GUIDELINES FOR IMPROVING THE MANAGEMENT EFFICIENCY OF GUANGXI UNIVERSITIES

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ABSTRACT

The research objectives of This paper is: (1) In order to study the management efficiency of local undergraduate colleges and universities in Guangxi. (2) In order to explore the different factors that affect the management efficiency of local undergraduate colleges and universities in Guangxi. (3) In order to study the guidelines developed to improve the management efficiency of local undergraduate institutions in Guangxi. The research object is 26 undergraduate colleges and universities in Guangxi. The research sample is 10 local undergraduate colleges and universities with types taken from the research object. The literature method was used to collect the data of the sample colleges and universities. The data envelopment analysis method was used to analyze and draw conclusions from them.

Research shows: (1) The educational resources of Guangxi colleges and universities have been no invested enough for a long time and need to be increased. (2) There are certain fluctuations in the overall management efficiency of Guangxi colleges and universities, but the overall trend is toward good. (3) The input of faculty and staff has positive relationship with technical efficiency. (4) The input of fixed assets has a positive relationship with comprehensive efficiency. (5) The input of teaching expenses has a positive relationship with technical efficiency.

Key words: Higher Education Management/Higher education management efficiency

ชื่อเรื่อง **แนวทางการพัฒนาการบริหารประสิทธิภาพของการศึกษาระดับอุดมศึกษาในมณฑลกวางสี**

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บทคัดย่อ

งานวิจัยนี้มีวัตถุประสงค์เพื่อ1)ศึกษาสภาพปัญหาของประสิทธิภาพ การบริหารจัดการสถาบันอุดมศึกษาระดับปริญญาตรี ในมณฑลกว่างสี 2)ศึกษาปัจจัยที่มีอิทธิพล ต่อประสิทธิภาพการบริหารจัดการสถาบันอุดมศึกษาระดับปริญญาตรี ในมณฑลกว่างสี 3)ศึกษาแนวทางการพัฒนาประสิทธิภาพการบริหารจัดการสถาบันอุดมศึกษาระดับปริญญาตรี ในมณฑลกว่างสี ซึ่งประชากรในศึกษาครั้งนี้ เป็นสถาบันอุดมศึกษาระดับปริญญาตรีในมณฑลกว่างสี จำนวน 26 แห่ง แล้วคัดเลือกสถาบันอุดมศึกษาระดับปริญญาตรี ที่มีลักษณะ เดียวกันมาเป็นกลุ่ม ตัวอย่าง โดยใช้วิธีการทบทวนวรรณกรรมเพื่อศึกษารวบรวมข้อมูลเกี่ยวกับการลงทุนและการผลิตจากสถาบันอุดมศึกษาระดับปริญญาตรีของกลุ่มตัวอย่างจำนวน 10 แห่ง แล้วใช้วิธีการวัดประสิทธิภาพองค์กร (DEA) มาวิเคราะห์ข้อมูลและสรุปดังต่อไปนี้

ผลการวิจัย พบว่า การลงทุนด้านการศึกษาระยะยาวในมณฑลกว่างสีไม่เพียงพอ ควรลงทุนทรัพยากรด้านการศึกษาเพิ่มขึ้นและประสิทธิภาพการบริหารจัดการสถาบันอุดมศึกษาระดับปริญญาตรีในมณฑลกว่างสี มีความผันผวน แต่ภาพรวมทั้งหมดเป็นแนวทางพัฒนาที่ดี ส่วนปริมาการลงทุนด้านบุคลากรการสอนและประสิทธิภาพเชิงเทคนิคลค่ารวมของสินทรัพย์ถวารกับประสิทธิภาพโดยรวม การลงทุนของเงินสนับสนุนการศึกษากับประสิทธิภาพเชิงเทคนิค จำนวนหนังสือทั้งหมดในห้องสมุดกับประสิทธิภาพเชิงเทคนิคมีความสัมพันธ์เชิงบวก

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Chapter 1
Introduction

Rationale

Undergraduate education, as the main body of national education, takes a central position in the structure of higher education and has long been responsible for the important task of cultivating high-quality applied, compound and innovative talents and scientific and technological innovation. The success or failure of undergraduate education, to a certain extent, determines the survival and development of the country. Wang Chen. (2010). believed that Higher education is fundamental to the revitalization of the country and the nation and to the development of society. It is the fundamental choice of the improvement on the overall quality of the nation and the all-round development of human beings. It is the key to the improvement on the soft power and comprehensive national strength of the country and the enhancement of its international discourse. Therefore, each country attaches great importance of higher education and invests a lot of human, material and financial resources in this field, aiming to cultivate various kinds of high-quality talents for higher education, laying a solid foundation for enhancing the comprehensive strength and international discourse of the country and seizing the strategic high ground in the new era. In the context of that era, countries around the world have generally increased their investment in educational resources and expanded enrollment, which has led to rapid growth of higher education.

Ministry of Education. (2020). In recent years, in order to meet the requirements of the times and enhance the national comprehensive strength and international discourse, China has implemented the strategy of developing the country through science and education, for which the government has invested a large amount of human, material and financial resources to make unprecedented development of higher education in China. In 2004, the gross enrollment rate of higher education in China was 17%, which has entered the stage of mass education in advance. 2020, the gross enrollment rate of higher education in China is 54.4%, which has entered the

stage of mass higher education, but this is far from the people's expectation of the level of higher education in China. Compared with the higher education level of developed countries in the world, the development level of higher education in China is still at a low level in the world. Wu Feng. (2007). believed that Guangxi, located in the western region of China, has a relatively weak educational foundation, a relative shortage of educational resources and relatively limited educational investment. In response to these problems, China implemented the “Western Higher Education Revitalization Plan” in 2011 and invested a large amount of human, material and financial resources to support a number of distinctive and powerful undergraduate universities in the western region, and strengthen the improvement of undergraduate teaching facilities and the quality of undergraduate teaching, so as to solve the problem of lagging behind in higher education in the western region. Although the country had invested a lot of resources in Higher Education in recent years, how to make full use of these resources and run a satisfactory university education should first ensure a good management efficiency of the University. Therefore, whether it is to improve the quality of undergraduate education or to address the growing demand for undergraduate education, it is necessary to pay great attention to management efficiency.

Therefore, this paper will refer to the relevant domestic and foreign literature, select the universities with the same nature in Guangxi as the research object, and use the multiple-input and multiple-output analysis method - data envelopment analysis method, and try to establish an input-output model based on human input, financial input and material input of higher education, which indicates a technical type of production factor input and output. The input-output model of the relationship is used to explore the main factors affecting the management efficiency of Guangxi colleges and universities, to fully learn from the advanced experience and innovative strategies of domestic and foreign colleges and universities to improve the management efficiency of colleges and universities, in order to form guidelines to improve the management efficiency of Guangxi colleges and universities, and to provide theoretical basis and decision-making reference for the managers of Guangxi colleges and universities to consider how to reduce costs and improve management efficiency while ensuring the quality of education.

Research Questions

1. What is the current management efficiency of local undergraduate colleges and universities in Guangxi?

2. What are the main factors that affect the management efficiency of local undergraduate colleges and universities in Guangxi?

3. What are the guidelines for improving the management efficiency of local undergraduate colleges and universities in Guangxi?

Objectives

1. In order to study the management efficiency of local undergraduate colleges and universities in Guangxi.

2. In order to explore the different factors that affect the management efficiency of local undergraduate colleges and universities in Guangxi.

3. In order to study the guidelines developed to improve the management efficiency of local undergraduate institutions in Guangxi.

Scope of the Research

Population and the Sample Group

Population

26 undergraduate universities in Guangxi, distributed in the cities of Nanning, Liuzhou, Guilin, Hezhou, Chongzuo, Laibin, Wuzhou and Yulin.

Sample

adopt the stratified sampling method, take the school running orientation as its sampling standard. Then select 10 local undergraduate colleges of the same type as the sample, namely Hezhou University, Guangxi University of Finance and Economics, Wuzhou University, Nanning University, Liuzhou Institute of Technology, Guilin University of Aerospace Technology, Guangxi University of Foreign Languages, Guangxi Minzu Normal University, Guilin Tourism University, Yulin Normal University.

The Variable

1. Input indicators(Independent Variable): Total investment of teaching funds,

investment of teaching staff, total value of fixed assets, total number of library collections.

2. Output indicators(Dependent Variable): Number of undergraduate students, employment rate of graduates, output of scientific research, number of papers published at home and abroad.

Contents

The full text is divided into five chapters. The main contents of each chapter are as follows:

Chapter 1 is the introduction. The introduction part contains the research background and significance of this paper, outlines the research issues, research objectives, research assumptions, research scope, research advantages and research ideas, and describes the basic theories and terms involved in the paper in detail.

Chapter 2 is the literature review. This paper combs the research on the efficiency of university input-output management at home and abroad in detail, summarizes and analyzes its advantages and disadvantages, and puts forward the research direction of this paper.

Chapter 3 is the research method. It mainly includes the selection of research samples, development of research tools, and data collection and analysis methods.

Chapter 4 analyzes the results of quantitative analysis. It mainly includes detailed analysis of the data obtained from the above quantitative analysis and summary of relevant conclusions.

Chapter 5 is research discussion and suggestions. The problems analyzed in the article are discussed in detail, and the guidelines for improving the efficiency of input-output management of local universities in Guangxi are given.

Time

Based on the input-output data of 10 local undergraduate colleges and universities in Guangxi, the paper combs the current situation of the input-output management efficiency of local undergraduate colleges and universities in Guangxi in detail, and explores the main factors affecting the management efficiency of local undergraduate colleges and universities in Guangxi. Finally puts forward relevant

improvement measures according to the research results. The data of the paper is based on relevant data collected by way of Guangxi Education Yearbook 2016-2020, Undergraduate Teaching Quality Report of each university from 2016-2020, ESI, a database of basic scientific indicators, and the Performance Evaluation Report of Chinese Higher Education Institutions. With reference to the regulations of the Programme for Assessment of Teaching Levels in Higher Education, the data envelopment analysis (DEA) method was applied to study the input-output management efficiency of 10 local undergraduate education in Guangxi, and the Tobit method was used to conduct regression analysis on the institutions with invalid DEA to explore the main factors affecting the input-output management efficiency of local undergraduate institutions in Guangxi. It is aim at providing scientific data support for improving the input-output management efficiency of local undergraduate institutions in Guangxi.

Advantage

1. Firstly, it is based on the national conditions to clarify the current situation of the input and output of higher education in China, to explore its existing difficulties. Then fully draw on the successful experience of foreign countries, according to the orientation and development characteristics of local universities in Guangxi. Then it can develop the evaluation index system for the management efficiency of local universities in Guangxi.

2. A more comprehensive analysis of the evaluation results is made, mainly including the following six aspects: total efficiency evaluation, pure technical efficiency evaluation, scale efficiency evaluation, scale reward and the development trend of management efficiency of local undergraduate colleges in Guangxi in the past five years. On this basis, the Tobit regression analysis method is used to analyze the main factors affecting the management efficiency of local undergraduate colleges in Guangxi. Finally, it puts forward some relevant suggestions for the development of local undergraduate colleges in Guangxi, and provides more detailed decision-making information for college managers.

Research significance

1. It can provide scientific data support for education policy makers and managers to reform education and improve management efficiency.

2. It can effectively alleviate the problem of insufficient educational resources in Guangxi universities.

3. It can promote to improve the management efficiency of local undergraduate institutions in Guangxi.

4. It can effectively improve the education quality of undergraduate students in Guangxi colleges and universities.

Definition of Terms

"Efficiency of educational management", which is a term introduced in the article "Equal Opportunity in Education" by Coleman (1966). refers to "the ratio of educational resources input to output in higher education activities". Since the efficiency of higher education management in the economics of education not only reflects the contribution of higher education to the development of individuals and the progress of the country but also the effective utilization of educational resources, countries all over the world attach great importance to the evaluation of higher education management efficiency.

Research Framework

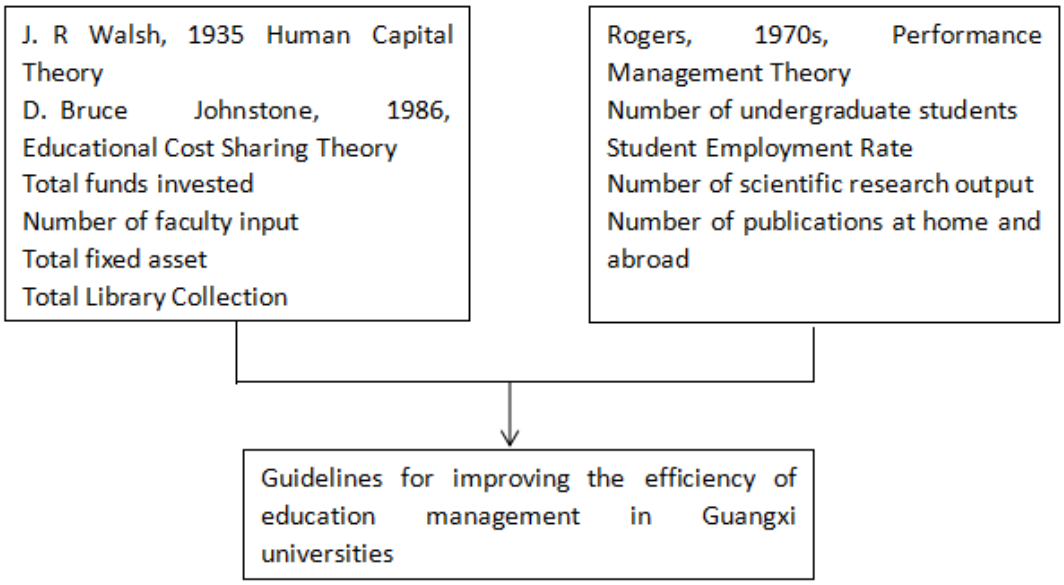

Figure 1.1 Research framework diagram

Chapter 2
Literature Review

In this study, the researcher referred to the theories and research results of relevant scholars at home and abroad on higher education management, higher education management efficiency and the theories and results of guidelines (development strategies). Then a detailed review was conducted. On this basis, the researcher analyzed the literature and related research results from the following aspects, as follows:

1. The concept of higher education management
2. The concept of higher education management efficiency
3. The concept of guidelines (development strategy)
4. Related research

The concept of higher education management

Xue Tianxiang. (2002, p.107-109). mentioned that higher education management refers to the process that people consciously adjust various relationships and resources inside and outside the higher education system according to the purpose and development law of higher education to achieve the established purpose of higher education system. Higher education management can also be divided into two parts: macro higher education management (higher education administration) and micro higher education management (higher education management). Macro higher education management is higher education administration. Higher education administration is the process of the national education administrative department in accordance with the law of higher education development and the purpose of national higher education, planned coordination of various relationships and resources of the higher education system, to ensure the realization of the national goal of cultivating high-level talents. Micro-higher education management refers to the implementation of higher education activities in colleges and universities, in accordance with the purpose of higher education and the general law of higher education development, consciously regulating various relationships and resources inside and outside higher education institutions, effectively achieving the established higher education system's purpose and process of cultivating all types of high-level professionals at all levels.

Zhao Zhongjian. (1997, p.81-82). mentioned that higher education management mainly refers to the management behaviors such as controlling, coordinating, organizing, and planning the education system by the government or educational institutions in a country. According to the different processes and management functions of higher education management, higher education management is generally divided into two major aspects: administrative management and school management. The former is for off-campus management and the latter is based on on-campus management. It is necessary to distinguish between education management and education administration. Many people mistakenly believe that education management is education administration, but the two are not the same. Education management includes education administration. In addition, higher education management also includes education policies formulated by a national government, but these are not included in the scope of education administration. Therefore, education management and education administration are different. Educational management can be divided into three levels: macro, medium and micro. The three levels are national educational policies and regulations, local government policies and school internal management activities.

Zhang Huijun & Rong zhanhuai. (2001, P.126). mentioned that higher education management is a series of purposeful and continuous activities carried out by the central or local governments and institutions of higher learning in accordance with the national education guidelines, laws, regulations, and policies to achieve the training objectives. It includes two parts: macro management of higher education and micro management of higher education. Macro management of higher education is administrative management of higher education. Micro management of higher education is self-internal management of colleges and universities.

Zhang Xiaoyun. (2011, P.18). mentioned that higher education management refers to the effective allocation of human, material, financial and other educational resources in the higher education system or organization through planning, organization, leadership, incentive, control and other methods consciously according to the purpose and development law of higher education, so as to improve the management efficiency of the higher education organization system and achieve the goal of higher education. It includes two systems: macro higher education management and micro higher education management.

Guo Jianru. (2003, p.68-74). mentioned that academic circles in China usually regard higher education management as the organization, leadership and management of higher education business and schools by the state or local government. In terms of scope, higher education management is higher education administration plus school management. It is the general term of higher education administration and school management. It is the leadership and management of higher education firms implemented by the whole country with the state education administrative organs as the main body, It is part of the management of the whole society and the behavior pattern of higher education managers in the process of solving problems.

Yao Huiming & Yu Dahuai. (2004, p.78). mentioned that higher education management refers to the whole process in which people consciously adjust various resources and relations inside and outside the higher education system according to the purpose and development law of higher education, so as to achieve the purpose of the established higher education system. It contains three meanings: firstly, it indicates that the purpose of higher education and the law of development are the basis of higher education management activities. Secondly, it points out that it is the unique task of higher education management to regulate the internal and external relations of the higher education system and the relevant higher education resources available consciously and consciously in order to respond to the objective regularity of the development of the higher education system. Thirdly, the result of higher education management is the need to continuously contribute to the effective realization of the purpose of its higher education system.

Ding Lili. (2012, p.19). mentioned that higher education management is that the participants in higher education seek to achieve the specific objectives of national planning by purposefully regulating a series of resources in the higher education system. Higher education management is the specific management of higher education by the state and its education authorities in order to achieve better development of higher education in China.

Deng Huan. (2013). mentioned that higher education management refers to the rational allocation of human, material, financial and other resources in the educational environment by managers under the guidance of certain educational ideas, educational policies and educational management concepts, in order to achieve the educational goals of the school, and to plan, organize, coordinate, supervise and evaluate various

educational activities of the school, so as to achieve the coordinated operation of the entire educational activities.

Wen Fuxiang. (1997). mentioned that higher education management, as a science, is to study the management activities in the higher education system. Higher education management specifically refers to the management of various forms and levels of professional education based on the completion of secondary education. Its purpose is to maintain and further develop socialist relations of production. It also needs to develop social productive forces, develop higher education, run colleges and universities well, serve social needs, and serve the working people.

In short, higher education management is the whole process in which people consciously adjust various resources and relations inside and outside the higher education system according to the purpose and development law of higher education, so as to achieve the purpose of the established higher education system. It is a form of scientific management for the development of schools and their students. Its overall goal is to improve the construction and management of schools while ensuring a high level of educational quality by effectively using educational resources, stimulating, and promoting the implementation of educational activities. The content of higher education management includes institution construction, examination evaluation, research and innovation and campus culture construction. It focuses on institutional management and academic management, combines with multidisciplinary perspectives, and implements management activities with higher management skills, so as to achieve the established development goals. It involves the formulation of policies, the improvement of institutions, the construction of teaching staff, scientific research management, the effective allocation of people, finance, and materials, as well as the planning, implementation, and assessment of educational projects.

The importance of higher education management

Zhang Jin. (2013, p.11). mentioned that the study of higher education management is an important tool to understand the laws of higher education. And it is an important guarantee to promote the reform and development of higher education. The study of higher education management plays a role of think tank and think tank in the development of China's education. Higher education management can provide theoretical guidance and ideological guidelines for the practice of higher education management in China. And it also determines the route and direction of higher

education management. Therefore, whether higher education management can grasp the trend and law of today's higher education development or whether it can quickly adapt to the changes of China's higher education situation greatly affects the practice of higher education management in China and the improvement of the quality of higher education in China.

Han Liangzhong. (2012, p.11). mentioned that higher education management influences the development of higher education management practice, which is conducive to the improvement of consciousness of higher education management theoretical researchers in solving practical problems, as well as the attention and application of theoretical research results by practitioners, which in turn improves the overall development of higher education management practice in China.

Deng Jingfen. (2009, p.13). mentioned that higher education management can effectively promote the reform and development of higher education, improve the quality of higher education, actively adapt to the increasingly fierce international form, enhance international competitiveness, and boost the development of social economy. In addition, the study of higher education management can help explore a model that is suitable for China's national conditions and in line with the world's advanced higher education, shorten the gap with the world's advanced countries in higher education, and promote the coordinated and rapid development of higher education.

Zhang Jin. (2013, p.17). mentioned that higher education management can help the government, universities and relevant education management institutions find the problems and achievements in their management and put forward effective countermeasures and ways to further develop and improve the quality of higher education management.

Ivanov. (2008). mentioned in the article "Management Model of the Education System" that the goal of higher education management is to establish a unified education space, provide efficient services and facilities, and meet the needs of all sectors of the population for higher education. The second is to innovate the social common values and national cultural values of educating the younger generation. Third, make higher education in a constantly evolving system, ensure the development of individuals and local social systems, and build communication and interaction channels between enterprises and social institutions. In this process, a new

management structure is formed, and modern management models and educational methods are developed. Management issues are complex and interdependent. To determine the actual transformation of education management, it needs to improve the government's management concepts and methods, clarify the functions of education management, correctly handle the relationship between centralization and decentralization, and maintain a balance.

Deng Huan. (2013). mentioned that higher education management helps managers to clarify the problems in the daily management of colleges and universities. On this basis, it can optimize the internal management institutions, improve the existing education management system, and improve the overall management level of colleges and universities to ensure the high quality and rapid development of colleges and universities.

In a word, higher education management can promote the scientific and modern management of colleges and universities, improve the efficiency of management, realize the effective organization and management of teaching, and ensure the quality and effect of education. Through higher education management, it can build the organizational structure of colleges and universities, improve the management system and improve the management level. In addition, it can improve the effective use of educational resources in schools, implement the optimal allocation of resources, escort for diversified development, and achieve sustainable development of education. In conclusion, higher education management plays an important role in education and its healthy development. It is the key to achieving the three major goals of higher education - quality education, development education and educational innovation. Therefore, when implementing higher education management, it should focus on concepts and principles, pay attention to infrastructure development and technical management, improve the quality of education implementation, and strive to achieve the desired educational results.

Scope of higher education management

1. The National Education Commission has designated higher education management to be in charge of the national higher education work:

1.1 Implement national policies, laws and administrative regulations on higher education, and formulate specific policies and regulations on higher education. To guide and inspect the implementation of the national policies, laws and

administrative regulations on higher education by all provinces, autonomous regions, municipalities directly under the Central Government, relevant departments of the State Council and institutions of higher learning.

1.2 Organize to forecast the national demand for professional talents, prepare the national development plan and annual enrollment plan for higher education, and adjust the structure and layout of higher education. To examine and approve the establishment, cancellation, and adjustment of institutions of higher learning and graduate schools. Formulate regulations on the recruitment and distribution of graduates and the annual distribution plan of graduates uniformly allocated by the state.

1.3 Formulate the setting standards for universities and graduate schools. Formulate the basic specialty catalogue and specialty setting standards of colleges and universities and organize the examination and approval of specialty setting.

1.4 The principle of formulating the management system and quota standard for the capital construction investment, business funds, staffing, labor and unified distribution of materials and equipment of higher education with relevant national departments. Make guiding proposals on the allocation plan of infrastructure investment, education and scientific research funds, special expenses, foreign exchange and unified material and equipment for higher education at the central level. Be in charge of infrastructure investment, undertaking funds and staffing for regulating the coordinated development of higher education and supporting the construction of key disciplines.

1.5 Formulate rules and regulations for personnel management of higher education, plan and organize the construction of teachers and cadres in colleges and universities. In accordance with the provisions of the State Council on the implementation of the professional and technical post appointment system, the work of higher education in this regard is organized and guided.

1.6 Guide the ideological and political work, teaching work, sports work, health work and general affairs work of higher education institutions. Determine the years of study and training specifications for graduate students, undergraduates, and specialists. Formulate guiding teaching documents, plan, and organize the compilation and review of teaching materials. Organize inspection and evaluation of the quality of education in higher education.

2. Formulate the school management plan according to the management plan formulated by the State Education Commission.

2.1 On the premise of ensuring the completion of the tasks assigned by the state to cultivate talents, inter-departmental and cross-regional joint education will be implemented in accordance with the ratio stipulated by the state. It also needs to accept entrusted and self-financed students, implement the graduate allocation plan assigned by the state, formulate the graduate allocation plan, and recommend some graduates to employers.

2.2 Under the premise of complying with the national financial system, it need to arrange to use the annual budget approved by the competent department in accordance with the budget management principle of “lump-sum use, no overspending, saving and self-balancing”.

2.3 Carry out all work in accordance with the overall design assignment, overall plan, long-term and annual capital construction plan approved by the competent department.

2.4 According to relevant national regulations, organize and carry out the evaluation of professional titles and degree awarding in the university.

=we,bx2.5 According to the national education policies, length of schoolingand training specifications, adjust the direction of professional services according to social needs, formulate teaching plans (training programs), syllabuses, select textbooks, and reform the teaching content and methods.

Problems in higher education management

Zeng Yan. (2013, p.16-17). mentioned that the current management of higher education in China mainly has the following problems: firstly, there is a contradiction between the administrative level and range of colleges and universities. The management level refers to the vertical level of management. The management range refers to the horizontal range of management. Generally speaking, the fewer the management levels, the higher the efficiency, the smaller the management range, and the better the effect, but there is a mutually exclusive relationship between the two under certain conditions. If the management level is small, the management range will be large, while if the management range is small, the management level will be many, which is contradictory to each other. Secondly, the functions of the administrative agencies ware not compatible with the current system. Thirdly, the distribution

structure of administrative power and interests is unreasonable. Finally, the efficiency of administrative management is not high. Universities are essentially teaching and scientific research institutions. However, since the administrative management concepts and the management methods caused by the concepts are the same as those of government agencies, ignoring the basic attribute that universities are teaching and scientific research institutions, the adaptability of administrative management and teaching and scientific research is not strong, and the overall efficiency is not high.

Rakhimzhanova Dinara. (2015). mentioned that the higher education management of Kazakhstan mainly has the following problems: 1. The entrance examination management is not strict. In order to expand enrollment, colleges and universities in Kazakhstan have deliberately lowered the standards for entrance examinations or adopted special skills and easy scoring policies. This has led to students' lax learning, and graduates have less professional knowledge and skills, which has seriously exacerbated the plight of employment and labor market. 2. The lack of teaching management in private colleges and the lack of strict management of the teaching system and the teaching system which lead to the lack of comprehensive professional skills of students. 3. The lack of rigor in academic research. Academics in the Ministry of Higher Education of Kazakhstan are less involved in scientific research activities, and most of these departments in the repositioning determine the educational function as the main one. 4. There are defects in the management system of higher education, which is not bound by unified and scientific legal regulations. Different education quality management systems in different institutions, uncoordinated teaching management goals, and the lack of a unified teaching quality monitoring system which lead to a large difference in the level of graduates from different colleges and universities, and even a big problem of professional skills disparity among graduates from the same institution.

Ye Chen. (2017, p.163-166). mentioned that the following problems mainly exist in higher education in China at present: 1. The higher education management system is rigid, focusing on centralization rather than decentralization. In reality, the rights of provincial governments are more centralized, but the actual rights delegated to schools are still less. Local universities still have more limited rights in terms of enrollment regulations and enrollment quotas, appointment and dismissal of principals, and establishment of school institutions. Nowadays, universities pay more

attention to the expansion of scale, the increase of specialties and the rise of level, but neglect the development of school connotation, which leads to the stagnation of quality despite the quantity of universities. In addition, in the realization of school functions, it pays too much attention to the economic functions and the creation of campus culture and neglect the construction of school humanities. They attach importance to the construction of school hardware and despise the development of school soft culture. This makes the universities “more buildings but less masters” and “more expensive instruments but less expensive ideas”, which eventually results in the serious utilitarian thinking in the whole campus, the weakening of teaching and learning, and the situation that there are many academics but few sophisticated academics, which seriously hinders the development of universities. 3. The quality of higher education management team varies. Although universities have formulated higher education management system, there are still some “old-fashioned” people with low quality, low education level and unable to take the initiative to learn and accept new ideas in the higher education management team, which restrict the development of higher education management and progress of universities to different degrees.

