities as the research object, according to the students' opinions on the reform and innovation of the double "3+1" training model for compound talents. The fill-in of the innovation questionnaire, the need for government support, social support, student recognition, acceptance, and colleges and universities to implement the reform and innovation of the dual "3+1" training model for compound talents that have been summarized, sorted, and screened Propaganda intensity, etc., using SPSS software analysis, and judging the main influencing factors of the reform and innovation of the double "3+1" training model of compound talents in universities based on the results of the questionnaire survey data analysis. Therefore, based on previous academic research results on talent training and teaching reform, the following hypotheses are put forward:
H$_4$: The reform and innovation of the dual "3+1" training model for compound talents implemented by universities in Guangxi, China has been significantly affected by government support and social support.

H$_5$: The reform and innovation of the dual "3+1" training model for compound talents implemented in Guangxi universities in China is significantly affected by the school's propaganda efforts.

H$_6$: The reform and innovation of the dual "3+1" training model for compound talents implemented by universities in Guangxi, China is significantly affected by the implementation of the promotion by the government and universities.

H$_7$: The reform and innovation of the dual "3+1" training model for compound talents implemented by universities in Guangxi, China is significantly affected by students' demand for ideals and skills.

H$_8$: The reform and innovation of the dual "3+1" training model for compound talents implemented by Guangxi universities in China is significantly affected by the acceptance of students.

H$_9$: The reform and innovation of the dual "3+1" training model for compound talents implemented by Guangxi universities in China is significantly affected by the situation of students' families.

H$_{10}$: The reform and innovation of the dual "3+1" training model for compound talents implemented in Guangxi universities in China is significantly affected by students' satisfaction with the training model.

H$_{11}$: The reform and innovation of the dual "3+1" training model for compound talents implemented in Guangxi universities in China is significantly affected by the students' willingness to develop in the future.

5.2. Selection of samples
Taking the students of Guangxi University for Nationalities in China as the survey and research objects, conduct a questionnaire on reform and innovation of the dual "3+1" training model for compound talents in colleges and universities (https://www.wjx.cn/m/33708509.aspx), 255 copies were returned, including 255 valid questionnaires and 0 invalid questionnaires. Although the students of Guangxi University for Nationalities account for only a small proportion of the total number of students in all colleges and universities in Guangxi, it has a strong representativeness of colleges and universities, which can fully reflect the implementation of the dual "3+1" training model for interdisciplinary talents in colleges and universities. The state of reform and innovation, students' attitudes, views, implementation possibilities and future development trends of the reform and innovation of the dual "3+1" training model for compound talents. The research data of the thesis mainly comes from questionnaire surveys, and the data are all true and reliable.

5.3. Empirical analysis

5.3.1. Factor analysis

| Table 1. KMO and Bartlett Test |
|--------------------------------|
| KMO sampling appropriateness number | 0.812 |
| Bartlett's sphericity test       |      |
| Chi-square last read             | 1532.203 |
| Degree of freedom                | 325   |
| Significance                      | 0.000 |

Table 1 is the inspection and sphere inspection. The KMO test studies the partial correlation between variables, and the influence of other factors is controlled when calculating the partial correlation, so it will be smaller than the simple correlation coefficient. The effect of sampling suitability is greater than 0.9, and it is acceptable above 0.7, and it is not easy to make factor analysis below 0.5. The appropriateness of KMO sampling in this study is 0.812, which is more than 0.7 acceptable; while the significance of Bartlett's test is 0.000, which is less than 0.01. Therefore, if there is a significant correlation between variables, there is no null hypothesis that the correlation matrix is the identity matrix.
Table 2. Common Factor Variance

| Factor                                | Initial value | Extract       | Factor                                | Initial value | Extract       |
|---------------------------------------|---------------|---------------|---------------------------------------|---------------|---------------|
| Family education                      | 1             | 0.777         | Understand less people                | 1             | 0.572         |
| Family monthly income                 | 1             | 0.689         | Implement fewer universities          | 1             | 0.487         |
| Should be resolved first              | 1             | 0.666         | Insufficient government support       | 1             | 0.51          |
| Should be resolved first              | 1             | 0.468         | Low coordination                      | 1             | 0.513         |
| Satisfaction level                    | 1             | 0.696         | Low support funds                     | 1             | 0.651         |
| Internship                            | 1             | 0.566         | Insufficient social support           | 1             | 0.595         |
| Challenging view                      | 1             | 0.552         | Most in need of training              | 1             | 0.591         |
| Propaganda                            | 1             | 0.596         | Corporate internship experience       | 1             | 0.517         |
| Lectures, forums                      | 1             | 0.522         | Professional theoretical foundation    | 1             | 0.52          |
| University financial support          | 1             | 0.483         | Entrepreneurial ability               | 1             | 0.497         |
| Government policy                     | 1             | 0.618         | Professional practical skills         | 1             | 0.524         |
| Government funding                    | 1             | 0.61          | Foreign language ability              | 1             | 0.651         |
| Training focus                        | 1             | 0.587         | Optimization suggestion               | 1             | 0.548         |

Extraction method: principal component analysis.

