REFORM OF TALENT CULTIVATION IN HIGHER VOCATIONAL EDUCATION IN ETHNIC REGIONS FROM THE PERSPECTIVE OF ECONOMICS

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A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF
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วิทยานิพนธ์ฉบับนี้เป็นงานวิจัยที่เกิดจากการค้นคว้าและวิจัย ขณะที่ข้าพเจ้าศึกษาอยู่ในคณะครุศาสตร์อุตสาหกรรม มหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี ดังนั้น งานวิจัยในวิทยานิพนธ์ฉบับนี้ถือเป็นลิขสิทธิ์ของมหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี และข้อความต่าง ๆ ในวิทยานิพนธ์ฉบับนี้ ข้าพเจ้าขอรับรองว่าไม่มีการคัดลอกหรือนำงานวิจัยของผู้อื่นมานำเสนอในชื่อของข้าพเจ้า

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ABSTRACT

This study explores the laws and characteristics of the supply side structural reform of higher vocational education talent in an ethnic region of China, namely Guangxi. The aim of the study is to provide theoretical basis and policy considerations for the improvement of the higher vocational education system via high-quality talent supply in ethnic regions such as Guangxi.

Using theory, history, and practice as its three lenses, this paper discusses the particular characteristics and laws of talent supply in higher vocational education in Guangxi. Firstly, core concepts of supply and demand in the supply side structural reform of higher vocational education talents in Guangxi are extracted. Then, how to introduce this pair of economic categories into the discussion of higher vocational education is considered. Finally, the perspective of stakeholders in higher vocational education and the value of talent supply side structural reform is summarized. Two macroeconomic theories are applied to the analysis: the "New Supply Economics Theory", whose core is "New Supply Creating" "New Demand" and the "Public Goods Theory", which mainly explores the joint governance of multiple subjects in public goods. Because higher vocational education is a quasi-public product, the key to talent supply is to grasp the relationship between the government and the market. Achieving a model of multi-subject joint governance of higher vocational education in Guangxi under the leadership of the government will be valuable. To this end, this study

constructs a theoretical framework for exploring the supply side structural reform of higher vocational education talents in Guangxi through an interdisciplinary application of these two theories.

By closely examining the supply side structural reform of higher vocational education talents in Guangxi, it is hoped that a model of talent supply side structural reform applicable to the vast ethnic regions can be derived.

Keywords: economics, ethnic areas, Guangxi, higher vocational education, reform

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CHAPTER 1
INTRODUCTION

The relationship between ethnic education and ethnic economy has always been a fundamental issue of concern in ethnic education. As an important type of ethnic education, higher vocational education for ethnic minorities has a particularly close relationship with the ethnic economy. On the one hand, higher vocational education for ethnic minorities can provide practical labor for the economic development of ethnic regions, promote the "materialization" and innovation of science and technology in ethnic regions, and play a huge promoting role in the development of ethnic economy. On the other hand, the development of social productivity in ethnic areas restricts the scale and speed of the development of ethnic higher vocational education, the specifications of talent cultivation, professional settings, educational content and methods. Studying the structural reform of the talent supply side in ethnic higher vocational education and exploring how ethnic higher vocational education can adapt to the needs of economic development in ethnic regions is of great significance for promoting modernization in ethnic regions, maintaining ethnic unity, and national unity.

The relationship between the development of higher vocational education and social change has always been a topic of concern for the academic development community in China. As higher vocational education moves from the edge to the center in the process of socialist modernization construction in China, academic research on its theory and practice has gradually flourished. Essentially, the internal force driving higher vocational education towards the center of economic and social development is the development of vocational colleges themselves, while the external force is the increasing demand for high-quality technical and skilled talents in economic and social development. With the deepening of the modernization construction of socialism with Chinese characteristics, the connection between higher vocational education and economic and social development in China has become increasingly close, and the interdependent and complementary relationship has become increasingly prominent. Similarly, for ethnic minority areas, the revitalization of regional economy and society, high-quality development of ethnic economy, and inheritance

of ethnic culture cannot be achieved without talent and intellectual support from higher vocational education. Therefore, studying and paying attention to talent cultivation in higher vocational education in ethnic regions, exploring the characteristics and laws of the development of higher vocational education, are the practical needs of modernization construction in ethnic regions. As a typical ethnic region, Guangxi has distinct characteristics in its economic and social development, and its demand for higher vocational education talent cultivation is also highly representative. Taking Guangxi as an example, exploring the laws of talent supply side structural reform in higher vocational education in Guangxi can confirm the assumptions about the characteristics and laws of the development of higher vocational education in ethnic regions.

1.1 Background and Statement of the Problem

At present, China has 34 provincial-level administrative regions, including 23 provinces, 5 autonomous regions, 4 municipalities directly under the central government, and 2 special administrative regions (Provincial Administrative Division of China, 2023).

There are 5 ethnic minority autonomous regions in China, namely Xinjiang Uyghur Autonomous Region, Ningxia Hui Autonomous Region, Guangxi Zhuang Autonomous Region, Tibet Autonomous Region, and Inner Mongolia Autonomous Region (Provincial Administrative Division of China, 2023).

The vocational education level in the western region where ethnic minorities live is not only lower than the national average, but also far behind the eastern region. In terms of the total number of higher vocational and technical colleges, the eastern region is nearly twice that of the western region.

Table 1.1 Basic Information of 5 Provincial Ethnic Autonomous Regions

Serial Number	Autonomous Region Name	Capital (Administrative Center)	Area (10^4 square kilometers)	Resident population (10^4)	Regional characteristics	Per capita GDP (10^4yuan)	Per capita disposable income (10^4yuan)
1	Inner Mongolia	Hohhot City	118	2540	North, adjacent to eight provinces and regions	6.8	3.1
2	Ningxia	Yinchuan City	6.6	695	Northwest, the smallest of the five autonomous regions in terms of area	5.4	2.4
3	Xinjiang	Urumqi City	166	2487	The northwest border, accounting for one sixth of China's total land area	5.5	2.3
4	Tibet	Lhasa City	123	344	The southwestern border area accounts for about one eighth of the total area of the country, second only to Xinjiang	4.9	1.95
5	Guangxi	Nanning City	23.8	4960	The South, the only coastal autonomous region in China	4.3	2.33

Source: China National Bureau of Statistics, 2023

Focusing on the theme of the talent supply side structural reform of higher vocational education in ethnic regions represented by Guangxi, using research methods such as economics and pedagogy, and selecting G College as a fieldwork, this paper studies the rules and characteristics of the talent supply side structural reform of higher vocational education in ethnic regions, The purpose is to provide theoretical basis and policy considerations for the improvement of the higher vocational education system and high-quality talent supply in ethnic areas such as Guangxi.

Based on theory, history, and practice, this paper discusses the characteristics and laws of talent supply in higher vocational education in Guangxi.

Figure 1.1 Location map of 5 provincial-level ethnic autonomous regions

Source: Distribution of Ethnic Regional Autonomy in China, 2022

The first is theoretical clues: extract the core concepts of the talent supply side structural reform of Guangxi higher vocational education: supply and demand, and consider how to introduce this pair of economic categories into the discussion of higher vocational education.

From the perspective of stakeholders in higher vocational education, summarize the value of talent supply side structural reform. Two macroeconomic theories are applied:

The first is the new supply economics theory (Chen Fuzhong, 2016), whose core is new supply creates new demand (Chen Fuzhong, 2018).

In Guangxi's higher vocational education, the government and industrial enterprises among various stakeholders on the demand side can provide resources for the development of higher vocational education. Therefore, compared to individuals, the government and industrial enterprises pursue more urgent and demanding return on investment for talent suppliers. The current objective reality is that the phenomenon of talent surplus has emerged, which means that it is no longer feasible to seek capacity reduction and inventory reduction from the demand side alone (Wang Jiangtao, 2016).

Therefore, structural and innovative exploration should be carried out on the talent supply side to stimulate and promote the generation of new demand on the demand side through innovative development on the supply side.

Another important subject of stakeholders is students, who to some extent are the products of education. However, when discussing educational issues, we cannot use the purely commercial thinking of utilitarianism to analogy. The essence of education is to establish morality and cultivate people. Helping students achieve personal development is the cornerstone of higher vocational education. Especially for higher vocational education in ethnic minority areas, it should be taken into account that it can bring more opportunities for students in ethnic minority areas to receive higher education and achieve educational fairness to a greater extent.

The second is the public product theory (Wang Lin, 2016), which mainly discusses the multi subject joint governance of public goods. Higher vocational education is a quasi public product, and the key to its talent supply is to grasp the relationship between the government and the market, and achieve a multi subject joint governance model for Guangxi's higher vocational education under the leadership of the government (Wang Lin, 2016).

This study builds a theoretical framework for exploring the talent supply side structural reform of higher vocational education in Guangxi through the interdisciplinary application of these two theories.

The second is the historical clue: taking history as the logic, this paper combs the history of its development and talent supply from three dimensions: the higher vocational education of Guangxi, a typical representative of the world, China, and ethnic regions.

Firstly, through analyzing the historical changes and typical mainstream models of the development of higher vocational education in several representative countries in the world, it is concluded that higher vocational education is developing towards a trend of balanced supply and demand relations, gradually improving supply and demand systems, and gradually diversifying supply entities. Higher vocational education has always responded to the era's demand for economic and social development, and is a supply means to respond to the demand for talent from various interest entities. Therefore, summarizing and thinking about its history from the perspectives of supply and demand relationship, supply system, and supply subject can provide inspiration for the talent supply of higher vocational education worldwide.

The second is to discover that the development of higher vocational education in China has undergone the same transformation process as other countries in the world, with regular changes taking place in the supply relationship, supply system, and supply subject. In the process of higher vocational education practice, China has also realized the importance of balancing supply and demand relationship, improving supply system, and diversifying

supply subjects for achieving talent supply and demand in higher vocational education, In the process of development, policies are constantly adopted to regulate and reform.

The third is to sort out the development process of higher vocational education in Guangxi, which is a typical ethnic region. In general, through the review and summary of historical changes, we can obtain enlightenment on the current talent supply side structural reform of higher vocational education in ethnic areas.

Finally, there are practical clues: explore the demand for higher vocational education talent supply from the economic and social development of Guangxi, and find that the ultimate goal of economic and social development is to promote the economic and social prosperity of the region through the development of various industries in ethnic areas, thereby promoting the people of all ethnic groups, with Zhuang as the main ethnic group, to obtain a better life in Guangxi.

Under this overall demand, there is a demand for the supply of higher vocational education talents in the region with the characteristics of ethnic regions. How well does Guangxi respond to these needs?

Since the reform and opening up, Guangxi, as a minority region, has made significant progress in various social undertakings, and higher vocational education has also achieved rapid development in the past decade, basically meeting the needs of current economic and social development. However, as a minority and underdeveloped region, the foundation is weak, and there is a lack of confidence in coping with the future geographical relationship and industrial pattern (Tu Yunyou, 2019). There is a trend of talent supply and demand not matching, mainly reflected in the layout of universities, professional settings, curriculum systems, and teaching activities. After conducting a field survey of G College, it was found that there are certain practical difficulties in the connection between the school layout and industrial layout, the connection between professional settings and industrial settings, the connection between courses and positions, and the connection between the talent cultivation process and the production process, resulting in deviations in the integration of talent supply and demand, and the coexistence of talent surplus and labor shortage.

1.2 Research Questions

The main issues of the study are :

1.2.1 What is the characteristics and laws of the supply-side structural reform and development of higher vocational education talents in ethnic minority areas : Guangxi ?

1.2.2 Why should we reform the talent cultivation of higher vocational education from the supply side of ethnic minority areas : Guangxi ?

1.2.3 what is the current situation of the demand side of talent in higher vocational education in Guangxi, and to what extent does it meet the demand side?

1.2.4 What is the direction and focus of higher vocational education reform in ethnic minority areas : Guangxi ?

1.3 Research Objectives

1.3.1 Identify the characteristics and patterns of the supply side structural reform and development of higher vocational education talents in ethnic minority Guangxi region.

1.3.2 Identify the connection between the supply side reform of higher vocational education talent cultivation in ethnic minority Guangxi region and the regional economy of Guangxi.

1.3.3 generalize the current demand side situation of higher vocational education talents in Guangxi and the degree of matching with supply measurement.

1.3.4 Summarize the direction, path, and focus of higher vocational education reform in Guangxi.

1.4 Content Scope

1.4.1 Content of the Study

This study is divided into seven parts: A survey and research were conducted on the supply basis of higher vocational education talent suppliers. Research the main

connotation and theoretical framework of the supply side structural reform of higher vocational education talents in ethnic regions. By reviewing and summarizing historical changes, we can gain insights into the current talent supply side structural reform of higher vocational education in ethnic regions. Over view of the demand for talent supply in higher vocational education in Guangxi's economic and social development. The current situation and main issues of talent supply in higher vocational education in Guangxi. Analysis of the reasons and reform ideas for the talent supply problem in higher vocational education in Guangxi. The fundamental path for the structural reform of the talent supply side in Guangxi's higher vocational education.

1.4.2 Population size

Guided by the overall research framework and based on the research of existing literature, a field survey was conducted at G College. In this study, both micro and macro perspectives were included. From the survey of fieldwork, the macro aspect mainly refers to the professional settings, integration of production and teaching, and talent cultivation mode of Fieldwork G College, while the micro aspect mainly refers to the curriculum setting, curriculum implementation, student internship and employment. From the perspective of the entire article, Tian Tian Dian G College is a micro and "point" case, which is a microcosm of the medium and "line" problems existing in the talent supply side of higher vocational education in Guangxi. It can also reflect the talent supply problems existing in the macro perspective of ethnic regions. For this reason. This study is based on the framework of economic research methods, using participatory observation, in-depth interviews, and historical literature analysis to complete the entire study.

1.4.3 Time

Development of Higher Vocational Education from 2014 to 2023

1.4.4 Area

The Current Situation of Higher Vocational Education in Five Ethnic Autonomous Regions Represented by Guangxi

1.5 Definition of Terms

1.5.1 Ethnic Autonomous Regions: Under the unified leadership of the state, based on areas inhabited by ethnic minorities, establish corresponding autonomous organs, exercise autonomy, independently manage internal affairs of their own ethnic groups and regions, and exercise the right to be the masters of their own affairs.

1.5.2 Higher vocational education: There are five types of education in China: preschool education, basic education (primary and secondary education), vocational education (including secondary vocational education and higher vocational education), higher education (including general higher education and higher vocational education), and adult education (including adult secondary education and adult higher education). The five types of education have their own training objectives. Vocational colleges mainly cultivate vocational and skilled talents with certain theoretical knowledge to meet the needs of production and work on the front line. Vocational and skilled talents are the most widely needed talents in current society.

1.5.3 Supply and demand in economics: The relationship between supply and demand is the cornerstone of economics, reflecting the relationship between the price and quantity of goods supplied and demanded. Simply put, if the price of a commodity supply is high, the quantity demanded is low; If the price of supply is low, the quantity of demand is high. On the contrary, and vice versa.

1.5.4 reform: Change, innovation. Often referring to changing old systems or things. Starting from improving the quality of supply, promoting adjustment through reform, improving the adaptability and flexibility of supply to changes in demand, meeting the needs of the general public, and promoting sustained and healthy economic and social development

1.5.5 Double position teachers: a specific term among vocational education teachers, refer to double certified teachers or double professional titles teachers, that is, teachers + intermediate or above technical positions (or professional qualifications), such as "teachers + technicians (accountants, lawyers, engineers, etc.)" (Li Mengqing, 2023).

1.5.6 supply - demand relationship: Under the condition of commodity economy, the relationship between supply and demand of commodities is the reflection of the relationship between production and consumption in the market.

1.5.7 Talent surplus: Mainly refers to undergraduate and graduate students who have received university education, and their current employment ratio or unemployment rate.

1.6 Limitations of the Study

As a minority region and a frontier region, Guangxi is also an economically underdeveloped region. Due to the generally lagging development of various industries, it is not attractive to various types of talents. This is a dilemma for Guangxi, and it is also a common dilemma for many ethnic regions.

At present, China's higher vocational education system has entered a new era of high-quality development. As the central government and local governments in autonomous ethnic regions attach importance to higher vocational education, relevant policies have been introduced one after another, all of which are trying to carry out pioneering planning and design for higher vocational education. These epochal breakthroughs and changes have occurred in the process of forming this article, but due to the lag in data collection, This article has failed to turn them into powerful data to support this study.

1.7 Expected Benefits

Summarize the rules of talent supply side structural reform in Guangxi higher vocational education, and hope to derive a model of talent supply side structural reform applicable to the vast ethnic areas based on this.

1.7.1 Determine the foundation for the reform of higher vocational education. Propose relevant strategies to attract stakeholders to participate in the reform of higher vocational education in ethnic autonomous regions, providing direction for solving the problem of low participation of stakeholders in the reform. The stakeholders involved in the

reform of vocational education in Guangxi include: government, universities, enterprises, families, social organizations, etc.

1.7.2 Clear indicators for evaluating and monitoring education quality. The proposal to introduce third-party institutions to evaluate the quality and evaluation of higher vocational education has broadened the path of educational economics.

1.7.3 Determine the key factors for connecting enrollment and employment. Design a linkage model between enrollment and employment. Open up the channel for vocational education students to rise.

1.7.4 Find a linkage mechanism between the market and vocational colleges.4. Vocational education has dual attributes of education and economy, which determines that vocational education and industrial development are inseparable. A comprehensive analysis of vocational education and industrial structure is more conducive to accurately grasping the future development direction of vocational education.

1.8 Research framework

The research framework consists of three parts: research ideas, research content, and research methods, as shown in the figure

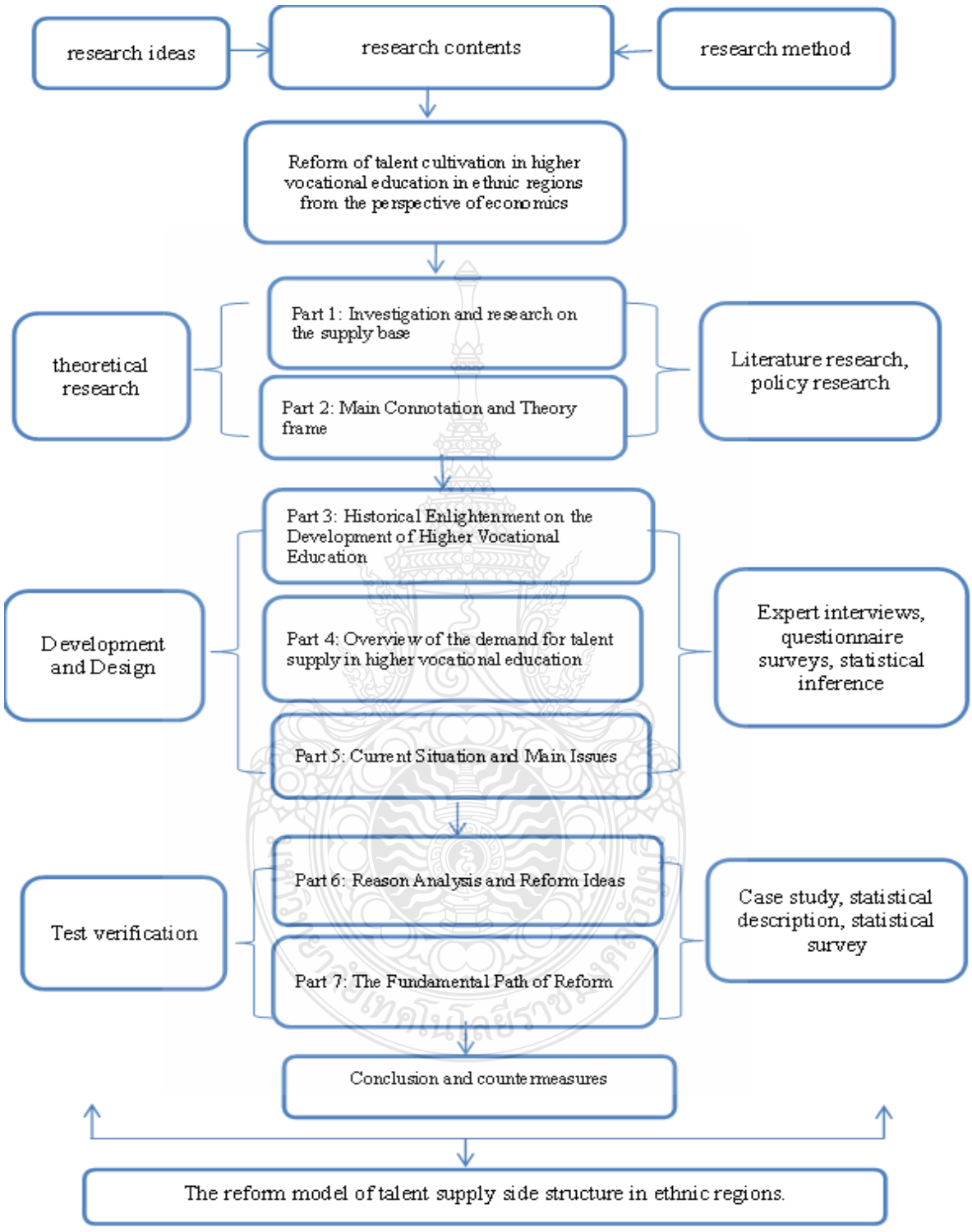

Figure 1.2 Research framework diagram

CHAPTER 2
LITERATURE REVIEW

Vocational education is the product of economic and social development to a certain stage, and the emergence and development of higher vocational education is also the result of responding to rapid economic and social development and changes. The research on the reform and development of higher vocational education in the academic community has been fruitful from macro to micro, from theory to practice, and cannot be enumerated.

However, as for the research on the supply side structural reform of higher vocational education, there were occasional references to the supply side and demand side of vocational education in newspapers and magazines at the beginning of this century. As a research perspective, it has only emerged in recent years.

2.1 Research on the Supply Side of Higher Vocational Education

2.2 Research on the Problems Existing in the Supply Side Reform of Higher Vocational Education

2.3 Research on the Structural Issues of the Talent Supply Side in Higher Vocational Education

2.4 Research on the direction and path of talent supply side structural reform in higher vocational education.

2.5 Synthesis of model or framework, Concepts/Theories/Research related to Dependent Variables

2.6 Concepts/Theories/Research related to Independent Variables

2.7 Research related to dependent and independent variables

2.8 Reviewing on research methodologies and research procedures of the dissertation

2.9 Reviewing key issues of the research scope

2.10 Reviewing on research results and research findings for Discussion and Suggestions in Chapter 5

2.11 Reviewing on research methodologies and research procedures of the dissertation (About theory that relate the study)

Supply and demand are the concepts of economics, Supply side structural reform (Shan Shiliang,2022) was proposed by General Secretary of the CPC Central Committee Xi Jinping at the 11th meeting of the Central Financial Leading Group (Central Financial Leading Committee) in 2022 (Shan Shiliang, 2022).

The structural reform of the supply side is aimed at improving the quality of supply and adjusting the economic structure through reform to adapt to a flexible and constantly updated demand side. Since then, following this principle, China's academic community has focused on the reform of the talent supply side of higher vocational education.

The current research on the structural reform of the talent supply side of higher vocational education can be summarized in four aspects: the demand and supply of higher vocational education; The difficulties and problems in the structural reform of the talent supply side in higher vocational education; The connotation of the talent supply side structural reform in higher vocational education; The direction and path of the structural reform of the talent supply side in higher vocational education (Shan Shiliang, 2022).

2.1 Research on the Supply Side of Higher Vocational Education

There are many research achievements on the supply side of higher vocational education, and the academic community mainly focuses on the supply side components of higher vocational education, the mechanism of supply side structural reform, and the path of reform implementation. Scholars are concerned about the quantity of talent supply in higher vocational education and the need to meet the needs of economic development, as well as the ability structure of talent in higher vocational education, namely, the satisfaction of the needs of professional and industrial structures, as well as the quality of talent cultivation in higher vocational education and the need to meet the needs of economic and social development.

Many scholars have explored the supply side of higher vocational education from multiple perspectives, including the components of the supply side and the interaction between supply and demand. (Han Bing, 2016) reformed the connotation development and quality improvement of vocational education from three aspects: curriculum, teachers, and students' sustainable development ability (Han Bing, 2016).