Zhao Xiuyue & Li Xiurong. (2017, p.26). mentioned that there is a lack of management in enrollment in China’s higher education management. Secondly, in terms of student management, there is no uniform standard between colleges and universities for punishing students who violate school rules and regulations. Most of the schools punish students according to their own rules and regulations. For example, some schools criticize and warn students for cheating in examinations on their official websites, while some schools withhold students’ degrees and cancel their degrees. Finally, the boundary between academic management and administrative management is blurred. As the internal management of higher education institutions is both academic and administrative in nature, and the two are closely related but distinct from each other.

The concept of higher education management efficiency

The connotation of “education management efficiency” has been interpreted differently by different scholars in different literature and different occasions, such as: efficiency of education investment, efficiency of education resource utilization, internal

efficiency of education investment and efficiency of education resource allocation. “Efficiency” is a concept in economics, which is often used to evaluate the relationship between the input and output of the market economy system. That is whether the minimum resource input has reached the set goal, or whether the given resource input has obtained the maximum benefit. The educational management efficiency refers to the contribution of education to the development of individuals and nations. Professor James Colmman etal. (1966). introduced the term “educational management efficiency” in his report on equal opportunity in education. Since then, domestic and foreign scholars have gradually diversified their research on “educational management efficiency”. In the research on “educational management efficiency”, scholars mainly focused on “what is educational management efficiency” and “what factors affect educational management efficiency” in the early stage of research. With the continuous development of research, scholars’ research on “educational management efficiency” has gradually shifted to the direction of “how to measure educational management efficiency” and “how to improve educational production”.

The meaning of higher education management efficiency

Jill Johnes. (2006, p.25). mentioned that school management is a teaching management activity that managers organize and utilize various educational resources to achieve school management objectives. In a broad sense, the efficiency of higher education management refers to the relationship between the total input and output of higher education resources, and its input and output indicators are difficult to accurately measure. In a narrow sense, the management efficiency of higher education refers to the relationship between the human, material and financial resources consumed by the management activities of universities and the direct output they bring. Its input-output indicators are often easy to control and measure. The theory and method of the research on the input-output efficiency of university management are derived from the firm theory of microeconomics. However, it is difficult to accurately measure the management efficiency of higher education due to the special reasons such as the non-profit nature of higher education, the diversity of input and output, and the unavailability of output prices.

Coleman. (1966, p.82). mentioned that the efficiency of higher education management is based on “educational efficiency”, which refers to “the ratio of educational resources input to output in higher education activities”.

Elchanan Cohn. (1972, p.123). an American professor, mentioned that he conducted a detailed study of the efficiency of higher education management, mainly including a comprehensive analysis of the output and input of higher education and the relationship between them, the relationship between higher education and economic growth, the production and cost functions of higher education, the factors affecting the salaries of college teachers, higher education finance and education plans.

Yuan Liansheng & Yuan Qiang. (1991, p.22-28). mentioned that the efficiency of higher education management refers to the internal efficiency of higher education investment. That is the ratio of output to input. Specifically, the results of education output can be divided into internal and external output. The former belongs to direct education results, mainly refers to the comprehensive quality of students, measures the efficiency of education process, and the latter refers to the role and contribution of education to social economy. It measures the contribution to social and economic growth.

Cheng Gang. (2008, p.1079-1104). mentioned that the efficiency of higher education management refers to the relationship between the actual output and the maximum output (actual cost and theoretical minimum cost) that can be achieved in theory under the condition of fixed educational resources and resource allocation.

Wang Shanmai. (1996, p.35). mentioned that the efficiency of higher education management refers to the ratio of higher education input to direct output. Among them, the input is the human, financial, material, and other educational resources occupied by the relevant higher education implementation departments and colleges. The direct output includes the number of talents trained by universities, the quality of talent training, the number and quality of scientific research and social services.

Hu Jianhua. (2003, p.63). mentioned that the management efficiency of higher education is similar to the economic efficiency, which refers to the degree of occupation and consumption of educational resources in order to achieve the same educational results under certain social conditions.

Dong Zefang. (2014, p.36). mentioned that the efficiency of higher education management can be divided into two aspects: social efficiency and personal efficiency. Social efficiency includes both economic and spiritual aspects. The “economic input” refers to the ratio of input to output of higher education. The “economic input” refers to the ratio of input and output of higher education. The “input” here, besides the

input in human, financial and material resources, should also include the spiritual input of the participating subjects, because the essence of higher education is also a kind of interpersonal activity. The main participating subjects are teachers and students, and there are exchanges and collisions of ideas between them.

Xu Liying & Yuan Guilin. (2007, p.8-11). mentioned that the connotation of higher education management efficiency includes sociology and economics. From the perspective of sociology, the level of management efficiency is mainly reflected by the size of educational function; From the perspective of economics, the evaluation of the efficiency of education management mainly depends on the ratio of education input to output and whether the allocation of education resources is reasonable. It is considered that the efficiency of education management is high if the education goal is achieved with the minimum investment, and vice versa.

Li Yining & Min Weifang. (1995, p.212). mentioned that the efficiency of higher education management should include educational production efficiency, educational resource allocation efficiency and educational X-efficiency. Among them, educational production efficiency refers to the ratio of input to output of educational resources. Educational resource allocation efficiency refers to the allocation and use of educational resources among different departments of the same unit or among different units. Educational X-efficiency refers to the main factor that affects the gap between the actual output and the ideal output of education is the problem of staff motivation.

Cao Rujun. (2008, p.10). mentioned that higher education and economic activities are two different social activities, and there are great differences between them. The concepts of higher education management efficiency and economic efficiency cannot be confused. Therefore, the existing research believes that higher education management efficiency and economic efficiency are different and emphasizes that higher education has its unique characteristics and the particularity of the two research objects. It is not scientific to just draw a relatively vague concept of higher education management efficiency.

Chu Hongqi. (2008, p.111). mentioned that education should be placed in the whole social system and the role of education in the social system should be fully considered. He believed that the efficiency of higher education management should include the connotation of economics and sociology. The efficiency of education

management is a measure of the degree of realization of education objectives. The efficiency of education management can be measured by such indicators as fostering modern citizens, promoting economic development, building democratic politics, maintaining national security, and improving international competitiveness.

Zheng Yinhua & Yao Limin. (2006, p.104). mentioned that from the perspective of social philosophy, the management efficiency of higher education should be composed of economic efficiency and social efficiency of higher education. According to the different roles and impacts of higher education system on the social system, the social efficiency of higher education can be further subdivided, including political efficiency, cultural efficiency, and moral efficiency. This kind of research has greatly enriched the connotation of higher education management efficiency from the perspective of the role of education in society.

In a word, the efficiency of higher education management refers to the ratio of education resources input and output that can be quantified in higher education activities. Input includes human resources input, financial resources input and material resources input. Human resources investment usually refers to the total amount of human resources needed to maintain the normal operation of colleges and universities. Financial resources investment refers to the costs incurred by universities in carrying out various teaching and scientific research activities. The input of material resources mainly refers to the use of fixed assets and daily consumables in colleges and universities. Education output is divided into direct output and indirect output, including undergraduate scale, student employment rate, scientific research output and number of papers published.

The importance of management efficiency in higher education

Zhu Qing. (2017, p.78). mentioned that higher education management efficiency helps relevant organizations to formulate management and assessment guidelines in the field of education and motivate universities to allocate resources rationally in order to better carry out teaching, research and social service activities. To some extent, the improvement of higher education management efficiency will influence and drive economic development to a better form and effectively lead to the rapid improvement of the level of scientific and technological innovation, which in turn will, to some extent, promote economic improvement. The establishment of a unified assessment index system for the management efficiency of higher education by the

state or relevant academic circles can effectively stimulate the full use and allocation of educational resources in universities. Thus, higher education will become the source of scientific and technological innovation, a good place for talent training and scientific research, and develop a new direction and environment for improving the national scientific and technological innovation system.

Wang Jingtao. (2010, p.3). mentioned that in the economics of education, higher education management efficiency not only reflects the contribution rate of higher education to individual development and national progress at the same time, but also reflects the effective utilization rate of educational resources, which provides a basis for improving the management system of universities in the future, fully exploiting the potential of educational resources utilization and using them efficiently. Therefore, all countries in the world attach great importance to the evaluation of higher education management efficiency.

Wang Chen. (2010, p.10). mentioned that the evaluation of management efficiency of higher education institutions based on data envelopment analysis method, research on input-output efficiency of higher education institutions and pointed out the problems and reasons of inefficient universities, which can help university policy makers and managers to improve management, explore the potential of using higher education resources, build “economical” universities. This will help university decision makers and administrators to improve management, explore the potential of using higher education resources, build “economical” universities, and improve the efficiency of school operation.

Fu Minghui. (2011, p.12). mentioned that studying the management efficiency of colleges and universities is to seek the best state of running schools in the process of evaluation practice and provide a theoretical guidance and practical plan for the construction and development of universities. Through the research on the evaluation of the management efficiency of colleges and universities, it can improve the theoretical system of education evaluation in China, develop education evaluation methods and enrich education evaluation practice, and promote the sustainable and stable development of education in China.

Wang Zhanrui. (1996, p.55). mentioned that improving the efficiency of university management can save and make full use of educational resources, increase output, and ultimately promote the development of social economy. The development of

social economy is conducive to the real realization of social equity. The realization of social equity can promote social stability and create conditions for improving the efficiency of higher education management and promoting social and economic development. On the contrary, if only efficiency is taken into consideration instead of fairness, it will certainly lead to social unrest and eventually make the efficiency cannot be improved either. If only fairness is taken into account without regard to efficiency, it will inevitably lead to the waste of scarce educational resources and the waste of limited resources of the whole society, which will affect the social and economic development, and the economic conditions for the real realization of social equity will be lost.

Yang Mudan. (2021, p.10). mentioned that the efficiency of higher education management is an important means to improve the quality of running a school and achieve the goal of running a school. It is reflected not only in scientific organization and management, but also in effective management activities in many aspects. Firstly, it can realize the sustainable development of higher education, effectively reduce the cost of education, achieve accurate and timely resource allocation and coordinate social resources. Secondly, it can effectively improve the quality of education and ensure that students get enough support and help in the learning process.

In a word, the management efficiency of higher education is the key to improve the economic efficiency of colleges and universities and improve the management level of schools. Only good management can ensure the steady improvement of teaching and research quality of schools and the sustainable and stable development of schools. Its importance is as follows: Firstly, improving management efficiency can optimize the allocation of educational resources and make full use of the educational resources of colleges and universities. Secondly, effective higher education management can promote the improvement of teaching quality and enhance the popularity of the school. Finally, improving the efficiency of higher education management is conducive to enhancing the economic benefits of universities and improving the management level and international influence of schools.

Evaluation index system of higher education management efficiency

The establishment of higher education management efficiency evaluation index system is the first step of the evaluation work, and it also the basic work of DEA efficiency evaluation, because the selection of indicators has the most direct and

important impact on the final evaluation results. The evaluation system of higher education management efficiency includes two parts: the input and output of colleges and universities.

Meaning of university investment

Ding Xiaohao. (2000, p.63-69). mentioned that the input of colleges and universities in a broad sense refers to the various resources and elements required for the operation of the university system. For the university system, this input is extremely broad, including the input of students, schools, and other aspects. The input from the student side includes the physical, psychological, and intellectual qualities of the individual before entering the university, as well as the level of effort of the individual after entering the university. The input from the school includes human and capital invested from the school side, generally in the form of human, financial and material, and each form can be divided into several categories. In addition to the tangible physical investment in education such as people, finance and materials, the school also has intangible assets. Intangible asset is a kind of resource input that exists in non-physical form and has significant influence on the overall operation process of the university, such as the visibility of the university, academic reputation and so on. Other inputs mainly refer to the general characteristics of the social and family environments in which students live, and are extremely broad in scope, such as the influence of peers, the socio-economic background of students' parents, etc.

Fu Minghui. (2011, p.22). mentioned that the investment of colleges and universities is the same as that of enterprises. All elements used to promote and maintain the effective operation of schools should be included, including all tangible and intangible school-running resources, some of which come from colleges and universities themselves and some from society. Among them, tangible investment includes human investment, material investment, financial investment, and so on. These are necessary factors to maintain the operation of the school, which are meaningful for the research conclusion.

Deng Weihua. (2013, p.23). mentioned that viewing university inputs as the same as those of enterprises includes human, financial and material resources, human resources include teachers and administrative staff, etc. Financial resources include government financial allocations, investments from individuals or social organizations,

and the university's own profit-making income, etc. Material resources include fixed assets, teaching and research equipment, etc.

In short, for higher education institutions, the inputs required to maintain their normal operation include the following primary indicators: human resources, financial resources and physical resources. However, to further refine the human resource input of higher education institutions, it can be divided into full-time faculty input and management input. The investment in financial resources includes teachers' salary, teaching reform fund, professional development fund and daily administration fund. The inputs of physical resources include land resources, laboratories, teaching and research equipment, library collections, and facilities for cultural and sports activities of higher education institutions are all part of their physical resource inputs. Because this paper studies the effectiveness of educational resources use in local undergraduate institutions in Guangxi, the input index system is constructed only from the perspective of school inputs.

Manpower input. For higher education institutions, manpower input refers to the sum of labor capacity of all staffs in higher education institutions. In fact, higher education institutions can be regarded as a special kind of social system. In order to maintain the normal operation of higher education institutions, it is essential to invest a large amount of human resources, because higher education institutions are the main position of the country to cultivate high-quality professionals. They are responsible for the production and reproduction of human resources.

Maintaining the normal operation of a higher education institution requires a large investment in human resources, which should consist of all faculty and staff personnel within the school. Previous studies have usually considered only full-time faculty as the input of human resources in higher education, which is not in line with the actual operation of the higher education system. Although the nature of the work of each staff member in each job will be different, the role of each staff member cannot be ignored for the whole system of the university. In terms of education, institutions of higher education should take moral education as the fundamental task and practice the concept of "three-wide education", which is full education. Therefore, full-time teachers of institutions of higher education should not only teach students professional knowledge, but also other staff members should properly guide students to form the correct "three views" and establish noble ideals of life through "teaching

by example". In the field of scientific research, it is impossible to complete it only by full-time teachers, but by a professional team of teachers. The professional team needs to be composed of full-time teachers, teaching assistants, logistics and administrative personnel. Therefore, every faculty member in colleges and universities is indispensable. When selecting the indicators of human resources investment in colleges and universities, this paper does not distinguish the identity of the teaching staff as in previous studies, but takes the teaching assistants, logistics staff, administrative staff and full-time teachers as a whole.

Physical input. The normal operation of higher education institutions is the same as that of enterprises, which must have material resources in addition to human resources. Land resources, laboratories, teaching and research equipment, library collections, sports and cultural facilities of higher education institutions all belong to their material inputs. There are many kinds of fixed assets, and for the convenience of calculation and comparison. This paper refers to the teaching and research laboratory equipment as fixed assets.

Financial investment. In addition to the above-mentioned human and material inputs, another important input is needed to maintain the normal operation of higher education institutions. That is financial input. The normal operation of institutions of higher education cannot be achieved without human resources and material resources. The quantity and the quality of human resources and material resources need strong financial support. Therefore, financial investment in institutions of higher education is an indispensable input. In order to facilitate statistics and comparison, only the financial investment in teaching and learning is considered in this study.

Meaning of university output

Fu Minghui. (2011, p.23). mentioned that higher education is an institution with multiple outputs. At present, talent training, scientific research and social service are recognized as the three major functions of modern universities. According to this, the output of universities can be divided into talent training output, scientific research output and social service output. In addition to the three outputs corresponding to the three functions, colleges and universities will also have a positive or negative impact on the value of their intangible assets while operating. The talents trained by China's higher vocational colleges are high-level practical and technical talents who work in the production line or construction site.

Gu Jianmin. (2001, p.68-72). mentioned that colleges and universities are institutions with multiple outputs. The output of colleges and universities can be divided according to their functions. At present, talent training, scientific research and social service are recognized as the three major functions of modern colleges and universities. Therefore, the output of colleges and universities can be divided into talent training output, scientific research output and social service output. In addition to the three outputs corresponding to the three functions, colleges and universities will also have a positive or negative impact on the value of their intangible assets while operating.

Deng Weihua. (2013, p.24). mentions that as the primary output of universities should be high-end talents. Secondly, it refers to social services, and this view points out that the output of schools does not refer to talents, but to services to society Thirdly, the educational output is seen as a combination of talents and social services.

In a word, the output of colleges and universities includes teaching achievements and scientific research achievements. Colleges and universities are the main positions for teaching and educating people and cultivating intellectuals. The teaching achievements of colleges and universities should naturally be one of the important indicators to measure the output of colleges and universities. This paper evaluates the employment rate of graduates and the number of undergraduate students in universities to determine the teaching achievements of universities. In addition, colleges and universities are also the core institutions to carry out scientific research. Therefore, this paper selects the number of scientific research output and the number of high-quality papers published at home and abroad as two representative indicators, as follows:

Number of undergraduate students enrolled. The professional knowledge, professional skills and personal humanities acquired by students in the course of their education are the direct output of higher education institutions when they train talents. The teaching output of higher education institutions can be reflected by the number of students produced by higher education institutions.

The employment rate of undergraduates. Undergraduate employment rate is the proportion of employed undergraduate graduates in the total number of undergraduate graduates at a certain point in time. It is an important indicator to reflect the employment status of undergraduate graduates, and also one of the

important indicators to reflect the efficiency of university management. At present, the employment rate of undergraduate students in China is released by the provincial education department. The actual statistics of the number of employed graduates will include those who have found work units, engaged in freelance work, pursued postgraduate studies, studied abroad, conscripted into compulsory military service, etc.

The number of scientific research outputs. The management efficiency of higher education can also be reflected by the number of provincial and ministerial-level honors, scientific research platforms and scientific research projects won by colleges and universities. Because awards, research platforms and research projects are one of the important indexes to evaluate the quality of higher education institutions, which is an important basis to measure whether a university meets the standards in social services, and also a true reflection of the management efficiency of universities. If a university can make major breakthroughs in academic and scientific research, it means that its academic and scientific research level is at the forefront of the domestic or international level, and it has made great contributions to social services. Therefore, the number of various awards, scientific research platforms and scientific research projects won by colleges and universities at the provincial and ministerial levels will also be included in the output efficiency index system to measure the efficiency of higher education management.

The number of papers published at home and abroad. Higher education institutions are not only the main place for talent training, but also the center for conducting scientific research in China. Most of the teachers in colleges and universities have high academic qualifications and professional titles, and have strong scientific research capabilities. They need to perform the task of cultivating various talents for various industries, but also need to conduct scientific research in their research fields and publish them in authoritative journals and academic conferences at home and abroad in the form of papers and research reports. These papers and research reports often have high value and influence in their research fields by virtue of their higher quality and innovation. Therefore, to measure the efficiency of input-output management of higher education, the number of high-level papers published by university teachers at home and abroad can be included in its evaluation index system. It should be emphasized here that due to the uneven quality of the papers, this paper only selects the number of high-quality papers collected by the core of Peking

University, CSSCI and other high-quality academic journals, as well as the authoritative foreign journals SSCI and SCI as the measurement index to reflect the output of higher education.

Principles for selecting the evaluation index system of higher education management efficiency

Li Xinyue. (2021, p.34-35). mentioned that according to the social system theory, the evaluation of higher education management efficiency is a complex system engineering. In order to guarantee the scientific and standardized evaluation index system of higher education input and output efficiency, the following principles should be followed: 1. Systematic principles. To evaluate the efficiency of higher education management, the indicators should be reasonably selected from the perspective of the system. There should be logical correlation or mutual influence between the evaluation indicators. The accuracy of the research results can be better reflected by comprehensively considering all aspects involved in the system objectives. 2. Pertinence principle. The selection of evaluation indicators should follow the criteria of pertinence principle. According to the actual needs of input and output conditions, appropriate input and output indicators should be selected pertinently. On the basis of ensuring objectivity, the essence and evaluation objectives of the higher education system should be comprehensively reflected, the rationality and irrationality of the evaluation object indicator system should be strictly distinguished. The indicators that are not related to the evaluation objectives should be eliminated. 3. Scientific principle. The selection of input-output indicators should adhere to the scientific principle. The selection of indicators should be representative and concise, which can truly and objectively reflect the characteristics of higher education management efficiency. Adopting scientific methods to define evaluation indicators and quantify weight distribution can effectively reduce the coupling relationship between indicators, ensure the clarity of model structure and ensure the accuracy of research results. 4. Operability principle. The construction of higher education management efficiency evaluation index system should be in line with the realistic conditions and specific situations of the study, and for the actual situation between the selected indexes and the research object. The selected indexes should be clear in connotation based on the accessibility, easy to collect and operable.

Zhang Jianing. (2019, p.25). mentioned that different evaluation index systems will have a huge impact on the final evaluation results. At the same time, considering the complexity of higher education management efficiency, the following principles should be followed when selecting evaluation indicators: 1. Targeted. The establishment of the indicator system serves the purpose of efficiency evaluation. The indicators need to comprehensively and intuitively reflect the core essence of university activities, decompose around the evaluation of efficiency, eliminate irrelevant or low correlation individual indicators, select appropriate detailed indicators, and set different indicator systems to adapt to the objectives. 2. Scientific. To reduce the coupling relationship between evaluation indicators, the selection of indicators should be able to describe the facts and keep the evaluation indicators both rigorous and concise according to the scientific research route objectively and concretely. Observing the scientific reality requires selecting indicators under the guidance of scientific theory and in combination with the actual situation of higher education, considering the rules in domestic and foreign research as far as possible, removing extreme factors, selecting objective and clear indicators, and trying to be scientific and perfect. 3. Operability. In order to ensure the smooth implementation of efficiency evaluation, it is required that the connotation of the selected indicators is clear, consistent with the actual situation of the research content, which can accurately serve the research objectives. That is to say, the evaluation object must be quantifiable, and at the same time easy to obtain from existing statistical data documents or public websites, or easy to survey and collect. As far as possible to achieve a uniform caliber, to ensure the comparability between indicators. 4. Systematic. This principle requires that each indicator should have a reasonable logical connection, to ensure that the indicator system can meet the requirements of the subject of this study evaluation of the object, enough to conduct a comprehensive evaluation study. The relationship between evaluation indicators is very intricate, part of the indicators are interlinked and part of them are restricted to each other, and try to avoid strong correlation of indicators in the system.

Wang Jingtao. (2010, p.31-32). mentioned that the construction of evaluation index system is a crucial part of higher education input-output efficiency evaluation whose scientific and rationalization degree largely determines the authenticity and objectivity of the evaluation of higher education system efficiency. The evaluation indicator system is a whole composed of several individual evaluation indicators, which

reflects the objectives and requirements of the problem to be solved. The indicator system should be realistic, reasonable and scientific, which is basically accepted by the leaders of the higher education system and the Ministry of Education and must reflect the purpose of running the university. 1. Purpose principle. The design of the evaluation index system should reflect the essence of higher education and the goal of evaluation comprehensively and truly, consider it as a whole, neither omitting nor repeating, decompose it closely around the goal, and eliminate the indicators that are not related to the purpose of evaluation or have little relationship. 2. Systematic principle. The design of the evaluation index system should start from the system point of view and recognize and analyze the evaluated object as an open subsystem. Include all aspects involved in the system objectives and consider the indicators to be designed from the perspective of the system's input, output, internal structure, system status and external environment. Moreover, there should be appropriate evaluation indicators for qualitative problems to ensure that the evaluation does not appear one-sided. 3. Operability principle. The evaluation index system established can be put into practice under realistic conditions to ensure the smooth implementation of the evaluation work and has sufficient accuracy. In addition, the information required for the evaluation indexes should be easy to investigate and collect from statistical data as far as possible. 4. Comparability principle. Comparability is an aspect of system evaluation index design that should be of particular concern. Any alternative program should be comparable and consistent in ensuring the achievement of the basic functions of the system. Individual functions that are outstanding or program content that is new can only indicate their relevant aspects and cannot replace other aspects, which will make the evaluation lose its real meaning. 5. Scientific principle. It is necessary to use scientific classification methods to categorize different influencing factors, grasp the main and put the secondary, and define the system scope of higher education efficiency evaluation in a scientific and reasonable way.

Liu Xiaoxuan. (2020, p.50-51). mentioned that the evaluation index is the basis that can accurately reflect the characteristics of an evaluation object according to the evaluation purpose. Multiple evaluation indicators describe a certain characteristic of the evaluation object from different angles and form an evaluation indicator system according to certain logical relations. Therefore, the following principles should be followed when selecting evaluation indicators: Firstly, the principle of unity of

scientificity and effectiveness. Ensuring scientificity is the first principle for determining evaluation indicators. In the process of research selection, extensive reference should be made to the literature and relevant policy standards, and sufficient university research or interviews with relevant scholars should be conducted, which should be in line with objective reality and should not be subjective and arbitrary, to ensure the authenticity and effectiveness of the collected indicator data. The second is the principle of the unity of simplicity and systematism. The number of evaluation indicators should be appropriate, not too much, or the operation is complex, or too little, or the evaluation is not comprehensive enough. The evaluation indicators should be as concise as possible on the basis of representativeness, and also have systematic logic. The selection of evaluation indicators should be able to reflect the characteristics of the evaluated object in all aspects according to the evaluation objectives and form a comprehensive evaluation result. Thirdly, the principle of unity of comparability and accessibility. The comparability of indicator data requires that the data be standardized, the statistical caliber of the data be consistent, and the meaning of the indicators be common among subjects so that horizontal comparison can be made. At the same time, the selected indicator data should be available through certain channels and ways. Fourthly, the principle of unity of goal-oriented and quantifiability. When determining the indicators, it is necessary to consider both the indicators in line with the purpose of evaluation and the quantification of indicator data to avoid blindly selecting indicators with weak relevance to the target in order to enrich the data.

Hou Xingyu. (2016, p.29-30). mentioned that the design of the evaluation index system is crucial for the multi-index evaluation method. If the evaluation index is set too much, it will lead to a large number of effective decision-making units, and the sample submission will lose the significance of research; If there are few evaluation indicators, it is not conducive to finding problems and providing accurate reference information for decision makers. Therefore, the following basic principles should be followed when constructing the evaluation index system: 1.Goal-oriented principle. The purpose of higher education is to educate people and scientific research, and its assessment is not to evaluate the merits and rankings, but to indicate the direction and development goals for its development. At the same time, the goals should be quantified and clear, not missing, not vague and repetitive. 2. Principle of operability

and comparability. The establishment of assessment index system and assessment methods is to use, not to be flashy, so it should have operability, feasibility, and practicality. 3. Systematic principle. This means that when constructing the index system of higher education management efficiency, the whole analysis object should be regarded as a large system according to the viewpoint of system theory. The evaluation system should cover a comprehensive range, take into account all aspects of factors, and not be one-sided. 4. Scientific principle. When constructing the index system of higher education management efficiency, it must adhere to the scientific nature, take the spirit of science as its own guide, and reasonably determine the evaluation index system according to the scientific classification means.

In a word, the selection of higher education management efficiency evaluation index system should follow the following principles:

1. Goal-oriented principle. The three major functions of higher education institutions are talent cultivation, scientific research and social services. In view of the specificity of their functions, when using the data envelopment analysis method to evaluate the efficiency value of sample universities, it cannot simply take economic benefits as the first place of evaluation or simply evaluate their advantages and disadvantages, but more importantly. It is necessary to find the core factors affecting management efficiency through evaluation.

2. Systematic principle. Higher education institutions are a complex system. Evaluating the effectiveness of their management efficiency is a complex process, so it is necessary to build a multi-input and multi-output evaluation index system, and it is necessary to fully consider the connection between each index and whether it can reflect the real situation of the evaluated objects. Therefore, when using data envelopment analysis method to evaluate the management efficiency of higher education institutions, we should adhere to the principle of overall optimality of the selected index system when selecting the evaluation indexes.