Table 2 above is the common factor variance table. It can be seen that the commonness of initial variables is used to measure the relative importance of common factors. The "extract" column is the value of the common degree of the variable, and the value of the common degree is \([0,1]\). For example, the common degree of family education level is 0.777, which can be understood as the contribution rate of the 8 common factors to the variance of the family education level variable is 77.7%.

Table 3. Factor Extraction and Naming

| Factor                                | Serial number | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | Grand total % |
|---------------------------------------|---------------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|
| Government and social support         |               | 0.783 |       |       |       |       |       |       |       | 13.487        |
|                                       | X1            | 0.712 |       |       |       |       |       |       |       |               |
|                                       | X2            | 0.645 |       |       |       |       |       |       |       |               |
|                                       | X3            | 0.604 |       |       |       |       |       |       |       |               |
| Push                                  |               | 0.706 |       |       |       |       |       |       |       | 22.023        |
|                                       | X8            | 0.619 |       |       |       |       |       |       |       |               |
|                                       | X9            | 0.488 |       |       |       |       |       |       |       |               |
|                                       | X10           | 0.463 |       |       |       |       |       |       |       |               |
| Skill requirements                    |               |       |       |       |       |       |       |       |       | 30.326        |
|                                       | X13           | 0.571 |       |       |       |       |       |       |       |               |
|                                       | X14           | -0.746|       |       |       |       |       |       |       |               |
|                                       | X15           | 0.465 |       |       |       |       |       |       |       |               |
|                                       | X16           | 0.441 |       |       |       |       |       |       |       |               |
|                                       | X7            | 0.435 |       |       |       |       |       |       |       |               |
|                                       | X17           | 0.394 |       |       |       |       |       |       |       |               |
| Acceptance                            |               |       |       |       |       |       |       |       |       | 36.478        |
|                                       | X18           | 0.692 |       |       |       |       |       |       |       |               |
|                                       | X19           | 0.681 |       |       |       |       |       |       |       |               |
| Family situation                      |               |       |       |       |       |       |       |       |       | 42.292        |
|                                       | X20           | 0.496 |       |       |       |       |       |       |       |               |
|                                       | X21           | -0.827|       |       |       |       |       |       |       |               |
| Satisfaction                          |               |       |       |       |       |       |       |       |       | 47.914        |
|                                       | X22           | 0.693 |       |       |       |       |       |       |       |               |
|                                       | X23           | 0.787 |       |       |       |       |       |       |       |               |
| Student wishes                        |               |       |       |       |       |       |       |       |       | 52.839        |
|                                       | X24           | 0.521 |       |       |       |       |       |       |       |               |
|                                       | X25           | 0.703 |       |       |       |       |       |       |       |               |
| Publicity                             |               |       |       |       |       |       |       |       |       | 57.709        |
|                                       | X26           | 0.388 |       |       |       |       |       |       |       |               |
|                                       | X27           | 0.779 |       |       |       |       |       |       |       |               |
|                                       | X28           | 0.432 |       |       |       |       |       |       |       |               |
|                                       | X29           | 0.391 |       |       |       |       |       |       |       |               |
The factor extraction and naming in Table 3 are based on the analysis coefficient matrix of the factors, the interpretation of the total variance of the table, and the rotated component matrix. The final common factor score formula can be obtained:

\[ F_1 = 13.487 \times \text{Government and social support}, \text{that is, government and social support rate.} \]

\[ F_2 = 22.023 \times \text{Promotion intensity, that is, the impact of the promotion intensity rate on the reform and innovation of the double "3+1" training model for compound talents.} \]

\[ F_3 = 30.326 \times \text{Skill demand, that is, the influence of skill demand rate on the reform and innovation of the double "3+1" training model for compound talents.} \]

\[ F_4 = 36.478 \times \text{Acceptance, that is, the impact of acceptance rate on the reform and innovation of the double "3+1" training model for compound talents.} \]

\[ F_5 = 42.292 \times \text{Family situation, that is, the influence of family situation rate on the reform and innovation of the double "3+1" training model for compound talents.} \]

\[ F_6 = 47.914 \times \text{satisfaction, that is, the impact of satisfaction rate on the reform and innovation of the double "3+1" training model for compound talents.} \]

\[ F_7 = 52.839 \times \text{Student willingness, that is, the impact of student willingness rate on the reform and innovation of the double "3+1" training model for compound talents.} \]

\[ F_8 = 57.709 \times \text{Propaganda situation, that is, the influence of the propaganda situation rate on the reform and innovation of the double "3+1" training model for compound talents.} \]

