HUMAN CAPITAL MANAGEMENT MODEL AND ORGANIZATIONAL EFFECTIVENESS IN CHINA'S PRIVATE UNIVERSITIES

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A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of

Doctor of Philosophy in Management

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DECLARATION

I, Du Ping, hereby certify that the work embodied in this dissertation entitled "Human Capital Management Model and Organizational Effectiveness in China's Private Universities" is result of original research and has not been submitted for a higher degree to any other university or institution.

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ABSTRACT

Title : Human Capital Management Model and Organizational Effectiveness in China's Private Universities

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This research focuses on Human Capital Management (HCM) in Chinese private universities and its impact on Organizational Effectiveness (OE). Utilizing a mixed-methods research design, it integrates both quantitative and qualitative research methods. A total of 400 valid quantitative surveys were collected and analyzed using SPSS and AMOS software. In-depth interviews were held with 15 key managers, and focus groups were conducted with 8 experts for qualitative analysis.

The results of the Structural Equation Model (SEM) indicate that HCM, Knowledge Management, and Job Satisfaction significantly influence OE, with HCM being the most critical factor. The equation $OE = 0.883 \cdot HCM + 0.864 \cdot KM + 0.394 \cdot JS + \varepsilon$ supports these connections. These relationships suggest that structured faculty development, effective knowledge sharing, and engagement initiatives are essential for improving OE. However, challenges such as knowledge-sharing gaps highlight the need for AI-driven knowledge management solutions.

Qualitative analysis indicates faculty members value clear career paths, leadership support, and fair performance evaluations. Inconsistent HR policies, unclear compensation, and insufficient research funding contribute to faculty turnover. Based on these findings, a human capital management model (HCM - OE Model) has been

proposed. It includes strategic faculty investment, industry-university collaboration, and AI-enabled knowledge storage. This study provides practical policy recommendations for universities. It also suggests future cross-cultural research on HCM models in higher education to understand further their influence on faculty development and institutional long-term competitiveness.

Keyword: human capital management, organizational effectiveness, job satisfaction, knowledge management, structural equation modeling

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April 5th, 2025

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF TABLES

Tables **Page**

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1
INTRODUCTION

1.1 Background of the Problem

With the emergence of the knowledge economy, knowledge has become a major driving force for social and economic progress. The future of human development increasingly depends on the enhancement of human intelligence and the effective utilization of human capital rather than on natural resources such as land or energy (Becker, 1964). Effective management relies on wisdom and knowledge rather than on mechanical routines or coercion (Drucker, 1999). Building a sound human capital system enables organizations to establish people-oriented mechanisms that help them gain core competitiveness and sustainable advantages (Quinn, 1992). In addition, identifying the types of human capital that contribute to high organizational performance and exploring how to manage and enhance their value are enduring issues in organizational research. Human capital management plays a central role in achieving superior performance and long-term success (Pfeffer, 1994)

The concept of human capital was first systematically introduced by Theodore W. Schultz (1961), who emphasized that investment in human capabilities such as education and training contributes significantly to economic growth and social progress. Since then, researchers have increasingly sought to integrate human capital into the dynamic development process of enterprises and to explore how improvements in human capital influence organizational performance. From the perspective of resource-based theory, internal resources are regarded as the foundation of sustainable competitive advantage. Any resource that enhances efficiency and effectiveness, enables market opportunities, mitigates competitive threats, or supports the formulation and implementation of organizational strategies is considered valuable. Beyond tangible assets, organizational resources also include intangible human and organizational capital (Snell & Wiley, 1990). As the only “dynamic asset,” human capital has received growing attention because it

comprises knowledge and skills that competitors cannot easily imitate, transfer, or replace. It is therefore the most unique and core intangible asset of an enterprise. Human capital serves as the true source for organizations to obtain sustainable competitive advantages and to continuously improve organizational performance. In the context of the knowledge economy, human capital has been introduced into organizational management as a critical resource and intellectual support for development (Barney, 1991).

At the same time, as one of the foundations of organizational management, the development of knowledge management supports not only enterprise operations but also the creation of new knowledge, technologies, and methods. Each stage of organizational management and every link in knowledge management are integrated and mutually reinforcing, and knowledge management often accompanies technological innovation (Quintas & Ray, 2004). Recent research indicates a strong synergy between human capital management and knowledge management that together enhance organizational effectiveness (Suparwadi et al., 2024). The effective development and utilization of human capital can improve the flow of knowledge resources, ensure the efficient use and value-addition of human resources, and enhance organizational management effectiveness. In this process, human capital is the key component, knowledge management the vital means, and organizational effectiveness the goal, forming an interconnected whole.

Specific systems of human capital practices can be used to build a firm's unique productivity, promote firm performance, and provide a source of sustainable competitive advantage for firms (London & Wilson, 2005). In practice, most enterprises regard human capital as the key capital for management (Pfeffer, 1994). The acquisition, accumulation, and preservation of human capital are the basis of organizational innovation and renewal, an important source of profits, and a factor in organizational success (Stewart, 1997). In the era of a knowledge economy that emphasizes knowledge management and intellectual capital, how to conduct human capital management is the key to obtaining organizational effectiveness.

Human capital management activities have the most direct impact on organizational effectiveness and can significantly promote organizational productivity improvement (Grant, 2020). Human capital management aims to harmonize human capital management practices with the organization's overall strategic objectives, establish the enterprise's unique productivity, provide the enterprise with a sustainable competitive advantage, and promote the effectiveness of organizational management. Human capital management is a new management trend that is used to cope with the challenges of the knowledge economy. However, the systematic research on human capital management is still lacking. What kind of influence human capital has on the effectiveness of organizational management, what kind of management activities enterprises must take to effectively manage and use human capital, and achieve the business objectives of enterprises are the problems that all modern enterprises and organizations must face, including private universities.