3. General comparability principle. Using the data envelopment analysis method to evaluate the management efficiency of higher education institutions, it is not only possible to evaluate the efficiency of the same university in different periods, but also to compare and evaluate different universities. Therefore, when selecting the evaluation system, it is necessary to consider not only the principle of system optimization, but also its generality and comparability. Especially, when comparing and

evaluating the management efficiency of different universities, it is necessary to adhere to the above-mentioned principles when using a unified evaluation index system.

Research on the Factors Influencing the Efficiency of Higher Education Management

Based on the existing literature on the factors affecting the efficiency of higher education management, it can be simply divided into two aspects: internal factors and external factors. Among them, external factors can roughly include social and economic environmental factors, national and local policies. Fang Chao et al. (2018, p.101) believed that market investment in higher education can improve the output efficiency of higher education and is more efficient than government investment. Parteka et al. (2011, p.83). on the contrary, argue that the value of local GDP per capita is negatively related to the efficiency of higher education administration, and the level of GDP per capita affects the efficiency of higher education administration to some extent.

Abbort & Doucouliagos. (2005, p.18). used DEA to evaluate 26 vocational schools in Australia in 1995. Regression analysis was used to explore the impact on the study. The results show that the use of equipment, government education compensation, class size, number of managers, number of full-time teachers and business cooperation all have a certain impact on school management efficiency.

Zhang Hong's. (2015, p.80). study pointed out that regional GDP per capita did not significantly contribute to the improvement of college management efficiency. Wolszczak Derlacz, Wei Mei et al. (2012, p.102). showed that local medical development, education level per capita and high education management efficiency were positively correlated. Cao Jian. (2011, p.22). argues that the level of national or local government support for the operation of a university can largely determine the management efficiency of that university.

Wu Feng. (2007, p.66). believes that the internal influencing factors of university management efficiency can be summarized as two aspects of schooling conditions and staffing. Special attention should be paid to the effective use of all input resources, such as instruments and equipment, which is the only way to enhance the overall schooling efficiency. Ren Yi, Gao Congcong. (2017, p.75). and Liu Xiaojun have the same view. Their research indicates that the efficiency of material and financial input and utilization of colleges and universities is not high. The resource source is relatively

single, which will not have a greater pull on higher education, thus affecting the management efficiency of colleges and universities.

Jiang Tongtong. (2011, p.65). used data envelopment analysis to study the management efficiency of universities. The results of the study showed that the research funding received by universities was positively correlated with the management efficiency improvement of universities. Meanwhile, the more teachers and tutors with master's and doctoral degrees, the more they contribute significantly and positively to the management efficiency of universities.

Ding Lan. (2012, p.93). divided universities into "985" universities and other universities and found that government funding has a negative impact on the management efficiency of "985" universities, which is a promotion for other universities. At the same time, a large proportion of young teachers and doctoral teachers and students can effectively improve the management efficiency of the university.

Lu Genshu. (2014, p.88). explored and analyzed the structure of higher education investment and its management efficiency by integrating AHP and DEA methods, then pointed out the models and development keys that could promote the improvement of higher education management efficiency in China from the eight higher education investment models summarized.

Lu Genshu et al. (2006, p.28). made a DEA evaluation of the input-output efficiency of 48 universities directly under the Ministry of Education, which obtained the evaluation values of the input-output efficiency of scientific research in each university, and the results show that the scientific research output was insufficient and the input was redundant. Different scholars also have different views on the investment of school-running funds. Among them, KUO JENN-SHYONG et al. (2008, p. 117). think that the national special funds have a negative effect on the cost-efficiency of colleges and universities, which will reduce the management efficiency of colleges and universities to a certain extent. Wei Mei. (2012, p.100). believed that the level of government financial investment in colleges and universities did not have a significant impact on the management efficiency of higher education. The study of Zhou Zhigang and Zong Xiaohua. (2018, p. 26). shows that "985" and "211" universities monopolize the highest quality higher education resources in China. They are in an absolute dominant position in the higher education market, and the state's investment in their funding has a large redundancy, which largely reduces their management efficiency. For other

resource-poor undergraduate institutions, government funding has a positive driving effect on the improvement of management efficiency.

Wolszczak-Derlacz amp & Parteka. (2011, p.16). found in his research that the more female faculty members, the more significant the promotion of university management efficiency. Zhang Hong. (2015, p.98). also found that the higher the proportion of teachers with high professional titles and academic qualifications among teachers, the more significant the impact on the development of disciplines, scientific research, talent training and other aspects of colleges and universities, and the obvious positive impact on the input-output efficiency of colleges and universities.

Yingjuan Wu. (2011, p.151). considers the market influencing factors from both quantitative and qualitative aspects, and explains that national policies can influence the efficiency of higher education management directly and indirectly in many ways, such as research taxation, preferential measures for university industries, and supportive policies for private schools.

The concept of guidelines (development strategies)

An Wenzhu. (1991, p.430-431). mentioned that education development strategy refers to the research and planning of guiding the long-term, overall and major issues in the process of education development. The specific contents include: (1) To study the development trend of education in the future for a period and find its common characteristics and laws. (2) Study the relationship between education and social and economic development and explore how education can meet the needs of social politics, economy, culture, and science. (3) Research the development goals of education in the future, and formulate the basic guidelines, guiding ideology and specific measures for the development of education on how to achieve the goals. (4) Research the problems existing in the implementation of the education development strategy and modify and improve the meta-strategy based on this research.

Education development strategy is an important component of social and economic development strategy. It refers to the major, overall planning and planning for the development of education in a country or a region in the long term. A complete education development strategy includes the goals, priorities and steps of education development, and major policies. Among them, the most important is the goal, focus, steps and policies, all serve to achieve the goal.

Liu Jingfa. (1986, p.73). mentioned that from the perspective of strategic objectives, education development strategy refers to making strategic development countermeasures concerning the overall situation and longer term in accordance with the objective laws of education and the needs and possibilities of economic, scientific and technological and social development, starting from the prediction of the development trends of various factors, levels and conditions of development.

Zeng Tianshan. (1990, p.45). mentioned that from the perspective of strategic implementation, the education development strategy refers to the main objectives to be achieved by the country at a certain stage of education development and the plans and arrangements to achieve the objectives.

Jiang Jiawei. (2021, p.15). mentioned that the education development strategy refers to the planning and decision-making of a country or region to achieve the overall goal of social development in a certain historical period, with overall, fundamental, and long-term issues, including education development planning, strategy formulation, strategy implementation, etc. The education development strategy is always based on the needs of social development and guides the development of education, which not only ensures and regulates the sound, healthy and sustainable development between education and external conditions such as social development according to the real needs of society, but also coordinates the internal development of the education system itself, and organically combines the independent elements within education in a systematic, holistic and structural way, so that it ensures sustainable development.

Lou Junying. (2006). mentioned that different scholars have different understandings of the definition of development strategy from their own perspectives. The development strategy of universities is described as follows: in order to form and maintain a competitive advantage and seek long-term survival and development, it is a systematic overall plan based on the analysis of the external environment and internal conditions, with a correct guiding idea of the main development goals of the school, ways, means and implementation steps to achieve them.

Lin Xiangcheng & Fan Lijuan. (2011, p.7-9). mentioned that the higher education development strategy is a management approach that formulates a school's future development strategy based on the challenges of the external and internal environment of the university and the opportunities they offer and puts it into practice to guide the school's continuous development in an uncertain environment.

Hao Keming & Tan Songhua. (1997, p.4). mentioned that the education development strategy is the planning and decision-making of the overall, fundamental and long-term issues of education development.

Gao Shuguo. (2009, p.70). mentioned that the education development strategy is a strategic means or action for a country or region to solve the complex problem of education development with a view to the future and with a view to the overall situation. It can plan out the implementation objectives and specific action elements of the strategy. Generally speaking, the strategic planning of education development can clarify the reasons for action and the specific implementation of action. The reason why strategic planning for educational development is used is that it focuses all effective efforts on coordinating a better overall effort, redirecting actions when appropriate, and ensuring that all members work toward a unified goal.

Chen Chuannan. (2020, p.14). mentioned that the education development strategy is a major macro-level overall plan development of education made by the national high-level decision-makers based on the comprehensive judgment of the internal and external environment of education in a certain period, starting from the need for coordinated economic and social development. Compared with similar concepts such as education policy and education reform, education development strategy is a relatively superior concept.

Li Jingjing. (2012, p.19). mentioned that education development strategy is a brand-new research field that emerged after 1980s, which is a kind of decision and strategy with fundamental, global and long-term characteristics, and is formulated by a country or region for education development in a specific historical period in order to achieve the overall goal of social development.

In short, the overall, fundamental and long-term nature of the development strategy is always the unchanging characteristics of the development strategy. The formulation of any development strategy is a comprehensive, fundamental and long-term strategy to achieve the development goals of the organization in a specific period of time. Its basic elements include the main body of the development strategy, the strategic environment, the strategic object, the strategic idea, the strategic goal, the strategic focus, the strategic deployment, the strategic steps, strategic measures and guarantees.

The importance of guidelines (development strategies)

Daniel Jolie and Herbert Sherman. (2006). mentioned that firstly, development strategies can promote the better coordinated development of universities and the environment. The market mechanism connects the environment and universities, which may promote the interaction and common changes between the university and the environment, and bring positive effects to both sides, and may also cause disharmonious negative effects. Secondly, it can improve the effectiveness of learning while constantly creating new methods of knowledge dissemination and education, and it plays a significant role in preventing social underclass. Lastly, it ensures that universities have a long-term sustainable goal, and by actively promoting school integration through development strategies, universities are able to improve the standard of living of students, staff and even administrators, as well as the quality of life of the university community as a whole.

Zhang Wei. (2021, p.12). mentioned that the guiding principles of higher education will help improve the competitive strength of China's higher education, build a world-class higher education system with Chinese characteristics, realize the integration of higher education popularization with developed countries, and gradually find a more suitable development path for the modernization of higher education with the characteristics of China's national conditions, so as to improve the opportunities for the Chinese people to accept high-quality and optional higher education.

Li Junxiao. (2012, p.15). mentioned that the higher education guidelines have greater significance for the development of higher education in China toward modernization, the sound development mechanism of higher education modernization, and the improvement of the blueprint outlining the development strategy of higher education modernization.

Jiang Jiawei. (2021, p.16). mentioned that the guiding principles of higher education help to determine the strategic position, strategic countermeasures and strategic objectives of the modernization of higher education, and clarify the action guide and road map of the modernization of higher education. The purpose of the research on education development strategy is to solve the future-oriented development goals, define the tasks required for development and the key problems to be solved.

Chen Chuannan. (2020, p.21). mentioned that the education development strategy is to promote the better development of higher education in view of the social and economic development and the need of universities to build high-level universities, re-examine and position the talent training objectives of higher education, further optimize the competitiveness of higher education, and realize the coordinated and sustainable development of higher education in terms of scale, quality, structure, efficiency, etc., which is very meaningful.

Yuan Jinting. (2010, p.13). mentioned that the formulation of education development strategies is of great significance for enhancing the quality of talent training in higher education, meeting the diverse needs of society, accelerating the training of high-level application-oriented professionals, adjusting and optimizing the training structure of higher education, and improving China's application-oriented and innovative talent training system.

Bai Lu. (2012, p.28). mentions that the significance of education development strategy for the economic and social development of a country or region lies in the fact that it facilitates a country or region to gather wisdom and strength to the maximum extent, allocate resources more rationally in the operation of education, respond more effectively to the opportunities and challenges brought by the competition for comprehensive national power to the education development of the country or region, and promote the sustainable, stable and healthy development of education.

All in all, education development strategy is the key to improve the level of national higher education, enhance the comprehensive power and international discourse of the country, maintain social stability and promote social development, and its importance is mainly expressed as follows: First of all, it helps to improve the competitiveness of the country in the era of knowledge economy, reduce the waste of educational resources, and thus put more educational resources into places with actual needs. Secondly, it helps to formulate more scientific and reasonable education policies, improve the effectiveness of education, and promote social development and progress. Finally, education development strategies help to improve social education level, protect the rights of vulnerable groups, and promote social equity. Therefore, in order to achieve a sustainable development of education, it is essential to build a scientific and reasonable education development strategy.

Related Research

Research on the Efficiency and Fairness of Higher Education Management

The efficiency of higher education management is the result of educational resource allocation, which inevitably involves the issue of fairness. Whether the relationship between efficiency and equity in higher education management can be correctly understood is of great significance to promote the sustainable and healthy development of higher education system, and the efficiency and equity in higher education management has become a focus of academic circles. Since China's reform and opening up, there are some differences in the views on the efficiency and equity of higher education management in academic circles, which can be roughly divided into the theory of equity over efficiency, the theory of efficiency priority and equity, and the theory of interaction.

Arthur Oken. (1978, p.75). mentioned that increasing national spending on education can promote efficiency and fair coordination, which can not only improve the quality of workers, social, cultural level and social and economic efficiency, but also increase the income of low-income people and narrow the social income gap. Based on this, he proposed that although equalization of income cannot be achieved. The development of education can still promote the coordination of efficiency and fairness.

D. Duttall. (1992, p.84). of the London School of Economics mentioned that efficiency indicators "can reflect the efficiency or behavior of education management of an educational organization and can provide information for decision-making." He also stressed that education statistics that can become efficiency indicators of higher education management must be able to reflect the key aspects of education and must provide reference for these two functions to provide a basis for subsequent judgments.

Pan Maoyuan. (2003, p.20). mentioned that higher education management efficiency and fairness are two different concepts that cannot be discussed and studied at the same level. To pay attention to fairness must improve efficiency. Education fairness without efficiency is a low-level egalitarian thought. Therefore, to raise efficiency and focus on high-level fairness is a prerequisite for the sustainable and healthy development of higher education in China.

Peng Zeping. (2003, p.118). mentioned that higher education management efficiency and higher education equity are only a pair of related categories rather than corresponding contradictory categories, and they are independent.The pursuit of equity does not necessarily come at the expense of efficiency, nor does the pursuit of efficiency come at the expense of equity. On the one hand, the two are discussed at different levels. Equity in higher education is primarily philosophical, while management efficiency in higher education is primarily at the level of economics. On the other hand, there are different factors and sources that affect both. Equity in higher education is mainly influenced by factors external to higher education, while management efficiency in higher education is mainly influenced by factors internal to higher education.

Chen Yunpen. (2004, p.65). mentioned that the fairness of higher education and the management efficiency of higher education are contradictory. They must choose one to give priority to development. A group of scholars, represented by the Liu Yundong believe that China is at the primary stage of socialism and that the current resources for higher education are very limited. The development of higher education must adhere to the principle of “efficiency first and equity at the same time”. At the same time, another group of scholars believe that the purpose of education is not the pursuit of efficiency, because education is not an economic activity and educational institutions are not economic organizations. The real purpose of education is to impart knowledge and skills to achieve the all-round development of human beings in order to promote the development of society. Therefore, the issue of equality has a significant impact on the overall efficiency of higher education. It has become the first issue to be solved by policy makers and executives of higher education.

Chen Fengzheng. (2012, p.173). mentioned that higher education management efficiency and higher education equity are complementary. The former is the premise of the latter, while higher education equity is the purpose of higher education management efficiency. To achieve the unity of higher education management efficiency and equity, the fundamental path lies in the innovation of its values and institutional innovation.

Dong Zefang. (2014, p.36). mentioned that the relationship between higher education management efficiency and higher education fairness is neither mutually exclusive and antagonistic, nor is it consciously transformed and necessarily promoted, but is complementary and can be transformed and promoted under certain conditions.

To achieve a balance between fairness and efficiency in higher education is to find a balance point that can better balance fairness and efficiency according to the specific national, educational, social and public conditions, the conditions and wishes of each student, and the theoretical structure of higher education management efficiency and higher education fairness at different levels. To seek the maximum relative fairness and efficiency from both social development and personal development, and to promote the dynamic adaptation and mutual transformation of the two.

Research on Higher Education Efficiency Evaluation

The evaluation of management efficiency, overall performance and resource allocation efficiency of colleges and universities by using data envelopment analysis is derived from Levin's technical efficiency measurement of educational production in 1974. During this period, the use of data envelopment analysis to evaluate the management efficiency of higher education has become an important means for many scholars at home and abroad, such as Avkiran, Cooper, Zhao Zhen, Xu Jian, Wang Xuhui, etc.

Avkiran. (2001, p.60). used the C2R model and the BC2 model to effectively assess the overall performance and management efficiency of 36 Australian universities in 1995. The results of his study showed that the Australian universities performed well in terms of technical efficiency and scale efficiency, while the main area for improvement was the performance of paid enrolment, mainly in the form of diminishing scale in some universities. Therefore, for these universities, the input of resources could be appropriately reduced without affecting their output.

Thanassoulis, E., Dunstan, P. (1994, p.50). used data envelopment analysis to evaluate the management efficiency of higher education institutions. Then dissects one of the real cases and obtains a series of guidelines, which provides reliable data support for promoting the efficiency of higher education management.

Ruggiero, J. et al. (2002, p.142). used data envelopment analysis to analyse the managerial efficiency of New York State schools, to identify the factors that lead to inefficiencies in these colleges and universities, and to provide guidelines for these colleges to be able to control teaching and learning costs effectively.

Juan Aparicio et al. (2012, p.79). used these data to conduct a detailed evaluation of the managerial efficiency of education in different countries from a

cross-national perspective, using participation in the Programme for International Student Assessment (PISA) as the subject of their study, from which they found significant differences in the managerial efficiency of education between universities in different countries.

Somayeh et al. (2016, p.136). conducted a comprehensive assessment of the managerial efficiency of education of different disciplines at the Shiraz Faculty of Medicine using a system of different input-output indicators and found that the managerial efficiency of education of different disciplines varied over time, and a similar study was conducted by Martin examining the teaching and research efficiency of various faculties at the University of Zaragoza (Spain).

Ye Qianlin & Yue Zhongxin et al. (2018, p.129). collected relevant data on higher education investment in 31 provinces, municipalities, and autonomous regions of China from 2014 to 2016, evaluated and compared the efficiency of higher education management in 31 provinces, municipalities and autonomous regions, and the research results showed that the overall level of higher education management efficiency in China is high. Meanwhile, there are some differences among different provinces. The Tobit model was used to conduct regression analysis on the main factors affecting the level of higher education management efficiency. It was found that the per capita education expenditure of college students has a significant positive influence on higher education management efficiency, while the local economic strength, education expenditure investment scale and higher education resource allocation structure have a significant negative influence on higher education management efficiency. It is proposed to improve higher education management efficiency by establishing a third-party professional evaluation agency.

Xu Jian & Wang Xuhui. (2009, p.85). used the data envelopment analysis method to comprehensively evaluate and analyze the managerial efficiency of higher education in 31 regions of China, then conducted projection analysis on the inefficient provinces in 10 major provinces of higher education to explore the main factors affecting their managerial efficiency. The results of the study show that: China’s higher education resources are seriously under-invested, and the overall managerial efficiency of higher education is low. What’s more, a total of 24 regions are in the state of DEA inefficiency. The scale reward of these DEA inefficient regions is in the incremental stage, and their higher education resources investment has serious waste phenomenon. So, it is necessary to reduce the

number of scientific research funds and administrative teaching staff.

Zhao Xiang. (2005, p.74). used data envelopment analysis (DEA) to conduct a detailed analysis and comparison of the allocation of higher education resources in Guizhou province, and made detailed calculations of data on the redundancy rate of higher education resources inputs as well as the deficiency rate of outputs in the province.According to the calculation results, a series of measures to improve the current situation of higher education resources allocation in Guizhou Province were proposed, such as transforming the government's functions and increasing the autonomy of universities; increasing the investment in education resources and improving their own running conditions, in order to maximize the efficiency of the use of educational resources by universities under the market economy system and promote the rapid and good development of schools.

Research on the application of data envelopment analysis (DEA) in the field of education

Charnes ,& Cooper et al. (1988, p.36). studied the management efficiency of 108 public and 85 private schools with doctoral-granting status in the United States in 1984 by using the C2R and BC2 models in data envelopment analysis (DEA), and concluded that public universities were more efficient than private universities overall.

Colbert et al. (2000, p.87). used BC2 model to analyze the relative efficiency of MBA program of the top 24 universities in the United States in 1997. The results show that MBA program of these universities is relatively efficient.

Tom kins & Green. (1998, p.131). applied the data envelopment analysis method to the managerial efficiency analysis of higher education, and the research results were affirmed and recognized by some scholars. The DEA method was highly respected and actively used in the study of resource input efficiency.

Beasley. (1990, p.172). took chemistry majors in UK universities as the object of study, and analyzed and compared chemistry majors in UK universities according to DEA analysis, and made a ranking of the educational efficiency of chemistry majors in each university.

J. E. Beasley. (2001, p.93). analyzed the collected data of teaching and scientific research in various universities by DEA analysis method, and evaluated their efficiency. The result shows that the input of scientific research is positively related to the efficiency of school management.

Korhonen & Tainio. (2001, p.11). constructed a new evaluation index of internal management of universities based on the integrated game theory and the related theory of education economics, and used the C2R model to evaluate the influence of internal management and operational efficiency of universities on resource allocation efficiency, and concluded that the internal operational efficiency of universities was positively related to allocation efficiency, but the influence was not significant.

John Ruggiero & Loyd Blnachardt. (2002, p.82). analyzed the efficiency of higher education management in a region by means of DEA, and drew the conclusion that according to different situations, implementing corresponding investment can effectively allocate resources to non-effective factors.

Clark. (2003, p.90). used the DEA model to study the efficiency of higher education resource allocation in Australia and constructed input indicators such as students' comprehensive merit grades in final examinations, research inputs, library capital construction inputs and library materials inputs, and laboratory hardware inputs, and output indicators such as research outcomes and the number of graduate students (master's and doctoral) graduates. The results of the study concluded that the scale of university education has no significant effect on the allocation efficiency, and the research achievements have a positive relationship with the allocation efficiency which is the more research achievements, the higher the efficiency of higher education resources allocation in that university.

GaryB.Nackman. (2012, p.109). concludes that DEA is the most effective way to analyze the efficiency of higher education management by comparing different research methods.

Agrell & Ralph. (2000, p.161). compares and analyzes the faculty and scientific research achievements of a university, evaluates their management efficiency, and finally gives corresponding measures to improve management efficiency.

Xie Youcai & Hu Hanhui. (2005, p.77). made a quantitative analysis of the management efficiency of China's higher education, taking universities as the analysis unit and taking education and research as the output of undergraduate education. Taking the number of teachers, the number of teachers with senior professional titles and research funds as inputs, the study found that the overall technology of 31 universities was effective, 47 universities were pure technology effective, and 32 of the universities with ineffective scale were in the stage of diminishing returns to scale.

Zeng Qiumei. (2010, p.91). uses a data envelopment analysis model to measure the relative scale efficiency of higher education in Yunnan according to the definition of payoffs of scale and scale efficiency in economics. Placing the level of higher education development in Yunnan Province in the context of the national and western regions respectively, the problems in the development of higher education in Yunnan are systematically analyzed. Their causes are explored as well as informative suggestions are provided. The validity of the suggestions is tested, which ultimately show that they are reliable and reasonable.

Li Xiangyun. (2011, p.108). estimated the “technical efficiency” and “management efficiency” of university inputs and outputs by constructing a data envelopment analysis and its quadratic relative efficiency model and synthesized the comprehensive efficiency of each university by using the assignment method. On this basis, we try to analyze the efficiency of input and output of colleges and universities in China by using the data of 2007 and 2008 as an example.

Tian Dajiang. (2015, p.172). evaluated the input-output efficiency of colleges and universities by using the super-efficiency DEA model based on the research material data of some universities in China, and found that about 25.9% of colleges and universities can achieve the reasonable allocation of input resources.

Li Xinya & Jin Ling et al. (2015, p.115). studied and analyzed the input-output effectiveness of colleges and universities in Chongqing through the data envelopment analysis method. They believed that the optimization of the allocation of resources and the improvement of the use efficiency of colleges and universities were more prominent. They required to start with the government's evaluation of the input efficiency of resources in colleges and universities, the construction of the evaluation index system, and the problem decision-making scheme, so as to improve the ineffective or weak performance of colleges and universities.

Wang Jianhong. (2015, p.172). On the basis of selecting the sample data of 54 subordinate universities from 2008 to 2010, constructed a performance evaluation system using factor analysis and DEA quadratic relative efficiency model respectively, analyzed and evaluated the technical efficiency and management efficiency of university scientific research input and output, and believed that there was room for improvement in both efficiency.

Liang Ying. (2017, p.64). Formulated the input-output indicators of school-enterprise cooperative colleges and universities from the perspective of quantity and quality, and used DEA method to evaluate the scale efficiency of 15 school-enterprise cooperative colleges and universities in Tianjin from the perspective of quantity and quality. It was concluded that the scale efficiency of school-enterprise cooperative colleges and universities in the province was relatively low in both quantity and quality. It was necessary for the school, government and enterprise to adjust relevant strategies under the urgent situation of serious shortage of college education funds. Work together to improve the scale and efficiency of school-enterprise cooperation.

Ding Wenhui. (2014, p.36). Used DEA evaluation method, DEA-based C2R model and BC2 model, and constructed the evaluation index system of human resource utilization efficiency of general colleges and universities, and compared the panel data of 31 provinces and regions from 2004 to 2010 to study the human resource utilization efficiency of general colleges and universities in terms of three outputs: talent output, social service and scientific research. It is found that the overall efficiency of human resources utilization efficiency of general colleges and universities in China is increasing. The mean value of pure technical efficiency has improved significantly, but the mean value of scale efficiency has not improved significantly.

Meng Siyi. (2019, p.66). Took the 17 universities directly under the Ministry of Education that have merged most frequently in 1998-2000 as the main research object, placed them on a longer time axis, and used data envelopment analysis (DEA) to evaluate the merger effect. From the perspective of absolute scale, the scale of input and output of the “strong alliance” merged into medical universities has expanded significantly, and the original comprehensive universities that only merged into medicine have good discipline development and strong comprehensive strength. From the perspective of relative scale, the merged universities failed to effectively improve the management efficiency in the short period after the merger. The management efficiency fluctuated in the long period after the merger. And the relative efficiency of the “strong alliance” merged into the medical universities was relatively low.

Chapter 3
Research Methodology

The purpose of this study is to study the following aspects: 1) In order to study the management efficiency of local undergraduate colleges and universities in Guangxi; 2) In order to explore the different factors that affect the management efficiency of local undergraduate colleges and universities in Guangxi; 3) In order to study the guidelines developed to improve the management efficiency of local undergraduate institutions in Guangxi. In order to solve the research problems mentioned in Chapter I and achieve the above research objectives, the researcher adopted the following research procedures, as follows.

1. The population / the sample Group
2. Research methods and research steps
3. Data collection
4. Data analysis

The population / Sample Group

Population : This study group includes 26 undergraduate colleges and universities in Guangxi, which are distributed in Nanning, Liuzhou, Guilin, Hezhou, Chongzuo, Laibin, Wuzhou, Yulin and other cities. On this basis, these colleges and universities are classified according to their different orientations, and the management efficiency of the same type of local undergraduate colleges and universities in Guangxi is mainly studied.

Sample: Using stratified sampling method, the school's orientation is taken as its classification standard, and 10 local undergraduate colleges and universities are selected as samples, namely, Hezhou University, Guangxi University of Finance and Economics, Wuzhou University, Nanning University, Liuzhou Institute of Technology, Guilin University of Aerospace Technology, Guangxi University of Foreign Languages, Guangxi Minzu Normal University, Guilin Tourism University, Yulin Normal University. The data from 2016 to 2020 of these undergraduate colleges and universities are required as sample data for the study.

Interviewee**:** The interviewees in this study include managers and full-time teachers who belong to local undergraduate colleges and universities in Guangxi. They are required to have the following qualifications: they have been in the school for at

least 8 years, and are familiar with the specific conditions of the school's development plan, daily teaching, student management, input-output and scientific research. Six people are interviewed in each school, totaling 60 people.