Because it studies the comprehensive influence of each factor on the reform and innovation of the double "3+1" training model for compound talents, the scores of 8 public factors can be weighted and summed, and the weight is the variance contribution rate corresponding to the public factor. Can be obtained from the rotation sum of squares in the total variance interpretation table in Table 3. The study uses the variance contribution rate as the value, and the variance contribution rates of the 8 rotated public factors are: 13.487%, 8.535%, 8.303%, 6.152%, 5.814%, 5.622%, 4.925% and 4.870%. Therefore, the comprehensive scoring formula for the reform and innovation of the double "3+1" training model for compound talents is:

\[
ZF = 13.487\% \times F1 + 8.535\% \times F2 + 8.303\% \times F3 + 6.152\% \times F4 + 5.814\% \times F5 + 5.622\% \times F6 + 4.925\% \times F7 + 4.870\% \times F8
\]

(5)

5.3.2. Research conclusion. H₁: The reform and innovation of the dual "3+1" training model for compound talents implemented in Guangxi universities in China has a significant influence of 13.487% of government support and social support.

H₂: The reform and innovation of the dual "3+1" training model for compound talents implemented in Guangxi universities in China has a significant influence of 8.535% of the school's propaganda efforts.

H₃: The reform and innovation of the dual "3+1" training model for compound talents implemented by universities in Guangxi, China is significantly influenced by the implementation of the government and universities, which is 8.303%.

H₄: The reform and innovation of the dual "3+1" training model for compound talents implemented by universities in Guangxi, China is significantly influenced by students' demand for ideals and skills, which is 6.152%.

H₅: The reform and innovation of the dual "3+1" training model for compound talents implemented by universities in Guangxi, China has a significant influence of 5.814% on the acceptance of students.

H₆: The reform and innovation of the dual "3+1" training model for compound talents implemented by universities in Guangxi, China is significantly affected by 5.622% of the students' family situation.

H₇: The reform and innovation of the double "3+1" training model for compound talents implemented by universities in Guangxi, China has a significant influence of 4.925% of students' satisfaction with the training model.

H₈: The reform and innovation of the dual "3+1" training model for compound talents implemented by universities in Guangxi, China has a significant influence of 4.870% on the students' willingness to develop in the future.
6. Recommendations and Conclusions

6.1. Suggestion
1. Actively carry out cooperation with overseas universities and use the joint training model to allow students to study and live in the target country for one year after laying a solid foundation, proficient in foreign languages, have an in-depth understanding of the target country’s culture, and train to adapt to Guangxi’s economic and social development and China-ASEAN free trade zones needed for trade construction.

2. Focus on the construction of teaching practice bases, and use the method of school-enterprise joint training to improve students' practical ability. The school continues to expand the teaching practice bases of various majors and strengthens cooperation with enterprises to enable students to fully serve the enterprises with the knowledge they have learned in the school. As a result, enterprises can obtain highly efficient and more affordable talents, which is different from the past only internships. The way to exercise students’ practical ability.

3. Establish a training platform for compound talents, integrate school language, management, economics, ethnology and other related discipline resources, and closely integrate with internship training links, and continuously innovate teaching methods and training models.

4. Teaching according to subject categories, further consolidate the foundation of students, expand students' knowledge, broaden their horizons, and provide a broader space for students' employment.

5. Establish a communication channel for the cultivation of compound talents. Before implementing the reform and innovation of the double "3+1" training model for compound talents, colleges and universities should understand the true wishes and needs of students, and understand if the implementation of the students' acceptance level, etc., it is even more so It is conducive to the smooth implementation of the reform and innovation of the double "3+1" training model for compound talents, to achieve the expected results and ideal goals, and to better cultivate the compound talents required by Guangxi.