During the discussion of the reform process through the composition of the main elements of the supply side, some scholars (Guo Guangjun, Zhao Xionghui, 2018) proposed a supply and demand linkage mechanism model that can systematically reform the system, order, value, and other aspects. The model emphasizes that the supply side is driven and the demand side is oriented, and comprehensive supply is implemented to the demand side, including human demand, economic demand, social demand, and human demand, The interaction between the supply side and the demand side in China is well explored (Guo Guangjun, Zhao Xionghui, 2018).

At the same time, they also believe that driven by "Made in China 2025", China's demand for technical and skilled personnel has changed, with a broad, creative, and complex knowledge structure for technical and skilled personnel; Ability structure strength, innovation, and professionalism; Highly hierarchical, systematic, and forward-looking; New challenges and demands have emerged in the dimensions of type structure, productivity, and serviceability. To this end, we can optimize the layout structure supply of higher vocational colleges, school scale structure supply, specialty layout structure supply, specialty layout structure supply, school hierarchy structure supply, and the overall structure supply of higher education to achieve a technical and skilled personnel supply system that meets the new demand.

At the same time, some scholars have conducted exploratory discussions on how to achieve accurate supply in higher vocational colleges as the main supplier, proposing that in response to the requirements of the economic supply-side structural reform on the supply-side reform of higher vocational education, higher vocational colleges as the main supplier of talent and technology can contribute to achieving accurate supply of talent cultivation

and technical services in 10 aspects(Li Hongqu, Peng Zhenyu, 2016) the functions of colleges include employment, enrollment The diversification of social services, the standardization of university governance, the informatization of educational methods, the localization of talent supply orientation, the differentiation of school running characteristics, the internationalization of school status, the refinement of management and education, the systematization of school management and operation, the synergy between schools and enterprises, and the marketization of university development (Li Hongqu and Peng Zhenyu, 2016).

Education activities are an important part of economic activities, and education supply is a part of the economic supply of the whole society. By comparing with economic supply, it can be seen that the main investors of education supply are the government and society, the products supplied are people with specific knowledge, technology, quality, value, emotion, and attitude, and the core elements of supply are teachers with teaching skills and managers with management skills, The supply mechanism is that the government regulates the allocation of educational resources, and employers influence talent cultivation activities through the display of demand. Reducing inefficient supply, expanding the supply of high-quality education resources, enriching the variety of education supply, improving the supply structure, optimizing the allocation of education resources, improving supply quality, improving the education supply system, and improving supply efficiency can effectively promote reform (Chen Wei, 2017).

Different scholars have different divisions on the dimensions of higher vocational education reform. Chen Liting (2017) believes that the demand side of higher vocational education reform focuses on extension construction, while the supply side lies in connotation construction. Supply side reform is the best path choice for teaching innovation in higher vocational education, which can be viewed from talent supply, curriculum supply, student production practices, vocational qualifications Carry out comprehensive reform on the supply side of higher vocational education from five dimensions, including lifelong learning, to achieve innovative development in higher vocational education and teaching.

Another scholar has proposed the concept of precision in supply, arguing that the supply-side structural reform of higher vocational education can be discussed from four dimensions: logic, connotation, path, and security. Because the key word for the path of reform practice is precision (Zhang Xugang, 2016), it is possible to achieve precision in talent supply and social services in higher vocational education through reform. Specifically, in terms of the security mechanism, it is necessary to strengthen the system supply on the macro level, mobilize the active participation of industry enterprises, and in the medium term, it is necessary to reform the management system and introduce a diversified management mechanism; At the micro level, it is necessary to improve the modern school system, stimulate the innovative vitality of schools, and achieve accurate supply (Zhang Xugang, 2016).

In the supply side research of higher vocational education, a very important topic is the supply and demand fit of higher vocational education. The talent supply and demand of higher vocational education is ultimately reflected in three dimensions: the number of technical and skilled applied talents, the ability structure, and the degree to which talent quality meets the demand side.

Guo Fuchun and Wang Yulong (2019) analyzed the supply-side structural reform of higher vocational education from four dimensions: scale, structure, quality, and policy. They believe that the core of the reform is quantity and quality requirements based on demand. The principle of the reform is to balance supply and demand, pay equal attention to scale and quality, and consider both the present and the long-term. The practical path of reform is to dynamically adjust the scale of higher vocational education to balance supply and demand; Optimize the structure of higher vocational education by diversifying the main body of education, improving the modern vocational education system, and integrating the cooperation mechanism in the eastern, central, and western regions to optimize educational resources; Improving the quality of education; Systematically formulate higher vocational education policies to ensure sustained collaborative innovation.

In the study of fit, Chen Liting (2016) proposed a viewpoint that the reform and innovation of higher vocational education is not equal to the supply-side structural reform, and the main body of the reform is not only the higher vocational colleges themselves. She believes that supply side reform should be implemented in three directions: matching professional structure with industrial structure, matching talent cultivation with market demand, and matching education and teaching with student development (Chen Liting, 2016).

Some scholars have different perspectives on "fit" and believe that the lack of dominant position of industry enterprises in vocational education has led to many practical difficulties in vocational education curriculum design, teacher team construction, and student internship and training. The separation of the labor employment system and vocational education system is the underlying reason.

In addition, influenced by traditional culture and social concepts, vocational education has been subjected to certain prejudices and discrimination in our country. These two reasons have caused distortions in the allocation of vocational education elements, which are reflected in the mismatch between professional settings and market demand, curriculum settings and training objectives, teacher structure and vocational education characteristics, and student source structure and vocational education attributes. To solve these problems, we can use information technology to establish various databases, provide predictions for professional settings, and achieve accurate supply through big data and other forms; Develop professional standards and courses for vocational education, and achieve effective supply through the establishment of educational enterprises and other systems; Establish a national qualification system, promote the integration of general education and vocational education, and achieve innovative supply (Hu Chongqing, 2018).

2.2 Research on the Problems Existing in the Supply Side Reform of Higher Vocational Education

Scholars believe that some problems and dilemmas have been encountered during the supply side reform of higher vocational education. Ni Qinfeng (2020) believes that there are problems in China's higher vocational education, such as a single supply structure, loose connection between majors and the market, and homogenization of running schools (Hu Chongqing, 2020).

During the process of rethinking the development of higher vocational education in China, some scholars have found that the lack of development concepts and narrow talent cultivation concepts in higher vocational education have hindered the development of higher vocational education in line with the times. Problems such as insufficient investment in education capital and insufficient education quality during the rapid expansion of school size and quantity have also jointly led to the lack of functions of higher vocational education (Li Chengsen, Yan Weidong, 2017).

Regarding the problems existing in the reform, the relatively concentrated view is that there is a mismatch between supply and demand in higher vocational education, but scholars analyze the mismatch from different perspectives. Ding Jinchang (2019) believes that the mismatch is mainly reflected in the disconnection between talent cultivation and social needs (Ding Jinchang, 2019), the neglect of students' diversified development needs in the process of talent cultivation, and the mismatch between the scale of running a school and their own development needs, The dynamic mechanism of higher vocational colleges is not sound and the lack of innovative ability has led to the impact of talent cultivation characteristics, social services, and teaching quality improvement.

Liu Linshan (2018) analyzed the structural issues of school-enterprise cooperation in higher vocational education from a supply-side perspective and believed that the lack of effectiveness in institutional supply could neither help both schools and enterprises achieve the common goal of common education in terms of concepts and consciousness, nor could it play its expected role in the mechanism, that is, it could not promote cross-border

effective cooperation between government, school, and enterprise, nor could regulatory and regulatory functions function (Liu Linshan, 2018).

Some scholars have analyzed the practical difficulties in the supply process of higher vocational education from three dimensions: system supply, talent supply, and factor supply. They believe that in terms of system, the lack of system supply has led to some problems in internal governance structure, two-level management of colleges and departments, integration of industry and education, and school-enterprise cooperation. The low quality of supply factors is reflected in the practicality orientation of teachers' quality and professional construction. The lack of systems and the low quality of training factors have led to the dilemma of internally generated talent cultivation. The homogenization of talent supply is serious, and the supply of innovative talents is insufficient, resulting in the plight of low levels of social services to the outside world. The technical service capacity is insufficient, and it is unable to produce a large number of high-quality scientific research results, and the conversion rate is low (Wang You, 2018).

Liu Jiashu and Zhang Miao (2017) believe that there are problems in the supply side quality management model of higher vocational colleges, such as awareness, core element quality, external control quality management model, talent training model, and quality standard system of the training process.

2.3 Research on the Structural Issues of the Talent Supply Side in Higher Vocational Education

Regarding the structural issue of the talent supply side, the research results are mainly reflected in 5 aspects: the layout structure of colleges and universities, the structure of specialty settings, the talent cultivation model, the construction of teaching staff, and the evaluation and guarantee of teaching quality.

School layout. The layout of colleges and universities is the top-level design made by governments in various regions for higher vocational education. Its decision-making and practice are constrained by macro and micro factors, such as local economic, social,

political, and geopolitical factors, and micro factors such as regional educational development patterns and plans, and the history and foundation of the development of colleges and universities themselves.

In response, Zhao Jingjing (2017) conducted an empirical study on the changes in the regional layout of vocational education in China and proposed that at the national level, it is necessary to improve service awareness and guide the competition and cooperation relationship between regions; at the provincial level, it is necessary to improve the scientific nature of decision-making, taking serving the regional development strategy as the policy starting point; at the school level, it is necessary to clarify the positioning of running a school, and take the regional economy as the development foundation. National and provincial governments as the layout makers As the undertaker of the layout, colleges and universities jointly drive the rationalization of the layout of colleges and universities from different levels, thereby promoting the rationalization of the talent structure (Zhao Jingjing, 2017).

Song Yafeng, Wang Shibin, et al. (2018) conducted a quantitative study on the layout of existing higher vocational colleges in China, At the macro level, the layout of higher vocational colleges and universities in China is characterized by wide regional coverage, prominent 'clustering' phenomenon, and significant regional disparities. At the micro level, the layout of higher vocational colleges and universities is characterized by high city coverage, a dominant provincial capital city, and uneven heating and cooling in eastern and western cities. (Song Yafeng, Wang Shibin, 2018)

Regarding the spatial layout of higher vocational colleges, Liu Renxiong (2019) concluded after conducting a textual analysis of 192 provincial Annual Report on the Quality of Higher Vocational Education nationwide: The structural layout of higher vocational education is not reasonable enough to meet the needs of economic construction, industrial upgrading, and social progress, mainly manifested in the scattered distribution of colleges and universities, small size of schools, poor conditions, unclear characteristics of professional settings, insufficient docking with industrial clusters, high training costs, and

weak overall strength. (Liu Renxiong, 2019)

Professional setting and industry fit. The agreement between specialty setting and industrial structure is almost the consensus of most scholars studying the supply and demand of talents in higher vocational education, and in fact, it is also the consensus of all parties in practice. The research results on this issue are also particularly rich.

Shen Lujuan (2019) believes that the connection between industrial structure and professional structure of higher vocational education is crucial, and proposes that regional industrial development planning should be connected to the quantitative structure of higher vocational education majors, the layout of regional industrial clusters should be connected to the layout structure of higher vocational education majors, the level of regional technical and skilled talents should be connected to the professional hierarchy structure, regional pillars, emerging industries should be connected to the professional quality structure, and the level and structure of regional industrial technology should be connected to the professional scientific and technological service structure The interactive relationship between regional governments, enterprises, society, and higher vocational colleges should address the coordination of industries and specialties, using this as a strategy to enhance the docking effect between industrial structure and professional structure, grasp the transformation of supply and demand in the talent market, cultivate suitable talents, and achieve a win-win situation in multiple aspects (Shen Lujuan, 2019).

In terms of teaching staff construction. The most active element of the curriculum and talent cultivation model is the faculty. Regarding the construction of teaching staff in higher vocational education, scholars regard it as an important content of the talent supply side structural reform in higher vocational education. In particular, the construction of double qualified teachers is an enduring hot spot in the study of vocational education reform.

On this issue, Li Mengqing's research from Hubei University of Technology is the most representative. As early as 2011, in his article Building a Double Qualified Teacher Team in Vocational Colleges in the Context of the Education Planning Outline, he

mentioned that Double Qualified teachers are scarce in vocational education. Some of the main challenges faced by the construction of "Double Qualified" teacher teams are the lack of training and a series of institutional deficiencies, including access, evaluation, and incentives.

In 2012, he further combed the development process of the "double qualified" teacher system and the excellent practices of various provinces and regions in China during the development process, and based on this, proposed thinking on the system construction in the construction of the double qualified teacher team, including creating a good policy environment , setting standards and certification methods for double qualified teachers Develop a professional title evaluation system that conforms to the characteristics of 'double qualified' teachers in vocational education" and other specific suggestions.

After years of development of these missing systems, China's double qualified teacher team has continued to grow but is still in short supply. Especially in the context of supply side reform, the contradiction between the shortage of double qualified teachers and the rapid development of the industry and the increasing importance of vocational education has become increasingly acute. In 2016, He continued to write the article Building a Double Qualified Teacher Team in the Context of Supply Side Structural Reform to further analyze the requirements of supply side structural reform on the ability of Double Qualified teachers, analyze the problems existing in the current Double Qualified teacher team construction and the constraints these problems have on the development of vocational education, and finally propose a Double Qualified teacher team construction strategy of Efficient Supply, High Quality Supply, and Accurate Supply.

In addition, Liu Lifang (2018) conducted a special study on the cultivation of double qualified teachers in higher vocational colleges, proposing to increase the number and proportion of double qualified teachers, and build a high-quality teacher team with excellent professional knowledge, rich practical experience, and a combination of autocracy and part-time work, which is the key to ensuring the quality of talent cultivation in higher vocational colleges. The establishment of double qualified teachers is not only a guarantee

for talent cultivation in schools, At the same time, it also benefits the entire economy and society, playing a positive role in industrial transformation and upgrading, improving efficiency and quality. It is recommended to cultivate a double qualified teacher team by formulating standards and qualification recognition systems for double qualified teachers, improving the evaluation system, conducting planned and targeted teacher training, and conducting teaching and research competitions (Liu Lifang, 2018).

The new focus of curriculum and talent cultivation model reform is the three education reform, which refers to the reform of teachers, textbooks, and teaching methods. Some scholars have studied the issue of teachers in higher vocational education from the perspective of three education reform, and proposed some relatively influential reform paths. For example, Zhou Jiansong and Chen Zhengjiang (2019) proposed the path of teacher reform - establishing high-level, structured teaching innovation teams, building high-quality, double-qualified teacher teams, and promoting the teacher management system in higher vocational colleges. (Zhou Jian Song and Chen Zhengjiang, 2019). Another example is Qin Huawei's (2019) proposal of strengthening the construction of teachers ethics and style through the guidance of the four haves standards for good teachers, improving the construction mechanism of teachers team, implementing the excellent teacher cultivation project, and comprehensively improving the quality of' double qualified teachers (Qin Huawei, 2019).

The reform of talent cultivation mode. Another important aspect of teaching reform in higher vocational education is the integration of industry and education. Currently, the integration of industry and education has become a core mode of talent cultivation in higher vocational education, so many studies regard school-enterprise cooperation and integration of industry and education as a breakthrough in the structural reform of the talent supply side of higher vocational education.

Xu Ye (2017) believes that supply side reform points the way for the reform of school-enterprise cooperation in higher vocational education, and school-enterprise cooperation should also undergo supply-side structural reform. From a macro perspective,

the focus should be changed from employment development to career development, and from a medium perspective, the focus should be changed from one end development to two end development. At a micro level, a talent cultivation chain should be formed, with precise supply to meet the social demand for innovative technical and skilled talents (Xu Ye, 2017).

Some scholars have sorted out the positioning of three stages of industry-education integration in the development of higher vocational education: industry-education integration as the development stage of higher vocational talent cultivation mode, as the school-running mode, and as the development paradigm stage. It is believed that this indicates that the integration of industry and education has moved from the edge to the core of talent cultivation in higher vocational colleges, becoming an effective way for sustainable development of higher vocational colleges and enterprises to play the main role of education. Higher vocational education should deepen the integration of industry and education, optimize the environment at the government level, consider integrating into regional economic and social development at the school level, and increase the integration degree of jointly cultivating high-quality technical and skilled talents with colleges and universities at the enterprise level (Liu Changxing, Liu Yuan, 2021).

Teaching quality evaluation and guarantee. This aspect mainly involves the quality and evaluation of education and teaching. Liu Jiashu and Zhang Miao (2017) believe that there are problems in the supply side quality management model of higher vocational colleges, such as awareness, core element quality, external control quality management model, talent cultivation model, and training process quality standard system. It is urgent to comb the quality awareness of talent cultivation; Improving the quality of core elements in colleges and universities, such as establishing a professional team of principals, a team of double qualified teachers, and establishing a system of graduate quality standards; Establish a new mode of quality management and control, introduce evaluation experts from society and industry, and learn advanced foreign experience; Improve the current mode of talent cultivation, highlight the characteristics of type education in higher vocational education, improve the proportion of theoretical and practical courses, and promote the reform of the

school running system by multiple means to promote the flexibility and diversification of pedagogy; Establish a quality standard system for the talent cultivation process, establish quality admission standards for teachers, and comprehensively ensure the quality of talent cultivation in higher vocational education (Liu Jiashu, Zhang Miao, 2017).

Liu Renxiong (2016) discussed the issue of quality evaluation in the supply side reform of higher vocational education, arguing that current evaluation models and theories fail to orderly separate management, evaluation, and management, that schools and governments are the subject of evaluation, and that the lack of discourse power between talents themselves and their users has affected the improvement and overall development of higher vocational education quality. The value orientation of teaching quality evaluation lacks an evaluation system with long-term goals, making it difficult to adapt to the constantly changing and developing higher vocational education. A quality evaluation model for higher vocational colleges based on six sum analysis is proposed (Liu Renxiong, 2016).

Liu Jiashu and Zhang Miao (2017) believe that there are problems in the supply side quality management model of higher vocational colleges, such as awareness, core element quality, external control quality management model, talent cultivation model, and training process quality standard system. It is urgent to comb the quality awareness of talent cultivation; Improving the quality of core elements in colleges and universities, such as establishing a professional team of principals, a team of double qualified teachers, and establishing a system of graduate quality standards; Establish a new mode of quality management and control, introduce evaluation experts from society and industry, and learn advanced foreign experience; Improve the current mode of talent cultivation, highlight the characteristics of type education in higher vocational education, improve the proportion of theoretical and practical courses, and promote the reform of the school running system by multiple means to promote the flexibility and diversification of pedagogy; Establish a quality standard system for the talent cultivation process, establish quality admission standards for teachers, and comprehensively ensure the quality of talent cultivation in higher

vocational education (Liu Jiashu , Zhang Miao, 2017).

Some scholars have proposed that the construction of professional dynamic mechanisms is one of the core tasks of the development of higher vocational colleges. There are some difficulties in the process of establishing mechanisms. The solution is to clarify the ideas for the construction of professional dynamic mechanisms to ensure the accuracy of the construction direction; Promote multiple supply simultaneously from the three dimensions of system, team, and social capital to promote the sustainability of professional dynamic mechanisms; Incorporate professional dynamic mechanism construction as an idea and spirit into the strategic development of the school to promote the continuous construction of the mechanism in a normalized manner (Liu Yan and Wu Yujian, 2017) .

Zhang Quanfu (2018) proposed an effective path for the supply side reform of higher vocational education based on the results of the evaluation of the ability of higher vocational colleges to adapt to social needs organized and implemented by the Education Steering Committee of the State Council. It is mentioned that it is necessary to consider the attractiveness and rationality of specialty settings from the perspective of supply side reform based on the analysis of professional talent cultivation status. The scientific setting of specialties is reflected in adapting to the needs of regional economic and social development with large majors and multi-directions, establishing standards for specialty settings, establishing professional early warning and dynamic adjustment mechanisms with employment rate, social demand, and satisfaction as indicators, and based on the development trend of regional economy and key industries, Set up some characteristic specialties in advance (Zhang Quanfu, 2018).

2.4 Research on the direction and path of talent supply side structural reform in higher vocational education

The direction and path of the talent supply side structural reform in higher vocational education is the focus of many research documents, so the conclusions of the study are also different from each other. People have proposed the direction and path of the

current talent supply side structural reform in higher vocational education from different perspectives such as philosophical values, theoretical logical reasoning, practical experience extraction, and methodological significance.

Zhang Binghui's service perspective. Zhang Binghui (2018) believes that in the context of supply-side structural reform, higher vocational education should transform its traditional educational type into a service-oriented function, and establish a service-oriented talent cultivation system based on student consumers. Serving governments, enterprises, and social organizations externally, and serving students, teachers, teaching, and research internally. According to the characteristics and needs of students, while teaching students in accordance with their aptitude and taking social needs as the guide, build a bridge between talent cultivation and social needs, provide accurate services, and improve the effectiveness of talent cultivation (Zhang Binghui, 2018).

He summarized the effective path of reform: based on serving employers, building a service-oriented talent cultivation model based on the order type of school-enterprise cooperation and modern apprenticeship system; Based on serving students and consumers, relying on vocational college skill competitions to reconstruct service-oriented courses; Based on serving students and society, we will build a diversified interchange chemical education and personality bureau featuring general teaching, continuing education, international cooperation, innovative experiments, and college to college connection.

Zhao Huili and Wang Bing (2016) proposed a practical path exploration towards supply side reform based on their analysis of provincial coordinated higher vocational education. They believe that there is a natural linkage between higher vocational education and local governments. Province is the highest local administrative region in China, and the development and reform of higher vocational education cannot be separated from the command and management of provincial governments. On the one hand, provincial governments need to delegate power and on the other hand, they need to coordinate the allocation of resources and structural layout of higher vocational education in the region, as well as the autonomy of higher vocational schools, funding, and promoting innovation and

reform of the educational system and mechanism. They proposed that in the context of supply side reform, provincial governments should help establish a voice in higher vocational education, and pay more attention to the contribution and dependence of regional economy on higher vocational education. Promote reform through planning guidance, expanding school autonomy, exploring a modern vocational education system, promoting the diversification of school running entities, and establishing a classified enrollment system and a dynamic adjustment mechanism for majors (Zhao Huili, Wang Bing, 2016).

Similarly, Sun Wenjuan and Yang Jun (2017) summarized the practical path of the supply side reform of Urumqi Vocational University, and summarized practical experiences such as promoting the integration and integration of middle, higher vocational, and application-oriented undergraduate education through the school's collectivization, jointly completing talent cultivation with multiple entities, dynamically managing the quality of teachers, standardizing the management curriculum system, authenticating practical teaching tasks, and internationalizing school running.

Lu Kunjian (2018) discussed the supply side reform path of higher vocational education from the perspective of new engineering type higher vocational colleges, and believed that the reform of new engineering type higher vocational colleges should be promoted in terms of professional structure, teaching system, and students' professional skills cultivation through precise docking between professional chains (clusters) and new engineering industry chains, precise docking between talent chains and job chains, and precise docking between knowledge chains and technology chains.

Research on the structural reform of the talent supply side of higher vocational education in ethnic areas is relatively rare, and more concentrated on specific aspects such as curriculum development, teaching models, enrollment policies, and so on. In the literature review, it was found that a relatively typical study is Pulin Lin and Dong Xing (2010), who took the exploration and practice of higher vocational education reform in Yunnan University for Nationalities as a case study to analyze the issue of employment oriented minority applied talent cultivation models in undergraduate universities.

n summary, the research results on the supply side structural reform of higher vocational education are rich, focusing on the connotation, logic, significance, dilemma, direction, path, etc. of the reform, especially on the reform path. Scholars have conducted a very thorough discussion, both theoretically and practically.

The viewpoint focuses on improving the quality of talent cultivation through improving the modern vocational education system, improving institutional mechanisms, activating the vitality of the reform of higher vocational colleges, building a double qualified teacher team, and building the connotation of higher vocational education. Through in-depth integration of industry and education, and precise cooperation between schools and enterprises, we can provide high-quality technical and skilled talents for regional economic development.

However, among the numerous research results, there are few studies focusing on the structural reform of the talent supply side of higher vocational education in ethnic areas. However, it is gratifying to note that with the rapid development of vocational education and the normalization of rural revitalization, the volume of high-level papers on vocational education in ethnic areas has shown a rising trend in the past decade, and will become a hot spot for scholars to study the supply side reform of higher vocational education. Guangxi is a typical ethnic region, and it is an important region that cannot and should not be ignored when studying the reform of higher vocational education in ethnic regions.