Research methods and research steps

This study used multivariate analysis and collected data using documentary analysis, and to check and determine the correctness of the data, the data in this study were both quantitative and qualitative. This paper investigates the input-output data of 10 local undergraduate colleges and universities in Guangxi, and uses structured interview method to familiarize yourself with the situation related to the management efficiency of the sampled colleges and universities. The BC2 and C2R models of data envelope analysis (DEA) are used to study and analyze the input-output management efficiency of the same type of Local Undergraduate colleges and universities in Guangxi. Based on the efficiency value, the shadow factor assumption of the efficiency value is put forward. The Tobit regression equation is constructed and the regression analysis is carried out to find out the factors that affect the efficiency of input-output management of local undergraduate colleges and universities in Guangxi. The steps of this study are as follows:

The first step: setting research ideas.

Comb through relevant domestic and foreign literature, get familiar with domestic and foreign research on marketization of higher education, efficiency of higher education (connotation of management efficiency of higher education, assessment, fairness of school operation, etc.), factors affecting management efficiency of higher education and about data envelopment analysis (DEA) applied to the field of education, etc. On this basis, rooted in the actual school operation of local undergraduate institutions in Guangxi, refer to relevant theories, and develop a research plan.

Set up research ideas. The efficiency of higher education management in this study refers to the ratio of the direct output of undergraduate education to the educational resources invested in undergraduate education. The indicators involved include the input of human resources, material resources and financial resources. Based on the actual needs, this study selected four input indicators (total input of teaching funds, total input of faculty and workers, total value of fixed assets, total collection of libraries), four output indicators (number of undergraduate students in

school, student employment rate, number of scientific research output, number of papers published at home and abroad).

The second step: this study is based on the input-output data of 10 local undergraduate institutions in Guangxi, and a detailed analysis of the current situation of input-output management efficiency of local undergraduate institutions in Guangxi is conducted. The data of this study mainly come from the Guangxi Education Yearbook 2016-2020, the Undergraduate Teaching Quality Report of Guangxi Universities 2016-2020, and the Performance Evaluation Report of Chinese Higher Institutions. Referring to the Regulations such as the Evaluation Program of Teaching Level of Higher Institutions, this paper uses the Data Envelopment Analysis (DEA) method to study and analyze the input-output management efficiency of 10 local undergraduate colleges in Guangxi. It lays a foundation for further exploring the efficiency of input-output management in 10 local undergraduate colleges and universities in Guangxi.

The third step is exploring the factors affecting the efficiency of input-output management in local undergraduate colleges and universities in Guangxi. Based on the data obtained in the second step and combined with the situation grasped by the structured interview. The Tobit regression method is used to analyze the factors affecting the efficiency of input-output management in local undergraduate colleges and universities in Guangxi, so as to provide a reference for decision making to develop guidelines for improving the efficiency of input-output management in local undergraduate colleges and universities in Guangxi.

The fourth step is formulating guidelines for improving the management efficiency of local undergraduate institutions in Guangxi. Based on the basis of the research and analysis results of the second and third steps, combined with the national plan of revitalizing western higher education in the National Medium and Long-term Education Reform and Development Plan (2010-2020), and rooted in the actual situation of local undergraduate colleges and universities in Guangxi, the guidelines for improving the management efficiency of local undergraduate colleges and universities in Guangxi are formulated to effectively promote the management efficiency of local undergraduate colleges and universities in Guangxi. The guidelines are based on the actual situation of local undergraduate colleges and universities in Guangxi. The research steps are shown in Figure 3.1

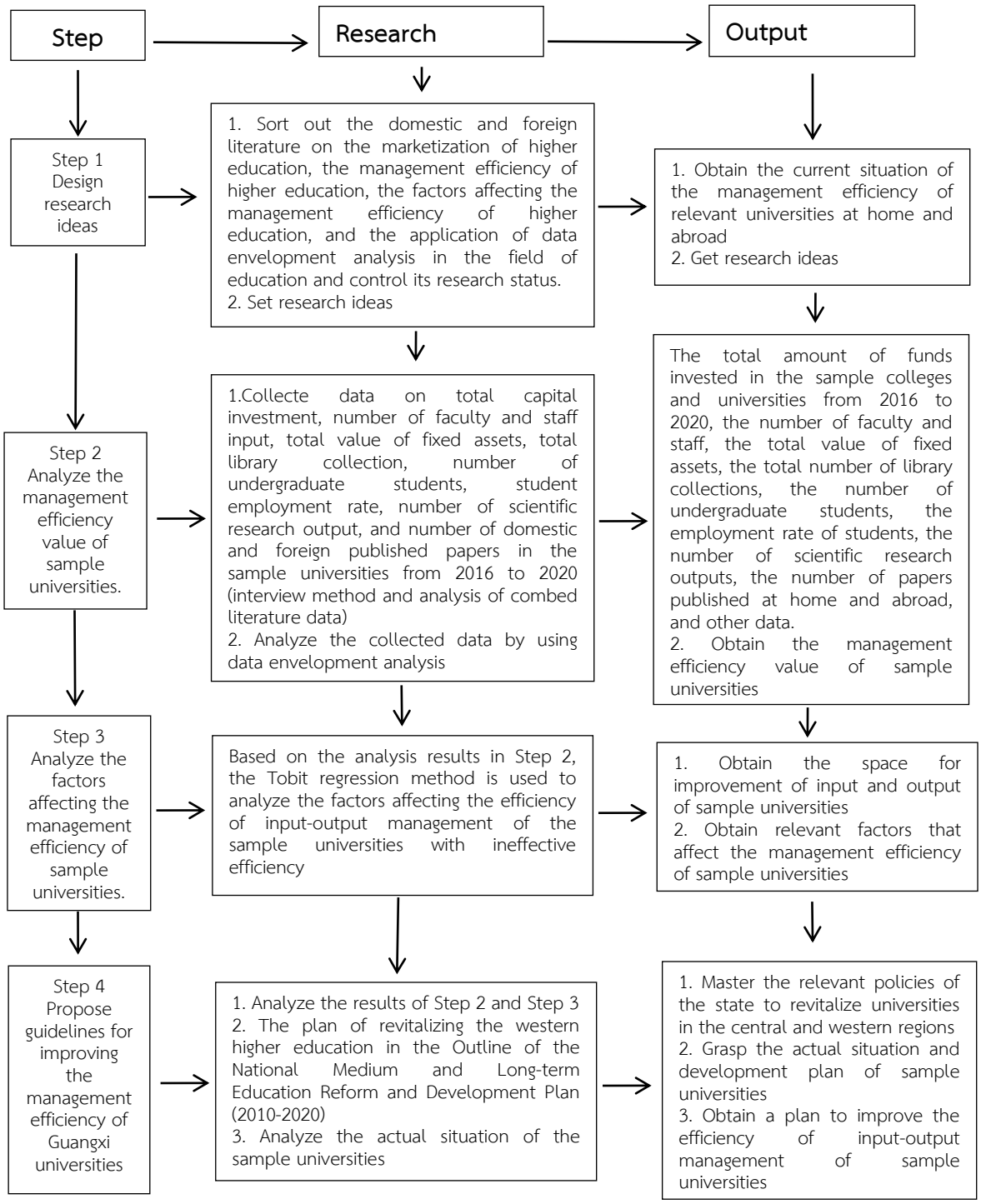

Figure 3.1 Research steps of guidelines for improving the management efficiency of Guangxi universities

Research Instruments

The tools used in this study include literature research method, interview form, data envelopment analysis (DEA), university input evaluation index and university output evaluation index.

Literature research method: literature study is the basis of scientific research. Careful analysis of the literature can help scholars get familiar with the current research situation in relevant fields, and find problems from it. In addition, it can also help to understand the feasibility and necessity of the problems studied. A large number of documents related to the efficiency of input and output management of higher education are collected. The research status of domestic and foreign scholars in this field is combed in detail, and relevant research views are refined. Successful experience in domestic and foreign research is used for reference, and the research is carried out in combination with the actual situation of the research object.

Interview table: The input indicators are classified according to the input of human resources, financial resources, and material resources. The input indicators are classified according to the input of teaching staff, education funds, fixed assets, and the number of books in the library. The output indicators are classified according to the number of undergraduate students, student employment rate, scientific research output, and the number of papers published at home and abroad. Based on these input-output indicators, the corresponding structured interview form was developed to conduct structured interviews with the management staff and full-time teachers of the sample universities.

Data Collection

Data Envelope Analysis (DEA):

Data Envelopment Analysis was officially proposed by operational researchers Chains and Cooper. DEA was created on the basis of the “Relative Efficiency Evaluation” theory and is mainly applicable to the evaluation and analysis of the relative effectiveness of the same type of departments. The principle is to use a mathematical planning model to evaluate the effectiveness of the frontier according to the degree of projection deviation on the frontier surface. Specifically, DEA is a measure of the effectiveness of the individual units being measured as a DMU, without setting the weights of the production function, and is actually a measure of relative

efficiency, which means that the effectiveness of the DMU is only associated with the sample decision units among the selected sample. Selecting data envelope analysis method to carry out efficiency evaluation can calculate the actual number of inputs and outputs of the selected decision unit, make a linear combination of effective DMUs with linear programming method, form a piece-wise hyperplane, finally establish the effective production frontier, and measure the optimal solution of input and output of DMUs.

The data envelopment analysis method can provide specific direction for the decision-making units with DEA inefficiencies to formulate improvement strategies, correct the excessive redundancy of investment in these DMUs with DEA inefficiencies, and the lack of output in how many indicators, so that managers can implement new strategies according to the evaluation results to improve the efficiency of the decision-making units. The application of this method in education, economics, operational research, management and other fields is more and more in-depth and extensive.

1. Model introduction

The first basic model of DEA, CCR, was proposed by Chauncey and Cooper in 1978. It was mainly used to explore whether similar DMUs with multiple inputs and outputs were simultaneously efficient subjects for scale and technology, but with the restriction that returns to scale were constant. After fully improving the variable conditions of scale returns, the BCC model is introduced again to realize the result evaluation of pure technology effectiveness; In the later stage, the classic FG model appeared, which can meet the conditions of non-increasing returns to scale and the ST model that meets the conditions of non-decreasing returns to scale.

2. Advantages of DEA

The production activities of universities are a series of typical multiple input and multiple output activities, and DEA is chosen to study the efficiency of input-output management of universities because the biggest advantage of this research method is that it is very suitable for the measurement of the complicated system of multiple inputs and multiple outputs. There is no need to set the production function and weighting assumptions in advance, so it has a very scientific and objective nature. It is more and more convenient to show the real relationship between inputs and outputs. It is better to avoid subjectivity interfering with the results of this evaluation, and to see

the urgent need to optimize the shortcomings and obtain solutions to improve efficiency. During the dynamic analysis, we can also see the dynamic development and change of the input-output efficiency of higher education, which is helpful to grasp the development trend of management efficiency more clearly and comprehensively, and has significant advantages for studying the input-output management efficiency of colleges and universities. Therefore, DEA method is selected for this efficiency study.

The model of this method is easy to operate, and it is convenient to study the efficiency of decision making units that process multiple input and multiple output data with high quality and efficiency. Therefore, since the establishment of the CCR model, the first model of DEA theory in 1978, it has been the best choice to evaluate the relative efficiency of multiple production and non-production organizations with the same type of input and output. The relevant theoretical research has been deepening. The strong practical significance is the strong advantage of data envelopment analysis. The empirical result is to integrate numerical values to evaluate the efficiency of DMU under different conditions, effectively reflect the resource utilization of the organization, and provide reference basis for organizational decision makers and managers at all levels, with strong adaptability.

In terms of measuring the efficiency of education input and output, experts in education economics transplanted the economic evaluation methods of production efficiency, combined with the nature and characteristics of colleges and universities, and developed many specific evaluation models and new models. Among the evaluation methods of education input-output efficiency, the internal rate of return method and the index analysis method all have harsh preconditions, but it is very difficult to quantify the various data of higher education input-output, especially the quantitative induction of the implementation of quality problems in education output, which is still difficult to achieve. At the same time, higher education has several functions and shoulders heavy responsibilities. First of all, it is necessary to improve the ability of students and graduates to carry out scientific research. On the other hand, it is necessary to contribute to regional economic development, improve employment difficulties, and promote vigorous socio-economic and cultural development. Therefore, DEA has become the mainstream tool for measuring the efficiency of higher education input-output management. The DEA method can comprehensively consider the best combination of inputs and outputs within the

evaluated sample universities. Then it can fully reflect the current situation of the evaluated universities' own management efficiency.

The specific advantages are as follows.

1. DEA method does not need to set up the production frontier function of parametric style. The current domestic and foreign researches in the field of higher education management efficiency have not yet formed a unified evaluation index system, and the actual situation between different universities in different regions has a large variability, which makes it impossible to determine the weights of the indexes. If researchers arbitrarily add weights to the evaluation index system, it will lead to large errors in the derived research results.

2. The use of DEA method does not require a unified evaluation index system. DEA method essentially applies the model in mathematical planning to the actual measurement. Therefore, all parameters in the evaluation index system can also be treated equally, and the obtained data need not be processed without quantification during the calculation.

3. DEA method has the function of obtaining the overall input-output management efficiency of higher education institutions. It is able to derive whether there is redundancy or deficiency in the educational resources invested by higher education institutions. It can also use the projection method to grasp the specific reasons for the ineffectiveness of DEA, so as to obtain the main factors affecting the management efficiency of higher education institutions. Select colleges and universities with homogeneity as the research object. Each college has the same input and output. Therefore, the input and output indicators of multiple colleges and universities in different years can be compared and studied, and the input and output management efficiency of education resources of different colleges and universities in different years can be scientifically analyzed, so as to be familiar with its development trends and improve management efficiency.

3. Evaluation steps of DEA

(1) Be familiar with and master the research objectives. The selection of the decision-making unit and the construction of the management efficiency evaluation index system are determined strictly according to the research objectives. Therefore, it is necessary to be familiar with the objectives of this study before conducting the management efficiency research, which is the basis for the follow-up research.

(2) Build research evaluation index system. Build a scientific and reasonable research evaluation system according to the established research objectives. The evaluation index system should be selected by adhering to the principles of goal-oriented, systematic and general comparability to ensure that the research results obtained are true and reliable.

(3) Select the DMU. The premise of using DEA method is that the selected decision units need to be homogeneous. Therefore, when selecting decision units, it is necessary to fully consider the actual situation of candidate objects and try to ensure that the selected decision units are homogeneous.

(4) Collect research data. When widely collecting research data, it is necessary to consider the availability of research data, the representativeness and applicability of research data, and determine the appropriate DEA model to start the calculation according to the purpose and background of effectiveness analysis.

(5) Draw the research conclusion. Analyze the data obtained after calculation in detail, be familiar with the efficiency dynamic changes and development trends of each decision-making unit in recent years, explore the main factors affecting the input redundancy and output insufficiency of each decision-making unit, and finally form the research conclusions and put forward corresponding improvement suggestions.

Evaluation index system.

Since the evaluation model selected in this study involves the confidential information of the decision-making unit. It is difficult to obtain the data. This study has constructed the following four input indicators under the premise of adhering to the principles of availability, representativeness, and applicability of the research data. It includes total investment in teaching funds, investment in teaching staff, total value of fixed assets, and total amount of library collections. What's more, four output indicators are the number of undergraduate students, the employment rate of students, the number of scientific research output, and the number of papers published at home and abroad.

Data acquisition

1. Literature

The input and output data of the sample universities in the past five years are mainly obtained from the 2016-2020 Guangxi Education Yearbook, the 2016-2020 Guangxi University Undergraduate Teaching Quality Report and the Performance

Evaluation Report of Chinese Higher Education Institutions, which involve the number of faculty and staff inputs, the total number of library collections, the number of undergraduate students, the student employment rate, the scientific research output of the sample universities in the past five years, quantity and the number of published papers at home and abroad. Considering that the two data of total value of fixed assets and total amount of capital investment of each university in this study are sensitive, and the problem of leakage of confidentiality will also be considered, this study will adopt the interview method to collect the data for these two data to ensure the reliability of the data.

2. Interview

(1) Summarize the results obtained by using the data envelopment analysis method according to the established evaluation index system.

(2) Set up the qualifications of participants interview, including the management personnel and full-time teachers of the sample universities. These interviewees are required to have the following qualifications: have worked in the university for at least 8 years, and be familiar with the development planning, daily teaching, student management, input and output, and the specific situation of scientific research.

(3) Select respondents. According to the requirements in the second item, the researcher invited the interviewees and those who volunteered to participate in the interview.

(4) Interview according to the steps.

Data Analysis

1. Literature

Before analyzing the data, the researcher checks the correctness and completeness of the data collected through the literature method for data analysis. If the data is found to be conflicting or incomplete, the researcher will directly contact the sample universities to obtain more correct data. Then the researcher will create a data file to store the variables used in the study. When the data is ready, the researcher will conduct a preliminary analysis of the collected data according to the established evaluation index system, and initially check whether these data meet the relevant research purposes. In addition, the unit of these data needs to be uniformly processed to ensure the accuracy of the results.

2. Interviews

Analyzing whether the contents of the interviews meet the requirements of the research objectives, this step of the analysis is to collect data from the content analysis, which is obtained from the interviews with the managers and full-time teachers at the sample universities.

3. Data Envelopment Analysis

(1) Technical efficiency and scale efficiency: technical efficiency is mainly used to reflect the use of input resources by the evaluated object, and ineffective technical efficiency means that there are problems in the management of resource use of the decision unit. With the same input, the management efficiency can be improved by improving the transformation ability of the decision-making unit. Scale efficiency is mainly used to reflect the influence of the scale of the decision-making unit on the management efficiency, and either too large or too small scale will affect the input-output management efficiency. After obtaining the data of sample colleges and universities, the static and dynamic analysis of input-output management efficiency of local undergraduate colleges and universities of the same type in Guangxi is conducted. The higher the value of technical efficiency, the higher the input-output efficiency of sample colleges and universities. The higher the value of scale efficiency, the better the scale of sample colleges and universities. When the value of both is 1, the input-output management efficiency of sample colleges and universities is in the best state.

(2) Remuneration to scale: It is mainly used to reflect whether the current investment scale of the decision-making unit is reasonable, and also to provide direction for how to adjust the investment scale. When the return to scale of the DMU remains unchanged, it means that the current input will get the same proportion of output, and there is no need to adjust the current input scale. When the return to scale of the DMU is increasing, it means that the current input of the DMU will bring more output than the proportion of input, and the output can be increased by appropriately expanding the input scale. When the return to scale of the DMU is in a decreasing state, it means that the current input of the DMU will bring output lower than the input proportion, and the input scale needs to be appropriately reduced.

(3) Projection analysis: By analyzing the distance between the ineffective decision-making unit of technical efficiency and the production frontier, it is to analyze

the improvement space of each ineffective university of technical efficiency through the relaxation variables of the university's input and output, understand the utilization of its educational resources and the areas that need to be improved in each decision-making unit, and calculate the output insufficiency rate or input redundancy rate through relevant software. It is a process to help the decision-making unit transfer from the invalid state to the production frontier, thus improving the management efficiency.

(4) Insufficient output and input redundancy: Insufficient output represents that the decision unit's input according to the current input standard will lead to its insufficient output. Input redundancy represents that the current input of the decision unit is in excess. By analyzing the situation of insufficient output and input redundancy of the decision unit, the direction of improvement can be provided for the inefficient decision unit, which is generally measured by the insufficient output rate and input redundancy rate.

(5) Regression analysis: Select the universities with DEA efficiency less than 1 in the sample universities, and use Eviews6.0 software to build a Tobit regression model to analyze the factors that affect the efficiency of input and output management of local universities in Guangxi.

Chapter 4
Results of Analysis

The research purpose of the Guidelines for Improving the Management Efficiency of Guangxi Local Colleges and Universities is to study the current situation of the management efficiency of local colleges and universities in Guangxi, explore the different factors that affect the management efficiency of local colleges and universities in Guangxi, and study the guidelines formulated to improve the management efficiency of local colleges and universities in Guangxi, so as to improve the management efficiency of local colleges and universities in Guangxi and promote its steady and sustainable development, The researcher presented specific research results through the following items.

Part I: The personal information of the interviewees and the input and output of local universities in Guangxi during the five-year period from 2016 to 2020.

Part II: The analysis results of the current situation of management efficiency of local universities in Guangxi during the five-year period from 2016 to 2020.

Part III: The main factors affecting the management efficiency of local undergraduate colleges in Guangxi from 2016 to 2020 and the analysis results of specific reasons.

Part IV: The analysis results of the interview according to the evaluation index system of the Guidelines for Improving the Management Efficiency of Guangxi Universities.

Part V: Based on the above research results to develop guidelines for improving the management efficiency of colleges and universities in Guangxi and its suitability analysis results.

Symbol and Abbreviations

Part I: The personal information of the interviewees and the input and output of local universities in Guangxi during the five-year period from 2016 to 2020.

Table 4.1 The personal information of the interviewees

	Personal information	Number of people	Percentage
Gender	male	13	65%
	female	7	35%
	in total	20	100
Working experience in colleges and universities	8-10 years	3	15%
	11-15years	12	60%
	More than 16 years	5	25%
	in total	20	100
Education level	Bachelor's degree	5	25%
	Bachelor’s degree or above	15	75%
	in total	20	100
Position	School administrator	11	55%
	full-time teacher	9	45%
	in total	20	100

According to Table 4.1 the majority of the respondents were 13 males (65%) and 7 males (35%). The majority of the respondents had worked in higher education institutions between 11-15 years with 12 or 60%, followed by 5 or 25.0% with more than 16 years, and the least with 8-10 years with 3 or 15%. The majority of the individuals had an educational level of bachelor's degree or higher with 15 or 75%, and bachelor's degree with 5 or 25%. The majority held higher education administrator positions with 11 or 55%, and 9 or 45% held full-time faculty positions.

By searching the 2016-2020 Guangxi Education Yearbook, the 2016-2020 Guangxi University Undergraduate Teaching Quality Report, and the Performance Evaluation

Report of Chinese Colleges and Universities, this paper collected the relevant input index data (total teaching funding, number of faculty inputs, total value of fixed assets, total library collection) and output index data (number of undergraduate students, student employment rate, The number of scientific research outputs, the number of papers published at home and abroad), which is shown in Table 4.2 and Table 4.3:

Table 4.2 Data on input indicators

Year / DMU	Number of faculty and staff input					Total value of fixed assets					Total library collection					Total investment in education				
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
DMU_1	702	757	809	852	916	94923400	16728440	11763340	11508850	12650840	1104968	1219888	1475316	1534100	1593000	1104968	1219888	24891490	11199370	15005590
DMU_2	1434	1414	1414	1451	1468	12591620	16100000	16076510	22900000	11540 00000	480187	666500	1718100	4551800	4109300	480187	666500	45715140	11988500	13358600
DMU_3	907	745	1021	1100	1116	10171700	11735 50000	11735500	15700000	17760000	1021000	1535000	949000	1034000	1129000	1021000	1535000	16202000	16983000	19731000
DMU_4	612	687	734	871	968	7637200	10348820	9597450	14420650	17550000	1780000	1938000	1142700	2281000	3937400	1780000	1938000	20669000	37035200	32293850
DMU_5	747	807	862	907	986	56916300	79857900	67725 50	12700000	12900000	2322600	2479000	2501800	2499000	1963100	2322600	2479000	20821700	15386500	24421800
DMU_6	1076	1209	1076	1136	1190	15555220	15600000	16769510	18540130	21535400	1203600	1260300	1309400	4228000	3917800	1203600	1260300	26000000	27254850	28543430
DMU_7	701	743	722	783	817	11512430	17600000	15960 15	19360000	22610000	1030000	1183000	1300000	1157000	1520000	1030000	1183000	57320600	45075100	43547300
DMU_8	602	614	791	832	870	9928270	14900000	13700000	16300000	18100000	1500000	1417000	2557000	2223000	1416000	1500000	1417000	35617900	39424200	39842600
DMU_9	720	757	809	852	638	8665470	11800000	9492340	11510000	13380820	2436000	1560500	1744000	3002000	4126000	2436000	1560500	24904040	36421 0300	61456700
DMU_{10}	873	1123	1201	1335	1370	14948680	21014726	18305070	25362580	28889720	2110000	3049000	3768000	3772000	1923000	2110000	3049000	12598150	13184900	14160220

Table 4.3 Data on output indicators

Year / DMU	Number of undergraduates enrolled					Student employment rate					Number of scientific research outputs					Number of domestic and international publications				
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
DMU_1	2421	4291	6933	8392	9009	0.93	0.93	0.90	0.66	0.91	12	36	72	105	99	151	158	128	100	141
DMU_2	18792	20046	20046	22881	21064	0.95	0.96	0.97	0.93	0.85	53	62	80	43	136	153	161	135	189	215
DMU_3	11050	12228	13380	15636	16419	0.93	0.93	0.93	0.92	0.72	10	18	51	47	40	69	70	81	67	67
DMU_4	9825	10422	11532	12421	13022	0.91	0.95	0.93	0.91	0.85	5	7	5	9	8	43	30	43	52	69
DMU_5	12261	12793	12057	12082	12066	0.92	0.94	0.94	0.92	0.74	1	5	2	3	3	60	61	50	53	16
DMU_6	11615	13257	11615	13842	13972	0.91	0.92	0.93	0.94	0.92	8	21	54	68	43	86	94	69	124	133
DMU_7	10654	11072	12025	12541	13325	0.95	0.93	0.93	0.93	0.95	3	8	7	11	10	13	18	14	24	21
DMU_8	10880	11395	12618	14441	16231	0.91	0.97	0.98	0.96	0.72	10	17	28	45	48	82	92	77	69	75
DMU_9	2415	3478	4291	8386	8392	0.93	0.94	0.91	0.93	0.67	8	12	27	49	86	27	47	40	48	70
DMU_{10}	16094	16183	16121	16232	16031	0.94	0.95	0.94	0.90	0.79	15	28	62	83	58	126	126	113	165	141

Part II: The analysis results of the current situation of management efficiency of local universities in Guangxi during the five-year period from 2016 to 2020.

This paper uses DEAP software to solve DEA model. DEAP is a software specially used for model calculation, which can solve many DEA models such as C^2R and BC^2. The software is simple to operate, convenient to use, and reliable in calculation results. It has been widely used in academia. The solution results of the model using DEAP in this paper are shown in Table 4.4

Table 4.4 Results of the DEA model solution for the decision unit

DUM year	C2R technical efficiency					BC2 pure technical efficiency					Scale efficiency					Return to scale				
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
DMU_1	1	1	0.903	1	1	1	1	1	1	1	1	1	0.903	1	1	--	--	IRS	--	--
DMU_2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--
DMU_3	1	1	0.936	1	1	1	1	0.995	1	1	1	1	0.941	1	1	--	--	IRS	--	--
DMU_4	0.85	1	0.862	0.966	1	1	1	0.995	0.994	1	0.85	1	0.867	0.972	1	IRS	--	IRS	IRS	--
DMU_5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--
DMU_6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--
DMU_7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--
DMU_8	0.73	1	1	0.885	1	1	1	1	0.942	1	0.73	1	1	0.939	1	IRS	--	--	IRS	--
DMU_9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--
DMU_{10}	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--

Overall efficiency analysis

The distribution of technical efficiency values of local undergraduate colleges and universities in Guangxi from 2016 to 2020 is shown in Table 4.4 From the calculation results in the table, it shows that the technical efficiency of 6 local undergraduate colleges and universities in the five years is all 1. It means that the DEA of these 6 local undergraduate colleges and universities is effective, accounting for 60% of all evaluated schools. In addition, the technical efficiency of these 10 local undergraduate colleges and universities is relatively high, with an average of 98.3%, It shows that the management efficiency of local undergraduate colleges in Guangxi is good in general. The overall management efficiency of local colleges and universities in Guangxi increased significantly from 2016 to 2017, decreased slightly in 2018, and

continued to maintain a steady upward trend in 2019 to 2020 (see Figure 4.1). Among the evaluated local undergraduate universities. The comprehensive efficiency value of 4 universities is less than 1, which means their DEA is invalid. In addition, from the distribution of comprehensive efficiency values of decision-making units in Table 4.4, DMU8 is the university with the lowest comprehensive efficiency value. Its 5-year average efficiency value is only 0.923, indicating that there is a certain waste of resources in the university, and the use of various resources within the university is not optimized. For these local undergraduate institutions with ineffective DEA, the core elements affecting their ineffective DEA can be explored by projection analysis of decision units on the production front surface, and their DEA can be made effective by optimizing the input-output ratio of higher education institutions. The specific efficiency values of these 10 local undergraduate universities are as follows:

1. DMU2, DMU5, DMU6, DMU7, DMU9, DMU10 (FY2016, 2017, 2018, 2019, 2020), DMU1, DMU3 (FY2016, 2017, 2019, 2020), DMU4 (FY2017, 2020), DMU8 (FY2017, 2018, FY 2020) are at optimal levels of combined efficiency, technical efficiency, and scale efficiency.