7. Conclusion
Empirical research based on the factor model by SPSS shows that the contribution rates of the 8 common factor variances after rotation are: \( H_1 = 13.487\% \), \( H_2 = 8.535\% \), \( H_3 = 8.303\% \), \( H_4 = 6.152\% \), \( H_5 = 5.814\% \), \( H_6 = 5.622\% \), \( H_7 = 4.925\% \), \( H_8 = 4.870\% \). Therefore, in the process of training compound talents, China should not only pay attention to the internal and external support of the government, society, and universities, but also pay attention to the needs, wishes and wishes of students themselves, and continuously expand students’ horizons and consolidate their professional basic knowledge. And by strengthening the reform of practical links, improve students’ practical ability, explore new models of compound talent training, improve the quality of compound talent training, and send more outstanding talents to Guangxi’s economic and social development and the construction of the China-ASEAN Free Trade Area.

First of all, we must pay attention to the implementation and optimization of the dual "3+1" training model for compound talents. The implementation of the dual "3+1" model requires active expansion of external contacts and integration of numerous resources. At the same time, it also needs to continuously improve and improve the talent training model according to the students' willingness and acceptance of the training model, their degree of acceptance, study, life and internships abroad, etc. optimization. Secondly, actively integrate the superior resources of related disciplines, based on government funding and policy support, university funding and publicity, and social support, and combine the needs of Guangxi's economic and social development and the construction of China-ASEAN free trade to establish compound talents. Cultivating platform to explore the training model of compound talents urgently needed in the region. Finally, implement the school-enterprise joint training model. According to market demand, students' demand for ideals and skills, and students' willingness for future development, courses and students' practical work plans are set up in a targeted manner. Students will combine the theories they have learned with the reality of the company to improve their ability to solve
practical problems. Establish a base that integrates "teaching, scientific research, practical training, and enterprise-specific talent reserve", which not only solves the problem that the school enables students to closely connect with the actual situation of the enterprise in the professional education process, but also enables the enterprise to reserve compound talents that support the sustainable development of the enterprise.

References
[1] Dai Fen. Exploration of knowledge sharing behavior in online learning space based on social cognition theory. Yunnan Normal University, 2019.
[2] Tan Bing. Research on the Cultivation Mode of Undergraduate Talents in Economics, J. Chinese Journal of Education. S4 (2013) 99-100.
[3] ian Yuanqiang. Research on the Ecological Training Model of Cross-border E-commerce Talents in Colleges and Universities, J. Chinese Journal of Education. S2 (2015) 379-380.
[4] Xu Bing. Research on the talent training model of colleges and universities under the collaborative innovation of industry, university and research, J. China Adult Education. 24 (2015) 42-43.
[5] He Zhengdong. Research on the reform of higher vocational agriculture and animal husbandry talents training mechanism based on the integration of production and education——Taking Jiangsu Vocational College of Agriculture and Animal Husbandry Technology as an example, J. Jiangsu Agricultural Sciences. Vol. 45, No. 24 (2017) 327-329.
[6] Zhang Chaohui, Guan Zhe, Kuang Baoping, Huang He. Construction of the index system for the cultivation of practical medical talents under Internet + education, J. Modern Preventive Medicine. Vol. 45, No. 24 (2018) 4526-4530.
[7] Ma Dongling, Shi Zhuang, Cui Jian, Wang Xiaoyu. Research on the Training System of Applied Talents in Surveying and Mapping Engineering, J. Surveying and Mapping Engineering. Vol. 28, No. 01 (2019) 77-80.
[8] Wang Ling. Pedagogy analysis of applied and compound talent training reform, J. Vocational Education Forum. 36 (2013) 4-8.
[9] Cui Xuerong, Li Juan, Cao Aiping. Research on college teaching reform under the innovation training system, J. China Adult Education. 21 (2016) 98-100.
[10] ie Qiuli, Cheng Yong. Exploration and practice of "double innovation" talent training mechanism integrating industry, university and research, J. Experimental Technology and Management. Vol. 34, No. 12 (2017) 196-199.
[11] ang Ying. Research on the Problems and Countermeasures of Applied Innovative Talents Training, J. Educational Theory and Practice. Vol. 36, No. 36 (2016) 12-14.
[12] Ren Wenxia. The path of pharmacy talent training under the coordination of "medicine, teaching, and research"——Taking Zhejiang Medical College as an example, J. China Pharmacy. Vol. 28, No. 36 (2017) 5173-5175.
[13] Procedures. Research on the Graduate Training Mode under the New Mechanism of Cultivating Innovative Talents in Colleges and Universities in my country, J. Hubei Social Sciences. 12 (2017) 164-167.
[14] Peng Xinping, Zhang Xiumei, Chen Yongxiu. Research on the Cultivation of Entrepreneurial Talents for College Students, J. China Adult Education. 24 (2013) 59-61.