Currently, discussions similar to the structural reform of the talent supply side of higher vocational education in Guangxi are still slightly lacking. This research plan aims to conduct in-depth exploration and analysis in this field. This study is based on a thorough review of relevant literature, with reference to previous research findings and methods, to conduct a systematic study of the talent supply side reform of higher vocational education in ethnic regions, especially in Guangxi, a typical ethnic region, as a specific object, and to discuss the key points and paths for high-quality development of higher vocational education in ethnic regions.

2.5 Synthesis of model or framework, Concepts/Theories/Research related to Dependent Variables

The historical and logical clues to the development of higher vocational education in the world and China, the interdisciplinary application of the theory of supply side structural reform in macroeconomics, and the exploration of the characteristics and laws of the reform and development of higher vocational education in ethnic regions from the supply side, contribute to the construction of a theoretical treasure house of high-quality Chinese higher vocational education system. Using the field research methods of economics and pedagogy, and using the basic principles of macroeconomics and higher education, this paper conducts an interdisciplinary study on the structural reform of the talent supply side of higher vocational education in ethnic areas, thereby verifying the basic principles of the relationship between education and economic development, and exploring a new path for theoretical research on higher vocational education from a methodological perspective.

Focusing on the theme of the structural reform of the talent supply side of higher vocational education in ethnic minority areas, represented by Guangxi, using research methods such as field research, and selecting G College as a field study, this paper studies the laws and characteristics of the structural reform of the talent supply side of higher vocational education in ethnic minority areas, The purpose is to provide theoretical basis and policy considerations for the improvement of the higher vocational education system and high-quality talent supply in ethnic areas such as Guangxi.

2.6 Concepts/Theories/Research related to Independent Variables

Taking the four basic factors that affect and determine the quality of talent cultivation in higher vocational education, namely, the layout of colleges, specialty settings, curriculum system, and talent cultivation mode, as the independent variables of the study, this paper analyzes the demands of the main bodies on the talent demand side, including the government, society, students, and parents, as well as the satisfaction of the supply side of higher vocational education, and explores the specific manifestation of the contradiction

between talent supply and demand, and makes attribution analysis, Finally, it proposes the thinking of the talent supply side structural reform applicable to higher vocational education in Guangxi and similar ethnic regions.

2.7 Research related to dependent and independent variables

Centering on the theme of the structural reform of the supply side of higher vocational talents in ethnic regions, using the basic principles of higher education, adopting the field research method of economics, taking G College as a field point, and from three perspectives of history, theory, and practice, this paper sorts out and describes the necessity, reality, and inevitability of the generation and development of higher vocational education in the service of social and economic development, taking into account the layout of universities, specialty settings, curriculum systems The four basic factors that affect and determine the quality of talent cultivation in higher vocational education, namely, the talent cultivation model, are used as independent variables for the study. The demands of the main bodies on the talent demand side, including the government, society, students, and parents, and the satisfaction of the supply side of higher vocational education are analyzed, and the specific manifestation of the contradiction between talent supply and demand is explored and attribution analysis is made, Finally, it proposes the thinking of the talent supply side structural reform applicable to higher vocational education in Guangxi and similar ethnic regions.

2.8 Reviewing on research methodologies and research procedures of the dissertation

Fieldwork is a classic research method in economics and pedagogy. Fieldwork is an interdisciplinary application of economic research methods in the field of pedagogy, which conforms to the interdisciplinary and interdisciplinary characteristics of this study. Guided by the overall research framework and based on the research of existing literature, a field survey was conducted at G College. In this study, both micro and macro perspectives were included.

From the survey of fieldwork, the macro aspect mainly refers to the professional settings, integration of production and teaching, and talent cultivation mode of Fieldwork G College, while the micro aspect mainly refers to the curriculum setting, curriculum implementation, student internship and employment. From the perspective of the entire article, Tian Tian Dian G College is a micro and point case, which is a microcosm of the medium and line problems existing in the talent supply side of higher vocational education in Guangxi. It can also reflect the talent supply problems existing in the macro perspective of ethnic regions. Therefore, this study uses the research method of field investigation as the framework, using participatory observation, in-depth interviews, and historical literature analysis to complete the entire study.

1. Participate in observation. Participatory observation is a basic method in economic and educational research. "Because real situations do not appear at specific moments like" performances, but occasionally flash in daily life, as an ethnologist, if you cannot participate in the daily activities of fieldwork to capture, discover, and diligently seek the truth, you cannot learn the truth. In the field survey of this study, the author has consistently applied the participatory observation method to various educational and teaching activities in Field point G College. On the one hand, he has personally participated in the formulation and revision of a professional talent cultivation plan, classroom teaching, student internship guidance, graduate employment assistance, and so on. On the other hand, observe some activities of the school management, such as the negotiation of in-depth cooperation between schools and enterprises, and the planning and operation of joint construction between departments and schools. Through participating in the observation, many real details have been discovered, such as how the school can put policy support into talent cultivation activities after obtaining it, how a limited number of teachers support an entire major, and various setbacks encountered by students due to professional saturation during the process of graduation and employment. Similar situations can well reflect the issues discussed in this study. However, it is difficult to obtain information through interviews, and can only be discovered by participating in and observing specific activities.

Therefore, participating in observation is one of the most important methods in this study.

2. In-depth interviews. Interview method is a commonly used research method in economics and education. This study mainly adopts the method of case interview to conduct in-depth interviews with individual interviewees. Interviewees cover a wide range of subjects, including leaders of G College, heads of functional departments, leaders in charge of teaching and student work in secondary colleges, full-time teachers, and counselors as the main body of the talent supply side of higher vocational education; It also includes freshmen, students and graduates who have participated in enterprise internships; There are also employers' leaders on the demand side, and parents of students in ethnic minority areas. Basically, it includes various roles of both supply and demand sides of talent, so it has obtained relatively comprehensive field data.

3. Literature analysis method. Sort out and summarize the historical documents on the development and reform of national education and higher vocational education in ethnic areas at home and abroad, analyze the policy tools of the country in the development process of higher vocational education, and grasp the top-level design, value objectives, and development ideas of the country on the development and reform of higher vocational education.

2.9 Reviewing key issues of the research scope

Summarize the rules of talent supply side structural reform in Guangxi higher vocational education, and derive a model of talent supply side structural reform applicable to the vast ethnic areas.

2.10 Reviewing on research results and research findings for Discussion and Suggestions in Chapter 5

The research results on the supply side structural reform of higher vocational education are rich, focusing on the connotation, logic, significance, dilemma, direction, path, etc. of the reform, especially on the reform path. Scholars have conducted a very

thorough discussion, both theoretically and practically. The viewpoint focuses on improving the quality of talent cultivation through improving the modern vocational education system, improving institutional mechanisms, activating the vitality of the reform of higher vocational colleges, building a double qualified teacher team, and building the connotation of higher vocational education. Through in-depth integration of industry and education, and precise cooperation between schools and enterprises, we can provide high-quality technical and skilled talents for regional economic development. However, among the numerous research results, there are few studies focusing on the structural reform of the talent supply side of higher vocational education in ethnic areas.

Since the reform and opening up, Guangxi, as a minority region, has made significant progress in various social undertakings, and higher vocational education has also achieved rapid development in the past decade, basically meeting the needs of current economic and social development. However, as a minority and underdeveloped region, the foundation is weak, and there is a "lack of confidence" in coping with the future geographical relationship and industrial pattern. There is a trend of talent supply and demand not matching, mainly reflected in the layout of universities, professional settings, curriculum systems, and teaching activities. After conducting a field survey of G College, it was found that there are certain practical difficulties in the connection between the school layout and industrial layout, the connection between professional settings and industrial settings, the connection between courses and positions, and the connection between the talent cultivation process and the production process, resulting in deviations in the integration of talent supply and demand, and the coexistence of talent surplus and labor shortage.

Three reasons have led to these problems. One is the unbalanced structure of supply and demand under the concept of academic standard development; The second is the shallow symbiosis of supply entities under the policy based cooperation mechanism; The third is the path dependence of the supply system under the management based cultivation mode. To solve problems and ensure the success of the reform, we can think in six

directions: to understand that the fundamental premise of the reform is to adhere to the essence of educating people based on student development, to clarify that the core goal of the reform is to establish a regulatory system that balances supply and demand, to recognize that the basic support of the reform is to improve the data system with smooth information, and to adhere to the important content of the reform is to improve the governance mechanism of pluralistic and co governance, It is important to understand that the main guarantee of reform is to provide scientific and reasonable resource allocation, and that the key means of reform is to upgrade educational technology for resource sharing. Sorting out the reform ideas within this thinking framework can improve the current contradictions and dilemmas between the supply side and the demand side of higher vocational education talents in ethnic minority areas.

With the rapid development of vocational education and the normalization of rural revitalization, the volume of high-level papers on vocational education in ethnic areas has shown a rising trend in the past decade, which will become a hot spot for scholars to study the supply side reform of higher vocational education. Guangxi is a typical ethnic region, and it is an important region that cannot and should not be ignored when studying the reform of higher vocational education in ethnic regions. Currently, discussions similar to the structural reform of the talent supply side of higher vocational education in Guangxi are still slightly lacking. This research plan aims to conduct in-depth exploration and analysis in this field. This study is based on a thorough review of relevant literature, with reference to previous research findings and methods, to conduct a systematic study of the talent supply side reform of higher vocational education in ethnic regions, especially in Guangxi, a typical ethnic region, as a specific object, and to discuss the key points and paths for high-quality development of higher vocational education in ethnic regions.

As China enters a new stage of development, industrial upgrading and economic restructuring continue to accelerate, the demand for skilled personnel in various industries is becoming increasingly urgent, and the important position and role of higher vocational education is becoming increasingly prominent. As a minority region and a frontier region,

Guangxi is also an economically underdeveloped region. Due to the generally lagging development of various industries, it is not attractive to various types of talents. This is a dilemma for Guangxi, and it is also a common dilemma for many ethnic regions. The purpose of this article is not to lead the national reform of higher vocational education, but to discuss the laws of talent cultivation paths for higher vocational education that are applicable to the reality of Guangxi and reflect the characteristics of ethnic regions within the framework of the national reform of vocational education. This can enable the talent cultivation of higher vocational education in Guangxi to truly serve and assist the high-quality development of Guangxi's economy and society. The practice of reform in Guangxi can confirm the theoretical model and reform framework of the talent supply side structural reform of higher vocational education in Guangxi constructed in this article, which has practical significance for the vast ethnic regions and the people of all ethnic groups in the region.

2.11 About theory that relate the study

Sorting out the historical and logical clues of the development of higher vocational education in the world and China, applying the theory of supply side structural reform in macroeconomics across disciplines, exploring the characteristics and laws of higher vocational education reform and development in ethnic regions from the supply side, will contribute to the construction of a theoretical treasure trove of high-quality Chinese higher vocational education system.

Using the field research method of economics and the basic principles of macroeconomics and higher education, this paper conducts interdisciplinary research on the structural reform of the talent supply side of vocational education in ethnic regions, in order to verify the basic principles of the relationship between education and economic development, and explore new paths for theoretical research on higher vocational education in terms of methodology.

Due to the various particularities of higher vocational education in ethnic regions, it is necessary to put forward different requirements for the structural reform of the talent supply side of higher vocational education compared to non ethnic regions and developed regions. Given these particularities, there are special difficulties in talent supply, and the structural issues on the talent supply side are particularly prominent in the process of economic and social development in ethnic regions. Therefore, studying the talent supply side structural reform of higher vocational education in ethnic regions in the new era is timely and of special significance.

The development and talent supply of higher vocational education in ethnic regions have special characteristics. From the perspective of the development of higher vocational education in ethnic regions, most of the students in higher vocational colleges come from their own regions, and the low level of basic education in ethnic regions leads to low quality of students in higher vocational education; At the same time, the industrial development momentum and strength in ethnic minority areas are not strong, and there is a lack of ability to attract outstanding talents to serve the local area. The scarcity of high-quality local higher vocational education teachers further exacerbates the difficulties in cultivating talent quality in higher vocational education. The same reason has led to a weak attractiveness of ethnic minority regions for graduates of hard trained higher vocational colleges to stay employed, resulting in severe outflow of graduates, and poor sustainability of talent supply in the entire region. The difficulties faced in cultivating ethnic minority talents have led to a dilemma in the supply of locally applied skilled talents, with insufficient quantity and low quality, exacerbating the structural contradiction of talents in ethnic regions. Therefore, the demand for structural reform on the talent supply side of higher vocational education in ethnic regions is exceptionally strong. The particularity of the development and talent supply of higher vocational education in ethnic regions is the fundamental reason for their different requirements for the structural reform of the talent supply side of higher vocational education compared to non ethnic and developed regions. Studying the structural reform of the talent supply side in higher vocational education in

ethnic regions can provide some thinking frameworks and innovative paths for the development of higher vocational education and the improvement of talent supply level in the region, which has obvious practical significance.

Guangxi, as an ethnic and border region, is also an economically underdeveloped region. Due to the widespread lag in economic and social development, the attractiveness of various talents is insufficient, which is currently a dilemma faced by Guangxi and also a common dilemma for many ethnic regions. The purpose of this study is to explore the path and laws of talent cultivation in higher vocational education that reflect the characteristics of Guangxi within the framework of the national vocational education reform, so that the talent cultivation in higher vocational education in Guangxi can better serve and assist the high-quality development of Guangxi's economy and society. At the same time, it summarizes the characteristics and laws of higher vocational education reform and development in ethnic regions like Guangxi, and provides guidance for other ethnic regions Provide reference for research on the development of vocational education in border areas.

CHAPTER 3
RESEARCH METHODOLOGY

From an economic perspective, research on the reform of higher vocational education in ethnic minority areas mainly adopts a combination of qualitative and quantitative research methods, as follows

3.1 Research design

3.2 Population and Sample

3.3 Interview and questionnaire design

3.4 Research Tools

3.5 Data Collection Process

3.6 Analysis and Statistics

3.7 Framework of R&D design

3.1 Research design

This study adopts a mixed research method, using questionnaire surveys and expert interviews as the main tools, and revolves around the theme of the supply side structural reform of higher vocational talents in ethnic regions. Using basic principles such as higher education, from three perspectives of history, theory, and practice, it sorts out and narrates the necessity, reality, and inevitability of the generation and development of higher vocational education in serving social and economic development. The layout of universities The four basic factors that affect and determine the quality of vocational talent cultivation, namely major setting, curriculum system, and talent cultivation mode, are used as independent variables for research. The demands of the main demand side for talents, including the government, society, students, and parents, as well as the satisfaction of the

supply side of higher vocational education, are analyzed. The specific manifestation of the contradiction between talent supply and demand is explored and attribution analysis is conducted, Finally, it proposes considerations for the supply side structural reform of higher vocational education talents in Guangxi and similar ethnic regions.

3.2 Population and Sample

3.2.1 Population

The total population is 1690, including the following parts: (1) 70 professional leaders (teachers) in vocational colleges; (2) 50 professional leaders (teachers) in secondary vocational colleges; (3) 100 teachers for employment work in vocational colleges 50 teachers in charge of employment work in secondary vocational colleges 10 government personnel managing higher vocational education 300 vocational college graduates (working for 1-3 years) 300 graduates from higher vocational colleges (who have worked for 4-10 years) 300 vocational students 200 parents of graduates 200 parents of students in school 60 employees of the enterprise There are 50 education management personnel responsible for ethnic minority areas.

3.2.2 Sample

This paper will use the probability sampling technique (East Olympics, 2012; Jiang Dayuan, Tian Song, 2021), because the main respondents are randomly selected to come to Guangxi of China.

In this paper, we refer to the Cochran formula (1977) to calculate the sample size when the exact number of people cannot be clearly counted. This article uses the following formula for calculation： ⇨

$$Z\alpha/2\frac{s}{\sqrt{n}} = e \quad \Rightarrow \quad n = \left(\frac{Z\alpha/2\sigma}{e}\right)^2$$

(n---sample capacity, e ---error range, Z---confidence level, σ---Overall standard deviation, S---Sample standard deviation)

(1) In the formula, n represents the sample size, Z represents the confidence level, and e represents the allowable error range. Due to the inability to calculate the proportion of each specific group in the selected population in this article, it is assumed that the proportion is 0.5; That is to say, the maximum proportion of this attribute in the population can be 0.5, and the minimum can be 0.5. In this study, the confidence level was 95% and the allowable error range was 5%. The sample size calculated according to formula

(2) is 354.51, which means 355 samples should be selected. In order to prevent erroneous factors in questionnaire collection, the sample size was 360 samples, so we collected more than 10% of the samples, which means we calculated 36 cases, totaling 391 cases.

The selection of respondents is random, and their privacy will be protected. The interviewee's name will not appear. Their opinions will only be used for academic research purposes.

Table 3.1 Number of sample and population

number	position	Number of population	Number of sample
1	Professional leaders (teachers) in higher vocational colleges	70	25
2	Professional leaders (teachers) in secondary vocational colleges	50	15
3	Teachers responsible for employment work in higher vocational colleges	100	30
4	Teachers in charge of employment work in secondary vocational colleges	50	15
5	Government administrators managing higher vocational	10	5

Table 3.1 number of sample and population (Cont.)

number	position	Number of population	Number of sample
	colleges		
6	Graduates from higher vocational colleges (have been working for 1-3 years)	300	50
7	Graduates from higher vocational colleges (have been working for 4-10 years)	300	50
8	Students in higher vocational colleges	300	50
9	Graduates' Parents	200	40
10	Parents of current students	200	40
11	Enterprise personnel	60	20
12	Responsible for education managers in ethnic areas	50	15
	Total	1690	355+10%=391

3.3 Interview and questionnaire design

3.3.1 Questionnaire and Interview Questions

3.3.1.1 Open-ended Issues

Expert interviews are divided into 3 categories, including Interview Outline (Teacher), Interview Outline (for current students), and Interview Outline (Grades). The content mainly focuses on opinions on major settings, course development, teaching quality, and salary satisfaction. There are a total of 52 interview questions.

The questionnaire implementation adopts Questionnaire Star software, where the set questionnaire content is inputted and the samples are surveyed online. The purpose is to facilitate collection, statistics, analysis, and save time

The questionnaire is divided into 3 types: A, B, and C, with a total of 74 questions.

Type A

Type A is a survey questionnaire on the recognition of vocational education, mainly targeting local government officials, senior management personnel of enterprises, industry experts, vocational college teachers, vocational school teachers, education management personnel, enterprise leaders responsible for recruitment, and teachers responsible for student employment;

(1) The type A questionnaire is divided into 2 parts, with a total of 15 questions: Part 1: Basic information mainly includes identity, occupation, registered residence, education and other factors Part 2: The questionnaire mainly includes the evaluation of factors such as recognition of vocational education, understanding of vocational education policies, and attention to vocational education.

Type B

Type B is a market survey on satisfaction with vocation; education teaching and management, mainly targeting students and parents;

(2) The type B questionnaire is divided into 2 parts, with a total of 19 questions: Part 1: Basic information, including factors such as income, education, and identity. Part 2: Questionnaire content, mainly including factors such as satisfaction with vocational education teaching and management, teaching quality, students' practical ability, rationality of curriculum design, and students' achievement of employment goals.

Type C

Type C is a survey on the indicators that ideal vocational education should possess, mainly targeting local government officials, senior management personnel of enterprises, industry experts, vocational college teachers, vocational school teachers,

education management personnel, enterprise leaders responsible for recruitment, senior teachers responsible for student employment, students, and parents.

(3) The type C questionnaire is divided into three parts, with a total of 40 questions: Part 1: Recognition of the content and indicators of ideal vocational colleges Part 2: The most lacking abilities of current vocational college teachers. Part 3: Evaluation of the Ability of Vocational Education Teachers.

3.3.1.2 Target problem

Based on questionnaire surveys and expert interviews, combined with the relevant laws and regulations of the "National Vocational Education Reform Implementation Plan" (2021-2035) issued by the Ministry of Education of China, four primary indicators, as well as corresponding secondary and tertiary indicators, the design is based on background evaluation, condition evaluation, inter school evaluation, and performance evaluation. Then, based on the Likert scale and Delphi method, three rounds of expert interviews were conducted to further screen, modify, and improve the indicators, ultimately determining the reform system of higher vocational education in ethnic regions designed for this study.

3.3.1.3 Likert scale Using the Likert scale, set the initial indicator system 'level of agreement' to 5 Horizontal. The specific score settings are as follows:

Level 5 indicates strong agreement.

Level 4 indicates agreement.

Level 3 represents truth to some extent.

Level 2 indicates disagreement.

Level 1 indicates strong opposition.

3.3.1.4 Delphi method

A preliminary indicator system for higher vocational education in ethnic regions was established using the Delphi method.

The first round of interviews: Fully solicit expert opinions on the establishment of the indicator system, and revise and improve it;

The second round of interviews: We have solicited expert opinions again on the revision of the first round of interview indicator system, and further revised and improved the system of indicators;

The third round of interviews: the second round of revised interviews on the indicator system, and the third round of consultation with experts; Finally, the indicator system was revised and improved.

3.3.2 Interview and questionnaire survey steps

The questionnaire survey method mainly adopts China Question Star software, and expert interviews mainly use methods such as face-to-face, telephone, and Tencent meetings. The purpose of expert interviews and questionnaire surveys is to determine the elements of the indicator system, solicit opinions from experts and scholars on the initial indicator system, revise and improve the scientific, rational, and targeted nature of the indicator system, in order to improve the accuracy and effectiveness of the indicator system evaluation. The specific steps are shown in Figure 3.1 :

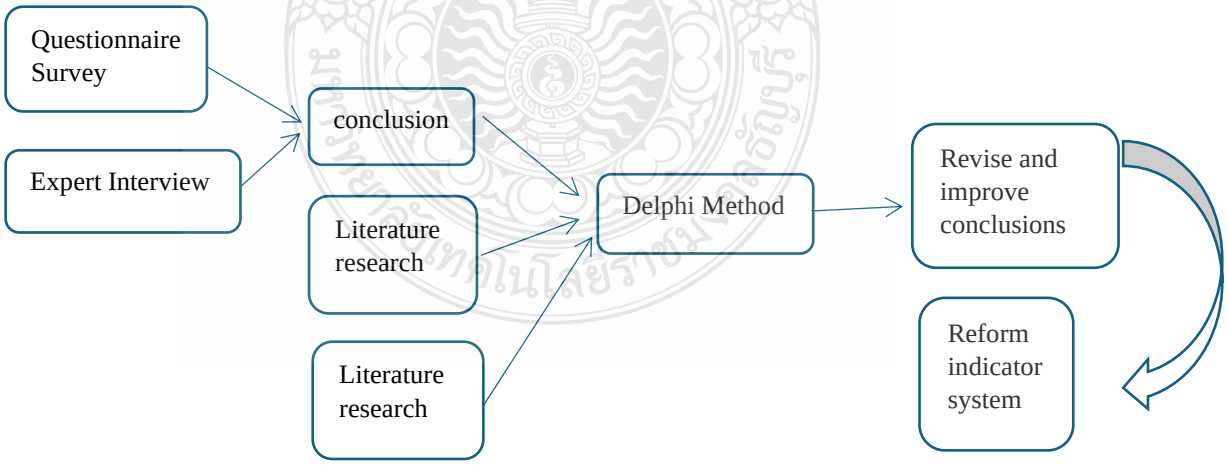

Figure 3.1 Steps of Expert Interview and Questionnaire Survey

3.4 Research Tools

3.4.1 Questionnaire Survey

Using the China Questionnaire Star software to implement questionnaires and conducting content surveys through the internet is more convenient and time-saving.

This questionnaire mainly consists of three parts; Refer to Appendix 1, 2, 3 and answer using the Likert scale.

Type A questionnaire: Recognition of vocational education, 15 questions in total

Type B questionnaire: Market survey on satisfaction with vocational education teaching and management, 19 questions in total

Type C questionnaire: A survey on the indicators that ideal vocational education should possess, 40 questions in total

3.4.2 Expert Interviews

Part 1: Interview Outline (Teacher), 12 questions

Part 2: Interview outline (for current students), 22 questions

Part 3: Interview Outline (Graduates), 18 questions

Expert interviews are divided into two stages:

Phase 1: Set up 52 questions, mainly consulting experts on the constituent elements of major offerings, course offerings, and teaching quality.