2. DMU1 (FY2018) is not at optimal overall efficiency and technical efficiency.

3. DMU3 (FY2020), DMU4 (FY2016, 2018, 2019), and DMU5 (FY2016, 2019) are not at optimal overall, technical, and scale efficiencies, and DMU1 (FY2018), DMU3 (FY2018), DMU4 FY(2016, 2018, 2019), and DMU8 (FY2016, 2019) with incremental returns to scale (IRS), suggesting that the existing scale should be adjusted for expansion.

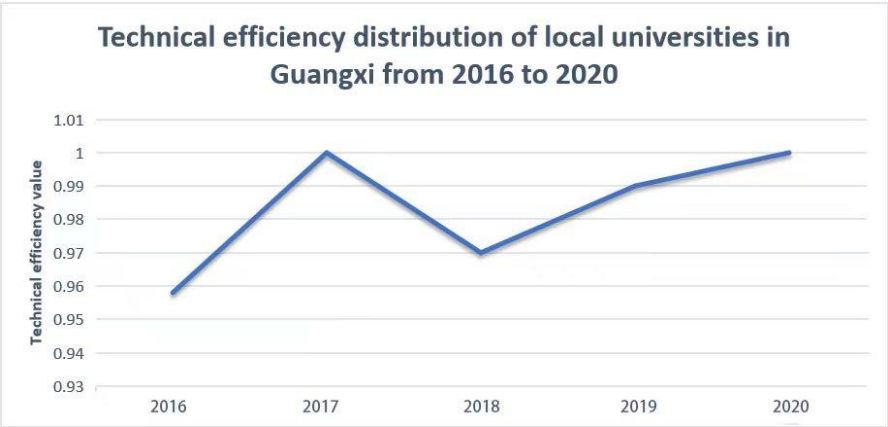

Figure 4.1 Technical efficiency distribution of local universities in Guangxi (2016-2020)

Analysis of pure technical efficiency solution

The overall efficiency of each decision unit in the above is obtained by the C2R model under the assumption of constant scale efficiency. In order to obtain the scale efficiency, it is necessary to assume the constant scale reward as the variable scale reward, so that the technical efficiency can be divided into pure technical efficiency and scale efficiency. The pure technical efficiency of colleges and universities reflects whether the teaching resource input of colleges and universities has got the maximum output. The larger the value of pure technical efficiency, the more effective the colleges and universities use the educational resources and the higher the management efficiency of colleges and universities.

From the data in Table 4-4, it can be seen that the average pure technical efficiency of DMU2, DMU5, DMU6, DMU7, DMU9 and DMU10 in 2016-2020 is 1, which means that the six colleges and universities have fully used the input educational resources and their output has reached the maximum. While the average pure technical efficiency of the other four colleges and universities (DMU1, DMU3, DMU4 and DMU8) is less than 1, indicating that these colleges and universities have not fully used the input educational resources. There is waste and the output is not maximized. From an overall perspective, the average value of pure technical efficiency of the 10 local undergraduate institutions in Guangxi evaluated is 0.998, indicating that only 0.002 of the input resources are not effectively utilized, which shows that the overall educational resource utilization rate of local undergraduate institutions in Guangxi is good. The overall management efficiency is high, and there is no serious waste of educational resources.

Scale efficiency analysis

The scale efficiency value is equal to the ratio of overall efficiency and pure technical efficiency. The scale efficiency of higher education institutions is not determined by the size of their scale of operation and whether they have a large amount of human resources, financial income and material investment. The main purpose of studying the scale efficiency of local undergraduate institutions in Guangxi contains the following two aspects: firstly, to grasp whether the scale of local

undergraduate institutions in Guangxi is in the best state. That means whether the scale is effective. On the other hand, to explore what state the scale of local undergraduate institutions with ineffective scale is in, whether it is in the increasing (IRS) state or in the decreasing (DRS) state.

The scale efficiency of 10 local undergraduate institutions in Guangxi is equal to the ratio of their overall efficiency and pure technical efficiency. The scale efficiency values of each local undergraduate institution are shown in Table 4.4. When the scale efficiency value is equal to 1, it means that the scale efficiency of the institution is effective and in a constant state. When the scale efficiency value is less than 1, it means that the institution is in a state of increasing or decreasing scale. Then the scale of these institutions is ineffective. For the institutions with ineffective scale, the closer the scale efficiency is to 1, the closer the scale of the institution is to the optimal state. From the values in Table 4.4, it can be seen that the average scale efficiency of DMU2, DMU5, DMU6, DMU7, DMU9 and DMU10 in 2016-2020 is 1, which represents the effective scale of these six local undergraduate colleges and universities, indicating that these local undergraduate colleges and universities are in the best scale. The scale efficiency value of DMU1, DMU3, DMU4 and DMU8 is less than 1. It means that the scale of these four local undergraduate colleges is invalid, and they do not reach the optimal scale. Moreover, the values in Table 4.4 show that four local undergraduate institutions are in the state of increasing returns to scale. They will get a large proportion of output with a small amount of input. If the local undergraduate institutions increase the amount of educational resources input on top of the original one, it will bring a higher proportion of output. In other words, when the local undergraduate institutions increase their educational resources input, their output will also increase to a certain extent. For these local undergraduate institutions, they should continue to appropriately expand their scale of operation and increase their educational resources input in order to improve their overall management efficiency.

In addition, it can be seen from Table 4.4 that the pure technical efficiency of DMU1 (2018) is 1, but the scale efficiency value is less than 1. It is in the state of increasing returns to scale, indicating that according to the evaluation index system set in

this paper, the utilization rate of DMU1 (2018) education resources is in the best state. But with the increase of investment in education resources, it will bring greater output. It is recommended to maintain the current proportion of investment, appropriately expand investment, and obtain greater output. Then it can achieve effective scale and improve the management efficiency of the local undergraduate colleges.

Part III: The main factors affecting the management efficiency of local undergraduate colleges in Guangxi from 2016 to 2020 and the analysis results of specific reasons.

From the results of the above empirical analysis, it can be concluded that among the 10 local undergraduate institutions in Guangxi evaluated, the DEA efficiency of 4 local undergraduate institutions is invalid. For these institutions, how to propose countermeasures and suggestions for improvement is the ultimate purpose of DEA evaluation, not just a simple division of advantages and disadvantages. Therefore, in this section, the projection analysis of ineffective decision units on the production frontier is carried out, which is to analyze the improvement space of each ineffective decision unit through the input-output slack variables, to understand the utilization of its resources and the magnitude of improvement of each decision unit, so as to provide countermeasures and suggestions to the non-DEA effective decision units.

From the perspective of linear scale theory, the relaxation variable in the optimal solution of the model is the amount that the input elements of the evaluated decision-making unit can be reduced, or the output can be increased when the output remains unchanged, while the output remains unchanged. The specific values are shown in Table 4.5

Table 4.5 Relaxation variable value of DEA invalid X variable in 2016-2020

Day / DMU	2016				2017				2018				2019				2020			
	S_1^{1-}	S_2^{1-}	S_3^{1-}	S_4^{1-}	S_1^{2-}	S_2^{2-}	S_3^{2-}	S_4^{2-}	S_1^{3-}	S_2^{3-}	S_3^{3-}	S_4^{3-}	S_1^{4-}	S_2^{4-}	S_3^{4-}	S_4^{4-}	S_1^{5-}	S_2^{5-}	S_3^{5-}	S_4^{5-}
DMU_1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DMU_3	0	0	0	0	0	0	0	0	0	0	849856	139234024	0	0	0	0	0	0	0	0
DMU_4	0	0	0	0	0	0	0	0	9.473	151335893	266886	28650697	9.976	113202034	0	10622465	0	0	0	0
DMU_8	144.3	0	113219	7276852	0	0	0	0	0	0	0	0	87.56	0	0	75770010	0	0	0	0

It can be seen from the above table that the input indicators corresponding to the values of these relaxation variables that are not equal to 0 which are the objects that colleges and universities must pay attention to. And they are also the key to improve the efficiency of their school scale. Specifically, there is one local undergraduate university whose s_1^{1-}、s_2^{1-}、s_3^{1-}、s_4^{1-} are all 0. It means that the investment of teaching staff, the total value of fixed assets, the number of books in the library, and the investment of teaching funds have not been redundant in the past five years. The s_3^{1-}、s_4^{1-} of one local undergraduate university in 2018 are not 0, which indicates that the university has insufficient investment in library collection and teaching funds in 2018. So, it can increase investment to improve the management efficiency of the university. The s_1^{1-}、s_2^{1-}、s_3^{1-}、s_4^{1-} of one local undergraduate college in 2018 are not 0. s_1^{1-}、s_2^{1-}、s_4^{1-} in 2019 are not 0, which indicates that the college's investment in staff investment, total value of fixed assets and teaching funds in 2018-2019 is seriously insufficient. In addition to the above four items, the university also has insufficient investment in library collection in 2018. The s_1^{1-}、s_3^{1-}、s_4^{1-} of one local undergraduate college in 2016 is not 0, and the s_1^{1-}、s_4^{1-} of 2019 is not 0, which indicates that the college has insufficient investment in staff investment and teaching funds in 2016 and 2019. In addition, the college has insufficient investment in library collection in 2016.

From the above analysis, it can be seen that the inputs of DMU1 in all aspects are scientifically reasonable and do not need to be adjusted specifically,.DMU3 only has insufficient inputs in two aspects of library collection and teaching funds input in 2019. The other years have reached the optimal input ratio, which indicates that the institution is relatively stable in terms of inputs and has a smaller impact on its management efficiency. while DMU4 and DMU8 have 2 and 3 insufficient inputs in 2 years respectively, which indicates that the two institutions have insufficient inputs in staff input and teaching funds, which seriously affects their management efficiency.

Table 4.6 Relaxation variable value of DEA invalid y variable of comprehensive efficiency from 2016 to 2020

Day / DMU	2016				2017				2018				2019				2020			
	S_1^{1+}	S_2^{1+}	S_3^{1+}	S_4^{1+}	S_1^{2+}	S_2^{2+}	S_3^{2+}	S_4^{2+}	S_1^{3+}	S_2^{3+}	S_3^{3+}	S_4^{3+}	S_1^{4+}	S_2^{4+}	S_3^{4+}	S_4^{4+}	S_1^{5+}	S_2^{5+}	S_3^{5+}	S_4^{5+}
DMU_1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DMU_3	0	0	0	0	0	0	0	0	-2859	0	0	-6.86	0	0	0	0	0	0	0	0
DMU_4	0	0	0	0	0	0	0	0	-1355	0	0	-22.4	-750	0	0	0	0	0	0	0
DMU_8	-537	0	-4.13	-26.6	0	0	0	0	0	0	0	0	-735	0	-7.72	0	0	0	0	0

Tables 4.6 show that from the perspective of outputs, all outputs of DMU1 in 2016-2020 are optimal and do not require any adjustment. DMU8 in 2016 and 2019, DMU3 and DMU4 in 2018 and 2019 have too many students enrolled, so these local undergraduate institutions should moderately reduce the size of undergraduate students enrolled to improve the management efficiency of the school. There is redundancy in the publication of high-quality papers in DMU8 in 2016 as well as DMU3 and DMU4 in 2018. There is also redundancy in the generation of scientific research in DMU8 in 2016 and 2019. The results of this study provide a reference direction for the improvement of management efficiency in these institutions.

Analysis of Reasons

According to the data in Table 4-6, the relevant local undergraduate colleges and universities have different degrees of deficiency in their inputs, including the input of teaching staff, total value of fixed assets, library collection and teaching expenses, which indicates that the primary problem affecting the low management efficiency of local undergraduate colleges and universities in Guangxi is the insufficient input of various resources. This is mainly because in recent years, with the continuous expansion of higher education institutions in China. Guangxi local undergraduate colleges and universities have built teaching buildings by investing a certain amount of funds, and raised funds to increase various fixed assets of schools through bank loans and other means, so as to realize the continuous increase of schools in human, material and financial resources in the short term. In addition, some local undergraduate colleges and universities in Guangxi have also achieved unprecedented rapid expansion in scale. However, due to the

blindness of investment and the uncoordinated proportion of various resources of the college, the management efficiency of local undergraduate colleges and universities in Guangxi is not high and unstable frequently. To sum up, the shortage of educational resources in Guangxi can not adapt to the expansion of the scale of local undergraduate students, resulting in the imbalance of input-output ratio. The specific reasons are as follows:

1. Insufficient investment in teaching and scientific research instruments and equipment. Local undergraduate colleges and universities in Guangxi blindly follow the trend and collect funds through loans and other means in a short period of time to rapidly expand school buildings and purchase a large number of precision instruments and experimental equipment for teaching and scientific research, as well as build internship and practical training sites. But the increased investment in hardware and software is far from keeping up with the actual needs of teachers and students for scientific research and teaching work after the expansion, resulting in a situation where the final investment is not coordinated with the production.

2. The internal coordination mechanism of the school is not sound, and the utilization rate of fixed assets such as experimental equipment is low. Some relatively independent teaching colleges and departments are often set up in colleges and universities. Due to the poor communication and coordination between colleges and departments in the purchase of teaching instruments and equipment and even the arrangement of staff, the same laboratory with the same function is repeatedly built in the same school and the same experimental equipment is purchased, resulting in a waste of resources.

3. Insufficient investment in human resources. The institutions of higher education have formulated some scientific and reasonable personnel management systems, and the ratio of the introduction of various talents is also regulated. Some local undergraduate colleges and universities in Guangxi have achieved rapid expansion in a short period of time, but because these local undergraduate colleges and universities are located in more remote cities and have low salaries, they cannot recruit quality full-time teachers and related managers in a short period of time, which seriously affects the management efficiency of the school.

Part IV: The analysis results of the interview according to the evaluation index system of the Guidelines for Improving the Management Efficiency of Guangxi Universities.

The first respondent

1. Based on your work and your understanding of the school, please talk about the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

Our school is a local undergraduate university. Especially after the expansion of enrollment in recent years, the number of teaching staff is obviously insufficient. There are relatively few teachers with high academic qualifications and high professional titles. Our school is in the western region of China, and the construction funds are relatively scarce. Therefore, compared with other provinces in terms of material and financial resources, we are seriously inadequate. The school management team generally has low academic qualifications and certain redundancy. The school has the phenomenon of repeated construction and procurement in the construction of practice and training sites and equipment procurement, and the overall utilization rate is not high. The library collection is relatively sufficient, but the borrowing rate is not high.

In view of the above problems, it is suggested that the school should formulate an overall planning, make a full demonstration before the construction of practice and training sites and equipment procurement, break through the barriers between various departments, and achieve the common construction and sharing of resources, to avoid the phenomenon of repeated construction and procurement, resulting in the waste of educational resources. In terms of talent introduction, it is necessary to further strengthen the introduction and increase the welfare of talent introduction to attract more high-quality talents to work in our university.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific research output of the university? And whether the number of excellent articles

published at home and abroad has reached the school's expectation?

In the case of our school, the current scale of operation is unreasonable. In recent years, major universities are expanding their scale of operation, the number of students is obviously increasing, and the educational resources of the school become seriously insufficient. For example: the number of students has increased, the number of student dormitories has become particularly tight, and there may even be insufficient. The employment rate of the school is steadily increasing in recent years, and the overall employment rate is relatively high, but the overall employment matching rate and employment quality of students are low. There are still relatively few high-level scientific research outputs and papers published by faculty and students, which fail to meet the school's expectations, and the proportion of students participating in scientific research is not high.

In response to the above problems, I think our school should reduce the number of enrollments, give full play to the existing educational resources, and improve the teaching quality and management efficiency of the school is the best choice at present.

The second respondent

1. Based on your work and your understanding of the school, please talk about the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

The number of teachers meets the basic requirements of the state, but the structure of teachers is not very reasonable, most of them are young and old teachers, and there are less middle-aged teachers, most of them are graduate students or doctoral students graduated from Guangxi, which is not very reasonable in terms of academic structure, and there is a lack of talents graduated from domestic high-level schools. In addition, teachers with high academic qualifications are relatively few, which leads to the low level of scientific research in our school. The management team is relatively large and needs to be streamlined. The school is seriously underfunded, and the prerequisite for the investment of material resources is strong financial support. With more than 16,000

students currently enrolled, the existing laboratory space and teaching and research equipment are far from meeting the actual needs of school operation.

In response to the above problems, I think it is necessary for the school and the government to work together to tackle the problem and further invest a lot of money to ensure that all school inputs can meet the actual needs of school operation in order to improve the overall management efficiency.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific research output of the university? And whether the number of excellent articles published at home and abroad has reached the school's expectation?

The school scale of our school is unreasonable. In recent years, the school has increased the enrollment scale of the college students, resulting in a larger scale of the college students than the students from ordinary high schools. This is very unreasonable. In addition, the increase in the number of students leads to a serious shortage of teachers and students' dormitories. In recent years, the employment rate of students is relatively good, but the quality of employment is not high, the overall scientific research department of teachers and students cannot meet the expectations of the school, and the rate of students participating in scientific research is also relatively low.

In response of this problem, it is suggested that the school should reduce the number of enrollment and control it to about 12000 people. At the same time, it is also necessary to increase the investment in funds, reasonably allocate the educational resources in the school, and regularly send teachers to further study and improve to ensure the steady improvement of teachers' teaching and scientific research level.

The third respondent

1. Based on your work and your understanding of the school, please talk about the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

The total number of teachers is relatively insufficient. The stability of the teaching staff is not enough such as backbone teachers ,discipline leaders. What's more, young and middle-aged backbone teachers are lossing and the mobility of external teachers is large. Some professional teachers lack industry practice background and industry work experience, and their guidance ability in practical teaching such as training and practice is weak. The proportion of double-qualified teachers with professional qualification certificate or practical ability is low. There is a shortage of high-level talents and teams, especially the lack of leading talents and influential discipline leaders, and the number of teachers with senior professional titles and "double-qualified" teachers is insufficient. The phenomenon of emphasizing introduction and neglecting cultivation obviously exists. In recent years, the school has actively introduced high-level talents from home and abroad according to the needs of career development, but it has not paid enough attention to the training and career development of teachers after the introduction, and the effective support service system for teachers' career development needs to be improved. The material and financial input of the school is seriously insufficient. After the expansion of enrollment, the school's infrastructure cannot meet the actual needs of running a school.

In response of the above situation, it is suggested that the school should make a good plan on the top-level design, determine the number of students enrolled in the school according to the actual situation of the school, make a good overall plan for improving the ability of teachers, and regularly send teachers to go out for further study, so that the school's teaching quality and management efficiency can be effectively guaranteed.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific research output of the university? And whether the number of excellent articles published at home and abroad has reached the school's expectation?

The current scale of our school is not very reasonable. The ratio of students to teachers is too high, leading to the following chain effects: teachers are so busy preparing classes, teaching classes, and correcting assignments that they have no free

time to do scientific research and write articles. The overall output of scientific research and high-level papers of the tutor school is low and far below the expectations of the school.

In response of the above problems, it is suggested that the school increase the introduction of teachers or reduce the number of enrollments, so that teachers have sufficient time to carry out teaching and research work.

The fourth respondent

1. Based on your work and your understanding of the school, please talk about the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

Our school currently has more than 670 staff members and 14,000 students. The student-teacher ratio is not in line with the national regulations, and the number of teachers is on the low side. In terms of the structure of teachers, there are mostly young teachers and fewer middle-aged and older teachers. The entire faculty is too young, with a serious shortage of highly qualified and educated teachers and a low level of scientific research. The faculty management team is too large and inefficient to manage, so it needs to be streamlined. The school library collection is relatively adequate, but the borrowing rate of students is not high. There is duplication in the construction of laboratories and the purchase of equipment, and the investment of school funds is seriously insufficient. The investment of school funds largely determines the quantity and quality of physical and human resources, so the current investment of physical and human resources in our school is also seriously insufficient.

In response of the above problems, it is suggested that the school should coordinate its educational resources, broaden the source of educational funds, and ensure that there are sufficient funds to support the school's human and material investment.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific research output of the university? And whether the number of excellent articles published at home and abroad has reached the school's expectation?

The scale of our school is unreasonable, with too many students and too few teachers, and the school's existing educational resources cannot meet the requirements of actual teaching and research. At present, teachers are tired of classes and cannot spare more time for scientific research, which seriously restricts the development of teachers, while the overall scientific research output rate of the school is also low.

In response of these problems, it is recommended that the university reduce the number of enrollments, increase the investment in education, and provide regular training for teachers to improve their teaching and scientific research abilities.

The fifth respondent

1. Based on your work and your understanding of the school, please talk about the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

First, the investment in human resources is not enough. Overall, we have more than 1200 faculty members, but the proportion of administrative staff is more. Therefore, in terms of full-time teachers, we have not yet reached the requirement of 17:1 for the construction of the master’s degree. Second, the investment in material and financial resources is also insufficient. In response to the problem, I think we need to invest funds from the government side, and with sufficient funds, the investment in human and material resources is equally guaranteed. In addition, because funding is limited, we need to think in terms of optimizing the allocation of educational resources. For example, in terms of human resources, there are currently too many administrative staff, can we divert some of these administrative staff to teaching positions and increase the proportion of full-time teachers.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific research output of the university? And whether the number of excellent articles published at home and abroad has reached the school's expectation?

The current scale of our school is unreasonable. After vigorously expanding the

size of students, our school’s educational resources in terms of human, financial resources and material resources cannot keep pace with the expansion, resulting in a serious shortage of school educational resources. At present, the employment rate in these years is still relatively good, the impact of the epidemic, students are not high in terms of employment counterpart rate. The output rate of scientific research is still relatively low, especially the number of papers published in excellent journals at home and abroad is low.

In response to these problems, I suggest that the school keep its current scale of running school, and on the basis of fully allocating existing educational resources, continue to increase investment, focus on running our education and teaching well, and cultivate more outstanding talents for our country and society.

The sixth respondent

1. Based on your work and your understanding of the school, please talk about the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

First of all, our school’s human resources investment is unreasonable. The number of teachers is seriously insufficient. There is a lack of teachers with high professional titles and high academic qualifications. Most of them are young teachers. Although our school has increased the introduction of high-level talents in recent years and the talent structure has gradually improved, the scientific research ability of the whole teacher team is low. In terms of material resources investment: At present, the science and engineering department of our school has relatively sufficient investment in practice and training places and equipment, but the humanities and social sciences are relatively lacking. In general, the software and hardware facilities of our school are insufficient. In addition, the phenomenon of repeated procurement of equipment and repeated construction of experimental sites is common in schools, resulting in waste of educational resources. The investment in schoolbooks is relatively sufficient, but the paper books are too old and the updating speed is slow, which to some extent affects the teaching and research work of teachers and students.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific research output of the university? And whether the number of excellent articles published at home and abroad has reached the school's expectation?

In response of this problem, it is suggested that the school should build a communication platform within the school to ensure the symmetry of information communication between various departments within the school, break the barriers between various departments, realize the sharing and sharing of resources between different departments, and effectively improve the utilization rate of educational resources and the overall management efficiency of the school. In addition, the school needs to further strengthen the introduction of high-level talents and improve the overall quality of the school’s teaching staff.

The seventh respondent

1. Based on your work and your understanding of the school, please talk about the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

The investment in human resources and financial resources of our school is relatively scarce. Compared with universities in economically developed areas, local undergraduate colleges and universities are at a disadvantage in introducing and stabilizing talents with high titles and high education, so there is an unreasonable proportion of high-level talents in the structure of teachers. Secondly, there is an uneven distribution of resources. At present, most undergraduate comprehensive colleges and universities support science and technology majors more than liberal arts, and there is an imbalance between them in terms of financial investment strength and importance.

The main factors that produce these problems can be attributed to two aspects: the environment where the university itself is located and the main managers of the university. For the environment, it is an objective factor that restricts the development of colleges and universities. A place's science and technology, cultural

tourism and industry will affect the direction of the development of local colleges and universities, and without resources in the market, human cannot be invested and output. For college managers, it is the subjective factor to decide the development of colleges and universities. As college managers, they should integrate the development of each existing profession and give reasonable resource allocation, only in this way can the whole management efficiency be improved.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific research output of the university? And whether the number of excellent articles published at home and abroad has reached the school's expectation?

I think the current scale of our school is relatively reasonable. We will expand the enrollment appropriately according to the hardware facilities of the campus and the number of existing teachers. We will also reduce some majors in combination with the actual situation of our school. The employment of students tends to be stable, but the quality of employment still needs to be improved. In terms of scientific research, we have not done very well. First of all, there are few high-quality scientific research and few high-quality platforms. There is a big gap compared with non-local undergraduate universities. Secondly, the scientific research atmosphere is not strong enough, and the old model and the teacher model are not enough. Third, the degree of transformation of scientific research achievements is insufficient. Most scientific research achievements are only limited to research and cannot be well applied to practical work and teaching.

In response of the above problems, I think in scientific research, first, we should strengthen the building of scientific research teams, and accelerate the improvement of the scientific research level of young teachers and students by taking teachers with the same research interests as a team in the old and new way. The second is to encourage the transformation of scientific research achievements and apply them to work teaching or local economic industries.

The eighth respondent

1. Based on your work and your understanding of the school, please talk about

the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

First of all, I think there is still a certain gap between the investment in human resources and the ideal. The details are as follows: the number of teachers with high professional titles and high academic qualifications is insufficient, the ratio of students to teachers in the whole school cannot meet the national requirements, and the recruitment of teachers in the school does not have an overall training and improvement plan, resulting in the inability of these new teachers to take up teaching posts quickly, which has seriously affected the quality of teaching. Secondly, the investment in material resources is also insufficient. Sufficient material resources need strong financial support, but at present our school's financial investment is also seriously insufficient. In addition, the school prefers to develop science and engineering, and has invested a lot of funds for these majors to build laboratories and purchase experimental equipment, but the utilization rate of these places and equipment is low. On the contrary, the humanities and social sciences majors lack various places for practice and training, and the basic teaching equipment cannot be met. The school’s paper book resources are insufficient, and the electronic book resources are sufficient, but the collated borrowing rate is not high.

In response to the above problems, it is suggested that the university should learn from universities that have done a good job in this area, formulate a set of development plans that meet the actual situation of our university, and introduce a series of systems or processes to guide the construction of various aspects of the university. In addition, the school should allocate its educational resources reasonably based on increased financial investment to ensure that the funds are used for the actual needs of the professions or projects, and to effectively improve the management efficiency of the school.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific research output of the university? And whether the number of excellent articles

published at home and abroad has reached the school's expectation?

In recent years, our school has been expanding the scale of enrollment, but the number of teachers introduced cannot keep pace with the school's expansion, resulting in an unreasonable student-teacher ratio, and teachers generally reflect that there are more courses and no time for research, which seriously affects the development of teachers and the overall teaching quality of the school. The overall employment rate of the school is good (the employment rate of science and technology is a bit higher, and the employment rate of humanities and social science students is a bit lower), and it has exceeded the average level of Guangxi for five consecutive years.

Specific suggestions: First, reduce the size of the enrollment while increasing the introduction of high-level talent to ensure that teachers have sufficient time to carry out scientific research work. Secondly, further increase the efforts of school-enterprise cooperation, build factories on campus or students go to factories for internship classes, break the barriers between schools and enterprises, create an integrated learning space inside and outside the school, ensure that students can go to the corresponding jobs immediately after graduation, and improve the quality of students and the matching employment rate.

The nineth respondent

1. Based on your work and your understanding of the school, please talk about the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

At present, there are about 1100 teachers in our school, which is basically enough in terms of quantity, but the management team of our school is relatively large, resulting in fewer professional teachers; the age, title, education, and academic structure of teachers are still relatively reasonable, and the research level of teachers is in the middle level in Guangxi. The school is still inadequate in the construction of basic teaching rooms and the investment in teaching and research equipment, which is mainly due to the lack of financial investment in the school, but the fundamental

problem is that the school blindly expands the number of students to cause a series of problems. Although the school has a set of rules and regulations to guide the construction and development of the school, the planning of the system is not in line with the actual situation of the school, so the school has encountered various problems in the construction and development. The school's library collection is not very adequate, especially electronic books do not meet the needs of the school's teachers to conduct scientific research.

So, first of all, the school needs to increase the efforts to introduce high-level talents. At the same time, it also needs to regularly train teachers in teaching and scientific research to improve their professional knowledge and scientific research ability. Secondly, it is necessary to update the existing construction plan and relevant rules and regulations according to the situation of the school, reasonably allocate the educational resources in the school, and scientifically carry out the construction of the school.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific research output of the university? And whether the number of excellent articles published at home and abroad has reached the school's expectation?

At present, the scale of our school is relatively reasonable, and the employment rate of students has been steadily increasing year by year, all of which exceeds the average level of Guangxi universities. The rate of scientific research and excellent thesis production is low and fails to meet the school's expectations.

It is suggested that the school should further increase the investment of various educational resources under the premise of maintaining the existing scale of school operation and allocate these educational resources reasonably to give full play to the effectiveness of educational resources and improve the quality of school operation. At the same time, the school should also regularly carry out various teaching and research training activities to update the teachers' knowledge system and improve their research ability, so as to ensure a steady increase in the school's scientific research and high-level paper output.

The tenth respondent

1. Based on your work and your understanding of the school, please talk about the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

First of all, our school is formed by the merger of two schools. The overall number of teachers is sufficient, but the proportion of management team is too large, resulting in the insufficient number of full-time teachers. This problem is caused by the merger of two schools. At present, the high-level talents of the teacher team are relatively scarce, and the overall scientific research ability is not strong. Secondly, financial investment is the basis of human and material investment, and the amount of financial investment determines the quantity and quality of human and material investment. At present, the financial investment of our school is seriously insufficient, resulting in insufficient human and material investment. Third, there is a widespread phenomenon of repeated procurement of teaching laboratories and scientific research equipment in our school, and the resources in our school are not properly allocated and fully utilized.

It is suggested that, firstly, the school needs to reasonably adjust the human resources within the school, streamline the existing management team, and adjust the teachers whose conditions permit to the positions of professional teachers to ensure that the student-teacher ratio of the school is reasonable. Secondly, the school needs to increase the investment of education funds, reasonably coordinate the use of resources, ensure that these resources are fully and effectively used, avoid duplicate construction and duplicate purchase, and eliminate the waste of teaching resources.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific research output of the university? And whether the number of excellent articles published at home and abroad has reached the school's expectation?

The scale of the school is unreasonable, the school did not consider the school’s own capacity, blindly expanding the enrollment, which result in a serious

shortage of teachers, the quality of teaching cannot be improved. At the same time also led to the following series of problems: teachers are busy with classes, no free time to do research, which seriously affects the development of teachers, while the school's research and thesis output rate dropped significantly. The employment rate of students has decreased in the past three years due to the epidemic, but it has reached the average level of Guangxi universities.

In response to these problems, it is suggested that the school should reduce the scale of enrollment and increase the investment in various educational resources to ensure that teachers have enough time to give good lessons and have free time to carry out scientific research work and feed scientific research into teaching to promote the mutual growth of teaching and scientific research.

The eleventh respondent

1. Based on your work and your understanding of the school, please talk about the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

First of all, in terms of human resources investment, the structure of our school's teaching staff is unreasonable. At present, most of them are young teachers and elderly teachers, and there are fewer middle-aged teachers, with serious aging. In terms of material resources investment, because our school is a science and engineering school, the investment in laboratory and equipment in this field is relatively sufficient, and the resources in the school are also shared and shared. There is no duplication of purchase and construction. However, the humanities and social sciences majors have relatively little material input and can only meet the basic teaching needs. In terms of financial investment, because the school's funding source is relatively single, only students' tuition income and a small amount of special teaching funds from the government can hardly meet the school's needs.

Therefore, the school needs to broaden the source of funds and increase the income of funds to ensure that the school's material and human resources are improved in quantity and quality to meet the actual needs of running a school.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific research output of the university? And whether the number of excellent articles published at home and abroad has reached the school's expectation?

In recent years, our school has been expanding the enrollment scale, and the scale of running school has gradually become unreasonable. The number of teachers cannot keep up with the pace of enrollment expansion. The output rate of teachers and students' scientific research and high-quality papers is low, and the number of students participating in teachers' scientific research is small.

It is suggested that the school should increase the input of human, material and financial resources, reduce teachers' class hours, improve teaching quality, and give teachers more time to carry out scientific research work to improve the overall management efficiency of the school.

The twelfth respondent

1. Based on your work and your understanding of the school, please talk about the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

First of all, in terms of investment in human resources, our university is a comprehensive university with a bias towards science and engineering. Therefore, the current teachers of science and engineering are relatively sufficient, while the teachers of humanities and social sciences are seriously insufficient. In addition, the recruited teachers' schools did not do a good job in the follow-up training and unified management, resulting in teachers not being able to quickly adapt to teaching posts. Secondly, in terms of material investment and resource investment, the current teaching equipment of our school is relatively old and cannot keep up with the pace of the times. The school has not updated and replaced in time, affecting the overall teaching quality. In addition, there are few places for practice and training in humanities and social sciences majors, and these majors cannot carry out practice and training teaching normally. Finally, in terms of financial investment, our school is in

charge of the local government. Due to the poor economy of the local government, the funds invested in education are seriously insufficient. The library has sufficient books, but the humanities and social sciences books are few.

Suggestions: Increase the introduction of humanities and social science majors and the investment of material and financial resources to ensure the rapid and healthy development of humanities and social science majors. The development of science and technology cannot be achieved without the assistance of humanities and social science, so we need to break the barriers between these disciplines, coordinate the educational resources within the school, improve the management efficiency of the school, and ensure the steady and sustainable development of the school.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific research output of the university? And whether the number of excellent articles published at home and abroad has reached the school's expectation?

The scale of the school is relatively reasonable. The overall employment rate of students tends to be problematic. All of them can meet the basic requirements of Guangxi, the rate of scientific research and high-quality thesis output of teachers and students is low, and the rate of students' participation in teachers' scientific research is also relatively low.

It is suggested that the school should increase the introduction of humanities and social sciences as well as high-level class teachers, improve the quality of the overall faculty, free up more time for teachers to carry out scientific research, and improve the quality of school operation and the overall management efficiency.

The thirteenth respondent

1. Based on your work and your understanding of the school, please talk about the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

First of all, in terms of human resource input, our school is located in the western region of Guangxi, lacking industry and underdeveloped economy, so it is

difficult to attract excellent talents, which leads to the serious aging of the school's faculty, unreasonable academic structure and low overall research level. The material resources input is seriously insufficient, mainly in the form of classrooms and laboratories for teaching. The courses have to be arranged at night and on weekends to complete the basic teaching tasks, which seriously affects the teaching quality and efficiency. The lack of financial resources is the basis of human and material resources, and the current lack of human and material resources in our university is largely due to the lack of financial resources.

Therefore, it is suggested that the government should increase the investment in education, schools should increase the cooperation with leading enterprises, introduce the technical backbone of enterprises into schools flexibly, increase the number of teachers in schools, and improve the quality of the teaching staff. At the same time, we should increase the cooperation between schools, governments, and enterprises, and introduce the production lines of enterprises into schools to solve the problem of insufficient internship and training places for students. We also hope that both the government and the school will increase the cost of introducing high-level talents and give more preferential policies to attract high-quality talents to join.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific research output of the university? And whether the number of excellent articles published at home and abroad has reached the school's expectation?

At present, the school's major settings are relatively reasonable, and the number of students enrolled is also reasonable, but there are large differences in the faculty of each major, with redundancy as well as aging of faculty in traditional disciplines and a serious shortage of faculty in art disciplines. The overall scientific research output and thesis output rate of the university is relatively good, and a careful analysis shows that the science and technology majors perform better in terms of scientific research output, while the humanities and social science majors are dragging their feet in this regard. The ratio of student participation in faculty research is low and needs to be further strengthened.

Therefore, it is recommended that the university increase the introduction of teachers in humanities and social science majors and invest more resources to support the construction and development of these majors to ensure that the university can develop in a balanced, stable, and sustainable way.

The fourteenth respondent

1. Based on your work and your understanding of the school, please talk about the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

At present, the school has a relatively enough faculty members, the age of teachers in the old majors presents an imbalance, the academic structure is more diversified, and the titles and educational levels are more abundant. However, for some of the school’s marginal specialties the teacher staffing is relatively much weaker. In the management team, it is shown that there are too many management levels and dimensions. The internal and external practice and training places invested by the school cannot be fully utilized. When promoting the development of professional construction, there is the phenomenon of repeated construction and equipment purchase, but the investment in teaching and scientific research equipment is not enough. The school does not have a set of reasonable systems or processes to guide the investment in the construction of the school. The funds invested by the school are not sufficient and cannot be used in the direction of actual demand, but they are gradually corrected, and the development and management efficiency of the school can be improved. The collection of books in the library is not enough, the number of databases purchased is also small, and students will not use the resources of the library reasonably, which also leads to the low borrowing rate of these books.

How to allocate, integrate and share resources within colleges and universities has an important impact on the development of local undergraduate colleges and universities in Guangxi. An objective understanding of the development needs of each major, long-term consideration of school development layout and reasonable arrangement of school resource allocation can make these problems improve.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific research output of the university? And whether the number of excellent articles published at home and abroad has reached the school's expectation?

After the enrollment expansion of the school, the number of students increased rapidly, resulting in an unreasonable ratio between students and teachers. Although the school's teaching resources can basically meet the normal teaching and scientific research, the quality is guaranteed. For example, the laboratory equipment is outdated, and the running speed is too slow, which seriously affects the quality and progress of experimental teaching. The employment rate of students is also unsatisfactory, and the professional counterpart rate is low. The number of scientific research platforms, awards and vertical scientific research projects approved by the university at or above the provincial level has remained stable and has not changed significantly. The proportion of students participating in scientific research is low.

In view of the above problems, it is suggested that the school should first expand its teaching staff, carry out teaching and classroom inspection, regularly send teachers to other colleges for exchange and training, carry out lectures on scientific research by experts and professors in scientific research, and build a scientific research learning platform. In encouraging students to participate in scientific research projects, teachers' studios can be added to increase the opportunities and rewards for students to participate in scientific research, so as to improve the above problems.

The fifteenth respondent

1. Based on your work and your understanding of the school, please talk about the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

Our school has more than 1300 teaching and administrative staff. The number of teaching and administrative staff is sufficient, and the structure and quality of the teaching staff is relatively reasonable. The school attaches great importance to the improvement of teachers' scientific research level and provides a large amount of

financial support to strengthen the development investment in the construction of art disciplines. In recent years, it has obtained more than 100 scientific research projects at the provincial and ministerial levels, more than 800 other scientific research and creative projects, more than 50 patents, and 68 national art funds. The number of projects approved is among the top among thousands of applicants in the country. It has achieved a breakthrough in the number of projects approved by students in school, which has had a great impact in the country. In terms of management team, the school management team is relatively rich, and there is also a relatively complete team management system. At present, the school has given sufficient funds for the development of professional disciplines, and the library collection is also relatively rich, but the humanities collection is less, and needs to be improved. In addition, due to the development of information technology, teachers are not very efficient in library borrowing and are more willing to consult online. Therefore, our library has also focused on strengthening the construction of online library for faculty and staff, but the progress needs to be further strengthened.

For the improvement of school management efficiency, human and financial resources are the key. Our school is also on the rise of development, and we are investing in the construction of student apartments and large teaching experiment bases, so the funds are slightly tight. At the same time, the application of information technology in the school is not particularly mature, and the investment is also less, so there is still a certain gap in the management of intelligent digital campus. To improve the efficiency of school management, the training of human resources and the improvement of related business skills are very important, and of course, financial support is needed.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific research output of the university? And whether the number of excellent articles published at home and abroad has reached the school's expectation?

At present, there are more than 16000 full-time students in our school. The accommodation of students in the school is relatively tight, and the teaching

equipment is relatively old, which cannot guarantee the normal development of students' teaching and research. In the past, the employment rate of students has remained at about 92%. In the past three years, the employment rate of students has declined. The employment platform and level are not high. Most of them are self-employed. In recent years, the scientific research ability of teachers and students in the school has been improved. The schoolteachers have published hundreds of academic works, and on average, hundreds of academic papers have been published in domestic core authoritative journals every year. Many consulting reports have been approved by the leaders of the autonomous region.

There are too many students, accommodation, teaching resources and other problems. At present, the university has adjusted and merged some majors, reduced the enrollment scale, and improved the enrollment quality. At the same time, funds are being invested in the construction of dormitory buildings and student experimental bases.

The sixteenth respondent

1. Based on your work and your understanding of the school, please talk about the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

The number of school staff is sufficient, and the structure of teachers is unreasonable, which is mainly reflected in the lack of high-level talents and the low overall scientific research level of teachers. The school’ s funds are relatively sufficient, but most of them have been invested in the construction of laboratories for science and engineering majors. The training rooms for basic disciplines and humanities and social sciences are outdated and have not been updated, which has seriously affected the teaching quality. The school library has sufficient books to meet the actual needs of teachers and students.

It is recommended that the school and the government introduce more affordable and attractive talent introduction policies to attract more high-level talents to work in our school. At the same time, the school also needs to reasonably allocate

its educational resources, update the equipment of basic disciplines and traditional humanities and social sciences training room as soon as possible, ensure the smooth development of normal teaching and improve the overall teaching quality.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific research output of the university? And whether the number of excellent articles published at home and abroad has reached the school's expectation?

At present, our university is expanding rapidly, and there are too many students, and the student-teacher ratio of some majors is too high, which does not meet the national regulations. The employment rate of students is good, but the quality of employment is generally not high. The university' s output rate of scientific research and high-quality papers is not high and ranks in the middle of the pack among equivalent institutions.

Suggestions: Firstly, the school should introduce professional teachers according to the actual needs of the majors and ensure that the student-teacher ratio of all majors meets the national regulations. Secondly, schools need to offer employment courses in freshman year to let students understand their own employment direction and raise their employment awareness. Finally, the school needs to regularly invite selected teachers for further training outside the school or invite experts to lecture on campus to improve the scientific research level of full-time teachers, improve the school's scientific research output, and improve the overall management efficiency of the school.

The seventeenth respondent

1. Based on your work and your understanding of the school, please talk about the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

Our university is a comprehensive undergraduate institution with more than 1,200 faculty members, and the structure of the faculty is not very reasonable. In recent years, recruitment requires master's degree or above, so it is difficult to recruit

teachers for some majors, especially for science and technology majors. The scientific research level of teachers is average, the management staff is old, and fewer young cadres are enabled. There are more off-campus internship and training sites, but the utilization rate is not high, the teaching and research equipment invested is not sufficient, the school does not have a reasonable system or process to guide the school's investment in construction, the library collection is not sufficient, there are also outdated books and newspapers, and the borrowing rate of books is not high.

Suggestions: Firstly, the school level should pay high attention to it, especially in the limited funding to seriously consider the rationality of funding input and output. Secondly, the overall planning of the school needs to be done, and the designation of the use of funds needs to go through multiple arguments. Finally, the school needs to improve the existing monitoring mechanism of funding input and supervise and evaluate the efficiency of funding input and output.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific research output of the university? And whether the number of excellent articles published at home and abroad has reached the school's expectation?

At present, the scale of our school is expanding, but there is still a certain difference with the national average. The employment rate of students is at a medium level, and the employment matching rate is not high. The number of scientific research platforms, awards and vertical scientific research projects at the university above the provincial level is improved, the number of excellent papers published by teachers and students at home and abroad is not sufficient, scientific research and published papers can promote the quality of teaching, and students' participation is not high.

Suggestions: Further expand the total enrollment and increase the gross enrollment rate on the existing basis. Pay attention to the improvement of the school's scientific research level. Improve the existing incentive mechanism, increase the enthusiasm of teachers to carry out scientific research. And encourage teachers to lead students to participate in scientific research together, so as to promote the improvement of teaching quality.

The eighteenth respondent

1. Based on your work and your understanding of the school, please talk about the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

The number of school staff is relatively short, the age, academic edge, title, and education structure of the teaching team is reasonable, the scientific research level of teachers is high, and the management team is lean. It can make full use of the on-campus and off-campus internship and training sites invested and constructed by the school, and the utilization rate is high, which can better promote the development of professional construction, and the school has a sound investment and construction system and sufficient funding. The library collection is sufficient, and the borrowing rate of books is high.

I believe that the factor that currently has the greatest impact on the efficiency of school management is the quality of the school staff. Strengthening staff training and improving staff competency and business skills is the key to improving the efficiency of school management.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific research output of the university? And whether the number of excellent articles published at home and abroad has reached the school's expectation?

In recent years, the school has carried out many enrollment expansion, and the number of students has increased. The school's teaching resources can basically meet the normal teaching and research development and can ensure the improvement of teaching and research quality. The employment rate of students is about 95%, and the employment counterpart rate is high. The number of scientific research platforms, awards and vertical scientific research projects approved by the university has increased every year. The number of excellent papers published by teachers and students at home and abroad is large. Teachers and staff can use these scientific researches and published papers to promote the improvement of teaching quality, and

students can actively participate in teaching and staff topics, but the overall proportion still needs to be improved.

Therefore, it is necessary to increase the proportion of high-level talents taking classes for undergraduates, increase the proportion of students participating in teaching and staff projects, and improve the scientific research level of students.

The nineteenth respondent

1. Based on your work and your understanding of the school, please talk about the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

Our school has more than 2000 full-time teachers, more than 400 full-time teachers with middle and senior professional titles, and more than 900 people with doctorates. In general, the number of school staff is sufficient, and the structure and quality of the teaching staff are reasonable. The scientific research level of teachers is high, and there is a certain redundancy in the management team. The internal and external practice and training fields invested by the school have been fully utilized. The overall utilization rate is high, which can promote the development of professional construction, but there is also the phenomenon of repeated construction and equipment purchase. The teaching and scientific research equipment invested by the school is sufficient, and the school has not yet established a reasonable system or process to guide the investment and construction of the school. The funds are sufficient and can basically be used in the direction of actual demand, which can promote the development of the school and improve the management efficiency. The library has sufficient books and high borrowing rate.

Suggestions: further refine the human resources investment plan, improve the existing management system and management process. Reform the existing composition of the management team, merge and streamline the existing departments, reasonably allocate staff, and improve the overall management efficiency of the school.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific

research output of the university? And whether the number of excellent articles published at home and abroad has reached the school's expectation?

The scale of our school is relatively reasonable. At present, the educational resources of our school can meet the normal teaching and research development, and the quality of teaching and research is also guaranteed. In recent years, the employment rate of students has been relatively high, reaching 98%. The number of scientific research platforms, awards, vertical scientific research projects and the number of papers published at home and abroad have increased every year. The overall output rate is high, and the participation of students is high.

Suggestions: Further strengthen the employment management of students and improve the employment matching rate of students. We will continue to improve the scientific research incentive mechanism for teachers and improve their enthusiasm for scientific research.

The twentieth respondent

1. Based on your work and your understanding of the school, please talk about the current problems in your school's investment in human resources, material resources and financial resources? What are the main factors that cause these problems? How to improve it?

At present, the total number of teaching staff in our school is sufficient, but the proportion of full-time teachers and management personnel is unreasonable. The number of management team is too large. The number of full-time teachers is too small. And there is a lack of talents with high professional titles and high academic qualifications. The school has a long-term lack of investment in material and financial resources, and some experimental sites have repeated construction.

Suggestions: Firstly, increase the financial investment of the school to provide guarantee for improving the current situation of material and human investment. Secondly, the school and the government jointly issued high-level talent introduction policies to improve the welfare benefits of talent introduction to attract more high-quality talents. Finally, we should reasonably adjust the working positions of staff in the school, streamline the management team, and increase the proportion of full-time teachers.

2. Do you think the current scale of local undergraduate universities in Guangxi is reasonable? What is the employment rate of students? What is the rate of scientific research output of the university? And whether the number of excellent articles published at home and abroad has reached the school's expectation?

At present, the scale of our school is relatively reasonable. The overall student-teacher ratio meets the national requirements. The employment rate of students is at the middle level, basically reaching the average level of Guangxi. The school's output rate of research and papers published in the Academy of Sciences is average, and students' participation is not high.

Suggestions: First of all, attach great importance to the cultivation of students' employment awareness, and regularly teach employment knowledge in the form of lectures or lectures to improve students' employment awareness. Secondly, improve the existing incentive mechanism for scientific research, increase the reward range, improve the scientific research output rate of the school, and improve the overall management efficiency of the school.

Part V: Based on the above research results to develop guidelines for improving the management efficiency of colleges and universities in Guangxi and its suitability analysis results.

According to the research results in the above chapters, Guangxi local undergraduate colleges and universities are facing problems such as insufficient investment in human, material and financial resources, uncoordinated internal resource allocation, and some local undergraduate colleges and universities in Guangxi have certain resource investment surplus. In this paper, the data envelopment analysis method is used to analyze the input-output management efficiency of Guangxi local undergraduate colleges and universities, and the projection analysis of these colleges and universities can further analyze the causes of the problems and the measures to solve them.

In order to solve the problem of low management efficiency of local undergraduate colleges in Guangxi, it is necessary to improve the investment in human,

material and financial resources and the efficiency of resource utilization of local undergraduate colleges in Guangxi in the short term, strengthen the cooperation of various departments, and control the blind enrollment expansion of local undergraduate colleges in Guangxi in the long term. With the implementation of the outline of the national medium and long-term education reform and development plan (2010-2020), the state's investment in Higher Education in Guangxi will gradually increase to 4% of the national income, so local undergraduate colleges and universities in Guangxi should further enhance the standardization and security of the use of educational funds in Colleges and universities, control the blind expansion of the scale of colleges and universities, adjust the proportion of investment and output in Colleges and universities, and improve the efficiency and efficiency of the use of funds in Colleges and universities. The specific guidelines for improving the management efficiency of local undergraduate universities in Guangxi are as follows.

1. Change the mindset and raise the awareness of decision makers about the significance of higher education management efficiency assessment.

Although higher education has always been regarded as a public good, as a quasi-public good, higher education input is also a productive input. Although higher education is a non-profit institution, it does not mean that the development of higher education can be cost-free. Although the concept of rough development, which solely relies on increasing education input and expanding education scale without limitation, has long been outdated, the stereotype of people's thinking still exists. Most people still simply think that the rapid development of higher education is the unlimited input of education resources. They think more resources invested, the faster the development. This idea seriously endangers the health and sustainable development of higher education. According to the above empirical analysis results, the management efficiency of local undergraduate universities in Guangxi in 2016-2020 is not stable and volatile. In 2016, 2018 and 2019, the average technical efficiency of local undergraduate colleges in Guangxi was less than 1, which was in a state of technical ineffectiveness. From the perspective of changes in returns to scale, local undergraduate universities in Guangxi in 2016, 2018 and 2019 are in a state of increasing

returns to scale, indicating the need to further increase investment in human, material and financial resources or reduce output to improve their management efficiency. From the institutions themselves, there are six local undergraduate institutions with mean efficiency equal to 1 in the five-year period of 2016-2020. Four local undergraduate institutions are still in a comprehensive technically ineffective state, and the number of local undergraduate institutions with effective technical efficiency over the five-year period is more volatile. Therefore, it is necessary to change the traditional mindset and raise awareness of the significance of management efficiency assessment of local undergraduate institutions. Only when decision makers raise awareness, the development and implementation of the corresponding assessment, reward and punishment, and supervision mechanisms can be carried out.

(1) Government and university policy makers should be guided in policy making. Whether the education authorities assess the input and output efficiency of local undergraduate colleges or the evaluation and assessment of local undergraduate colleges themselves, they should be guided by improving management efficiency, and encourage local undergraduate colleges and teaching and scientific research personnel to improve production efficiency from their own point of view. Establish a multi-level assessment mechanism, the assessment of local undergraduate colleges and universities by the competent education department, and the assessment of internal departments by local undergraduate colleges and universities, linking the final assessment results to the allocation of funds and the supply of personnel.

(2) The assessment and supervision of local undergraduate institutions should be different from those of comprehensive universities. Local undergraduate institutions generally do not have geographical and economic advantages, and their development goals and positioning are definitely different, so they cannot adopt the same evaluation and supervision system as comprehensive universities. Besides, different local undergraduate colleges and universities should also be based on the characteristics of university and root in local economic development, and develop different evaluation systems to ensure the reasonableness and fairness of evaluation, so as to fully mobilize the enthusiasm of local undergraduate colleges and universities in running schools.

(3) Implement the evaluation feedback mechanism. At present, what local undergraduate colleges lack is not the evaluation system, but the scientific rationality of the evaluation system and the application of these evaluation systems to give full play to the role of evaluation. At present, the evaluation of most local undergraduate colleges and universities is a mere formality, walking through the motions, not paying attention to the feedback of evaluation results and the rectification of problems. The purpose of evaluation is to find and solve problems, so as to improve the overall management efficiency of local undergraduate colleges and universities. The system of assessment-feedback-correction-reassessment must be carried out to ensure that these links are interlinked.

2. Take supply-side reform as a breakthrough, balance the scale of school operation and improve the overall management efficiency

At present, China's higher education is taking the opportunity of building "double first-class" universities to push forward the plan of building a strong country of higher education, which is both an opportunity and a challenge for Guangxi, which is in the backward economic region in the west and has been in a disadvantaged position in higher education for a long time. After the large-scale expansion of Guangxi higher education institutions for more than ten years, they are shifting from the past emphasis on the growth of enrollment, expansion of school scale and increase of campus area to the internal construction of schools, and many problems and contradictions have been highlighted in this transformation process. From the results of this paper, the core factors affecting the management efficiency of local undergraduate institutions in Guangxi are not only the reasons of insufficient input of educational resources, but also the problems of internal resource allocation mechanism and input-output supervision mechanism of institutions.

At present, the phenomenon of unbalanced allocation of higher education resources in China is relatively significant, with large differences among different regions, provinces and cities, and colleges and universities. And the problem of unbalanced allocation of educational resources among higher education institutions in Guangxi is also more prominent. Whether colleges and universities in China can get

more educational resources is mainly determined by the following two factors: the comprehensive strength of colleges and universities themselves and the economic development of the cities they are located in. The more developed the economy and the stronger the comprehensive strength of higher education institutions, the easier it is to get more excellent educational resources. On the contrary, those higher education institutions located in the backward economic areas in the west, whose comprehensive strength is relatively weak and whose reputation is not high, get less educational resources, which makes the weak schools weaker and the strong schools stronger, and the gap between schools widens. The unbalanced and unreasonable allocation of higher education resources has become the core element restricting the development of higher education in Guangxi.

The imbalance of input output scale structure is another core factor affecting the management efficiency of local undergraduate universities in Guangxi. Through the research, it is concluded that the output of some local undergraduate universities in Guangxi is redundant, which is caused by the uneven allocation of resources in these universities. Local Undergraduate Universities in the stage of increasing returns to scale are blindly expanding the scale of running schools, but the educational resources invested can not meet the actual needs of running schools, which seriously limits their own development. It is an important factor leading to the overall instability of the management efficiency of local undergraduate universities in Guangxi.

To solve the above problems, the following measures can be taken: (1) Optimizing the supply structure of local undergraduate institutions, deciding the allocation of human and financial resources according to the input-output efficiency level of each local undergraduate institution, increasing effective supply, avoiding the problem of misallocation of resources, balancing inter-campus resources and optimizing resource allocation; (2) improving the internal governance structure of local undergraduate institutions. The development of local undergraduate institutions has its own laws and internal logic. Therefore, local undergraduate institutions must continue to deepen the de-administration reform, and the government’s intervention must be limited and macro-level.