Phase2: interview content, is the satisfaction index system of the vocational education framework initially set by the author based on the questionnaire survey and the results of the first stage expert interviews. At present, the Delphi method and Likert scale are used to conduct three rounds of questionnaire surveys on experts. The main purpose is to seek expert opinions and suggestions on the scientific, reasonable, and operational setting of the indicator system, and to revise and improve the indicator system.

3.5 Data Collection Process

Data collection is mainly carried out through online database queries, government department collection, on-site research, and other methods. The following methods will be used to complete data collection:

1) Collect relevant information through online databases such as CNKI and Wanfang Data.

2) Obtain work reports, industry reports, survey reports, statistical data, and other information from government agencies.

3) A questionnaire survey was conducted on 396 samples and 30 experts and scholars were interviewed to obtain relevant data and information.

4) Use open data platforms from government agencies, such as the National Data Platform, to obtain relevant information.

This study consists of seven parts:

Part 1: Select G College as a field study, and investigate and study the development history of G College and its supply basis as a talent supplier for higher vocational education through economic methods.

Part 2: The main connotation and theoretical framework of the talent supply side structural reform of higher vocational education in ethnic areas. Extract the core concept of the supply-side structural reform of talent in higher vocational education in ethnic regions - supply and demand - and consider how to introduce this pair of economic categories into the discussion of higher vocational education. From the perspective of stakeholders in higher vocational education in ethnic areas, this paper summarizes the value of talent supply side structural reform. Using the "new supply economics theory" and the "public product theory" of macroeconomics to build a theoretical framework for exploring the talent supply side structural reform of higher vocational education in ethnic minority areas in China.

Part 3: The historical enlightenment of the development of higher vocational education on the talent supply side structural reform. Taking history as a logic, this paper combs the history of development and talent supply of higher vocational education in the

world, China, and Guangxi, as a minority region, from three dimensions. Through reviewing and summarizing historical changes, we can obtain inspiration for the current structural reform of talent supply in higher vocational education in minority regions.

Part 4: Overview of the demand for talent supply in higher vocational education due to the economic and social development of Guangxi. Guangxi is a typical ethnic region, and the ultimate goal of its economic and social development is to promote the economic and social prosperity of the region through the development of various industries in the ethnic region, so that the people of all ethnic groups, with the Zhuang nationality as the main ethnic group, can enjoy a better life in Guangxi. Under this overall demand, there is a demand for higher vocational education in the region that has the characteristics of ethnic regions.

Part 5: The current situation and main issues of talent supply in Guangxi higher vocational education. Since the reform and opening up, Guangxi, as a minority region, has made significant progress in various social undertakings, and higher vocational education has also achieved rapid development in the past decade, basically meeting the needs of current economic and social development. However, as a minority and underdeveloped region, the foundation is weak, and there is a lack of confidence in coping with future geographical relationships and industrial patterns. There is a trend that talent supply and demand do not match, mainly reflected in school layout, professional settings, curriculum systems, and teaching activities.

Part 6: Analysis of the causes of the talent supply problem in Guangxi higher vocational education and reform ideas. The main reasons for the above problems are comprehensive. To sum up, there are problems in the three dimensions of academic standard , policy standard , and management standard . Reform requires clarifying the premise, core objectives, basic support, important content, main guarantees, and key means of reform to form a reform mentality.

Part 7: The fundamental path of talent supply side structural reform in Guangxi higher vocational education. Answer the question of How to do reform and propose seven paths: strengthen the top-level design of the layout of higher vocational colleges, guided by

improving the compatibility of service capabilities with the needs of economic and social development; Optimize the professional structure of higher vocational education with the goal of improving the compatibility between professional settings and industrial structure; Deepen the curriculum reform of higher vocational education based on improving the compatibility between the curriculum system and vocational abilities; On the premise of promoting the deep integration of production and teaching, strive to build a new teaching model for higher vocational education; With the mission of cultivating high-quality talents, we strive to build a high-level double qualified teacher team; With ensuring the effectiveness of higher vocational education reform as the bottom line, we will focus on building a quality evaluation and monitoring mechanism for higher vocational education, and with promoting the implementation of various reform measures as the key, we will focus on building a comprehensive policy guarantee system.

At this point, the paper summarizes the rules of the talent supply side structural reform of Guangxi higher vocational education, and deduces a model of talent supply side structural reform applicable to the vast ethnic areas.

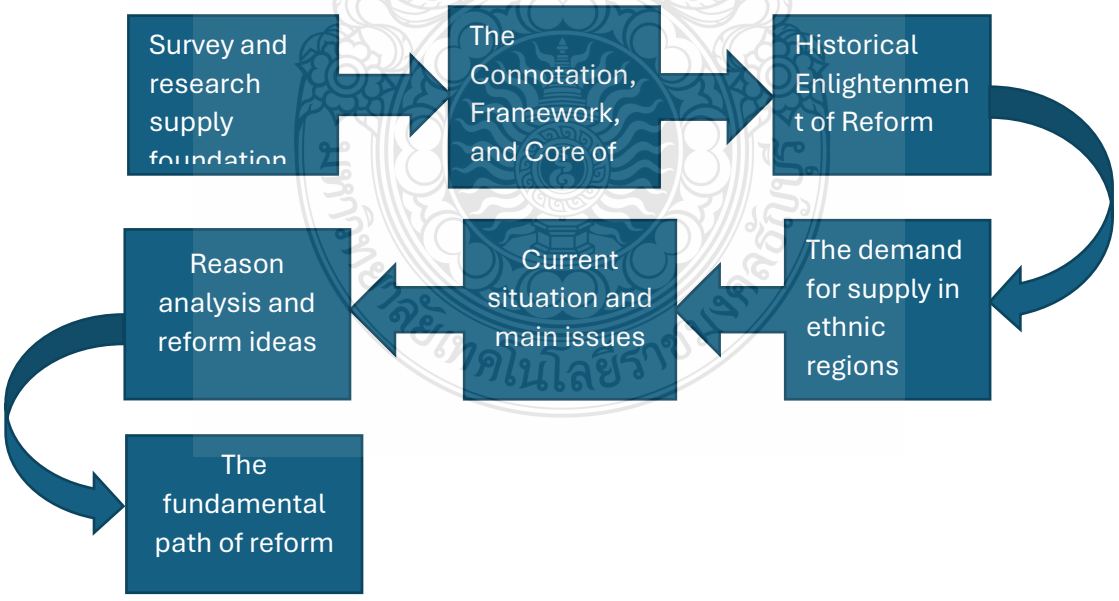

Figure 3.2 7 Steps of the Research Process

3.6 Analysis and Statistics

After collecting data from online questionnaires, the Social Science Statistical Software Package (SPSS) was used for data analysis. Firstly, use the frequency function in descriptive statistics to summarize the demographic characteristics of respondents and feedback from graduating students. Secondly, significant factors were identified through t-tests, analysis of variance, f-tests, and correlation analysis. Then, through multiple linear regression analysis, the dependent variable was used to test the factors.

The data analysis was conducted using the Social Science Statistics Software Package (SPSS) program version 22. Therefore, statistical techniques used for data analysis and interpretation include the following descriptive and predictive statistics:

3.6.1 Descriptive Statistical Analysis Section 1: In Section 1, frequency and percentage analysis are used to analyze stakeholder information such as gender, age, occupation, monthly income, education, and major. Section 2-4: Using mean analysis, the key factors (χ and standard deviation (S.D.) that affect vocational education reform in the Likert scale were analyzed.

3.6.2 I nferential Statistical Analysis: In order to test the hypothesis of the study, Pearson correlation analysis analyzed the relationship between the independent variable (job and professional correlation, job feedback, career satisfaction, internship satisfaction, training mode and industry demand integration) and the dependent variable (market demand feedback) (Khamsurin, 2020).

3.7 Framework of research and development design

Framework research and development Design The design of this study mainly includes four stages, as shown in Table 3.2

Phase 1: Through literature research and policy analysis methods, investigate and study the development history of higher vocational education in China, national policies and regulations, the supply foundation as the supplier of higher vocational education talents, and the current situation of higher vocational education in ethnic regions. Explore the

characteristics and laws of the development of higher vocational education, and derive a theoretical framework for talent cultivation in ethnic regions.

Phase 2: Through questionnaire survey, expert interviews, and statistical analysis, the results of the first phase were studied, as well as the background evaluation, condition evaluation, external evaluation, and internal evaluation index system of higher vocational education in ethnic minority areas. The current situation of the demand side for talent in Guangxi's higher vocational education was output using tools such as SPSS statistical analysis software, The demand model and theoretical indicator system for the supply of higher vocational education talents in ethnic regions represented by Guangxi's economic and social development.

Phase 3: Through software development methods, the results of the second stage and the main problems of talent supply in higher vocational education in ethnic minority areas were studied, as well as the quantitative indicators in the indicator system of cause analysis and reform ideas. We have developed and designed data processing software using software such as EXCEL and SPASS to output the direction and focus of higher vocational education reform in Guangxi's ethnic minority areas, as well as the fundamental path of reform.

Phase 4: Through case study and empirical research methods, the output results of the second and third stages, as well as the data and effects of relevant indicators for vocational colleges in ethnic minority areas, are studied. Representative vocational colleges in Guangxi are selected as empirical research subjects, and the laws of talent supply side structural reform in higher vocational education in Guangxi are summarized, And based on this, we hope to derive a model for talent supply side structural reform applicable to the vast ethnic regions.

Table3.2 Framework of research and development Design

stage	Research methods/objectives	research scope	Population/target/gr./ Sample/Output	Research tools/data collection	Data analysis/standards	output
1	Literature research/ Integrate the framework of the development stage of vocational education	1. Development stage of vocational education 2.Socio-economic process at each stage 3. Basic situation of foreign vocational education	1. Official materials and data of the Chinese government 2. Foreign websites 3. Periodicals, books and networks	statistical analysis case study	Variable description analysis content analysis correlation analysis	The development stages of vocational education and the background of current social and economic development
2	-Descriptive research - Current market and public demand for vocational education reform	1.Output results of the first stage 2.Problems in current vocational education	1. Students, parents, workers and officials of education departments in vocational education schools 2. Human resource managers of enterprises and employment agencies 3. Mass representatives	investigation Visit statistical analysis case study	questionnaire investigation Arithmetic mean Differential calculation T test regression analysis	Current situation and problems of vocational education
3	Framework design of vocational education reform	1. Framework design of vocational education reform 2. Output results of the second stage	Relevant interviews with government officials, summaries, plans, reports, etc. of the education department	Matrix, mind map, mapping, etc. case study	factor analysis Reliability analysis Validity Analysis	1. Model and development trend of vocational education reform 2. Framework design of vocational education reform
4	Evaluation and test of vocational education reform	1. Suggestions on vocational education reform 2. Output results of the third stage	Survey interview Questionnaire conclusion and analysis	Mind map Qualitative research quantitative study	variance analysis Experimental error, relative error cluster analysis	Suggestions on the reform of vocational education

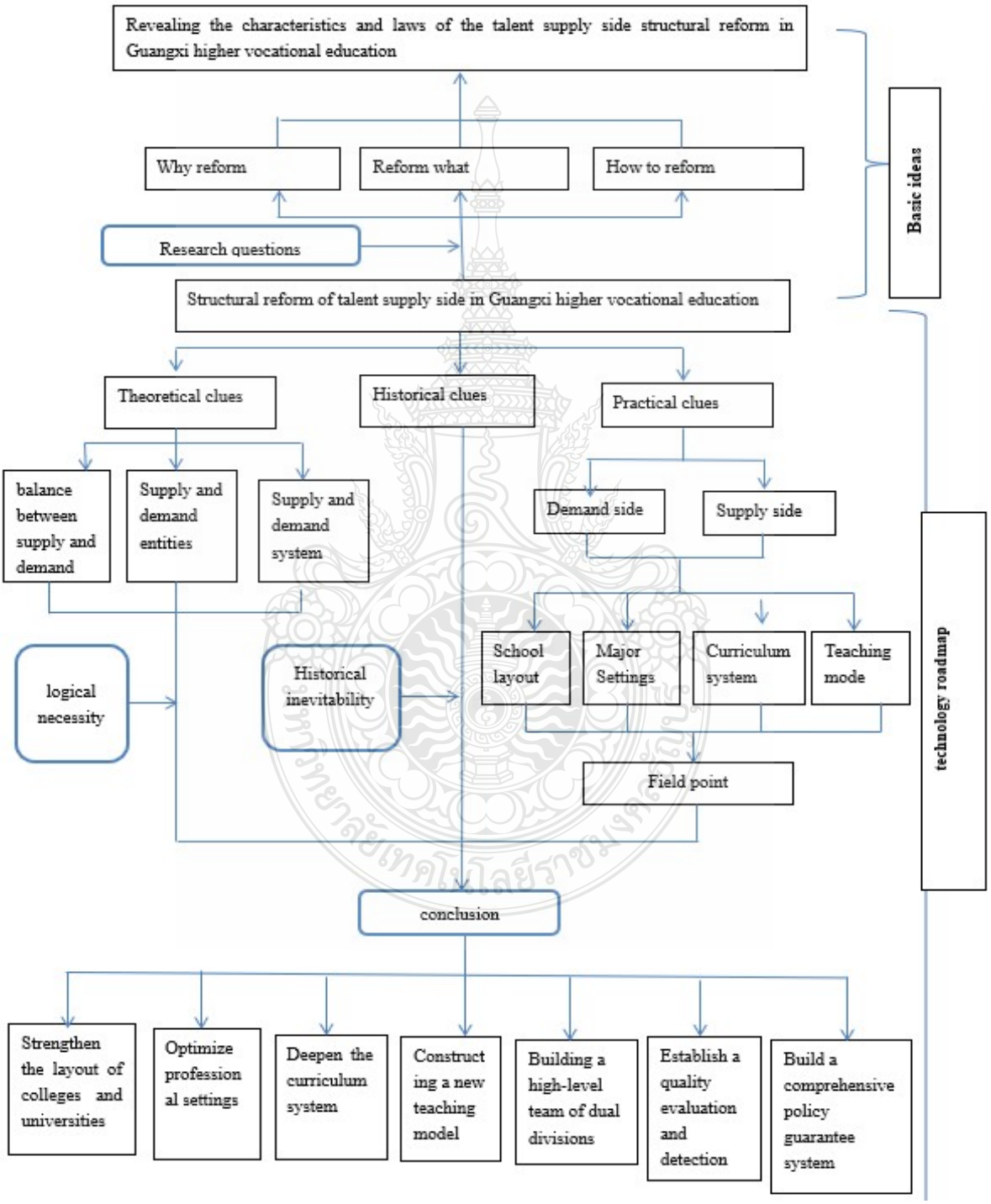
Revealing the characteristics and laws of the talent supply side structural reform in Guangxi higher vocational education
Why reform
Reform what
How to reform
Research questions
Structural reform of talent supply side in Guangxi higher vocational education
Basic ideas
Theoretical clues
Historical clues
Practical clues
balance between supply and demand
Supply and demand entities
Supply and demand system
Demand side
Supply side
logical necessity
Historical inevitability
School layout
Major Settings
Curriculum system
Teaching mode
Field point
technology roadmap
conclusion
Strengthen the layout of colleges and universities
Optimize professional settings
Deepen the curriculum system
Constructing a new teaching model
Building a high-level team of dual divisions
Establish a quality evaluation and detection
Build a comprehensive policy guarantee system

Figure 3.3 Structural reform of talent supply side in Guangxi higher vocational education

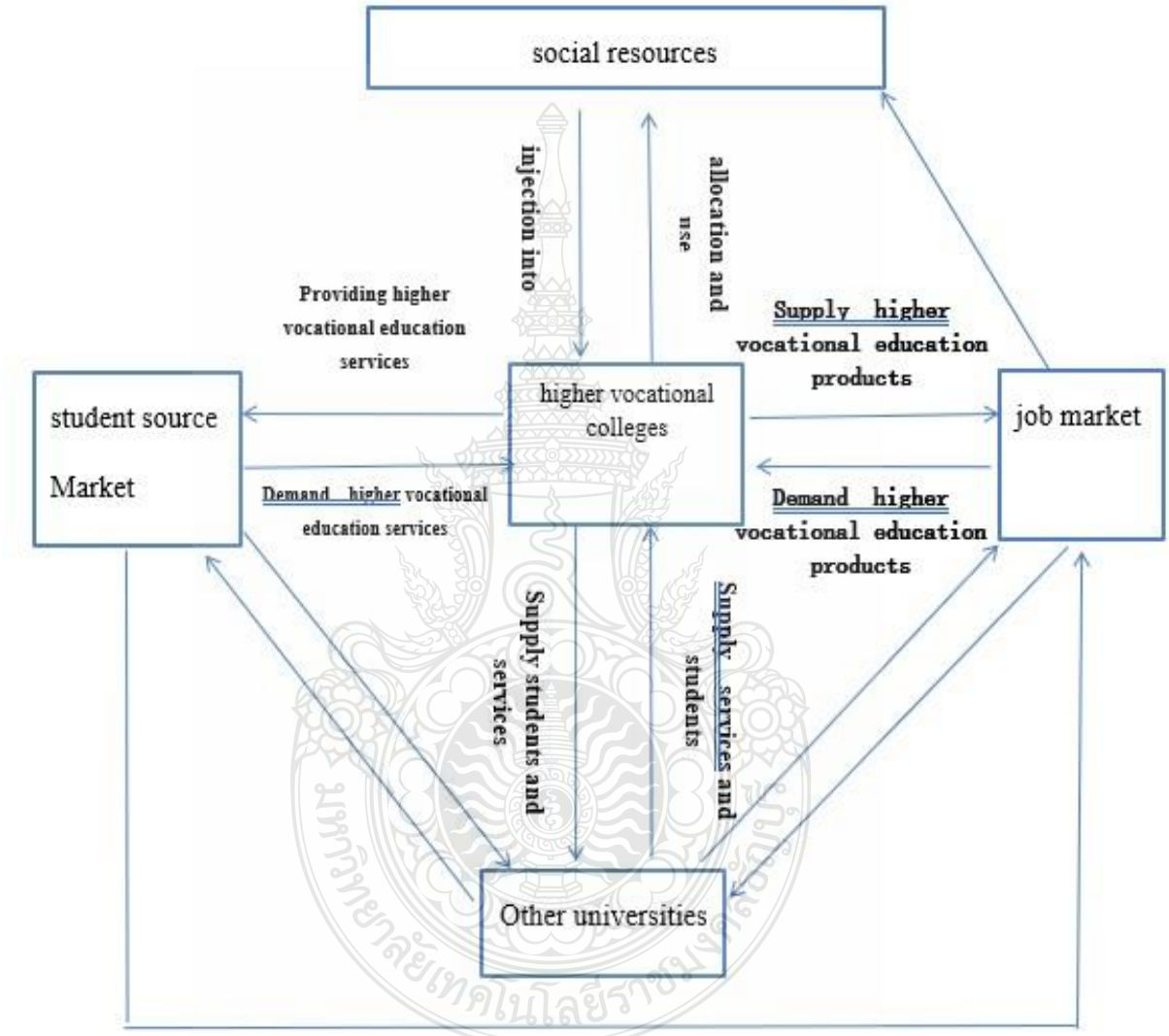

Figure 3.4 A Supply and Demand Model for Talent Cultivation in Higher Vocational Education in Ethnic Regions

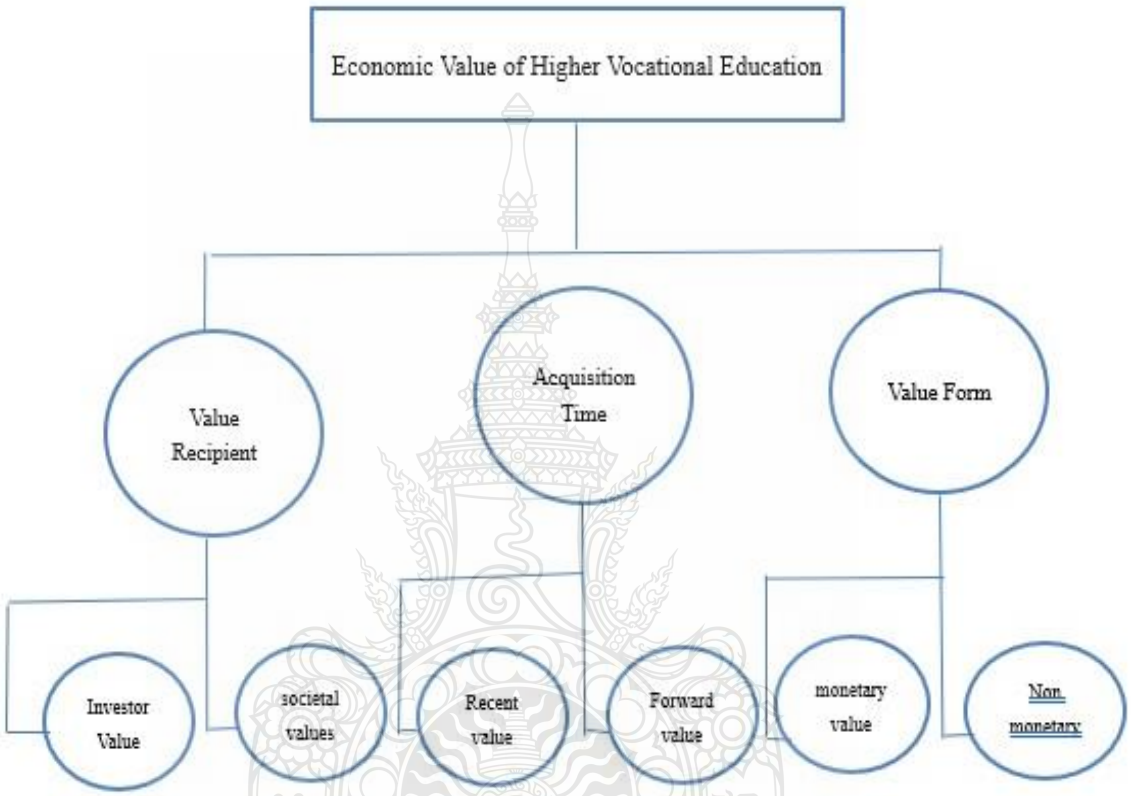

Figure 3.5 Economic Value of Higher Vocational Education

CHAPTER 4
OVERVIEW OF THE DEMAND FOR TALENT SUPPLY IN HIGHER VOCATIONAL EDUCATION IN GUANGXI'S ECONOMIC AND SOCIAL DEVELOPMENT

The application of the category of demand and supply in the structural reform of the talent supply side of Guangxi higher vocational education is to discuss its demands from the talent demand side, summarize its problems from the supply side, and ultimately form the practical logic of the research on the talent supply side structural reform of Guangxi higher vocational education. Taking Guangxi as a typical representative of ethnic regions, discussing Guangxi's demand for higher vocational education talents can reveal the desire for higher vocational education talent supply in the vast ethnic regions.

4.1 The Relationship between Industrial Development in Ethnic Regions and the Demand for Higher Vocational Education

Higher vocational education originated from ordinary higher education and is a product of economic and social development to a certain extent, which changes with the development of industries. The process of industrial development and changes constantly puts forward new demands for the talent supply that provides support for it. In fact, it requires higher vocational education to develop and change accordingly to meet the demand for talent in industrial development.

The industrial development and structural changes in ethnic regions have a lag and particularity, which puts forward higher requirements for higher vocational education talents.

4.1.1 The demand for higher vocational education talents in the primary industry

For a long period of history, the main industry of China's economy was agriculture, especially in ethnic areas, which accounted for the largest proportion of the regional economic structure. In the industrial structure dominated by agriculture, the value of vocational education is mainly reflected in the education of agriculture.