3. Broaden the investment channels of education funds and improve the efficiency of using funds

From the above study, it can be concluded that some local undergraduate colleges and universities in Guangxi currently have the phenomenon of insufficient investment in education funds and excessive enrollment. The long-term insufficient investment in education funds and unbalanced allocation of education resources in Guangxi local undergraduate colleges and universities seriously restrict their healthy development, so the management efficiency of Guangxi local undergraduate colleges and universities should be paid attention to. In addition, there has been a phenomenon of blind expansion in local undergraduate colleges and universities in Guangxi in recent years. Schools have temporarily raised funds through loans to invest in the construction of laboratories and the purchase of teaching and scientific research equipment, but these laboratories and teaching and scientific research equipment are far from meeting the actual needs of running schools. Insufficient input and output redundancy are the core elements restricting the development of local undergraduate colleges and universities in Guangxi. Although the investment in higher education funds in Guangxi is increasing, the unreasonable allocation of resources between schools and within schools has led to the long-term insufficient investment in education funds in some colleges and universities. Although the total investment of some colleges and universities is sufficient, there is a mismatch between input and output. Therefore, the following measures can be taken to alleviate the problem of insufficient investment and low efficiency in the use of education funds in local undergraduate universities in Guangxi.

(1) Broaden the financing channels of education funding for local undergraduate institutions in Guangxi. In the case that the national education funding cannot achieve a breakthrough increase in the short term, it is necessary to strengthen cooperation with enterprises and find a balance point in school-enterprise cooperation in running education, so that enterprises can get benefits from investing in education at the same time. This is in line with the general policy guideline of government financial investment and multi-channel financing of education advocated by the state. In recent

years, the cooperation between local undergraduate colleges and enterprises has been strengthened. Enterprises have invested in higher education by building teaching and scientific research platforms in schools and building internship and training bases inside and outside schools, which has alleviated the shortage of education funds in Local Undergraduate Colleges in Guangxi to a certain extent, but the total amount is still small.

(2) Construct education fund supervision and management mechanism. At present, the phenomenon of unreasonable use of education funds, repeated purchase of teaching laboratory equipment and repeated construction of laboratories generally exists in local undergraduate colleges and universities in Guangxi. In order to avoid these phenomena, institutions need to formulate a sound approval system and evaluation system for the use of education funds, regularly evaluate and analyze the efficiency of the use of education funds, and increase the investment for departments with high efficiency in the use of funds to make them develop rapidly. For the departments with low efficiency in the use of funds, the investment should be appropriately reduced. These departments should be required to complete the rectification on time to improve the efficiency of the use of existing funds.

4. Scientific positioning to improve management efficiency

(1) Positioning Applied Universities

As the main body of national education, undergraduate education occupies a central position in the structure of higher education and shoulders the important task of training high-quality applied, compound and innovative talents and scientific and technological innovation for a long time. Undergraduate colleges and universities should also carry out scientific orientation according to their own advantages, so as to avoid homogeneous development. For example, the source of students in local undergraduate colleges is mainly composed of students who have just entered the second batch of undergraduate scores, which belongs to the medium level in terms of the quality of students. Therefore, local undergraduate colleges should not blindly follow the “double first-class” colleges and universities to position themselves as scientific research universities, but as application universities according to their own

actual situation, so as to train application skilled talents for the development of China's industrial transformation.

(2) Maintaining moderate scale

At present, most local undergraduate colleges and universities in Guangxi have the phenomenon of blind expansion, pursuing the scale of school operation, constantly expanding the campus area and various teaching facilities, but the overall quality of school operation and management efficiency of the school are not progressing. In the process, local undergraduate institutions mainly raise construction funds by means of bank loans, but the funds raised are far from keeping up with the pace of expansion, which seriously affects the management efficiency of schools.

The appropriate scale of school operation has a facilitating effect on raising school funds, optimizing school conditions, improving teaching quality and management efficiency. Therefore, colleges and universities must pay attention to maintaining the appropriate scale of schooling. Only with a reasonable structure of schooling, sufficient investment in various educational resources such as human, financial and material resources, and giving full play to the effectiveness of these resources, can the management efficiency be ensured in the optimal state. As a non-profit knowledge industry, the operation of higher education is inseparable from the investment of various educational resources. Only a suitable school running scale can give full play to the maximum effectiveness of educational resources. Too small a school running scale cannot produce higher benefits, but too large a school running scale may not be effective. Guangxi local undergraduate colleges and universities should base themselves on their own conditions, take root in local economic development, strive for survival by quality, seek development by characteristics and benefits, and moderately expand enrollment, which is an inevitable choice to maintain the sustainable and healthy development of schools.

Chapter 5
Discussion Conclusion and Recommendations

Research Objectives

1. In order to study the management efficiency of local undergraduate colleges and universities in Guangxi;

2. In order to explore the different factors that affect the management efficiency of local undergraduate colleges and universities in Guangxi;

3. In order to study the guidelines developed to improve the management efficiency of local undergraduate institutions in Guangxi.

Research Methodology

This study used multivariate methods and used multivariate data collection methods. The data in this study were both quantitative and qualitative to check and determine the correctness of the data. The input-output data of 10 local undergraduate universities affiliated with Guangxi are investigated, and structured interviews are used to familiarize with the situation related to management efficiency in the sampled universities. The BC^2 and C^2R models of Data Envelopment Analysis (DEA) are used to study and analyze the input-output management efficiency of the same type of local undergraduate universities in Guangxi. On this basis, according to the efficiency values, the hypothesis of shadowing factors of efficiency values is proposed, Tobit regression equation is constructed, and regression analysis is conducted to derive the factors affecting the input-output management efficiency of local undergraduate universities in Guangxi.

Conclusion

1. The overall management efficiency of local undergraduate institutions in Guangxi is good. The DEA of 4 institutions is invalid, and the average DEA of 6 institutions reaches 1, which shows that the overall management efficiency of local

undergraduate institutions in Guangxi is good, but the 4 local undergraduate institutions with invalid DEA have long-term inadequate investment in human, material and financial resources. At the same time, due to blind expansion, these colleges raise funds through loans and other means to quickly purchase teaching and scientific research equipment in the short term, resulting in an imbalance between input and output. Therefore, these four local institutions should adjust the ratio of input and output and improve management efficiency. There are large fluctuations in management efficiency of local undergraduate institutions in Guangxi from 2016-2020, but the overall view is in an increasing trend year by year. From the change of scale gain, the general trend of local undergraduate institutions in Guangxi from 2016-2020 is in the state of increasing scale gain.

2. There is a positive relationship between faculty investment and technical efficiency. Two of the 10 local colleges in the study needed to invest more staff to achieve the goal of improving management efficiency.

3. There is a positive relationship between fixed assets and comprehensive efficiency. Three of the 10 local undergraduate universities studied have insufficient investment in fixed assets, and investment in fixed assets needs to be increased.

4. There is a positive relationship between school teaching expenditure and technical efficiency. Among the 10 local undergraduate universities studied, 1 has insufficient investment, and 2 have serious insufficient investment. It is necessary to increase investment in education funds to improve the overall management efficiency.

Discussion

1. From the perspective of research objects, the current domestic research results involving the evaluation of management efficiency in the field of higher education basically take the national higher education institutions as the research objects. For example, Yang Mudan (2016) analyzed the management efficiency of higher education in six central provinces of China from 2007 to 2013. Xu Jian and Wang Xuhui (2009) conducted a comprehensive evaluation analysis and projection analysis of the inefficient provinces in 10 large higher education provinces to explore the main

factors affecting their management efficiency. These studies lack pertinence, do not well follow the basic requirements of the research methods, and the accuracy of the research results needs to be discussed. In order to solve the above problems, this study strictly follows the requirements of the research object of Data Envelopment Analysis proposed by Charles and Cooper (1978) and takes local undergraduate universities with the same nature as the research object, effectively improving the scientific and accurate evaluation conclusions.

2. From the perspective of the evaluation index system, most of the original research took high-level academic universities as the research object, and the evaluation system built was basically inclined to scientific research, which is lack of scientificity and rationality for local undergraduate colleges and universities that focus on cultivating application-oriented, compound, and innovative talents. For example, Lu Genshu et al. (2006). made a DEA evaluation of the management efficiency of 48 colleges and universities directly under the Ministry of Education and concluded that the scientific research output was insufficient and the investment was redundant. Luo Hang (2013). studied from the perspective of several important factors affecting the management efficiency of 985 university and carried out a single index relaxation variable analysis on inefficient universities, pointing out the reasons for their inefficiency and improvement measures. Therefore, this study takes Guangxi local undergraduate universities as the research object and formulates an evaluation index system that conforms to the orientation and characteristics of local undergraduate colleges and universities. The research conclusions drawn are more in line with the actual situation of the research object.

3. From the perspective of research methods, the original research uses Data Envelopment Analysis to select different research models according to different research objectives. For example, Korhonen & Tainio. (2001). used the C2R model to evaluate the impact of internal management and operation efficiency of colleges and universities on the efficiency of resource allocation. Li Xiangyun. (2011). evaluated the management efficiency of sample universities based on the secondary relative efficiency model of Data Envelopment Analysis. This study combines the interview

method on the basis of Data Envelopment Analysis. By comparing the current situation of management efficiency mastered by the interview method with the results of Data Envelopment Analysis, it ensures the accuracy of the research conclusions and provides guarantee for the formulation of scientific and reasonable guidelines.

Recommendations

1. Improve the investment in teaching funds of local undergraduate institutions in Guangxi and broaden the investment channels of higher education resources. From the results of the above data analysis, it shows that the level of investment in teaching funds of local undergraduate colleges and universities in Guangxi in 2016-2020 is low. Improving the investment in teaching funds of local undergraduate colleges and universities in Guangxi is a prerequisite for their normal development. In recent years, Guangxi's fiscal revenue has been increasing, and local governments have played a greater role in alleviating the dilemma of low investment in university education funds, but this cannot fundamentally solve the problem. It also needs to further broaden the investment channels of teaching funds, take enterprises, social groups and individuals as important subjects of higher education investment, adopt the way of university government enterprise cooperation, through "order" training, attract the investment of enterprise resources and funds, effectively solve the problem of insufficient investment in local undergraduate universities in Guangxi. Then improve the management efficiency of local undergraduate universities in Guangxi.

2. Optimize the structure of teaching staff in local undergraduate colleges and universities in Guangxi and improve the quality of human resources investment in higher education. According to the results of descriptive statistical analysis, the teacher structure of 8 local undergraduate colleges and universities is relatively reasonable. From the empirical results, it can be concluded that there is a positive correlation between the investment of human resources and management efficiency. The requirements of colleges and universities for teachers are mainly reflected in the fact that the ratio of teachers to students should meet the standards, and the educational background, professional title and male female ratio of teachers should also be

reasonable. Therefore, Guangxi local undergraduate universities need to start from the following three aspects when introducing teachers. First, the recruitment process should be strictly controlled. There should have clear provisions on the specialty, teaching age and scientific research level of recruited teachers, conduct written tests and interviews for qualified candidates, and finally employ excellent personnel. Second, local undergraduate colleges and universities in Guangxi should fully demonstrate the number of personnel allocated to administrative departments, strictly control the proportion of managers, avoid the imbalance of personnel structure and the waste of human resources, then allocate human resources to urgently needed positions to improve the efficiency of human resources utilization. Third, local undergraduate colleges and universities in Guangxi should attach great importance to the exemplary role of academic leaders, fully mobilize the enthusiasm of all teaching staff, improve the teaching and scientific research level of full-time teachers, and thus improve the teaching quality of the whole school.

3. Improve the evaluation mechanism of resource allocation efficiency of local undergraduate colleges and universities in Guangxi. The goal of improving the evaluation mechanism of resource allocation efficiency of colleges and universities is to improve the overall management efficiency of colleges and universities. First of all, the index system of perfect evaluation mechanism of educational resource allocation efficiency should be constructed. At present, the construction of input index system is mainly carried out in three aspects of human resources, material resources and financial resources, but it does not fully consider the characteristics and orientation of school running among different institutions. Secondly, the evaluation of resource allocation efficiency of higher education institutions should be scientific and reasonable, and the effect brought by increasing resource input should not be over-exaggerated, but should focus on the optimal combination of various educational resource input factors. Finally, both the improvement of the evaluation mechanism and the optimization of the combination of input factors must rely on the strong internal management of colleges and universities. The effectiveness of the internal management of colleges and universities has a direct impact on the efficiency of

resource allocation of colleges and universities. Therefore, Guangxi local undergraduate colleges and universities need to build the internal management mode of "economical" colleges and universities to improve their overall management efficiency.

4. Scientifically control the scale of development.

At present, most local undergraduate colleges and universities in Guangxi have blindly expanded their enrollment, blindly pursuing the scale of the school, constantly expanding the area of campus and various teaching facilities, but the overall quality and management efficiency of the school are still lacking. In this process, local undergraduate colleges mainly raise construction funds through bank loans, but the funds raised are far from keeping up with the pace of enrollment expansion, which seriously affects the management efficiency of schools.

The appropriate scale of school operation has a facilitating effect on raising school funds, optimizing school conditions, improving teaching quality and management efficiency. Therefore, colleges and universities must pay attention to maintaining the appropriate scale of schooling. Only with a reasonable structure of schooling, sufficient investment in various educational resources such as human, financial and material resources, and giving full play to the effectiveness of these resources, can the management efficiency be ensured in the optimal state. As a kind of non-profit knowledge industry, higher education cannot operate without the input of various educational resources. Only the appropriate scale of schooling can give full play to the maximum utility of educational resources; too small a scale of schooling cannot produce high benefits, but too large a scale of schooling is not necessarily beneficial. Guangxi local undergraduate institutions should base on their own conditions, rooted in local economic development, seeking survival with quality, seeking development with characteristics and benefits, and moderate expansion is an inevitable choice to maintain sustainable and healthy development of the school.

Future Researches

1. Further Improvement of Research Model

On the basis of the original research, according to the actual needs of the

research objectives and in combination with the Assurance Region (AR) model, the upper and lower limits of the weights of each input and output index are increased to obtain more scientific and reasonable research results and provide intellectual support for university administrators and decision makers.

2. Further enrichment of research objects

For non-homogeneous colleges and universities, build different evaluation index systems based on their school-running orientation and characteristics, use the combination of Data Envelopment Analysis, fuzzy evaluation, and cluster analysis to evaluate the management efficiency of colleges and universities, and provide direction for different types of colleges and universities to develop guidelines to improve their management efficiency.

3. Further refinement of evaluation indicators

Based on the existing evaluation index system of scholars, the evaluation index system is further refined according to the research objectives to improve the scientific and accurate evaluation results. For example, the input of human resources can be subdivided into full-time teachers, logistics personnel, teaching staff and management personnel. Full-time teachers can be further refined from their educational background, professional title, and gender.

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Appendixes

Appendix A

List of Specialists and Letters of Specialists Invitation for IOC Verification

List of experts in research tool testing

1. Xiaoyu Luo — Guangxi University of Science and Technology
   Doctor of Philosophy (Education Management)
   Director of the International Student Affairs Office of the Institute of International Education

2. Xueli Chen — Hezhou University
   Doctor of Philosophy (Education Management)
   Head of Department

3. Dong Wang — Hezhou University
   Doctor of Philosophy (Education Management)
   Discipline leader

Appendix B

Official Letter

ที่ อว ๐๖๔๓.๑๔/๓๖

มหาวิทยาลัยราชภัฏบ้านสมเด็จเจ้าพระยา
๑๐๖๑ ถนนอิสรภาพ แขวงหิรัญรูจี
เขตธนบุรี กรุงเทพมหานคร ๑๐๖๐๐

๒๘ พฤศจิกายน ๒๕๖๕

เรื่อง เชิญเป็นผู้เชี่ยวชาญตรวจสอบความตรงเชิงเนื้อหาเครื่องมือในการทำวิทยานิพนธ์

เรียน Xiaoyu Luo
Guangxi University of Science and Technology

สิ่งที่ส่งมาด้วย ๑. เค้าโครงวิทยานิพนธ์ จำนวน ๑ เล่ม
๒. แบบสอบถาม จำนวน ๑ ชุด

เนื่องด้วย Mr.Huang Guiming นักศึกษาระดับบัณฑิตศึกษา หลักสูตรครุศาสตรดุษฎีบัณฑิต สาขาวิชาการบริหารการศึกษา มหาวิทยาลัยราชภัฏบ้านสมเด็จเจ้าพระยา ได้รับการอนุมัติให้ดำเนินการวิจัยวิทยานิพนธ์เรื่อง "Guidelines for Improving the Management Efficiency of Guangxi Universities" โดยมีคณะกรรมการที่ปรึกษาวิทยานิพนธ์ ดังนี้

๑. รองศาสตราจารย์ ดร.นิรันดร์ สุธีนิรันดร์ ประธานที่ปรึกษาหลัก
๒. ผู้ช่วยศาสตราจารย์ ดร.ภิญญาพัชญ์ ปลากัดทอง อาจารย์ที่ปรึกษาร่วม
๓. ผู้ช่วยศาสตราจารย์ ดร.สหัทยา สิทธิวิเศษ อาจารย์ที่ปรึกษาร่วม

ในการทำวิทยานิพนธ์ครั้งนี้ นักศึกษาจำเป็นต้องตรวจสอบความตรงเชิงเนื้อหา (Content Validity) ของเครื่องมือ เพื่อให้ได้เครื่องมือที่สมบูรณ์ที่สุด ทางบัณฑิตวิทยาลัยได้พิจารณาเห็นว่าท่านเป็นผู้ทรงคุณวุฒิ มีความรู้ความสามารถสอดคล้องกับหัวข้อการทำวิทยานิพนธ์ ดังกล่าวเป็นอย่างยิ่ง ซึ่งคำแนะนำของท่านจะเกิดประโยชน์ต่อการปรับปรุงแก้ไขในการสร้างเครื่องมือสำหรับการวิจัยของนักศึกษาให้มีคุณภาพและเหมาะสมเพื่อใช้ในการเก็บรวบรวมข้อมูลในการวิจัยต่อไป

จึงเรียนมาเพื่อโปรดพิจารณาให้ความอนุเคราะห์แก่นักศึกษาด้วยจะเป็นพระคุณยิ่ง

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร.คณกร สว่างเจริญ)
คณบดีบัณฑิตวิทยาลัย

งานประสานบัณฑิตศึกษา
โทร. ๐-๒๔๗๓-๗๐๐๐ ต่อ ๑๘๑๔

ที่ อว ๐๖๔๓.๑๔/๓๕

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๒๘ พฤศจิกายน ๒๕๖๕

เรื่อง เชิญเป็นผู้เชี่ยวชาญตรวจสอบความตรงเชิงเนื้อหาเครื่องมือในการทำวิทยานิพนธ์

เรียน Xueli Chen
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สิ่งที่ส่งมาด้วย ๑. เค้าโครงวิทยานิพนธ์ จำนวน ๑ เล่ม
๒. แบบสอบถาม จำนวน ๑ ชุด

เนื่องด้วย Mr.Huang Guiming นักศึกษาระดับบัณฑิตศึกษา หลักสูตรครุศาสตรดุษฎีบัณฑิต สาขาวิชาการบริหารการศึกษา มหาวิทยาลัยราชภัฏบ้านสมเด็จเจ้าพระยา ได้รับการอนุมัติให้ดำเนินการวิจัยวิทยานิพนธ์เรื่อง "Guidelines for Improving the Management Efficiency of Guangxi Universities" โดยมีคณะกรรมการที่ปรึกษาวิทยานิพนธ์ ดังนี้

๑. รองศาสตราจารย์ ดร.นิรันดร์ สุธีนิรันดร์ ประธานที่ปรึกษาหลัก
๒. ผู้ช่วยศาสตราจารย์ ดร.ภิญญาพัชญ์ ปลากัดทอง อาจารย์ที่ปรึกษาร่วม
๓. ผู้ช่วยศาสตราจารย์ ดร.สหัทยา สิทธิวิเศษ อาจารย์ที่ปรึกษาร่วม

ในการทำวิทยานิพนธ์ครั้งนี้ นักศึกษาจำเป็นต้องตรวจสอบความตรงเชิงเนื้อหา (Content Validity) ของเครื่องมือ เพื่อให้ได้เครื่องมือที่สมบูรณ์ที่สุด ทางบัณฑิตวิทยาลัยได้พิจารณาเห็นว่าท่านเป็นผู้ทรงคุณวุฒิ มีความรู้ความสามารถสอดคล้องกับหัวข้อการทำวิทยานิพนธ์ ดังกล่าวเป็นอย่างยิ่ง ซึ่งคำแนะนำของท่านจะเกิดประโยชน์ต่อการปรับปรุงแก้ไขในการสร้างเครื่องมือสำหรับการวิจัยของนักศึกษาให้มีคุณภาพและเหมาะสมเพื่อใช้ในการเก็บรวบรวมข้อมูลในการวิจัยต่อไป

จึงเรียนมาเพื่อโปรดพิจารณาให้ความอนุเคราะห์แก่นักศึกษาด้วยจะเป็นพระคุณยิ่ง

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร.คณกร สว่างเจริญ)
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งานประสานบัณฑิตศึกษา
โทร. ๐-๒๔๗๓-๗๐๐๐ ต่อ ๑๘๑๔

ที่ อว ๐๖๔๓.๑๔/๔๕

มหาวิทยาลัยราชภัฏบ้านสมเด็จเจ้าพระยา
๑๐๖๑ ถนนอิสรภาพ แขวงหิรัญรูจี
เขตธนบุรี กรุงเทพมหานคร ๑๐๖๐๐

๒๘ พฤศจิกายน ๒๕๖๕

เรื่อง ขอความอนุเคราะห์เก็บข้อมูลในการทำวิทยานิพนธ์

เรียน Guangxi Normal University for Nationalities

เนื่องด้วย Mr.Huang Guiming นักศึกษาระดับบัณฑิตศึกษา หลักสูตรครุศาสตรดุษฎีบัณฑิต สาขาวิชาการบริหารการศึกษา มหาวิทยาลัยราชภัฏบ้านสมเด็จเจ้าพระยา ได้รับการอนุมัติให้ดำเนินการวิจัยวิทยานิพนธ์เรื่อง "Guidelines for Improving the Management Efficiency of Guangxi Universities" โดยมีคณะกรรมการที่ปรึกษาวิทยานิพนธ์ ดังนี้

๑. รองศาสตราจารย์ ดร.นิรันดร์ สุธีนิรันดร์ ประธานที่ปรึกษาหลัก
๒. ผู้ช่วยศาสตราจารย์ ดร.ภิญญาพัชญ์ ปลากัดทอง อาจารย์ที่ปรึกษาร่วม
๓. ผู้ช่วยศาสตราจารย์ ดร.สหัทยา สิทธิวิเศษ อาจารย์ที่ปรึกษาร่วม

ในการทำวิทยานิพนธ์ครั้งนี้ นักศึกษามีความจำเป็นต้องเก็บข้อมูล เพื่อประกอบการจัดทำวิทยานิพนธ์ ดังนั้น จึงใคร่ขอความอนุเคราะห์ให้นักศึกษาได้ทำการเก็บข้อมูลเพื่อนำไปประกอบการจัดทำวิทยานิพนธ์ให้สมบูรณ์ยิ่งขึ้น

จึงเรียนมาเพื่อโปรดพิจารณาหวังว่าคงได้รับความอนุเคราะห์จากท่านและขอขอบพระคุณมา ณ โอกาสนี้

ขอแสดงความนับถือ

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เขตธนบุรี กรุงเทพมหานคร ๑๐๖๐๐

๒๘ พฤศจิกายน ๒๕๖๕

เรื่อง ขอความอนุเคราะห์เก็บข้อมูลในการทำวิทยานิพนธ์

เรียน Guilin Tourism Institute

เนื่องด้วย Mr.Huang Guiming นักศึกษาระดับบัณฑิตศึกษา หลักสูตรครุศาสตรดุษฎีบัณฑิต สาขาวิชาการบริหารการศึกษา มหาวิทยาลัยราชภัฏบ้านสมเด็จเจ้าพระยา ได้รับการอนุมัติให้ดำเนินการวิจัยวิทยานิพนธ์เรื่อง "Guidelines for Improving the Management Efficiency of Guangxi Universities" โดยมีคณะกรรมการที่ปรึกษาวิทยานิพนธ์ ดังนี้

๑. รองศาสตราจารย์ ดร.นิรันดร์ สุธีนิรันดร์ ประธานที่ปรึกษาหลัก
๒. ผู้ช่วยศาสตราจารย์ ดร.ภิญญาพัชญ์ ปลากัดทอง อาจารย์ที่ปรึกษาร่วม
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ในการทำวิทยานิพนธ์ครั้งนี้ นักศึกษามีความจำเป็นต้องเก็บข้อมูล เพื่อประกอบการจัดทำวิทยานิพนธ์ ดังนั้น จึงใคร่ขอความอนุเคราะห์ให้นักศึกษาได้ทำการเก็บข้อมูลเพื่อนำไปประกอบการจัดทำวิทยานิพนธ์ให้สมบูรณ์ยิ่งขึ้น

จึงเรียนมาเพื่อโปรดพิจารณาหวังว่าคงได้รับความอนุเคราะห์จากท่านและขอขอบพระคุณมา ณ โอกาสนี้

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เขตธนบุรี กรุงเทพมหานคร ๑๐๖๐๐

๒๘ พฤศจิกายน ๒๕๖๕

เรื่อง ขอความอนุเคราะห์เก็บข้อมูลในการทำวิทยานิพนธ์

เรียน Guilin Institute of Aerospace Technology

เนื่องด้วย Mr.Huang Guiming นักศึกษาระดับบัณฑิตศึกษา หลักสูตรครุศาสตรดุษฎีบัณฑิต สาขาวิชาการบริหารการศึกษา มหาวิทยาลัยราชภัฏบ้านสมเด็จเจ้าพระยา ได้รับการอนุมัติให้ดำเนินการวิจัยวิทยานิพนธ์เรื่อง "Guidelines for Improving the Management Efficiency of Guangxi Universities" โดยมีคณะกรรมการที่ปรึกษาวิทยานิพนธ์ ดังนี้

๑. รองศาสตราจารย์ ดร.นิรันดร์ สุธีนิรันดร์ ประธานที่ปรึกษาหลัก
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๓. ผู้ช่วยศาสตราจารย์ ดร.สหัทยา สิทธิวิเศษ อาจารย์ที่ปรึกษาร่วม

ในการทำวิทยานิพนธ์ครั้งนี้ นักศึกษามีความจำเป็นต้องเก็บข้อมูล เพื่อประกอบการจัดทำวิทยานิพนธ์ ดังนั้น จึงใคร่ขอความอนุเคราะห์ให้นักศึกษาได้ทำการเก็บข้อมูลเพื่อนำไปประกอบการจัดทำวิทยานิพนธ์ให้สมบูรณ์ยิ่งขึ้น

จึงเรียนมาเพื่อโปรดพิจารณาหวังว่าคงได้รับความอนุเคราะห์จากท่านและขอขอบพระคุณมา ณ โอกาสนี้

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร.คณกร สว่างเจริญ)
คณบดีบัณฑิตวิทยาลัย

งานประสานบัณฑิตศึกษา
โทร. ๐-๒๔๗๓-๗๐๐๐ ต่อ ๑๘๑๔

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มหาวิทยาลัยราชภัฏบ้านสมเด็จเจ้าพระยา
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๒๘ พฤศจิกายน ๒๕๖๕

เรื่อง ขอความอนุเคราะห์เก็บข้อมูลในการทำวิทยานิพนธ์

เรียน Guangxi University of Foreign Languages

เนื่องด้วย Mr.Huang Guiming นักศึกษาระดับบัณฑิตศึกษา หลักสูตรครุศาสตรดุษฎีบัณฑิต สาขาวิชาการบริหารการศึกษา มหาวิทยาลัยราชภัฏบ้านสมเด็จเจ้าพระยา ได้รับการอนุมัติให้ดำเนินการวิจัยวิทยานิพนธ์เรื่อง "Guidelines for Improving the Management Efficiency of Guangxi Universities" โดยมีคณะกรรมการที่ปรึกษาวิทยานิพนธ์ ดังนี้