The main mode of production in China for over two thousand years has been the small-scale peasant economy under political stability conditions. It includes four factors: individual households, small plots of land, self management, and self cultivation (Wen Tiejun, 2021). In this situation, agriculture is autonomous and decentralized, without forming industries or socialized production, and is self-sufficient. Therefore, the education and dissemination of agricultural knowledge and skills are spontaneous, liberal, and family oriented. The knowledge and skills of farming have been passed down through word of mouth for thousands of years. But there has always been no institutionalized education, and there are no specialized schools to teach agricultural knowledge and experience. Fei Xiaotong described China's small-scale peasant economy in Rural China and explained the ways and means of disseminating agricultural knowledge and skills in such an economic form (Fei Xiaotong, 1985). School education is a centralized, systematic and efficient way of disseminating knowledge, skills, and concepts. In China's agricultural society, the older generation imparts experience and skills to the younger generation in a face-to-face manner, which is similar to the level of productivity at that time. In other words, there is no demand for vocational education in schools in the current society. However, the transmission of experience and knowledge related to agriculture in China has never been interrupted.

Therefore, it can be said that during the agricultural society period, China had vocational education as a reality, without the name of vocational education.

After the Opium War, with the rise of the Westernization Movement, vocational education, which originated in Europe, was introduced into China. At that time, China established industrial education, which was mainly reflected in industry in the early stage. In the 1890s, industrial schools were no longer limited to industry, and schools related to agriculture were established nationwide. In 1913, the government of the Republic of China issued the Industrial Education Order, transforming industrial schools into industrial schools and specialized schools, and transforming apprentice schools into B-type schools, which were the first level or junior level; Transforming the secondary industrial school of the Qing Dynasty into a first-class school, which was the second or intermediate level; Establish

specialized schools as the third level or senior level. Since then, China has established vocational schools in terms of educational system. In 1922, vocational education replaced industrial education, and the new educational system stipulated that vocational preparatory education or vocational courses should be established in primary and secondary schools, while specialized courses should be established in universities and specialized schools; It also stipulates the connection between vocational education in the early and high school stages and higher specialized schools (Wen Youxin, 2000). Based on the social form at that time, vocational education at that time could be divided into four categories: agricultural education, industrial education, commercial education, and family education. Among them, agricultural education was an urgently needed vocational education at that time, and the purpose of agricultural education was three: to impart important knowledge of agriculture; Encourage students to establish their aspirations to serve agriculture, rural areas, and farmers; Encourage students to gradually improve rural life (Yang E Lian, 1929).

At the turn of the century, the biggest problems faced by China are the expansion of low-quality population and the surplus of simple labor force. After joining the WTO, the sustainable development of agriculture in China has been challenged, affecting national food security, farmers' income in ethnic areas, and rural employment in ethnic areas (Wen Tiejun, 2021). Due to the shortage of agricultural resources and the pressure of agricultural product imports, coupled with the acceleration of industrialization and urbanization, it is no longer possible for rural areas to retain farmers. A large number of ethnic minority people have become migrant workers and have to leave their hometowns for cities and industries. This has led to a result - there are fewer farmers left behind in rural areas and on the land, with the majority being young children and middle-aged and elderly workers. Among those who have the ability to work, relying on their ancestral agricultural knowledge and labor skills can complete farming.

Traditional agriculture emphasizes intensive cultivation while maintaining resource sustainability. Although it is not as modern as the large farm model in Western countries, as an indigenous agriculture, China's agriculture has always had a large proportion

of industries in the national economy. The country's economy has long relied mainly on agriculture, which determines the stage of transition from agricultural society to industrial society, The demand for vocational education is for a large population but low quality requirements, so overall, the requirements for the level of vocational education are at a low level. The demand for vocational education in schools is not prominent in the development of agriculture, especially in ethnic areas. The reason is that in the traditional agricultural system, the amount of social information is small, the speed of knowledge updating is slow, the types of technology are few, and the content is low. The traditional experience dissemination model of old farmers bringing new farmers roughly matches the social productivity at that time.

Therefore, vocational education, especially higher vocational education, has limited potential, and the demand for higher vocational education from the entire society, including ethnic minorities, has not yet emerged.

Throughout history, the modernization process of agriculture in China has gone through several stages, which demonstrate the process of changes in the structure of China's agricultural industry. Firstly, it is "agricultural industrialization", which is the true beginning of China's agricultural modernization. It can be said that the agricultural modernization reform this time was rough, but in this process, agricultural education broke the original spontaneous, decentralized, and ancestral style. In the entire process of transforming agriculture into industrial development, the product of industrial society, vocational education, also truly came to agriculture.

Subsequently, there was the industrialization of agriculture, combining agriculture with the tertiary industry. People in ethnic areas spontaneously turn natural resources originally used for agriculture into assets of the tertiary industry, and while planting, they become landscapes, synchronously developing agriculture and the tertiary industry, and sharing profits. Especially in combination with local resources to develop diversified agriculture. Ecological agriculture based on landscape agriculture to achieve coordinated development of leisure tourism, health preservation, and crop cultivation (Wen

Tiejun, 2021). At this point, the connotation of agriculture has been further enriched, and the relationship between farmers and land is no longer just about spring plowing and autumn harvest. When the development pattern opens up, the talents needed for agricultural development are no longer just traditional farmers, but agricultural talents covering multiple disciplines and possessing various professional and technical skills. Higher vocational education can play a greater role in agriculture to help promote sustainable modernization of agriculture.

At the same time, because Agriculture 3.0 is ecological and green, emphasizing sustainable development, and talent is one of the most sustainable resources, professional and technical talents can complete the mission of sustainable development of ecological agriculture.

Subsequently, there is the integration of the first, second, and third industries: using the Internet to greater extent involve people in socialized ecological agriculture, bringing people, finance, and goods back from the city to the mountains and villages (Wen Tiejun, 2021). The 18th National Congress of the Communist Party of China proposed the construction of ecological civilization, and the 19th National Congress proposed the strategy of rural revitalization, emphasizing the priority development of rural agriculture. Its core is to shift the human and financial resources that were previously directed towards cities and industries back to rural and agricultural areas, and to support the construction of agriculture, rural areas, and farmers.

In China, many rural areas are ethnic minority areas, and the revitalization of rural areas and the cultivation of rural ethnic talents are particularly significant. In the context of new social needs and industrial backgrounds, higher vocational education, as a frontline education for economic and social development, is entering rural areas in ethnic areas and entering agriculture in ethnic areas at the right time. Higher vocational education in ethnic areas has great potential to promote rural revitalization in the region. The key to revitalization is the revitalization of rural ethnic talents, and the essence of rural ethnic talent revitalization is to attract talents and talents to the countryside, Introduce advanced foreign technology and

personnel, cultivate and train local excellent technical and skilled talents, promote on-site employment, entrepreneurship and innovation of new vocational farmers, migrant workers, and other industries, promote the development of modern agriculture, and promote the connection between rural secondary and tertiary industries and urban industrial chains.

Higher vocational colleges in ethnic regions are an important force in helping to revitalize rural ethnic talents. They provide classified education and training for various types of rural talents, teaching according to their aptitude and location, and targeting demand for precise supply. Vocational education, like a glue, organically integrates and continues the scattered educational experiences of various ethnic groups in rural areas, bringing the concept and approach of lifelong education to the vast minority rural areas of China. The promotion of higher vocational education in ethnic areas to promote the revitalization of rural ethnic talents is to promote the effective connection between the rural education chain, talent chain, industry chain, and innovation chain.

The target of rural talent revitalization is five major categories of rural talents, totaling 18 subcategories, which involve various aspects of rural social production and life. The situation varies in different regions, so there are differences in the demand for similar talents in different regions. If these differences are underestimated or even ignored, the training plan for rural talents will become a formality. At the same time, it should be noted that the demand for higher vocational education for rural talents in ethnic areas is different from that of urban laborers, with clear targeting: using higher vocational colleges in ethnic areas to cultivate local ethnic talents rooted in and serving the countryside, and cultivating Tian Xiucai with agricultural sentiments to complete the agricultural production function in rural areas; Cultivate rural entrepreneurs with a local sentiment to strengthen the social security function of rural areas; Cultivate soil experts with green development concepts to clarify the ecological conservation and sustainable development functions of rural areas; Cultivate culturally confident "rural craftsmen" to evolve the ethnic cultural inheritance function of the local area.

4.1.2 The demand for higher vocational education talents in the secondary industry

The Industrial Revolution opened the prelude to modern history, with industrialization sweeping the world. International competition was mainly dominated by the industrial strength of various countries, and vocational education was the product of industrialization. With the advent of the Industrial Revolution, traditional manual workshop models were replaced by mechanized production. Vocational education solved the problem of the demand for professional talents in the era of large industry. Due to the rapid growth of social productivity brought about by technological innovation, the traditional apprenticeship system for cultivating skilled craftsmen can no longer meet the needs of industrial society in terms of speed, efficiency, and scale. Only vocational education can efficiently, diverse, large-scale, and specialized cultivate technical talents. Workers, technicians, engineers, and some management personnel learn cultural knowledge and professional skills through vocational education. Through systematic learning and training, they acquire skills that are capable of meeting job requirements. After graduating from school, they can correspondingly enter specific job positions on the production line, becoming screws"and working together to turn the big machine of the factory.

With the continuous improvement of social productivity, there are more and more types of industries, and the demand for talents in industrial society is becoming more diverse. The demand for specialized technical talents is gradually shifting from quantity to both quantity and quality. The level of talent demand is constantly rising, and the demand for talent levels is also gradually increasing: from primary to intermediate to advanced, various industries and positions require different levels of specialized talents. At the same time, the improvement of productivity promotes the refinement of social division of labor, and new industries and professions continue to emerge in society. The demand for specialized talents trained in vocational education, especially higher vocational education, has skyrocketed.

Higher vocational education is gradually moving from being in the marginal zone to the center of talent demand, and together with other types of higher education, it supports the burden of social and economic development.

Some scholars believe that industrial development can be divided into 5 stages: the era of handicrafts, the era of mechanization, the era of electrification, the era of automation, and the era of intelligence (Cao Ye, 2018). In fact, many scholars have also made similar stages and summaries of the evolution process of vocational education. Their consensus is that each industrial revolution triggers a major social division of labor, and each industrial revolution will bring about new forms of vocational education. In China, the matching between the stage of industrial development and the form of vocational education is as follows:

Table 4.1 Comparison of Industrial Development Stages, Characteristics, and Vocational Education Forms in China

S/N	Industrial development stage	Industrial characteristics	The demand for vocational education/the form of vocational education
1	Handicraft era	The use of labor tools has increased agricultural productivity and laid the foundation for the rise and development of the handicraft industry. The development of the handicraft industry has further promoted the improvement of labor productivity, leading to an increase in products and more complex economic activities	Engaging in handicrafts requires skilled craftsmen. The father of the family inherited technology from his son, who inherited his father's career and passed down technology and industry from generation to generation, objectively forming the spirit of craftsmanship, which was the initial model of apprenticeship. The apprenticeship system has a single learning content, long learning time, and low efficiency in disseminating professional skills. After the emergence of family handicraft workshops, the apprenticeship system entered the market, and the master and apprentice established a non blood relationship between teachers and students. The master led the disciples, and the disciples ultimately passed down their skills, some even surpassing the master.

Table 4.1 Comparison of Industrial Development Stages, Characteristics, and Vocational Education Forms in China (Cont.)

S/N	Industrial development stage	Industrial characteristics	The demand for vocational education/the form of vocational education
2	The Age of Mechanization	After the First Industrial Revolution, mechanical production replaced manual production, and light industries such as textiles became the main focus. Improved production efficiency, increased production capacity, and increased output	More workers need to be trained in a short period of time. Primary vocational schools have emerged, with two forms of vocational education represented by apprentices and students coexisting. The traditional apprenticeship system has gradually become tired and cannot adapt to mechanized production in terms of professional knowledge and skills. The number of talent cultivation cannot keep up with the needs of industrial development.
3	The era of electrification	After the Second Industrial Revolution, the driving force of machinery became electricity, with production capacity skyrocketing and products piling up like mountains. The combination of energy and technology has made transportation more convenient, making it possible to transport long-distance raw materials to processing sites and sell products to distant locations. The scope of goods and personnel activities has greatly increased, the market has expanded, and demand has also increased Large scale, promoting further expansion of production scale, and increasing demand for vocational and technical talents	Require a large number of technical workers and management and sales personnel for partially matched products. A large number of formal and diverse vocational schools have emerged, which is reflected in the gradual enrichment of talent cultivation direction. While cultivating blue collar workers through a combination of engineering and learning, it also takes into account the cultivation of management and sales personnel, linking manufacturing and sales. At this stage, a large amount of funds have been obtained from national financial and social support from various countries to build more and better vocational schools, and vocational education has ushered in its first major development.

Table 4.1 Comparison of Industrial Development Stages, Characteristics, and Vocational Education Forms in China (Cont.)

S/N	Industrial development stage	Industrial characteristics	The demand for vocational education/the form of vocational education
4	The Age of Automation	After World War II, the war led to the rapid development of science and technology in the industrial field. At this stage, electronic computers emerged as a milestone, and the application and promotion of electronic information technology brought industry into the era of automation. Machines began to replace some manual labor.	The demand for talent in industry has shifted from being able to manufacture products to being able to operate machines to manufacture products, and then to manufacturing, commanding, and managing machines to manufacture products. This is a comprehensive professional ability that integrates design, production, and management. With the upgrading of industries, vocational schools have become the main force in the era of industrial automation, cultivating talents with equal emphasis on professional knowledge and skills in vocational colleges.
5	Intelligent era	Industry is entering the era of intelligence, with cloud technology and artificial intelligence based on computer and information technology driving the development of industrial chains towards industrial clusters.	need modern vocational education system with a reasonable layout, professional settings that align with industries, and rich levels is needed to support the massive industrial development with the power of a system.

China's industry started relatively late, but its development speed is fast. China has also gone through five stages of world industrial development, but each stage has a different duration, and some stages may even be parallel. The requirements of industry for vocational education and the form of vocational education in China faithfully reflect the situation of industrial development. It is not a uniform pace or step-by-step approach, nor does it fully follow the path of vocational education development in developed Western countries.

Instead, it closely follows the pace of industrial development in China, constantly learning from external experiences and adapting to internal needs to explore and move forward. Like China's rapidly developing industry, the speed of vocational education development in China is very rapid. While China's industry has become the world's most complete industrial category and the only country with a full industrial chain, it has built the world's largest modern vocational education system.

In 2015, the State Council issued the "Made in China 2025", which was the first action plan for China to implement the strategy of becoming a strong manufacturing country. The development of the secondary industry, including manufacturing, has become a crucial part of China's new international competition and restructuring process in the new international order. Made in China 2025 proposes a three-step goal: to enter the ranks of manufacturing powers by 2025; By 2035, China's manufacturing industry as a whole will reach a moderate level among the world's manufacturing powerhouse camp; By the time the People's Republic of China was established 100 years ago, China's comprehensive strength had entered the ranks of world manufacturing powers.

The strategy of building a strong manufacturing country requires industrial progress, which relies on high-quality technical and skilled talents. Therefore, with the strategy of building a strong manufacturing country as the background, the development prospects of higher vocational education are broad. The highly developed manufacturing industry and advanced manufacturing technology are the core strength of a country, and also the core competitiveness of a country that has not undergone significant changes in a century. To achieve the building of core strength, talent is the core resource.

In China's higher education system, the division of labor for talent cultivation is clear: 985 and 211 universities provide high-end talents in basic theory and technology research and development, ordinary higher education institutions provide basic research talents, and vocational colleges provide technical and skilled talents.

In the context of the strategy of building a strong manufacturing country, the goal of cultivating each type of talent is clearly elevated in the top-level design. Double first-class

universities cultivate top R&D leaders, and vocational colleges with rich levels provide high-quality technical and skilled talents. The 16th National Congress of the Communist Party of China proposed to take the path of new industrialization, transforming traditional industries into new industries, upgrading low-tech industries to high-tech industries, transforming industries and development methods with high energy consumption and environmental pollution into low energy consumption and environmental protection, and changing the state of low added value of industrial products. By 2021, the country will further upgrade the new industrialization path to the strategy of becoming a manufacturing powerhouse and a network powerhouse, with specific goals set as five things: innovation drives industrial development; Building a modern industrial chain; The manufacturing industry highlights high-end, intelligent, and green development; Integration and development of large and small enterprises; Build a good ecosystem for the development of the manufacturing industry.

Under such practical needs, the mission of vocational education has shifted from cultivating industrial technical workers with professional skills to cultivating high-quality technical and skilled talents. The demand has shifted from one level (vocational college) to multiple levels (vocational college, undergraduate, master's, doctoral). The strategy of building a strong manufacturing country requires industrial progress, which relies on high-quality technical and skilled talents. The core task of a manufacturing powerhouse is the transformation and upgrading of the manufacturing industry. The transformation and upgrading of the manufacturing industry is manifested in changes in industrial layout and changes in development methods.

The changes in industrial layout are reflected in the transfer of some industries from developed regions to underdeveloped regions, and the increasingly obvious pattern of regional differentiation. This requires that the talent training resources of higher vocational education also move with the transfer of industries, and adjust the layout of higher vocational education. Otherwise, it will be impossible to provide sufficient and sufficient talents to meet the intellectual and human needs brought about by industrial transfer.

Most ethnic regions are economically underdeveloped, and many industries in ethnic regions still remain in traditional industries. The development speed of technology is also slower than other regions. To undertake industries transferred from developed regions and transform and upgrade their own characteristic industries, this can be said to be a double burden for ethnic regions. To shoulder this task of developing with the country, it is necessary to rely on higher vocational colleges in ethnic regions to provide a large amount of High quality technical and skilled talents form the main force of industrial development. It can be said that the urgency and importance of high-quality higher vocational education in ethnic regions are far greater than in other regions.

The transformation of development mode is reflected in the adjustment and upgrading of industrial structure, which cannot be achieved overnight, especially in ethnic areas with weak industrial foundations and insufficient economic development momentum. Reform requires time, and before the transformation of industrial development mode is completed, traditional and new models will coexist, Long term coexistence requires the support of a large number of high-quality technical and skilled talents, otherwise it will lead to difficulties such as weak industrial transformation due to labor shortage. At the same time, due to this long-term coexistence, the demand for high-quality technical and skilled talents in the industry shows obvious diversified characteristics. To meet the needs of adjusting and upgrading the industrial structure, higher vocational education also needs to undergo structural adjustments. Only by matching the industrial structure can it meet the industry's demand for talent.

At the same time, with the deep integration of industry, agriculture, and the tertiary industry, the industrial chain of industry has become very long, especially the use of industrial products to serve agriculture and the tertiary industry has become a norm, and the demand for vocational education in industry is no longer limited to industrial manufacturing itself. For example, in the aquaculture industry in agriculture, artificial farming is no longer just manual feeding. Fish farming is not just digging a pit or making a fish pond, but a set of artificial ecosystems with functions such as automatic feeding, water purification, and

temperature regulation; Raising livestock and poultry is no longer just a shed, but a factory that can automatically raise and complete all aspects of the industrial chain. Although the industry belongs to agriculture, it requires complete industrial technology equipment as the foundation and support. Such examples are ubiquitous in agriculture and the tertiary industry, so common that the shadow of industry is even imperceptible. In this process, the space for higher vocational education to be developed in industries that are already closely connected to it has greatly increased.

4.1.3 The demand for higher vocational education talents in the tertiary industry

In 1973, Daniel Bell published his monograph "The Post Industrial Society", which described the changes that were taking place in American society at that time. He made a series of assumptions and descriptions about the upcoming post industrial society. The world after the publication of monographs is indeed an era where industrialization is being developed and advanced rapidly worldwide. With the continuous advancement of industrialization, the population engaged in the primary industry is gradually shifting towards the secondary industry; When this transformation continues to occur and the population of the primary and secondary industries gradually shifts towards the tertiary industry, the post industrial society truly arrives. One of the economic characteristics of post industrial society is that the majority of workers work in the tertiary industry rather than in the primary and secondary industries (Ni Xiaoning, 2019). The world generally believes that the post industrial society is both an information society and a high-tech society.

Currently, China has gradually entered the post industrial era: the tertiary industry is occupying an increasingly important position in the national economy. If the transition from an agricultural society to an industrial society has brought about significant development in vocational education in schools, and the comprehensive and rapid development of the industrial society has elevated vocational education from basic vocational education to higher vocational education, then with the arrival of the post industrial era, in this society where the division of labor is becoming increasingly refined, the internal stratification of higher vocational education is also inevitable. The method for China to cope

with this socio-economic change is to build and improve a modern vocational education system, striving to provide suitable, diverse, and diverse vocational and technical talents for economic and social development.

Under the framework of national construction and improvement of the modern vocational education system, ethnic minority regions are also constructing and improving a modern vocational education system tailored to local characteristics and needs.

The World Economic Forum pointed out in its Future Employment Report that there are 10 most important competency requirements for practitioners in the future world, which can be summarized into four categories: problem-solving ability (accounting for half of the most needed skills in the global job market), self-management ability, ability to collaborate with people, and ability to use and develop technology.

Of course, the changes brought by the New Industrial Revolution to society are profound and enormous. New energy brings new rules, new rules trigger new models, new models lead new technologies, and new technologies cultivate new habits. The integration of industries has challenged the specificity of talents, and the interdisciplinary intersection of knowledge and the comprehensive application of skills are the requirements for talents in the new industrial era; The continuous deepening of internationalization requires talents to have multilingual abilities and an international perspective, while also understanding international and domestic rules; The accelerated updating of technology requires talents to have the awareness and ability to self-learning and continuous innovation.

The post industrial era is marked by the rise of the tertiary industry. When facing the post industrial era, higher vocational education needs to comprehensively upgrade from structural levels, training objectives, to training models. This "upgrade" refers to reform, which is a reform that starts from the root and involves various aspects and links within vocational education, as well as industries, industries, and enterprises outside the vocational education system. The difficulties in depth and breadth are not small. The stakeholders of vocational education have different expectations for vocational education, therefore, both academia and industry have different voices on how to reform. A few scholars believe that

industry development is dynamic, but education should have a certain degree of determination. The combination of talent cultivation and industry should be more reflected in the scientific research and social services behind teaching. The contribution of universities to disciplines and industries should be more reflected in promoting theoretical development of disciplines and promoting technological development to help industry businesses improve production and operational efficiency, rather than directly landing on teaching.

The consensus among most people in the academic community is that higher vocational education should be employment oriented and cultivate technical and skilled talents with unique skills that are close to job requirements. Moreover, due to the diverse and three-dimensional demand for talents in the New Industrial Revolution, a single skill is only a basic requirement for talents. On top of this, society also requires students to possess humanistic literacy, professional spirit, as well as interdisciplinary knowledge and international perspectives required for different positions (Chen Yulin, 2018).

With the continuous progress of society and the rapid progress of global industrialization, the connotation and development focus of the tertiary industry are also constantly changing. The service industry includes productive service industries and life service industries. Productive service industries have beeseparated from the manufacturing industry in the process of continuous upgrading and development. With the continuous integration of manufacturing and other industries, they have become the lubricant for manufacturing to penetrate into other industries (Xie Ji Fei, 2019). This is the service-oriented manufacturing industry, which covers electrification, automation technology services, transportation technology services, information technology services Financial services, independent of manufacturing but also serving production enterprises, promote the extension of products from tangible to intangible.

Against the backdrop of the country's strong development of manufacturing, the tertiary industry is no longer just a protagonist in the daily life service industry, which is closely related to people's livelihoods. The traditional service industry has become a modern

service industry that covers both traditional service industries and provides productive services for the modern industrial chain.

Correspondingly, higher vocational education, which provides talent support for the post industrial era and modern service industry, has a new training direction and mission.

The new demand of modern service industry for talent cultivation in higher vocational education in ethnic regions:

1) Cultivate highly skilled labor force that can provide productive service industries. They should have certain technical industry service skills that can directly assist the technology service industry;

2) Cultivate versatile talents who understand technology, marketing and sales, and management. In the past, workers working in the tertiary industry usually possessed a basic technical skill. However, in the era of the integration of secondary and tertiary industries and the rapid development of manufacturing services, the service industry itself is an extension of tangible products, and workers working in the service industry also need to possess richer skills to cope with it;

3) Higher vocational colleges in ethnic regions should gather in relevant industrial clusters within the region. Higher vocational education has a natural pro industry characteristic. Only when universities and industries are together can they continuously obtain the latest information and knowledge from enterprises and industries. Industries should gather, and industries and higher vocational colleges should also gather. After gathering, through in-depth integration of industry and education, as well as school enterprise cooperation, the supply and demand sides of vocational talents are directly connected, making the school's training activities valuable and not wasteful, cultivating the talents needed by the industry, and allowing the industry to use the most suitable talents in the first time.