๑. รองศาสตราจารย์ ดร.นิรันดร์ สุธีนิรันดร์ ประธานที่ปรึกษาหลัก
๒. ผู้ช่วยศาสตราจารย์ ดร.ภิญญาพัชญ์ ปลากัดทอง อาจารย์ที่ปรึกษาร่วม
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ในการทำวิทยานิพนธ์ครั้งนี้ นักศึกษามีความจำเป็นต้องเก็บข้อมูล เพื่อประกอบการจัดทำวิทยานิพนธ์ ดังนั้น จึงใคร่ขอความอนุเคราะห์ให้นักศึกษาได้ทำการเก็บข้อมูลเพื่อนำไปประกอบการจัดทำวิทยานิพนธ์ให้สมบูรณ์ยิ่งขึ้น

จึงเรียนมาเพื่อโปรดพิจารณาหวังว่าคงได้รับความอนุเคราะห์จากท่านและขอขอบพระคุณมา ณ โอกาสนี้

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร.คณกร สว่างเจริญ)
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มหาวิทยาลัยราชภัฏบ้านสมเด็จเจ้าพระยา
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เขตธนบุรี กรุงเทพมหานคร ๑๐๖๐๐

๒๘ พฤศจิกายน ๒๕๖๕

เรื่อง ขอความอนุเคราะห์เก็บข้อมูลในการทำวิทยานิพนธ์

เรียน Hezhou University

เนื่องด้วย Mr.Huang Guiming นักศึกษาระดับบัณฑิตศึกษา หลักสูตรครุศาสตรดุษฎีบัณฑิต สาขาวิชาการบริหารการศึกษา มหาวิทยาลัยราชภัฏบ้านสมเด็จเจ้าพระยา ได้รับการอนุมัติให้ดำเนินการวิจัยวิทยานิพนธ์เรื่อง "Guidelines for Improving the Management Efficiency of Guangxi Universities" โดยมีคณะกรรมการที่ปรึกษาวิทยานิพนธ์ ดังนี้

๑. รองศาสตราจารย์ ดร.นิรันดร์ สุธีนิรันดร์ ประธานที่ปรึกษาหลัก
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จึงเรียนมาเพื่อโปรดพิจารณาหวังว่าคงได้รับความอนุเคราะห์จากท่านและขอขอบพระคุณมา ณ โอกาสนี้

ขอแสดงความนับถือ

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มหาวิทยาลัยราชภัฏบ้านสมเด็จเจ้าพระยา
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เขตธนบุรี กรุงเทพมหานคร ๑๐๖๐๐

๒๘ พฤศจิกายน ๒๕๖๕

เรื่อง ขอความอนุเคราะห์เก็บข้อมูลในการทำวิทยานิพนธ์

เรียน Nanning University

เนื่องด้วย Mr.Huang Guiming นักศึกษาระดับบัณฑิตศึกษา หลักสูตรครุศาสตรดุษฎีบัณฑิต สาขาวิชาการบริหารการศึกษา มหาวิทยาลัยราชภัฏบ้านสมเด็จเจ้าพระยา ได้รับการอนุมัติให้ดำเนินการวิจัยวิทยานิพนธ์เรื่อง "Guidelines for Improving the Management Efficiency of Guangxi Universities" โดยมีคณะกรรมการที่ปรึกษาวิทยานิพนธ์ ดังนี้

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เรื่อง ขอความอนุเคราะห์เก็บข้อมูลในการทำวิทยานิพนธ์

เรียน Yulin Normal University

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เรียน Liuzhou Institute of Technology

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เรียน Guangxi University of Finance and Economics

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เรียน Wuzhou University

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เรื่อง ขอความอนุเคราะห์เก็บข้อมูลโดยการเข้าสัมภาษณ์

เรียน

สิ่งที่ส่งมาด้วย ๑. แบบสัมภาษณ์ จำนวน ๑ เล่ม

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ในการนี้คณะกรรมการบริหารหลักสูตรฯ ได้พิจารณาเห็นว่าท่านเป็นผู้เชี่ยวชาญที่มีความรู้ความสามารถที่จะให้ข้อมูล คำแนะนำอันเป็นประโยชน์ต่อการประเมินความเหมาะสมและความเป็นไปได้ของนักศึกษาได้เป็นอย่างดี จึงขออนุญาตให้นักศึกษาเข้าสัมภาษณ์ และกำหนดวันเวลาแก่นักศึกษาที่ท่านสะดวก

จึงเรียนมาเพื่อโปรดพิจารณาให้ความอนุเคราะห์แก่นักศึกษาด้วยจะเป็นพระคุณยิ่ง

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร.คณกร สว่างเจริญ)
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Appendix C

Research Instrument

Example of evaluation form for experts to test the validity of research toolsAnd by calculating the IOC value

Guidelines for Improving the Management Efficiency of Guangxi Universities	Targeting experts			
	+1	0	-1	proposal
Education expenditure				
The input of college teachers' salaries				
teaching reform costs				
Investment in professional construction costs				
practical teaching costs				
daily administrative funds				
The strong correlation between the investment of university education funds				
The investment in teaching reform has been fully utilized				
The investment in professional construction has been fully utilized				
The investment in practical teaching has been fully utilized				
The establishment of a scientific and reasonable fund investment system by university administrators can effectively improve the management efficiency of universities				
Manpower input				
the reasonable number of full-time teachers				
the reasonable number of management personnel				

Guidelines for Improving the Management Efficiency of Guangxi Universities	Targeting experts			
	+1	0	-1	proposal
the sufficient number of full-time teachers with high professional titles				
the reasonable number of full-time teachers with high academic qualifications				
the reasonable age structure of full-time teachers				
the scientific and reasonable proportion of full-time teachers and managers				
the structure of academic relationship of dedicated full-time teachers is reasonable				
the coordination of the male and female ratio of full-time teachers				
the reasonable and sufficient workload of full-time teachers and management personnel				
the objective and reasonable personnel management system of the school, which can effectively improve the management efficiency of the school				
the scientific research equipment invested by colleges and universities is sufficient, which conforms to the management efficiency goal of the school				
The teaching equipment invested is sufficient, which can improve the management efficiency of the school				
The scientific research equipment invested has been fully utilized				
the teaching equipment invested has been fully utilized				
the proportion of scientific research equipment and teaching equipment invested is reasonable				

Guidelines for Improving the Management Efficiency of Guangxi Universities	Targeting experts			
	+1	0	-1	proposal
the library has a sufficient collection of books				
a reasonable proportion of subjects in the library collection				
the library collection has been fully utilized				
the school has a scientific and reasonable equipment investment plan				
the school has a scientific and reasonable book procurement plan, which can effectively improve the school management efficiency				
Scientific research output				
the number of national scientific research projects				
Number of provincial scientific research projects				
Number of national honors				
Number of provincial honors				
Number of national scientific research platforms				
Number of provincial scientific research platforms				
the output rate of scientific research projects at or above the provincial level is high				
the number of honors won by the university at or above the provincial level is high				
the number of scientific research platforms won by the university at or above the provincial level is large				
the scientific research incentive policies formulated by the university are fair, objective and reasonable, which can				

Guidelines for Improving the Management Efficiency of Guangxi Universities	Targeting experts			
	+1	0	-1	proposal
promote the output of high-level scientific research projects and improve the management efficiency of the university.				
Publish high-quality papers				
the number of papers published by teachers in the CSSCI journals in China				
the number of papers published by teachers in the Chinese core journals of Peking University in China				
the number of high-quality papers published abroad				
the number of high-quality papers published in China is more than that published abroad				
the proportion of natural science and philosophy and social science in high-quality papers published by teachers is reasonable				
the CSSCI of high-quality papers published by teachers in China is more than that of the Chinese core of Peking University				
the SCI of high-quality papers published by teachers abroad is more than that of SSCI				
the contribution rate of high-quality papers published in China to social and economic development is large				
the contribution rate of high-quality papers published abroad to social and economic development is large				
the school has a scientific and reasonable incentive policy for high-quality papers, which can effectively promote the output of high-quality articles.				
Achievement of talent training objectives				

Guidelines for Improving the Management Efficiency of Guangxi Universities	Targeting experts			
	+1	0	-1	proposal
the number of undergraduate students in the school is reasonable and conforms to the development plan of the school				
Students have good professional quality				
Students have good humanistic quality				
Students have high graduation rate				
high employment quality				
high employment rate of graduates				
high professional matching rate of graduates				
strong lifelong learning ability of graduates				
clear goal of talent training of the school				
scientific and reasonable talent training plan, which can effectively improve the management efficiency of the school.				

Appendix D
The Results of the Quality Analysis of Research Instruments

I-1: 2016 DEA solution results of 10 sample universities in Guangxi

Results from DEAP Version 2.1

Instruction file = Eg1-ins.txt

Data file= sanjiao.txt

Input orientated DEA

Scale assumption: VRS

Slacks calculated using multi-stage method

EFFICIENCY SUMMARY:

firm	crste	vrste	scale	
1	1.000	1.000	1.000	-
2	1.000	1.000	1.000	-
3	1.000	1.000	1.000	-
4	0.850	1.000	0.850	irs
5	1.000	1.000	1.000	-
6	1.000	1.000	1.000	-
7	1.000	1.000	1.000	-
8	0.730	1.000	0.730	irs
9	1.000	1.000	1.000	-
10	1.000	1.000	1.000	-
mean	0.958	1.000	0.958	

Note: crste = technical efficiency from CRS DEA

vrste = technical efficiency from VRS DEA

scale = scale efficiency = crste/vrste

Note also that all subsequent tables refer to VRS results

SUMMARY OF OUTPUT SLACKS:

firm	output:	1	2	3	4
1		0.000	0.000	0.000	0.000
2		0.000	0.000	0.000	0.000
3		0.000	0.000	0.000	0.000
4		0.000	0.000	0.000	0.000
5		0.000	0.000	0.000	0.000

6	0.000	0.000	0.000	0.000
7	0.000	0.000	0.000	0.000
8	144.258	0.000	113219.321	7276851.721
9	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000
mean	14.426	0.000	11321.932	727685.172

SUMMARY OF INPUT SLACKS:

firm input:	1	2	3	4
1	0.000	0.000	0.000	0.000
2	0.000	0.000	0.000	0.000
3	0.000	0.000	0.000	0.000
4	0.000	0.000	0.000	0.000
5	0.000	0.000	0.000	0.000
6	0.000	0.000	0.000	0.000
7	0.000	0.000	0.000	0.000
8	537.066	0.000	4.132	26.558
9	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000
mean	53.707	0.000	0.413	2.656

SUMMARY OF PEERS:

firm	peers:		
1	1		
2	2		
3	3		
4	4		
5	5		
6	6		
7	7		
8	4	6	
9	9		
10	10		

SUMMARY OF PEER WEIGHTS: (in same order as above)

firm	peer weights:
1	1.000
2	1.000
3	1.000
4	1.000
5	1.000
6	1.000
7	1.000
8	0.711 0.289
9	1.000
10	1.000

PEER COUNT SUMMARY:

(i.e., no. times each firm is a peer for another)

firm	peer count:
1	0
2	0
3	0
4	1
5	0
6	1
7	0
8	0
9	0
10	0

I-2: 2017 DEA solution results of 10 sample universities in Guangxi

Results from DEAP Version 2.1

Instruction file = Eg1-ins.txt

Data file= sanjiao.txt

Input orientated DEA

Scale assumption: VRS

Slacks calculated using multi-stage method

EFFICIENCY SUMMARY:

firm	crste	vrste	scale	
1	1.000	1.000	1.000	-
2	1.000	1.000	1.000	-
3	1.000	1.000	1.000	-
4	1.000	1.000	1.000	-
5	1.000	1.000	1.000	-
6	1.000	1.000	1.000	-
7	1.000	1.000	1.000	-
8	1.000	1.000	1.000	-
9	1.000	1.000	1.000	-
10	1.000	1.000	1.000	-
mean	1.000	1.000	1.000	

Note: crste = technical efficiency from CRS DEA

vrste = technical efficiency from VRS DEA

scale = scale efficiency = crste/vrste

Note also that all subsequent tables refer to VRS results

SUMMARY OF OUTPUT SLACKS:

firm	output:	1	2	3	4
1		0.000	0.000	0.000	0.000
2		0.000	0.000	0.000	0.000
3		0.000	0.000	0.000	0.000
4		0.000	0.000	0.000	0.000
5		0.000	0.000	0.000	0.000
6		0.000	0.000	0.000	0.000
7		0.000	0.000	0.000	0.000
8		0.000	0.000	0.000	0.000
9		0.000	0.000	0.000	0.000
10		0.000	0.000	0.000	0.000
mean		0.000	0.000	0.000	0.000

SUMMARY OF INPUT SLACKS:

firm	input:	1	2	3	4
1		0.000	0.000	0.000	0.000
2		0.000	0.000	0.000	0.000
3		0.000	0.000	0.000	0.000
4		0.000	0.000	0.000	0.000
5		0.000	0.000	0.000	0.000
6		0.000	0.000	0.000	0.000
7		0.000	0.000	0.000	0.000
8		0.000	0.000	0.000	0.000
9		0.000	0.000	0.000	0.000
10		0.000	0.000	0.000	0.000
mean		0.000	0.000	0.000	0.000

SUMMARY OF PEERS:

firm	peers:
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10

SUMMARY OF PEER WEIGHTS:

(in same order as above)

firm	peer weights:
1	1.000
2	1.000
3	1.000

4	1.000
5	1.000
6	1.000
7	1.000
8	1.000
9	1.000
10	1.000

PEER COUNT SUMMARY:

(i.e., no. times each firm is a peer for another)

firm	peer count:
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0

I-3: 2018 DEA solution results of 10 sample universities in Guangxi

Results from DEAP Version 2.1

Instruction file = Eg1-ins.txt

Data file= sanjiao.txt

Input orientated DEA

Scale assumption: VRS

Slacks calculated using multi-stage method

EFFICIENCY SUMMARY:

firm	crste	vrste	scale	
1	0.903	1.000	0.903	irs
2	1.000	1.000	1.000	-
3	0.936	0.995	0.941	irs
4	0.862	0.995	0.867	irs
5	1.000	1.000	1.000	-
6	1.000	1.000	1.000	-
7	1.000	1.000	1.000	-
8	1.000	1.000	1.000	-
9	1.000	1.000	1.000	-
10	1.000	1.000	1.000	-
mean	0.970	0.999	0.971	

Note: crste = technical efficiency from CRS DEA

vrste = technical efficiency from VRS DEA

scale = scale efficiency = crste/vrste

Note also that all subsequent tables refer to VRS results

SUMMARY OF OUTPUT SLACKS:

firm	output:	1	2	3	4
1		0.000	0.000	0.000	0.000
2		0.000	0.000	0.000	0.000
3		0.000	0.000	849855.604	****
4		9.473	******	266885.987	28650697.452
5		0.000	0.000	0.000	0.000
6		0.000	0.000	0.000	0.000
7		0.000	0.000	0.000	0.000
8		0.000	0.000	0.000	0.000
9		0.000	0.000	0.000	0.000
10		0.000	0.000	0.000	0.000
mean		0.947	15133589.338	111674.159	16788472.123

SUMMARY OF INPUT SLACKS:

firm	input:	1	2	3	4
1		0.000	0.000	0.000	0.000
2		0.000	0.000	0.000	0.000
3		2858.927	0.000	0.000	6.856
4		1354.659	0.000	0.000	22.355
5		0.000	0.000	0.000	0.000
6		0.000	0.000	0.000	0.000
7		0.000	0.000	0.000	0.000
8		0.000	0.000	0.000	0.000
9		0.000	0.000	0.000	0.000
10		0.000	0.000	0.000	0.000
mean		421.359	0.000	0.000	2.921

SUMMARY OF PEERS:

firm	peers:			
1	1			
2	2			
3	6	10	1	9
4	9	7		
5	5			
6	6			
7	7			
8	8			
9	9			
10	10			

SUMMARY OF PEER WEIGHTS:

(in same order as above)

firm	peer weights:			
1	1.000			
2	1.000			
3	0.563	0.157	0.067	0.212

4	0.247 0.753
5	1.000
6	1.000
7	1.000
8	1.000
9	1.000
10	1.000

PEER COUNT SUMMARY:

(i.e., no. times each firm is a peer for another)

firm	peer count:
1	1
2	0
3	0
4	0
5	0
6	1
7	1
8	0
9	2
10	1

I-4: 2019 DEA solution results of 10 sample universities in Guangxi

Results from DEAP Version 2.1

Instruction file = Eg1-ins.txt

Data file= sanjiao.txt

Input orientated DEA

Scale assumption: VRS

Slacks calculated using multi-stage method

EFFICIENCY SUMMARY:

firm	crste	vrste	scale	
1	1.000	1.000	1.000	-
2	1.000	1.000	1.000	-
3	1.000	1.000	1.000	-
4	0.966	0.994	0.972	irs
5	1.000	1.000	1.000	-
6	1.000	1.000	1.000	-
7	1.000	1.000	1.000	-
8	0.885	0.942	0.939	irs
9	1.000	1.000	1.000	-
10	1.000	1.000	1.000	-
mean	0.985	0.994	0.991	

Note: crste = technical efficiency from CRS DEA

vrste = technical efficiency from VRS DEA

scale = scale efficiency = crste/vrste

Note also that all subsequent tables refer to VRS results

SUMMARY OF OUTPUT SLACKS:

firm	output:	1	2	3	4
1		0.000	0.000	0.000	0.000
2		0.000	0.000	0.000	0.000
3		0.000	0.000	0.000	0.000
4		9.976	********	0.000	10622465.226
5		0.000	0.000	0.000	0.000
6		0.000	0.000	0.000	0.000
7		0.000	0.000	0.000	0.000
8		87.561	0.000	0.000	75770009.755
9		0.000	0.000	0.000	0.000
10		0.000	0.000	0.000	0.000
mean		9.754	11320203.382	0.000	8639247.498

SUMMARY OF INPUT SLACKS:

firm	input:	1	2	3	4
1		0.000	0.000	0.000	0.000
2		0.000	0.000	0.000	0.000
3		0.000	0.000	0.000	0.000
4		749.977	0.000	0.000	0.000
5		0.000	0.000	0.000	0.000
6		0.000	0.000	0.000	0.000
7		0.000	0.000	0.000	0.000
8		735.378	0.000	7.724	0.000
9		0.000	0.000	0.000	0.000
10		0.000	0.000	0.000	0.000
mean		148.536	0.000	0.772	0.000

SUMMARY OF PEERS:

firm	peers:			
1	1			
2	2			
3	3			
4	9	7	1	5
5	5			
6	6			
7	7			
8	7	9	2	1
9	9			
10	10			

SUMMARY OF PEER WEIGHTS:

(in same order as above)

firm	peer weights:
1	1.000
2	1.000
3	1.000

4	0.081 0.143 0.069 0.707
5	1.000
6	1.000
7	1.000
8	0.489 0.247 0.169 0.094
9	1.000
10	1.000

PEER COUNT SUMMARY:

(i.e., no. times each firm is a peer for another)

firm	peer count:
1	2
2	1
3	0
4	0
5	1
6	0
7	2
8	0
9	2
10	0

I-5: 2020 DEA solution results of 10 sample universities in Guangxi

Results from DEAP Version 2.1

Instruction file = Eg1-ins.txt

Data file = sanjiao.txt

Input orientated DEA

Scale assumption: VRS

Slacks calculated using multi-stage method

EFFICIENCY SUMMARY:

firm	crste	vrste	scale	
1	1.000	1.000	1.000	-
2	1.000	1.000	1.000	-
3	1.000	1.000	1.000	-
4	1.000	1.000	1.000	-
5	1.000	1.000	1.000	-
6	1.000	1.000	1.000	-
7	1.000	1.000	1.000	-
8	1.000	1.000	1.000	-
9	1.000	1.000	1.000	-
10	1.000	1.000	1.000	-
mean	1.000	1.000	1.000	

Note: crste = technical efficiency from CRS DEA

vrste = technical efficiency from VRS DEA

scale = scale efficiency = crste/vrste

Note also that all subsequent tables refer to VRS results

SUMMARY OF OUTPUT SLACKS:

firm	output:	1	2	3	4
1		0.000	0.000	0.000	0.000
2		0.000	0.000	0.000	0.000
3		0.000	0.000	0.000	0.000
4		0.000	0.000	0.000	0.000
5		0.000	0.000	0.000	0.000
6		0.000	0.000	0.000	0.000
7		0.000	0.000	0.000	0.000
8		0.000	0.000	0.000	0.000
9		0.000	0.000	0.000	0.000
10		0.000	0.000	0.000	0.000
mean		0.000	0.000	0.000	0.000

SUMMARY OF INPUT SLACKS:

firm	input:	1	2	3	4
1		0.000	0.000	0.000	0.000
2		0.000	0.000	0.000	0.000
3		0.000	0.000	0.000	0.000
4		0.000	0.000	0.000	0.000
5		0.000	0.000	0.000	0.000
6		0.000	0.000	0.000	0.000
7		0.000	0.000	0.000	0.000
8		0.000	0.000	0.000	0.000
9		0.000	0.000	0.000	0.000
10		0.000	0.000	0.000	0.000
mean		0.000	0.000	0.000	0.000

SUMMARY OF PEERS:

firm	peers:
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10

SUMMARY OF PEER WEIGHTS:

(in same order as above)

firm	peer weights:
1	1.000
2	1.000
3	1.000

4	1.000
5	1.000
6	1.000
7	1.000
8	1.000
9	1.000
10	1.000

PEER COUNT SUMMARY:

(i.e., no. times each firm is a peer for another)

firm	peer count:
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0

Input and output raw data

Original data of input and output indicators of 10 local universities in Guangxi Autonomous Region in 2016

DMU	Number of faculty and staff input (X1)	Total value of fixed assets (X2)	Total number of books in the library (X3)	Total investment in teaching funds (X4)	Number of undergraduate students (Y1)	Student employment rate (Y2)	Number of scientific research outputs (Y3)	Number of papers published at home and abroad (Y4)
DMU_1	702	94923400	1104968	28092500	2421	0.93	12	151
DMU_2	1434	12591620	480187	37630800	18792	0.95	53	153
DMU_3	907	10171700	1021000	78625100	11050	0.93	10	69
DMU_4	612	7637200	1780000	21894000	9825	0.91	5	43
DMU_5	747	56916300	2322600	20485600	12261	0.92	1	60
DMU_6	1076	15555220	1203600	79895100	11615	0.91	8	86
DMU_7	701	11512430	1030000	43367500	10654	0.95	3	13
DMU_8	602	9928270	1500000	31399700	10880	0.91	10	82
DMU_9	720	8665470	2436000	11861790	2415	0.93	8	27
DMU_{10}	873	14948680	2110000	96979200	16094	0.94	15	126

Original data of input and output indicators of 10 local universities in Guangxi Autonomous Region in 2017

DMU	Number of faculty and staff input (X1)	Total value of fixed assets (X2)	Total number of books in the library (X3)	Total investment in teaching funds (X4)	Number of undergraduate students (Y1)	Student employment rate (Y2)	Number of scientific research outputs (Y3)	Number of papers published at home and abroad (Y4)
DMU_1	757	11763340	1219888	30138050	4291	0.93	36.00	158.00
DMU_2	1414	16076510	666500	100985900	20046	0.96	62.00	161.00
DMU_3	745	11735500	1535000	83769100	12228	0.93	18.00	70.00
DMU_4	687	9597450	1938000	23390000	10422	0.95	7.00	30.00
DMU_5	807	6772550	2479000	22612400	12793	0.94	5.00	61.00
DMU_6	1209	16769510	1260300	22154890	13257	0.92	21.00	94.00
DMU_7	743	1596015	1183000	53430800	11072	0.93	8.00	18.00
DMU_8	614	137000000	1417000	31734100	11395	0.97	17.00	92.00
DMU_9	757	9492340	1560500	14904730	3478	0.94	12.00	47.00
DMU_{10}	1123	18305070	3049000	14180450	16183	0.95	28.00	126.00

Original data of input and output indicators of 10 local universities in Guangxi Autonomous Region in 2018

DMU	Number of faculty and staff input (X1)	Total value of fixed assets (X2)	Total number of books in the library (X3)	Total investment in teaching funds (X4)	Number of undergraduate students (Y1)	Student employment rate (Y2)	Number of scientific research outputs (Y3)	Number of papers published at home and abroad (Y4)
DMU_1	809	16728440	1475316	24891490	6933	0.90	72	128
DMU_2	1414	16100000	1718100	45715140	20046	0.97	80	135
DMU_3	1021	1173550000	949000	16202000	13380	0.93	51	81
DMU_4	734	10348820	1142700	20669000	11532	0.93	5	43
DMU_5	862	79857900	2501800	20821700	12057	0.94	2	50
DMU_6	1076	156000000	1309400	260000000	11615	0.93	54	69
DMU_7	722	176000000	1300000	57320600	12025	0.93	7	14
DMU_8	791	149000000	2557000	35617900	12618	0.98	28	77
DMU_9	809	118000000	1744000	24904040	4291	0.91	27	40
DMU_{10}	1201	21014726	3768000	12598150	16121	0.94	62	113

Original data of input and output indicators of 10 local universities in Guangxi Autonomous Region in 2019

DMU	Number of faculty and staff input (X1)	Total value of fixed assets (X2)	Total number of books in the library (X3)	Total investment in teaching funds (X4)	Number of undergraduate students (Y1)	Student employment rate (Y2)	Number of scientific research outputs (Y3)	Number of papers published at home and abroad (Y4)
DMU_1	852	11508850	1534100	11199370	8392	0.66	105	100
DMU_2	1451	229000000	4551800	11988500	22881	0.93	43	189
DMU_3	1100	157000000	1034000	16983000	15636	0.92	47	67
DMU_4	871	14420650	2281000	37035200	12421	0.91	9	52
DMU_5	907	127000000	2499000	15386500	12082	0.92	3	53
DMU_6	1136	18540130	4228000	27254850	13842	0.94	68	124
DMU_7	783	193600000	1157000	45075100	12541	0.93	11	24
DMU_8	832	163000000	2223000	39424200	14441	0.96	45	69
DMU_9	852	115100000	3002000	364210300	8386	0.93	49	48
DMU_{10}	1335	25362580	3772000	13184900	16232	0.90	83	165

Original data of input and output indicators of 10 local universities in Guangxi Autonomous Region in 2020

DMU	Number of faculty and staff input (X1)	Total value of fixed assets (X2)	Total number of books in the library (X3)	Total investment in teaching funds (X4)	Number of undergraduate students (Y1)	Student employment rate (Y2)	Number of scientific research outputs (Y3)	Number of papers published at home and abroad (Y4)
DMU_1	916	12650840	1593000	15005590	9009	0.91	99	141
DMU_2	1468	1154000000	4109300	13358600	21064	0.85	136	215
DMU_3	1116	177600000	1129000	19731000	16419	0.72	40	67
DMU_4	968	175500000	3937400	32293850	13022	0.85	8	69
DMU_5	986	129000000	1963100	24421800	12066	0.74	3	16
DMU_6	1190	21535400	3917800	28543430	13972	0.92	43	133
DMU_7	817	226100000	1520000	43547300	13325	0.95	10	21
DMU_8	870	181000000	1416000	39842600	16231	0.72	48	75
DMU_9	638	13380820	4126000	6145670	8392	0.67	86	70
DMU_{10}	1370	28889720	1923000	14160220	16031	0.79	58	141

Appendix E

Certificate of English


มหาวิทยาลัยราชภัฏบ้านสมเด็จเจ้าพระยา

Bansomdejchaopraya Rajabhat University

This is to certify that

MR. HUANG GUIMING

Achieved BSRU-TEST of English Proficiency (BSRU – TEP) level

C 1

Given on 20th January 2020

Linda Gainma

(Assistant Professor Dr. Linda Gainma)

President

Appendix F

The Document for Acceptance Research

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Paper Title	Guidelines for Improving the Management Efficiency of Guangxi Universities

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