At the same time, by leveraging the educational function of schools, we provide continuing education for employees of various ethnic groups in the industry,

combining work and learning, enabling enterprises to obtain higher quality human value while providing employees with opportunities and avenues for lifelong learning, achieving multiple functions of higher vocational education that simultaneously meet local economic and individual development needs.

4.2 The Current Situation and Trends of Guangxi's Economic, Social and Industrial Development

Since the beginning of the 20th century, Guangxi has fully utilized the unique geographical location, natural resources, and ethnic cultural accumulation advantages of the ethnic autonomous region. Through continuous and arduous efforts throughout the region, various economic and social undertakings have achieved comprehensive development. The fourth economic census from 2004 to 2018 recorded Guangxi's extraordinary development process and outstanding achievements in the past two decades. From the perspective of GDP growth alone, during the first national economic census, Guangxi's GDP exceeded the 300 billion yuan mark for the first time in 2004; During the second national economic census, the GDP in 2008 exceeded 700 billion yuan, reaching 717.16 billion yuan; During the third national economic census, it reached 1437.8 billion yuan in 2013; During the fourth national economic census, Guangxi entered a new normal stage of development, with a significant slowdown in growth rate. In 2017, its GDP exceeded the 2 trillion mark for the first time, and in 2018, its GDP was 1.4 times that of 2013, reaching 2012.9 billion yuan. During the 13th Five Year Plan period, Guangxi deeply implemented the new development concept, actively promoted economic transformation and upgrading, sought progress while maintaining stability, and achieved a new leap in comprehensive economic strength. In 2022, the total GDP of the region was 2212.1 billion yuan, a year-on-year increase of 3.7%, ranking 12th in the country.

During the 13th Five Year Plan period, Guangxi focused on promoting structural adjustment and mode transformation, seeking development during the transformation, accelerating the pace of industrial transformation and upgrading, and continuously improving

the quality of economic development. The proportion of primary, secondary, and tertiary industries in the tertiary industry structure has shifted from 23.8:36.5:39.7 in 2004 to 16:32.1:51.9 in 2022. The proportion of the primary industry has significantly decreased, and the proportion of the tertiary industry has significantly exceeded that of the secondary industry. However, based on the analysis of labor productivity by some scholars, the current three industrial structure transformations in Guangxi do not necessarily mean that the industrial structure of Guangxi is transitioning towards higher levels. The proportion of primary production in Guangxi is still too high, more than twice that of 7.6 in the country, and the proportion of secondary production and tertiary production is 1-3 % lower than that of the country.

Industry has brought a "industrialization dividend" to Guangxi for over a decade, but in recent years, the proportion of added value in Guangxi's secondary industry has decreased. Studying the changes in industrial development data in recent years, it was found that the problem lies in the industry. The proportion of industrial added value to the second industry has been around 85% in recent years, and the development and changes of industry have played a leading role in the second industry. The proportion of industrial added value to GDP has been decreasing since the 13th Five Year Plan, only 23.6% in 2022, which is 7.3 percentage points lower than the national 30.9%. The main reason is that the industrial development in Guangxi has encountered structural problems, and it is not a manifestation of the transfer of industries from the second industry to the third industry in the post industrial period. Short industrial legs, poor structure, and lagging industrialization process are the severe realities facing Guangxi. To complete the industrialization process, accelerate transformation and upgrading, comprehensively improve quality, and truly achieve high-quality development, Guangxi still needs to make arduous efforts.

4.2.1 The Current Situation and Trends of the Development of the Primary Industry

Guangxi is a major agricultural province in China, and its favorable geographical location and climate conditions provide basic guarantees for agricultural development. The living habits of 12 ethnic groups have a stable impact on the internal

structure of agriculture, and characteristic agriculture with ethnic style and regional characteristics maintains a good development momentum. Agriculture in Guangxi plays an important role in the national economy, with the proportion of the primary industry stabilizing at around 16% in the past decade, accounting for 16.5% of GDP in 2022.

During the 13th Five Year Plan period, Guangxi deeply implemented the central government's decision-making and deployment on agriculture, rural areas, and farmers, fully implemented the poverty alleviation campaign, built a comprehensive well-off society, solidly promoted the construction of modern characteristic agriculture, and vigorously implemented the rural revitalization strategy, giving a new look to agriculture and rural areas. The total agricultural economy has reached a new level, with the added value of the primary industry in the region reaching 364.6 billion yuan in 2020, ranking 10th in the country. Agricultural advantageous industries have accelerated their growth, creating six industrial clusters worth 100 billion yuan, including grain, sucrose, fruits, vegetables, livestock, and fisheries, as well as three 50 billion yuan industries, including silkworms, traditional Chinese medicine, and poultry. A batch of industries worth 10 billion yuan have grown rapidly. The modern featured agriculture with national regional fashion has been growing. The four industries of Luohanguo, Sanhuangji, Guixi pig and Guangxi mango, which were selected into the national advantageous featured industrial cluster, have continued to grow. The industrial scale of garden fruit, sugar, silkworm and buffalo milk has steadily developed, and the production of live pigs and aquatic products is still in the forefront of the country. The acceleration of industrial integration development has led to the creation of 19600 modern characteristic agricultural demonstration zones at all levels in the region, the construction of 18 national level advantageous zones for characteristic agricultural products and 30 autonomous region level advantageous zones, the construction of 1 national level and 6 autonomous region level pastoral complex, the creation of 4 national level modern agricultural industrial parks and 20 autonomous region level modern agricultural industrial parks, 9 national level demonstration parks for rural industrial integration development, and 27 national agricultural industry strong towns, There are 109 demonstration villages and

towns nationwide with the concept of "one village, one product". The construction of agricultural product processing clusters has achieved significant results, with 116 completed. Make great efforts to cultivate large-scale agricultural product processing enterprises, with an annual sales revenue of over 100 million yuan reaching 365. Brand awareness is constantly increasing, with a total brand output value of over 106.5 billion yuan. Vigorously developing leisure agriculture has become a new growth point, creating 14 national level demonstration counties for leisure agriculture and rural tourism, 263 autonomous region level demonstration points, and 41 beautiful leisure villages in China. In 2020, the income of leisure agriculture in the entire region exceeded 40 billion yuan, and Guangxi, one of the top ten provinces in leisure agriculture in China, was listed. The internal structure of agriculture continues to undergo adjustments and changes. In 2020, the total output value of agriculture, forestry, animal husbandry and fishery in Guangxi accounted for 55.3%, 24.1% in animal husbandry, 8.6% in fisheries, and 2% in forestry. Compared to 2015, the proportion of agriculture increased by 4.2 percentage points, livestock decreased by 3.1 percentage points, fisheries decreased by 1.6 percentage points, and forestry decreased by 0.1 percentage points. Overall, agriculture still dominates, and animal husbandry also plays an important role.

Looking ahead to the 14th Five Year Plan, the development of agriculture and rural areas in Guangxi is facing a series of significant opportunities. The external environment and internal factors are undergoing profound changes, as well as facing many difficulties and challenges. From the perspective of favorable factors, Guangxi's agricultural and rural development is currently in a window of transformation and upgrading. The comprehensive implementation of the central "rural revitalization" strategy will drive Guangxi's agricultural development into a fast lane, solidly promoting the construction of modern characteristic agriculture and beautiful rural areas in Guangxi to become a key focus of agricultural development. Industries worth billions of yuan and rural prosperous industries will continue to accelerate development, and agricultural infrastructure construction will continue to improve towards a high level, Supporting policies and new driving forces will accelerate the upgrading of Guangxi from a major agricultural province to a modern

characteristic agricultural region, and will further promote the modernization of agriculture and rural areas in Guangxi. From the perspective of challenges, there are still many development shortcomings in Guangxi, and the task of consolidating the achievements of poverty alleviation is arduous. Strengthening agricultural infrastructure requires huge investment, and improving the level of agricultural industrialization has become a top priority. The extension of the entire industrial chain is slow, such as insufficient deep processing and limited brand marketing. It is difficult to improve the quality and efficiency of agricultural development, and there is still a shortage of rural talents and weak comprehensive competitiveness that need to be solved.

Overall, the development of agriculture and rural areas in Guangxi not only has unique conditions and a certain foundation accumulation, but also has obvious weaknesses. Seizing opportunities to fill the gaps, standing at a new starting point, and continuously advancing, accelerating the modernization of agriculture and rural areas is an inevitable choice for Guangxi.

In December 2021, the Guangxi government issued the "14th Five Year Plan for Promoting Agricultural and Rural Modernization in Guangxi", which proposed the 14th Five Year Development Goal: to achieve effective connection between consolidating and expanding poverty alleviation achievements and rural revitalization by 2025, achieve significant results in the construction of modern characteristic agricultural areas, and make significant progress in agricultural and rural modernization. Effective guarantee of food security, with a production capacity of over 13.7 million tons; Effective supply of bulk agricultural products such as pigs and sucrose. The advantageous position of characteristic industries in the country has been consolidated and enhanced, and the level of scale, intensification, mechanization, standardization, digitization, and branding has been further improved. The high-quality development of modern characteristic agriculture has achieved significant results. The average annual growth rate of the added value of the primary industry is over 5.5%, and the average annual growth rate has achieved the "two targets" of being higher than the national average and the average level in the western region. The plan also

proposes that by 2035, Guangxi's comprehensive agricultural production capacity will significantly improve, with most of the main indicators or growth rates of modern agricultural development ranking among the top 10 in the country. The level of rural construction will reach the top level in the central and western regions of China, and the development of industry integration, industry city integration, and urban-rural integration will reach a higher level. Decisive progress will be made in comprehensively promoting rural revitalization, and a strong modern characteristic agriculture zone will be fully built, We will basically achieve modernization of agriculture and rural areas.

The plan specifies requirements, based on the characteristics and resource advantages of ethnic regions, to expand, strengthen, and optimize characteristic advantageous industries, promote the modernization level of industries, and form a modern characteristic industrial system with strong competitiveness. According to the development model of regional agglomeration, intensive management, industrial cluster, full chain deep cultivation, and deep integration of primary, secondary, and tertiary industries formed by Guangxi's development of characteristic industries in recent years, we will strengthen and optimize the 10 major industrial clusters of grain and oil, sugar cane, vegetables, fruits, silkworms, tea, traditional Chinese medicine, poultry, livestock, and fisheries. By the end of the period, we will achieve a total output value of over 1 trillion yuan, which is about double the total output value of agriculture, forestry, animal husbandry, and fishery in the region in 2020. In order to ensure the sustainable and accelerated development of the agricultural industry, Guangxi has also made wise choices and scientific plans for the development of modern agricultural support industries, clearly proposing to strengthen the three major modern agricultural support industries of modern seed industry, facility agriculture, and digital agriculture, in order to continuously enhance the driving force of technology and material equipment for agricultural modernization. It can be foreseen that the competitiveness of Guangxi's agricultural industry will significantly improve, achieving a transformation from a major agricultural province (region) in China to a strong province (region).

4.2.2 The current situation and trend of the development of the secondary industry

The added value of Guangxi's industry accounts for about 85% of the secondary industry, and the overall development and changes of the industry dominate the development and changes of the secondary industry. We have achieved steady growth in total scale, optimization of industrial structure, and continuous improvement in quality benefits. From 2016 to 2020, the added value of industrial enterprises above designated size in the entire region increased by an average of 5.0% annually, industrial investment increased by an average of 7.5% annually, and the contribution rate of industry to economic growth exceeded 30%. In 2020, the total profit of industrial enterprises above designated size in the entire region increased by 13.6%. The entire region has formed 10 industries worth 100 billion yuan, including food, metallurgy, automobiles, non-ferrous metals, petrochemicals, machinery, electronics, electricity, building materials, papermaking, and wood processing. Among them, the output value of the food, metallurgy, and automobile industries exceeds 200 billion yuan. Industry clusters such as automobiles, machinery, high-end metal new materials, green chemicals, and electronic information have a significant influence in the country. The production of passenger cars, engineering machinery, internal combustion engines, electrolytic copper, alumina, and sucrose has all entered the top five in the country. During this period, Guangxi's industrial development had several obvious characteristics:

1) Focus on cultivating leading enterprises, and the overall strength of the enterprise is rapidly increasing. Implement the cultivation plan for leading enterprises, and do a good job in supporting, attracting, and cultivating them. The number and scale of leading enterprises have increased, and their driving role is highlighted. As of the end of 2020, there were 17 enterprises with a production value of 10 billion yuan in the entire region, with a production value of over 80 billion yuan for Liugang and SAIC Energy Wuling. There were 10 top 500 manufacturing enterprises in China, and a large number of Fortune 500 enterprises such as Huawei, Huayi, Huayou, Geely, Sun Paper, BYD, Inspur, and Huike settled in

Guangxi. The team of technology enterprises has rapidly grown, with 2806 high-tech enterprises, 107 gazelle enterprises, 27 national specialized, refined, and new small giant enterprises, and 2 individual champion enterprises in the entire region by 2020.

2) Focus on the construction of major projects and accelerate the formation of new driving forces. During the 13th Five Year Plan period, Guangxi has always focused on the construction of major projects, building three major platforms: "Double Hundred, Double New", "Thousand Enterprise Technological Transformation", and "Three Enterprises Entering Guangxi". At the same time, efforts have been made to improve the business environment, introducing a large number of manufacturing industries, new models, new technologies, and new product projects to settle in Guangxi, and the layout of new growth points for industrial development covers the entire region. Since 2018 alone, 411 double hundred and double new projects have been implemented, 2032 thousand enterprise technological transformation projects have been promoted, 1019 key projects have been completed and put into operation, with a new output value of 276.7 billion yuan and a rapid growth momentum. Project construction has entered a promising harvest period, and new industrial momentum has been continuously formed.

3) Efforts will be made to transform and upgrade, and industrial structure optimization will break through the tight encirclement. Implement actions to optimize and upgrade traditional industries, and accelerate their development towards high-end, green, and intelligent industries. Substantial progress has been made in the implementation of intelligent upgrading in industries such as non-ferrous machinery, automobiles, petrochemical and chemical industries, metals, metallurgy, and food. From 2018 to 2020, a total of 88 intelligent factory demonstration enterprises and 17 digital workshops were identified; Promoting the secondary entrepreneurship of traditional advantageous industries such as automobiles, aluminum, machinery, metallurgy, and sugar, new vitality in traditional industries has begun to burst, and the production of products such as passenger cars, internal combustion engines, engineering machinery, and aluminum oxide has entered the forefront of the country. Strategic emerging industries have achieved significant development. The in-depth

implementation of the innovation strategy has brought fruitful results in the continuous growth of emerging industries, with vigorous development of new industries, models, and formats. New products such as new energy vehicles, smart TVs, and smartphones are growing rapidly. As of the end of 2020, there were 986 strategic emerging industrial enterprises in the region, accounting for 14.5% of the total number of industrial enterprises above designated size. The proportion of the added value of strategic emerging industries to the added value of industries above designated size in the entire region has increased from 5.4% at the end of the 12th Five Year Plan to 16% at the end of the 13th Five Year Plan. The strategy of revitalizing light industry has reignited new hope. Wood processing, household appliances, textile and clothing, Baijiu drinks and other industries are on the road to revitalization, and innovative and creative products such as air conditioners, refrigerator smart home appliances and prefabricated furniture have achieved zero breakthrough in Guangxi manufacturing; 23 autonomous region level characteristic light industry parks have been identified for the development of light industry specialization and park intensive clusters, and the situation of "fault vacancy" in light industry has been preliminarily improved. The level of green development has significantly increased. The construction of a green manufacturing system has begun to take shape, creating 6 and 10 national and autonomous region level green parks, 45 and 81 national and autonomous region level green factories, and cultivating 30 and 17 types of national and autonomous region level green products; The energy consumption and emission levels of large key enterprises such as steel, aluminum, and copper have reached domestic or even international leading levels. The proportion of investment in high energy consuming industries in industrial investment is continuously decreasing, and the large-scale elimination of outdated production capacity has achieved significant results.

4) The dual cycle development of the entire industrial chain has shown new momentum. Led by leading enterprises, we will build a cross regional cross-border industrial chain supply chain with multiple advantageous industries such as automobiles, electronic information, metal new materials, and green chemical new materials. We will organize and

implement over 500 projects to strengthen and extend the chain, drive the development of industrial clusters, and strive to promote the complete matching of the industrial chain and supply chain of large industries and enterprises, and improve the level of dual circulation. The entire industrial chain of automobiles and new energy vehicles has begun to take shape, and new progress has been made in the industrial chain of alumina, electrolytic aluminum, and aluminum deep processing. New energy battery material enterprises such as Huayou Cobalt Industry and Xiangtan Electrochemical have been established, and the new energy battery material industry has gradually grown in support. The petrochemical and chemical industry system of oil, coal, gas, and salt has accelerated the formation, and characteristic chemical industries such as forest chemical industry and titanium dioxide new materials have begun to take shape. Nanning Acoustics and Beihai New Display have also taken shape Guilin's intelligent terminals and other industries are gathering and developing, and the entire industrial chain of raw material bases, artificial boards, and high-end green home furnishings is constantly growing. The biopharmaceutical industries in Guilin, Nanning, Wuzhou, and Yulin are developing in a clustered and supporting manner, and a high-quality calcium carbonate full industrial chain cluster with a focus on Hezhou and guests has initially formed.

During the 14th Five Year Plan period, Guangxi is still in an important period of strategic opportunities, but both opportunities and challenges have undergone new development changes, with opportunities outweighing challenges. Based on the new development stage, fully, accurately, and comprehensively implement the new development concept, serve and integrate into the new development pattern, promote high-quality development, and achieve the goal of accelerating development, transformation and upgrading, and comprehensively improving quality in Guangxi during the 14th Five Year Plan period. This puts forward higher requirements for promoting industrial revitalization and high-quality development. The Regional Comprehensive Economic Partnership Agreement (RCEP) was officially signed, the new land and sea corridor in the western region was upgraded to a national strategy, the construction of China (Guangxi) Pilot Free Trade Zone was accelerated, and national strategies such as the Western Development, the the Pearl

River Xijiang Economic Belt, the Guangxi Beibu Gulf Economic Zone, the Zuojiang Old Revolutionary Base Area and so on were further promoted, and the development of the Yangtze River Economic Belt, the construction of the Guangdong Hong Kong Macao Greater Bay Area and other major national strategies were actively integrated into the joint construction of the the Belt and Road, Accelerate the building of a cross-border industrial chain supply chain for ASEAN, form an open cooperation highland for ASEAN and better serve the the Belt and Road, and an important node hub for domestic and international double circulation, which will bring significant opportunities for Guangxi to integrate into domestic and international double circulation and deepen industrial opening and cooperation in an all-round way.

However, Guangxi's industry also faces severe challenges. In the transformation and upgrading of traditional industries in Guangxi, as well as the transition towards mid to high end, the competition with developed regions in the east and advanced regions in the central and western regions will become more intense. The overall scale of Guangxi's industrial economy is relatively small, with insufficient innovation capacity and increasing pressure for transformation and upgrading. From the perspective of industrial structure, traditional resource-based industries have a significant proportion, while strategic emerging industries have a low proportion. The development of light industry has lagged behind for a long time, and the ratio of light to heavy industry is about 1:4. From the perspective of innovation capability, the R&D investment is insufficient. In 2020, the total social R&D investment in the entire region was 17.32 billion yuan, with a R&D intensity of only 0.78%, which is 1.62 percentage points lower than the national average level. From the perspective of green transformation, the output value of the six high energy consuming industries accounts for over 45%, and the energy consumption per unit of industrial added value is higher than the national average. From the perspective of quality and efficiency, industrial products are mainly primarily processed, and their competitiveness is not strong. From the perspective of factor guarantee, energy supply and power guarantee are tightening, and there is a shortage of supply for chips and key components. The further intensification

of regional industrial competition will attract talent and technology from surrounding areas to transfer to Guangdong Hong Kong Macao Greater Bay Area, Hainan, Chengdu Chongqing and other places, forming a siphon effect of advanced elements and a lock-in effect of industrial development. Guangxi is facing severe challenges of either advancing or retreating slowly.

In the face of new situations, new tasks, and new challenges, the Guangxi government has formulated the "14th Five Year Plan" for high-quality development of industry and information technology, which proposes practical goals of achieving new breakthroughs in total scale, making new progress in structural optimization, presenting new improvements in cluster development, taking new steps in green development, and taking innovative development to a new level. During the 14th Five Year Plan period, the average annual growth rate of industrial investment in the entire region is about 18%, and the average annual growth rate of industrial added value is over 8%. By 2025, the total industrial output value will exceed 3 trillion yuan. The plan also proposes development goals for manufacturing, light industry, strategic emerging industries, and high-tech industries by 2025, with the added value of manufacturing accounting for over 25% of the regional GDP; The added value of light industry accounts for 25% of the total industrial added value in the region; The added value of strategic emerging industries accounts for 25% of the total industrial added value in the region; The added value of high-tech manufacturing industry accounts for 15% of the total industrial added value in the region. The plan proposes specific goals for the ownership of large enterprises above designated size and the development of the park's economic scale: more than 40 enterprises with a value of over 10 billion yuan, more than 10000 industrial enterprises above designated size, the proportion of the park's total industrial output value to the total industrial output value of the entire district reaching over 85%, 10 parks with a value of 100 billion yuan, and 10 parks with a value of 50 billion yuan. The plan also outlines a long-term blueprint for industrial development. By 2035, the proportion of manufacturing added value to regional gross domestic product will steadily increase, industrial technology innovation capabilities will significantly improve, the

industrial foundation will be advanced, and the level of industrial chain modernization will be significantly improved. A modern industrial system with complete categories, close integration of industrial chains, core competitiveness, and core technology of major industrial chains, led by innovation, will be established, forming advanced equipment manufacturing Two trillion yuan industrial clusters of green new materials have broken new paths in promoting high-quality development in border ethnic areas, demonstrated new achievements in serving and integrating into new development patterns, and taken new steps in promoting green development. In the future, Guangxi will continue to adhere to the strategy of strengthening Guangxi through industry as a major concern for the overall situation, and prioritize high-quality industrial development as a top priority for high-quality economic development. The Party Committee and People's Government of the autonomous region have formulated and introduced a series of supporting policy measures, including a three-year action plan for promoting industrial revitalization, several policy measures for promoting industrial revitalization, a three-year action plan for strategic emerging industry development, and a directory for guiding industrial structure adjustment, to vigorously promote industrial revitalization and achieve high-quality development.

4.2.3 The current situation and trend of the development of the tertiary industry

Since the reform and opening up, the service industry (tertiary industry) in Guangxi has maintained a rapid development trend. During the 13th Five Year Plan period, the overall stable and positive development trend has been continued. The total scale of the service industry has steadily expanded, the internal structure has been continuously optimized, and the results of industrial transformation and upgrading have been significant. The agglomeration development effect has continued to be significant, and the quality and efficiency have continuously improved, making significant contributions to the economic and social development of the entire region. The overall scale has leapt to a new level, with outstanding contributions to stable growth. During the 13th Five Year Plan period, the added value of the service industry in the entire region achieved significant growth, from 684.14 billion yuan in 2015 to 1149.24 billion yuan in 2020, with an average annual growth rate of

8%, 1.3 percentage points higher than the national average growth rate during the same period. In 2020, the contribution rate of the service industry to economic growth in the entire region reached 58.2%, and the proportion of added value of the service industry to GDP increased from 46.2% in 2015 to 51.9% in 2020, becoming the first driving force for economic growth. The development of Guangxi's service industry during this period presented several characteristics:

1) The service industry above designated size is developing rapidly. At the end of 2020, there were a total of 2902 service industry legal entities above designated size in Guangxi, an increase of 861 compared to the end of 2015. From 2016 to 2020, the average annual growth rate was 7.2%, indicating a significant increase in market entities. The business scale continues to expand, with a total of 2201.949 billion yuan in assets in the service industry above designated size at the end of 2020, and a revenue of 302.306 billion yuan, an increase of more than one time and 1.3 times compared to the end of 2015, respectively; Among the 32 major categories of service industries above the designated size, 18 have an average annual growth rate of over 10% in operating revenue. Among them, the internet and related services, software and information technology services, and healthcare industries have continued to maintain high-speed growth, with an average annual growth rate of 51.7%, 42.9%, and 17%, respectively, becoming star industries in the service industry. The team of leading enterprises continues to grow. In 2020, there were 449 units with a revenue scale exceeding 100 million yuan, an increase of 223 compared to 2015, and the competitiveness of the enterprises gradually increases.

2) The development of emerging service industries has entered a fast lane. At the end of 2020, there were a total of 1292 emerging service industry units, including telecommunications, radio and television, satellite transmission services, internet and related network services, software and information technology services, business services, research and experimental development, professional technology services, technology promotion and application services, accounting for 44.5% of the total number of designated service industry units. The operating revenue of emerging service industries has grown rapidly. In 2020, the

operating revenue of six industries, including commercial services, telecommunications, broadcasting and satellite transmission services, professional technical services, software information technology services, internet and related network services, research and experimental development, increased by 140%, 36.8%, 130%, 1430%, 310%, and 89.2% respectively compared to 2015. From 2016 to 2020, the average annual growth rate was 24.5%, 4.7%, 14.5%, 42.9%, respectively 51.7% and 90.3%.

3) Accelerated optimization and upgrading of consumption structure. During the 13th Five Year Plan period, a series of policies and measures by the central government and various regions to expand domestic demand and promote consumption continued to exert efforts. The scale of consumption in Guangxi continued to expand, and the consumption structure also underwent significant changes. The consumer goods market gradually formed a pattern of diversified entities, diverse ways, and open competition. From the perspective of total scale, the total retail sales of consumer goods in the entire region reached 783.101 billion yuan in 2020, an increase of 35.7% compared to 577.15 billion yuan in 2015, and an average annual growth of 6.3%; The per capita consumption expenditure of urban residents in the entire region is 20907 yuan, an increase of 4586 yuan compared to 16321 yuan in 2015, with an average annual growth rate of 5.1%. From the perspective of consumption structure, the growth of food is good, housing is rapidly developing, transportation is steadily improving, and the structure is quietly changing. The consumption form is shifting from a single material demand to a diversified demand, and the consumption level is shifting towards a green, healthy, high-quality, and enjoyable type; The upgrade of durable consumption is accelerating, and the ownership of car washing, mobile phones, air conditioning, refrigerators, washing machines, water heaters, etc. is steadily increasing; Healthcare consumption is constantly increasing. In 2020, the per capita healthcare expenditure of urban residents in the entire region was 1903 yuan, an increase of 1.5 times compared to 2015, and an average annual growth of 17%.

4) There are numerous highlights of service consumption. The accommodation market continues to expand, and with the continuous upgrading and changes

of business, tourism, and leisure methods, the scale of accommodation consumption has also been correspondingly expanded, with innovative forms and rich connotations; In 2020, there were 782 residential legal entities above the designated size in the entire region, an increase of 277 compared to 2015, with an average annual growth rate of 9.1%. Catering consumption has reached new highs, with an average annual growth of 7.3% in the 13th Five Year Plan period, which is 1.2 percentage points higher than the retail sales of goods. The development of tourism consumption is rapid, the construction of strong tourist areas continues to strengthen infrastructure construction, the transformation and upgrading of the tourism industry is significantly accelerated, and the full range of characteristic tourism is actively promoted. Guangxi's tourism industry has shifted from high-speed growth to high-quality tourism development. In 2020, Guangxi has a total of 598 AAA level and above scenic spots, 130 four-star and above hotels, and a total of 881 travel agencies; From 2016 to 2019, the number of domestic tourists received and the total tourism consumption increased by 26.8% and 33.2% annually. Among them, in 2019, the number of domestic tourists received was 870 million, and the total tourism consumption was 102414 million yuan, setting a new historical high. In 2020, despite being greatly affected by the epidemic, 661 million tourists were still received.

5) The real estate market is steadily expanding and developing healthily. In 2020, there were 3277 real estate development enterprises in the region, an increase of 807 compared to 2470 in 2016. During the 13th Five Year Plan period, the investment in real estate development in Guangxi increased by 86.7%, with an average annual growth of 15%, and the sales area of commercial housing increased by 13.8% annually. The sales of commercial housing in 2020 increased by 92.6% compared to 2016. During the 13th Five Year Plan period, the sales area of commercial housing in the entire region continued to grow and sales revenue continued to increase, which greatly promoted the sustained and rapid economic development of the entire region.

6) The development of the cultural industry has accelerated. The decisive battle against poverty and the comprehensive construction of a moderately prosperous society

during the 13th Five Year Plan period also brought historic opportunities for the prosperity and development of the cultural industry. During this period, the cultural industry in Guangxi achieved significant development, with the basic formation of the institutional system, continuous expansion of the industrial scale, continuous increase in operating income, and significant improvement in enterprise efficiency. The number of cultural industry legal entities has increased from 20000 in 2015 to 30700 in 2020, with an average annual growth of 23.9%; The total assets of cultural industries above designated size increased from 60.918 billion yuan in 2015 to 129.792 billion yuan in 2020, with an average annual growth rate of 46.0%; The operating revenue increased from 66.966 billion yuan in 2015 to 91.077 billion yuan in 2020, with an average annual growth of 16.6%; The coverage of 146 sub industries in cultural and related industries has increased from 66 in 2015 to 90 in 2020, with an average annual growth of 16.8%.

Although the development of modern service industry in Guangxi has achieved significant results during the 13th Five Year Plan period, there are still some shortcomings and problems compared to advanced regions in China and surrounding provinces in Guangxi. Firstly, the overall development quality and efficiency are not high. In 2020, the proportion of added value of the service industry in the region to GDP is still 2.7 percentage points lower than that of the whole country; Secondly, standardization and branding construction are relatively weak; Thirdly, the development of emerging modern service industries is lagging behind, and the development of productive service industries such as information services, technology services, and human resources is relatively slow. There are not many service industries and means in the process of agricultural production and circulation, and the development of new formats and models such as digital economy and platform economy is not yet active enough; Finally, there is insufficient opening up to the outside world, and there is a lack of supply of export-oriented professional services such as exhibition services, accounting and auditing, and legal services. The overall openness of the service industry is relatively low.

In October 2021, the Guangxi government issued the 14th Five Year Plan for the High Quality Development of Guangxi's Modern Service Industry. The goal is to fully unleash the reform and innovation energy in the service industry by 2025, steadily increase the scale of the modern service industry in the entire region, continuously optimize the internal structure, significantly improve quality and efficiency, enhance the vitality of carrier enterprises, and break through international energy levels, promoting Guangxi to accelerate the construction of high-end factor clusters The service economy center in the central and southern regions of Southwest China, which has a significant radiative driving effect and global competitiveness. Looking ahead to 2035, the total added value of the service industry in the entire region will double from 2020, and the comprehensive competitiveness of the modern service industry will significantly improve. A new era modern service industry system with digital empowerment, high-end formats, distinctive features, and strong radiation will be constructed with high quality; The integration of modern service industry with advanced manufacturing, agriculture, and the internal integration of service industry has significantly improved, and new formats and models have become the main driving force for the development of modern service industry; The construction of cluster areas and market entities has reached a new height, and the quality of diversified high-end service supply has significantly improved; The construction of the Guangxi Service brand has reached a new level, and the new advantages of participating in international economic cooperation and competition have been significantly enhanced. The modern service industry provides strong support for the basic construction of a magnificent Guangxi with Chinese characteristics in the new era, and for the basic realization of socialist modernization in sync with the whole country.

4.3 Analysis of Talent Demand for Economic and Social Development in Guangxi

Among various forms of education, vocational education is most closely related to economic and social development. The high-quality development strategy of accelerating economic and social development, transforming and upgrading, and comprehensively

improving quality in Guangxi has put forward higher demands for the supply of vocational education talents.

According to statistics from Guangxi Talent Network, the demand for talents of all levels and types in Guangxi in 2020 was 649748, an increase of 12280 people compared to the previous year, with a slight increase of 1.93%. From the perspective of the trend of talent demand changes, it belongs to normal and stable, with small fluctuations; The talent supply has shown a relatively rapid growth, with 606085 job seekers in 2020, an increase of 17% compared to the previous year. There is a certain structural imbalance in the talent supply and demand relationship in Guangxi. For example, among the 54 main job categories, 18 have significant talent gaps, mainly concentrated in sales, real estate agents, customer service and technical services, as well as marketing, planning and promotion. Among them, there is a shortage of 87244 sales talents, 19841 real estate agency talents, 18661 customer service and technical service talents, and 17692 marketing and planning promotion talents. From the perspective of educational level, job seekers are mainly concentrated in college and undergraduate degrees, accounting for 44.4% and 41.7% respectively; The proportion of talent demand for employers with clear educational requirements is 63.7%, with 39.8% requiring a college degree and 23.9% requiring a bachelor's degree. From the perspective of professional distribution, the five major categories of management, engineering, economics, science, and literature are the main support for talent supply. The total number of job seekers is 420922, accounting for 69.45% (Talent Network, 2021).

In order to grasp the employment needs of key industry related units in Guangxi, effectively guide the on-demand flow of various talents in key industries in Guangxi, and assist in a good start to the 14th Five Year Plan, in October 2021, the Human Resources and Social Security Department of Guangxi Zhuang Autonomous Region organized efforts to formulate the overall goals of the region's social and economic development, as well as the overall plan for talent development during the 14th Five Year Plan The 14th Five Year Plan industrial strategic layout and the urgently needed talent catalog for domestic advanced urban industries were collected, sorted, and compared in depth. The "2021 Guangxi Key Industries

(including Industrial Key Industries) urgently needed talent catalog" was compiled. By adopting an online and offline questionnaire survey, a total of 11288 household units and 55293 job samples were collected, covering directly affiliated universities, research institutes, enterprises, 14 municipal public institutions (including universities and research institutes), state-owned enterprises, parks, economic development zones, private enterprises, and relevant units stationed in various cities of Guangxi by the central government. After strict screening and selection of the collected questionnaire by the experts in the preparation team, a total of 648 urgently needed positions were identified in 13 industry categories, with a total demand of 40200 people. There is an urgent talent demand for the economic, social, and industrial development of Guangxi, specifically:

1) Requires a large number of industry aligned professional talents

Guangxi is a major agricultural province (region) in southwestern China, with unique advantages in sugarcane, subtropical fruits, mulberry leaf planting and product processing. However, the product added value and talent structure of these industries are relatively low in matching with the industrial structure (Wu Fan, 2020). The main reason for this is that the number of agricultural colleges and universities in the autonomous region is relatively small, the level of agricultural disciplines is low, and there is a lack of schools and majors aimed at cultivating new era agricultural technology talents such as "new farmers", resulting in a shortage of agricultural technology talents. The agricultural product processing industry is at the low end of the industrial chain, and still mainly relies on repeated investment of old technological elements to obtain lower economic benefits, Such an industrial development ecology has constrained the optimization and upgrading of the primary industry structure in Guangxi. Guangxi is also a major province rich in non-ferrous metals and mineral resources, but the production capacity of the non-ferrous metals and chemical industry is still biased towards tradition, and it is urgent to break the traditional production capacity path of resource dependence and high energy consumption compensation. Although the aluminum industry in Pingguo County, Baise City has developed on a large scale and with unique characteristics, the aluminum industry talents trained and transported by vocational colleges

and universities are not yet high-end enough, which to some extent restricts the high-quality development of the non-ferrous metal industry.

In addition, it can be seen from the "2021 Guangxi Key Industries Urgently Needed Talent Catalogue" that even if high-level scientific and technological talents are not included, the demand for emerging industry practitioners who only require a "college degree or above" is quite high. This type of talent is mainly used to meet the needs of Guangxi's future development, including the big health industry, new generation information technology, medical and health industry, intelligent equipment manufacturing, modern service industry, new materials industry, modern agriculture, modern logistics industry, etc. Guangxi's previously weak industries are in great need of talents who are familiar with industry development and have specialized skills and technologies.

Guangxi has a geographical advantage adjacent to the Beibu Gulf, and can and should vigorously develop marine fisheries, as well as a series of industries related to the ocean, including marine leisure sports, marine cultural services, marine celebrations, marine handicrafts, marine tourism, etc. This requires a large number of corresponding industrial construction and service talents. Taking the modern logistics industry as an example, Guangxi is at the forefront of the Beibu Gulf Economic Zone and serves as a bridgehead for China ASEAN international cooperation. The logistics industry is in a period of rapid growth. During the 13th Five Year Plan period alone, the demand for related talents in Guangxi's logistics industry reached 200000 people, with an average annual demand of 40000 people. Mainly due to the continuous expansion of market scale in China ASEAN international logistics, cold chain logistics, commercial logistics, express logistics, port logistics, etc., it has driven the demand for related talents. Nanning, Liuzhou, Guilin, and Yulin will be the cities with the largest express delivery business volume in Guangxi, while Dongxing, Fangchenggang, and Chongzuo will be the cities with the fastest growth rate of cross-border express delivery business. During the entire 13th Five Year Plan period, Guangxi, including universities outside the region, trained and transported corresponding talents for the logistics industry in Guangxi, which was less than a quarter of the demand (Guan Haifang, 2020).

2) Need for high-quality applied talents

The new era is a golden age for high-quality technical and applied talents, and high-quality applied talents are a solid foundation for high-quality development in the new era. Building a strong quality country is China's future strategic goal. To achieve this strategic goal, it is necessary to continuously cultivate innovative application technology talents, update knowledge, enhance skills, and strengthen the team of high-level engineers and skilled talents. However, there is a significant gap between the supply of high-quality applied talents and the requirements of high-quality economic development. From the perspective of market supply and demand, in recent years, the number of skilled labor positions in China has been more than 1.5 times the number of job seekers in this type of position, and the number of senior skilled workers is less than half of the number of positions. The contradiction between supply and demand is very prominent (Hu Libiao, 2018). The high-quality applied talents in Guangxi are lower than the national average, and the demand is even more urgent.

The fulcrum of China's the Belt and Road Initiative is talents, especially international skilled and applied talents. The the Belt and Road seeks to establish a community of interests, a community of shared future and a community of responsibility, and to realize the "five links and three sames" of connecting policies, facilities, trade, funds and people's hearts. This demand for talents is comprehensive and multi-level. Guangxi Beibu Gulf is an important node of the national "the Belt and Road Initiative". It is also one of the most dynamic regions for Guangxi's economic and social development in the future. The industrial internationalization of this region has started, and a large number of international talents are needed. The demand is concentrated in infrastructure construction, management (tourism, finance), foreign trade (international trade, e-commerce), engineering design, cross-cultural exchanges, etc. Guangxi higher vocational colleges need to be guided by this demand and further update their talent training objectives in order to truly serve the regional economic development.

The applied talents needed for the development of Guangxi's industry should not only meet the requirements of quantity, but also meet the requirements of quality. For example, the construction of the the Belt and Road requires compound foreign trade talents who master a certain foreign language and are familiar with foreign trade business, so foreign language majors in higher vocational colleges should add business and foreign trade expertise to the original pure language curriculum design, change from simple training in listening, speaking, reading and writing to language learning based, increase business foreign language, exhibition foreign language, translation practice and other basic language courses, so as to cultivate foreign language application The goal of cultivating translation talents is to emphasize language application, especially business application knowledge and skills, while appropriately weakening research and teaching on the language itself. At the same time, consider combining online and offline resources to provide students with elective courses on simple applications of the main languages in Southeast Asian countries. In some majors that focus on international trade as their employment direction, the cultivation of language application skills should be strengthened. By adding relevant language courses and adding requirements such as language proficiency tests and graduation foreign language exams to graduation conditions, students should strengthen language learning, master the knowledge and skills of these courses, and cultivate corresponding abilities, laying a solid foundation for future work related to foreign trade and commercial activities.

3) Need an innovative talent team

Guangxi will increasingly rely on high-quality technical and skilled talents to truly achieve innovation driven and high-quality development. Form an innovative talent pool.

At present, the main force of higher vocational education is vocational colleges, which have low requirements for students' theoretical knowledge and focus on their practical operational abilities. This reality determines that students do not have the foundation for innovation before becoming skilled workers. The best people in this level can only make some improvements on the technical level, far from innovation. Schools are well aware of

this principle, and therefore pay insufficient attention to students' innovation education. However, innovation is not something that can be achieved overnight, and it is not natural for people to innovate at a certain age or position. Innovation may seem accidental but is the result of long-term learning and training. That is to say, although students are temporarily unable to innovate, they cannot do without innovation awareness and willingness. Higher vocational colleges need to sow the seeds of innovation in students' hearts, cultivate their thinking habits and basic skills of active innovation, and only when they reach the stage where they can innovate can they accumulate and develop.

According to the new supply theory, new demand can be driven by new supply, that is, innovation is a breakthrough means to eliminate existing excess capacity, which means that the focus of industrial upgrading is innovation. From this, it can be seen that the existing technical and skilled talents lacking innovation ability are not needed in the future. We hope that the occasional innovation of skilled workers will push the lifeline of innovation, the upgrading of the industry, into an unstable and unsustainable predicament. Therefore, facing the future Only by cultivating innovative application technology talents in a hierarchical and hierarchical manner can we create a more specialized and refined team of creative professionals and high-end R&D personnel.

Developed countries such as the United States completed industrialization in the mid-20th century, and their technical and skilled talents possess strong innovation capabilities. Senior technicians with independent innovation capabilities are consistently maintained at one fifth of the total. However, from the perspective of China's situation, from 2001 to 2020, only 30% to 40% of the workforce with vocational qualifications had intermediate to advanced skills, while the proportion of advanced technicians was even less than 10% (Zhang Yuan, 2018). Creative professional technical personnel and creative high-end R&D personnel are even rarer, far from meeting the demand for innovative talents in the echelon of industrial upgrading.

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CHAPTER 5
SUMMARY: DISCUSSION, LIMITATIONS AND CONNTRIBUTIONS

This chapter provides a summary, discussion, conclusions, limitations, and contributions of this study. It integrates the theories of new supply economics and public goods theory, summarizes the laws of the supply side structural reform of higher vocational education talents in Guangxi, and based on this, derives a model of talent supply side structural reform applicable to the vast ethnic regions.

5.1 Summary of Results

5.1.1 Higher vocational education in ethnic regions shoulders the important mission of cultivating high-quality workers and technical skilled talents, inheriting ethnic culture, and providing high-quality talent resources to support economic and social development. Since the reform and opening up, higher vocational education in Guangxi has developed rapidly, cultivating a large number of talents and making important contributions to the economic and social development of the autonomous region. Especially after the major decision and deployment of "accelerating the development of modern vocational education" made at the 18th National Congress of the Communist Party of China in 2021, Guangxi fully leverages the advantages of the "National Ethnic Region Vocational Education Comprehensive Reform Pilot Zone", actively carries out theoretical and practical innovation, and the pace of reform and development has significantly accelerated, achieving significant results. Through statistical data and field research on the development of higher vocational education in Guangxi, while sorting out the achievements of the reform and development of

higher vocational education in Guangxi, from the perspective of talent supply in higher vocational education, there are still some structural problems that must be solved in terms of the alignment between school layout and regional development, the matching between professional settings and local industrial structure, and the connection between curriculum system and industry employment standards, To meet the needs of Guangxi's development, it faces severe challenges.

5.2.2 The higher vocational education in Guangxi is constrained by the local economy and society. Although it has made significant progress in the past decade, there are still many problems, especially how to adapt to the strategic decision of the Guangxi Party Committee and government to "transform and upgrade, accelerate development, and comprehensively improve quality" for high-quality development. There are still many challenges to be faced. There are still issues of insufficient balance and coordination in four aspects: the alignment between school layout and regional development planning, the matching of professional settings with local industrial structure, the connection between curriculum system and industry employment standards, and the integration of teaching activities with production practice processes. If these issues are not resolved in a timely and appropriate manner, it will exacerbate the imbalance in talent cultivation and development between regions and industries, increase the mismatch between the quality of applied technology talent cultivation and the high-quality development of related industries, and deepen the contradiction between the difficulty in optimizing the professional structure of talents and the urgent need for talent in the acceleration of industrial upgrading and transformation.

5.2 Discussion of Results

5.2.1 Applying the category of "demand and supply" in the supply side structural reform of higher vocational education talents in Guangxi is to discuss their demands from the demand side, summarize their problems from the supply side, and ultimately form the practical logic of research on the supply side structural reform of higher vocational education

talents in Guangxi. Taking Guangxi as a typical representative of ethnic regions, discussing the demand for higher vocational education talents in Guangxi can reveal the desire for the supply of higher vocational education talents in the vast ethnic regions.

5.2.2 Higher vocational education in ethnic regions shoulders the important mission of cultivating high-quality workers and technical skilled talents, inheriting ethnic culture, and providing high-quality talent resources to support economic and social development. Since the reform and opening up, higher vocational education in Guangxi has developed rapidly, cultivating a large number of talents and making important contributions to the economic and social development of the autonomous region. Especially after the major decision and deployment of "accelerating the development of modern vocational education" made at the 18th National Congress of the Communist Party of China in 2021, Guangxi fully leverages the advantages of the "National Ethnic Region Vocational Education Comprehensive Reform Pilot Zone", actively carries out theoretical and practical innovation, and the pace of reform and development has significantly accelerated, achieving significant results. Through statistical data and field research on the development of higher vocational education in Guangxi, while sorting out the achievements of the reform and development of higher vocational education in Guangxi, from the perspective of talent supply in higher vocational education, there are still some structural problems that must be solved in terms of the alignment between school layout and regional development, the matching between professional settings and local industrial structure, and the connection between curriculum system and industry employment standards, To meet the needs of Guangxi's development, it faces severe challenges.

5.2.3 With the expansion of enrollment in higher vocational education in China, its education scale has rapidly increased in recent years, and the scale of vocational college students and enrollment has already ranked among the top in the world. However, as a subsystem of society, higher vocational education also faces the common dilemma of current social development: the supply and production capacity of "old talents" are surplus, and the demand for "old talents" in the talent market is insufficient. That is to say, although various

higher vocational colleges provide graduates of sufficient scale, the mismatch and imbalance between supply and demand in the market due to the inability to meet the employment standards and job requirements of a large number of core positions results in large-scale talent unemployment on the supply side and large-scale job vacancies on the demand side. As this phenomenon and problem continue to worsen year by year, higher vocational education is further regarded as a "second rate education" and "useless education" different from ordinary higher education under the influence of the existing concept of "valuing learning over skills". How to improve the quality of talent cultivation in higher vocational education has also become a core issue in talent supply reform. This phenomenon is particularly prominent in the development of higher vocational education in Guangxi, and the fundamental reason behind it is the structural imbalance of supply and demand. Simply increasing the scale can only further reduce the consumption utility of employers. Only through innovative reforms in multiple layers and aspects such as supply and demand relationship, supply subject, management system, and technical support can it be effectively solved. According to the theories of new supply economics and public goods, the prominent issues in the supply of talents for higher vocational education in Guangxi can be explored and analyzed from several important dimensions such as "supply and demand relationship, supply system, and supply subject", and then form the basic ideas for reform.

5.2.4 Higher vocational education is the type of education closest to production, and it is also a supporting force for high-quality local economic development. The differences in the main battlefield of economic development mean that the reform paths and priorities of talent cultivation in higher vocational education in different regions must also be different. Based on the actual situation in Guangxi, it is necessary to further consider how to promote the supply side structural reform of higher vocational education in Guangxi at the practical level, give full play to the supporting role of higher vocational education, promote the economic and social development of Guangxi, and realize the people's aspirations for a better life. This is both the starting point and the foothold. Through the analysis of the previous chapters, it can be seen that there are deficiencies in the supply of talents in higher vocational

education in Guangxi, mainly reflected in the layout of schools, professional settings, curriculum reform, talent training quality, and teacher team construction. However, these problems are not unique to Guangxi, but are often common difficulties in the vast ethnic regions. The supply side structural reform of higher vocational education talents should be guided by the problems existing in the development process of vocational education. Starting from meeting the needs of economic and social development planning, adapting to the needs of industrial revitalization, rural revitalization, science and education revitalization, and individual student growth and development, according to the clear ideas of the supply side structural reform of higher vocational education talents, the path and tasks of the reform should be systematically and comprehensively planned. In response to the actual situation in ethnic regions, especially in Guangxi, it can be clarified that the key content of the supply side structural reform of higher vocational education talents is to promote the structural adjustment of higher vocational education, optimize the allocation of factors, expand the effective supply of professions, and promote the development of vocational connotation.

5.3 Conclusion

Guangxi, as an ethnic and border region, is also an economically underdeveloped region. Due to the generally lagging development of various industries, its attractiveness to various talents is insufficient. This is the dilemma of Guangxi, as well as the common dilemma of many ethnic regions. The purpose of this article is not to lead the national reform of higher vocational education, but to discuss the laws of talent cultivation paths for higher vocational education that are applicable to Guangxi's actual situation and reflect the characteristics of ethnic regions within the framework of the national vocational education reform: to enable the talent cultivation of higher vocational education in Guangxi to truly serve and assist the high-quality development of Guangxi's economy and society. The practice of reform in Guangxi can confirm the theoretical model and reform framework model of the supply side structural reform of higher vocational education talents in Guangxi

constructed in this article, which has practical significance for the vast ethnic regions and the people of all ethnic groups in the region.

5.4 Limitations

The National Vocational Education Conference held on April 13, 2021 indicates that the high-quality development of China's higher vocational education system has entered a new era. Guangxi vocational colleges and universities are also learning and mastering the spirit of the conference, and have made new plans and designs for the reform of their own schools. These plans and designs all point to the structural reform of the talent supply side, such as the innovative reform of the talent training mode of Tianye Point G College in this article.

5.4.1 Due to insufficient data information and related resources, there has been no detailed analysis, research, and comparison of the contribution of higher vocational education to various industries, resulting in research conclusions that lack industry specificity and require further in-depth research in the future.

5.4.2 Due to limitations in my research level and resources, empirical research is not in-depth and broad enough. Most research conclusions are still based on theoretical reasoning and analysis, with weak empirical data and analytical support.

5.4.3 Economic analysis of higher vocational education is not only a research topic in human capital theory, economic growth theory, educational economics, cost-benefit theory, etc., but also involves disciplines such as development economics, statistics, investment, labor economics, accounting, and industrial economics. Due to the limited knowledge background of researchers, it is inevitable that their research perspectives are limited.

5.5 Contributions

Based on the framework proposed in the first part of this study, which considers the reform of higher vocational education in ethnic regions from three dimensions: supply and

demand relationship, supply and demand subject, and supply and demand system, this study takes history as a clue to vertically sort out the transformation process of higher vocational education from being independent of higher education to becoming a type supporting economic and social development, as well as the changes in talent supply, Clarifying the development process of higher vocational education from the periphery to the center of economic and social development in China and the historical changes in talent supply, summarizing the development and changes of higher vocational education in Guangxi, a ethnic region, can provide a glimpse into the laws of higher vocational education development and talent supply.

5.5.1 In terms of perspective. Expanding the research perspective of educational economics, it also draws on relevant research methods and theoretical achievements from disciplines such as economics, educational economics, and higher vocational education. Based on an in-depth analysis of the cost input and benefit (output), supply and demand, and resource allocation of higher vocational education, the contribution of higher vocational education to the economy and employment is analyzed, which has a relatively broad research feature. And a preliminary analysis and research framework system for higher vocational education economics has been established, laying a certain foundation for further in-depth research on higher vocational education economics.

5.5.2 In terms of methodology. In addition to the commonly used methods by scholars, this study has made certain explorations in three aspects. One is to draw on existing analytical models and design research constants for theoretical and empirical analysis in the internal analysis of higher vocational education; Secondly, when analyzing the external factors of higher vocational education, a relationship model between higher vocational education and the external market was designed according to one's own understanding, and a detailed analysis was conducted based on this model; Thirdly, based on the reference of previous research, a framework for analyzing the relationship between higher vocational education and economic growth has been established, and a basic model for the contribution of higher vocational education to economic growth has been constructed. Exploratory

research has been conducted on the role and mechanism of higher vocational education in economic growth.

5.5.3 In terms of viewpoints. One is to clearly define higher vocational education as a new type of higher education, rather than a hierarchical one. By applying the theories of new supply economics and public goods, research and analysis are conducted, and principles and ideas for the balanced development of higher vocational education with other higher education are proposed. This provides a certain theoretical basis for improving the education system, especially the modern vocational education system, from an economic perspective. The second is to clearly state that the supply and demand of higher vocational education are constrained by the speed, scale, structure, and level of national economic development, that is, the social and economic development status determines the development status of higher vocational education. The allocation of higher vocational education resources should be based on the development of the national economy, otherwise it will lead to issues such as employment for graduates. With the development and changes in economic structure and scale, the scale and structure of higher vocational education should also develop and change accordingly. Higher level higher vocational education such as applied undergraduate and professional master's degrees should be gradually increased. The third is to apply the theory of human capital and modern economic growth to analyze the mechanism of higher vocational education in promoting employment, and propose that higher vocational education is an important choice for solving structural unemployment, unemployment caused by excessive education, unemployment caused by excessive talent consumption, and unemployment caused by economic transformation. At the same time, the viewpoint was put forward that higher vocational education can exert employment effects by promoting economic development and improving human resource structure

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APPENDICES

APPENDIX A

List of experts and the invitation letter

The experts were:

1. Prof. Dr. Jiang Hanzhou, Deputy Director of Guangxi Education Quality Monitoring Center, China.

2. Li Wei, Manager of Guangxi Beibu Gulf International Port Group Co., Ltd, China

3. Lu Xiao, Human Resources Manager of Guangxi Automobile Group Co., Ltd, China.

4. Prof. Dr. Ouyang Changqing from the School of Ethnology and Sociology of Guangxi University for Nationalities, China.

5. Pan Ming, General Manager, Deputy Secretary of the Party Committee, and Vice Chairman of Guangxi Tourism Development Group Company, China.

6. Prof. Dr. Shang Xiumei, Director of Guangxi Ethnic Education Development Center, China.

7. Prof. Dr. Song Xiaoxiao, Deputy Director of the Education Examination Proposition and Evaluation Center of Guangxi Zhuang Autonomous Region, China.

8. Prof. Dr. Haitao Wei, Director of the Employment and Entrepreneurship Guidance Center for Graduates of Guangxi Higher Education Institutions, China.

9. Ye Zeqing, Deputy Director of the Enrollment and Employment Department of Guangxi Vocational and Technical College, China.

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15 July, 2023

Dear Prof. Dr. Jiang Hanzhou , Deputy Director of Guangxi Education Quality Monitoring Center , China.
Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

I am writing to request your assistance as an honorary external research reviewer in evaluating the research instruments of Ms. Lihua Huang, Doctor of Science Program in Technical Education (Vocational Education) Rajamangala University of Technology Thanyaburi, who has been working on the dissertation titled "Reform of talent cultivation in higher vocational education in ethnic regions from the perspective of economics". under the supervision of Assistant Professor Dr. Issara Siramaneerat. In this regard, I would like to request your valuable time to evaluate the research instruments as I strongly believe that your expertise will be of great value in improving the research instruments.

If you have any questions or need further information, please feel free to contact Ms. Lihua Huang on the e-mail: lihua _h@mail.rmutt.ac.th

Yours sincerely,

(Assistant Professor Arnon Niyomphol)
Dean of Faculty of Technical Education

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15 July, 2023

Dear Li Wei , Manager of Guangxi Beibu Gulf International Port Group Co., Ltd , China.
Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

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15 July, 2023

Dear Lu Xiao, Human Resources Manager of Guangxi Automobile Group Co., Ltd , China.
Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

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15 July, 2023

Dear Prof. Dr. Ouyang Changqing from the School of Ethnology and Sociology of Guangxi University for Nationalities , China.
Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

I am writing to request your assistance as an honorary external research reviewer in evaluating the research instruments of Ms. Lihua Huang, Doctor of Science Program in Technical Education (Vocational Education) Rajamangala University of Technology Thanyaburi, who has been working on the dissertation titled "Reform of talent cultivation in higher vocational education in ethnic regions from the perspective of economics". under the supervision of Assistant Professor Dr. Issara Siramaneerat. In this regard, I would like to request your valuable time to evaluate the research instruments as I strongly believe that your expertise will be of great value in improving the research instruments.

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15 July, 2023

Dear Pan Ming, General Manager, Deputy Secretary of the Party Committee, and Vice Chairman of Guangxi Tourism Development Group Company, China.
Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

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15 July, 2023

Dear Prof. Dr. Shang Xiumei, Director of Guangxi Ethnic Education Development Center , China.

Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

I am writing to request your assistance as an honorary external research reviewer in evaluating the research instruments of Ms. Lihua Huang, Doctor of Science Program in Technical Education (Vocational Education) Rajamangala University of Technology Thanyaburi, who has been working on the dissertation titled "Reform of talent cultivation in higher vocational education in ethnic regions from the perspective of economics". under the supervision of Assistant Professor Dr. Issara Siramaneerat. In this regard, I would like to request your valuable time to evaluate the research instruments as I strongly believe that your expertise will be of great value in improving the research instruments.

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15 July, 2023

Dear Prof. Dr. Song Xiaoxiao, Deputy Director of the Education Examination Proposition and Evaluation Center of Guangxi Zhuang Autonomous Region , China.
Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

I am writing to request your assistance as an honorary external research reviewer in evaluating the research instruments of Ms. Lihua Huang, Doctor of Science Program in Technical Education (Vocational Education) Rajamangala University of Technology Thanyaburi, who has been working on the dissertation titled "Reform of talent cultivation in higher vocational education in ethnic regions from the perspective of economics". under the supervision of Assistant Professor Dr. Issara Siramaneerat. In this regard, I would like to request your valuable time to evaluate the research instruments as I strongly believe that your expertise will be of great value in improving the research instruments.

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15 July, 2023

Dear Prof. Dr. Haitao Wei, Director of the Employment and Entrepreneurship Guidance Center for Graduates of Guangxi Higher Education Institutions , China.
Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

I am writing to request your assistance as an honorary external research reviewer in evaluating the research instruments of Ms. Lihua Huang, Doctor of Science Program in Technical Education (Vocational Education) Rajamangala University of Technology Thanyaburi, who has been working on the dissertation titled "Reform of talent cultivation in higher vocational education in ethnic regions from the perspective of economics". under the supervision of Assistant Professor Dr. Issara Siramaneerat. In this regard, I would like to request your valuable time to evaluate the research instruments as I strongly believe that your expertise will be of great value in improving the research instruments.

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15 July, 2023

Dear Ye Zeqing, Deputy Director of the Enrollment and Employment Department of Guangxi Vocational and Technical College , China.
Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

I am writing to request your assistance as an honorary external research reviewer in evaluating the research instruments of Ms. Lihua Huang, Doctor of Science Program in Technical Education (Vocational Education) Rajamangala University of Technology Thanyaburi, who has been working on the dissertation titled "Reform of talent cultivation in higher vocational education in ethnic regions from the perspective of economics". under the supervision of Assistant Professor Dr. Issara Siramaneerat. In this regard, I would like to request your valuable time to evaluate the research instruments as I strongly believe that your expertise will be of great value in improving the research instruments.

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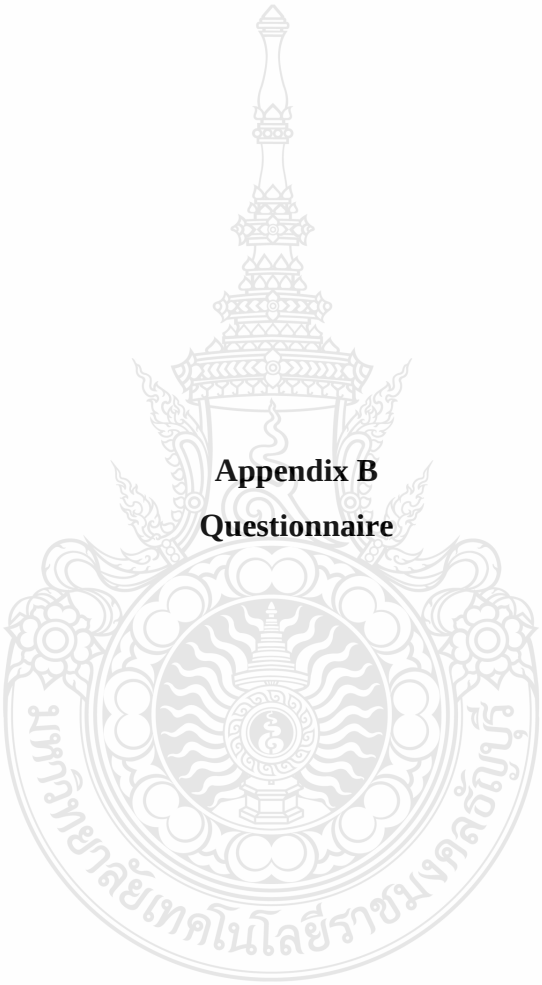

Appendix B

Questionnaire

Type A questionnaire ：Recognition of vocational education, 15 questions in total

*1. Your educational background

☐ Never attended school

☐ Primary or junior high school

☐ High school graduation

☐ Bachelor degree or above

*2. Your identity

☐ parent

☐ Vocational school students

☐ Ordinary school students

☐ other

*3. Your registered residence is

☐ countryside

☐ city

*4. Do you pay attention to vocational education in recent years

☐ Not paying attention at all

☐ Pay attention to some

☐ Very concerned

*5. Vocational education plays an important role in national construction

☐ agree

☐ disagree

☐ not sure

☐ some

*6. Is there an understanding of the newly added preferential policies in vocational education reform

☐ ignorant

☐ Understand a little

☐ Rough understanding

☐ not sure

*7. Understanding the employment prospects of vocational and technical school students after graduation

☐ ignorant

☐ Understand a little

☐ Rough understanding

☐ not sure

*8. Is there an understanding of the salary situation of vocational and technical school students after graduation

☐ ignorant

☐ Understand a little

☐ Rough understanding

☐ not sure

*9. Are there any differences between undergraduate college and vocational education

☐ difference

☐ No difference

☐ not sure

☐ differences, but not significant

*10. What do you think of the social status of vocational and technical schools

☐ low status

☐ No feeling

☐ No Comments

*11. I think vocational and technical schools can teach students real skills

☐ agree

☐ disagree

☐ not sure

☐ some

*12. I think the development prospects of vocational and technical schools are very promising

☐ agree

☐ disagree

☐ not sure

☐ some

*13. I think it is reasonable for employers to require educational qualifications when recruiting

☐ agree

☐ disagree

☐ not sure

☐ some

*14. I think letting children learn to be inferior in vocational schools

☐ agree

☐ disagree

☐ not sure

☐ some

*15. I hope you can provide valuable feedback on any aspect of vocational education

……

……

……

Type B questionnaire ：Market survey on satisfaction with vocational education teaching and management, 19 questions in total

Q1. Your income

- ☐ no income
- ☐ 2,000 - 5,000
- ☐ 5,000 - 10,000
- ☐ 10,000 - 30,000
- ☐ Above 30000

Q2. The school where your highest education is located

- ☐ Types of general higher education
- ☐ Types of Higher Vocational Education
- ☐ Type of secondary vocational education
- ☐ Ordinary high school type

Q3. What is your overall evaluation of vocational education

- ☐ Very satisfied
- ☐ satisfied
- ☐ Not bad
- ☐ not satisfied
- ☐ Dissatisfied

Q4. What is your reasonable evaluation of the school's professional curriculum

- ☐ Very satisfied
- ☐ satisfied
- ☐ Not bad
- ☐ not satisfied
- ☐ Dissatisfied

Q5. What is your evaluation of the internship practice arrangement at the school

☐ Very satisfied

☐ satisfied

☐ Not bad

☐ not satisfied

☐ Dissatisfied

Q6. What is your satisfaction with the teaching quality of teachers in various disciplines

☐ Very satisfied

☐ satisfied

☐ Not bad

☐ not satisfied

☐ Dissatisfied

Q7. Do you think schools are helpful in achieving your employment goals

☐ Very helpful

☐ Helpful

☐ so-so

☐ Not very helpful

☐ No help at all

Q8. What do you think is the school's evaluation of your assistance in further education

☐Very helpful

☐Helpful

☐so-so

☐Not very helpful

☐No help at all

Q9. Are you satisfied with the assessment methods and standards of various disciplines in the school

☐ Very satisfied

☐ satisfied

☐ Not bad

☐ not satisfied

☐ Dissatisfied

Q10. What is your evaluation of the skills competition organized by the school

☐ Very satisfied

☐ satisfied

☐ Not bad

☐ not satisfied

☐ Dissatisfied

Q11. Your identity is

☐ student

☐ Student Parents

☐ Social public

☐ Employers

Q12. How do you evaluate the overall academic style of the school

☐ Very satisfied

☐ satisfied

☐ Not bad

☐ not satisfied

☐ Dissatisfied

Q13. What is your evaluation of the teaching quality of vocational schools☐Very satisfied

☐ satisfied

☐ Not bad

☐ not satisfied

☐ Dissatisfied

Q14. What is your evaluation of the vocational skills of vocational school graduates

☐ Very satisfied

☐ satisfied

☐ Not bad

☐ not satisfied

☐ Dissatisfied

Q15. What is your evaluation of the practical ability of graduates transported by vocational schools

☐ Very satisfied

☐ satisfied

☐ Not bad

☐ not satisfied

☐ Dissatisfied

Q16. What is your evaluation of the professionalism and work attitude of graduates delivered by vocational schools

☐ Very satisfied

☐ satisfied

☐ Not bad

☐ not satisfied

☐ Dissatisfied

Q17. Are you satisfied with the current characteristics of vocational education and the scale of vocational schools

☐ Very satisfied

☐ satisfied

☐ Not bad

☐ not satisfied

☐ Dissatisfied

Q18. What is your overall evaluation of the development prospects of current vocational schools

☐ Very satisfied

☐ satisfied

☐ Not bad

☐ not satisfied

☐ Dissatisfied

Q19. Do you think there are any shortcomings in our current survey topic

……

……

……

Type C questionnaire ：A survey on the indicators that ideal vocational education should possess, 40 questions in total

Part 1 ：Questionnaire on your recognition of the content and indicators of ideal vocational colleges

1. Teachers in vocational colleges must have a bachelor's degree or above

☐ Fully agree

☐ agree

☐ Uncertain

☐ Disagree

☐ Completely disagree

2. Teachers in vocational colleges must have at least 2 years of work experience in enterprises

☐ Fully agree

☐ agree

☐ Uncertain

☐ Disagree

☐ Completely disagree

3. Teachers in vocational colleges must be able to guide students in completing the production of a certain product

☐ Fully agree

☐ agree

☐ Uncertain

☐ Disagree

☐ Completely disagree

4. Teachers in vocational colleges must work in enterprises for at least 2 months per year

☐ Fully agree

☐ agree

☐ Uncertain

☐ Disagree

☐ Completely disagree

5. Teachers in vocational colleges should be competent in professional and curriculum development

☐ Fully agree

☐ agree

☐ Uncertain

☐ Disagree

☐ Completely disagree

6. Teachers in vocational colleges should be able to design teaching activities

☐ Fully agree

☐ agree

☐ Uncertain

☐ Disagree

☐ Completely disagree

7. Teachers in vocational colleges should be able to communicate effectively with students

☐ Fully agree

☐ agree

☐ Uncertain

☐ Disagree

☐ Completely disagree

8. Teachers in vocational colleges should be able to undertake the technical research and development tasks of enterprises

☐ Fully agree

☐ agree

☐ Uncertain

☐ Disagree

☐ Completely disagree

9. Teachers in vocational colleges should be able to communicate at a high level with enterprise management personnel

☐ Fully agree

☐ agree

☐ Uncertain

☐ Disagree

☐ Completely disagree

10. Teachers in vocational colleges should be able to undertake social training tasks

☐ Fully agree

☐ agree

☐ Uncertain

☐ Disagree

☐ Completely disagree

11. The basic quality of vocational college teachers is to study hard and strive for excellence in technology

☐ Fully agree

☐ agree

☐ Uncertain

☐ Disagree

☐ Completely disagree

12. Vocational college teachers should be able to utilize modern technology to innovate teaching methods and learning resources

☐ Fully agree

☐ agree

☐ Uncertain

☐ Disagree

☐ Completely disagree

13. Teachers in vocational colleges should be able to commercialize their professional courses

☐ Fully agree

☐ agree

☐ Uncertain

☐ Disagree

☐ Completely disagree

14. Teachers in vocational colleges must pursue further education and study at least once a year

☐ Fully agree

☐ agree

☐ Uncertain

☐ Disagree

☐ Completely disagree

15. Vocational college teachers should be able to conduct research and practice on teaching reform

☐ Fully agree

☐ agree

☐ Uncertain

☐ Disagree

☐ Completely disagree

16. Teachers in vocational colleges must participate in national qualification exams before they can undertake teaching tasks

☐ Fully agree

☐ agree

☐ Uncertain

☐ Disagree

☐ Completely disagree

Part 2 : What do you think is the most lacking ability among vocational college teachers at present?

17. The application ability of new teaching technologies

☐ Very lack

☐ lack

☐ so so

☐ Not lack

☐ very not lack

18. Design ability of student-centered learning methods

☐ Very lack

☐ lack

☐ so so

☐ Not lack

☐ very not lack

19. Ability to enhance students' academic achievements

☐ Very lack

☐ lack

☐ so so

☐ Not lack

☐ very not lack

20. Practical training and guidance for students' ability to find employment and work skills guidance

☐ Very lack

☐ lack

☐ so so

☐ Not lack

☐ very not lack

21. The ability to design and develop courses, as well as the ability to build learning resources

☐ Very lack

☐ lack

☐ so so

☐ Not lack

☐ very not lack

22. The ability to apply modern educational technology and create online learning resources

☐ Very lack

☐ lack

☐ so so

☐ Not lack

☐ very not lack

23. Ability to assess and evaluate curriculum design plans

☐ Very lack

☐ lack

☐ so so

☐ Not lack

☐ very not lack

24. Ability to create a multicultural learning environment
    - ☐ Very lack
    - ☐ lack
    - ☐ so so
    - ☐ Not lack
    - ☐ very not lack
25. Critical and reflective teaching abilities
    - ☐ Very lack
    - ☐ lack
    - ☐ so so
    - ☐ Not lack
    - ☐ very not lack
26. Ability to conduct interdisciplinary research and guidance
    - ☐ Very lack
    - ☐ lack
    - ☐ so so
    - ☐ Not lack
    - ☐ very not lack
27. Ability to preserve, disseminate, analyze, discover knowledge and innovative skills
    - ☐ Very lack
    - ☐ lack
    - ☐ so so
    - ☐ Not lack
    - ☐ very not lack
28. Ability to find business partners and negotiate
    - ☐ Very lack
    - ☐ lack
    - ☐ so so

☐ Not lack

☐ very not lack

Part 3 : Your evaluation of the abilities of vocational education teachers

29. What do you think of the professional, curriculum construction, and development abilities of current vocational education teachers

☐ Very good

☐ good

☐ so so

☐ poor

☐ very poor

30. Do you think vocational education teachers have the ability to organize, manage, and guide students' self-directed learning

☐ Very good

☐ good

☐ so so

☐ poor

☐ very poor

31. Do you think vocational education teachers have the ability to design teaching activities centered around student activities

☐ Very good

☐ good

☐ so so

☐ poor

☐ very poor

32. Ability to develop, organize, and implement practical teaching

☐ Very good

☐ good

☐ so so

☐ poor

☐ very poor

33.Practical technology research and development and promotion capabilities

☐ Very good

☐ good

☐ so so

☐ poor

☐ very poor

34.Ability to innovate teaching methods and means using modern teaching technology

☐ Very good

☐ good

☐ so so

☐ poor

☐ very poor

35.Ability in educational reform and research

☐ Very good

☐ good

☐ so so

☐ poor

☐ very poor

36. Ability to guide enterprises in technological innovation

☐ Very good

☐ good

☐ so so

☐ poor

☐ very poor

37. Ability to provide high-quality training for enterprise employees

☐ Very good

☐ good

☐ so so

☐ poor

☐ very poor

38. Ability to design and organize skills competition projects

☐ Very good

☐ good

☐ so so

☐ poor

☐ very poor

39. The ability of teachers to participate in student education and teaching management

☐ Very good

☐ good

☐ so so

☐ poor

☐ very poor

39. Comprehensive evaluation of the professional abilities of teachers in your school

☐ Very good

☐ good

☐ so so

☐ poor

☐ very poor

Biography

Name-Surname	Mrs. Lihua huang
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Address	No. 73 Renmin East Road, Nanning, Guangxi. China
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