Since ancient times, there have been official and private schools (Academies, Private Schools, etc.) in China. In a long historical period, private and official universities have existed together. Private universities in modern China are missionary universities founded by foreign churches and private universities run by Chinese people. After the founding of the Republic of China in 1912, the government advocated the establishment of new schools and encouraged private schools, and private colleges and universities were greatly developed. 1952 all private colleges and universities were taken into public ownership, and private higher education was discontinued (Chen, 2008). The establishment of Zhongshan Amateur University in 1978 marked the return of private higher education in China to the historical stage after more than 20 years of silence. Since then, private education has entered a new period of development, going through four stages:

The first stage was the embryonic stage (1978-1985). In 1982, China stipulated in the Constitution that schools run by social forces should be integral to the state's educational undertakings. Most of the private educational institutions in this period were non-academic vocational training institutions and amateur schools with adults as the main object. However, private primary and secondary schools in basic education and private universities that can grant formal qualifications have not yet started.

The second stage was the exploratory stage (1985-1992). The 1987 Interim Provisions on the Running of Schools by Social Forces and the 1988 Interim Provisions on the Teaching and Management of Running Schools by Social Forces laid the legal foundation for the development of private education, marking that the state officially incorporated private education into the regular education management system (Chen, 2008). During this period, most private higher education institutions were non-academic training institutions and "examination assistance" institutions, such as college entrance examination tutoring classes, various foreign language training institutions, and self-examination tutoring classes. Most of these private education institutions were small in scale, with irregular school buildings and poor teaching facilities. The teachers are mainly retired teachers.

The third stage is the rapid development stage (1992-1997). In 1992, the 14th National Congress of the Communist Party of China (CPC) was held to encourage multi-channel and multi-form public funding for schools and non-governmental schools. In 1994, the State Education Commission accepted and approved for the first time the Yellow River Institute of Science and Technology, Shanghai Shanda College, and six other private colleges and universities with the qualification of issuing academic certificates, the implementation of formal academic education of private colleges and universities began to appear. Private colleges and universities have developed from the original non-academic education to both academic and non-academic education, and the focus of private schools has shifted to vocational education and vocational training.

The fourth stage is the normative stage (1997 to the present). In 1997, the State Council promulgated the Regulations on Running Schools by Social Forces, the first administrative regulation regulating private education in New China. The promulgation of the Law on the Promotion of Private Education in 2002 and the Regulations on the Implementation of the Law on the Promotion of Private Education in 2004 have provided institutional guarantees for the legalization and development of private universities. (Liu, 2023).

Through the four stages of development, China's private higher education gradually

grew; the Chinese Ministry of Education's relevant data shows that by the end of 2022, China had built a total of 764 private colleges and universities, 412 of which were university undergraduate levels (the Chinese Ministry of Education, 2022).

From scratch to further development, private universities have made a great leap in quantity and scale and have sent many high-quality talents to society (Liu & Xu, 2021). The development of private university education has made up for the shortage of public educational resources and increased the effective supply of educational resources. However, private universities still have a significant gap in management resources, teaching staff, and knowledge-sharing mechanisms compared to public universities. Its complex teaching equipment and soft facilities lag behind public universities to a certain extent, mainly because the backward management concept of private universities has fundamentally limited its development and improved school quality.

At present, the main problems facing the management of private universities focus on the management of human capital. Some studies have pointed out that private universities generally have high teacher turnover rates and insufficient knowledge-sharing culture, which not only affects the stability of the teaching team but also poses a challenge to the organization's overall effectiveness (Zhang et al., 2022). Private universities are increasingly aware that achieving efficient organization and management is challenging by relying on traditional human resource management methods. In order to optimize the organization and management of private universities, improve their effectiveness, and thus promote the running level of private universities, private universities must follow the law of knowledge management and the characteristics of human capital. Only through the organic combination of knowledge management theory and human capital management theory to enhance job satisfaction can private universities break through the bottleneck of human capital management and realize the effectiveness of organizational management (Tang, 2017).

In practice, many private universities have begun exploring management tools centered on knowledge management systems (KMS) to enhance the integration and utilization of knowledge resources (Wang et al., 2023).

In the knowledge management of private universities in China, the connotation of "knowledge" covers multiple levels, including explicit knowledge and implicit knowledge, theoretical knowledge and practical knowledge, individual knowledge and organizational knowledge, static knowledge, dynamic knowledge, and technical knowledge and management knowledge. (Tang, 2017) These different types of knowledge interact with each other, and through knowledge acquisition, storage, sharing, innovation, and other links, they promote the sustainable development of schools and improve the quality of education and management efficiency. In the process of knowledge management, knowledge suitable for sharing usually includes teaching resources, academic research results, management systems, school experience, technical knowledge, campus culture and brand promotion, and other information that promotes academic progress, teaching improvement, and cultural communication. There is also knowledge that is not suitable for sharing, which usually involves privacy protection, intellectual property rights, commercial secrets, or security risks, including privacy and personal information, internal management decisions and strategic planning, unpublished research results, business cooperation information, security-related information, etc., which require exceptional permission management.

In recent years, the knowledge management system (KMS) of private universities in China has developed from preliminary exploration to gradual improvement. With the advancement of information technology and changes in educational needs, private universities have made remarkable progress in knowledge management.

In the early 2000s, the knowledge management of private universities mainly relied on traditional paper materials and manual management, and the information level was low. With the popularization of the Internet and information technology, some universities have begun to try to introduce digital management tools, such as electronic file management systems and teaching resource libraries, to improve management efficiency (Wang, 2015). In the 2010s, with the state's emphasis on education informatization, private universities gradually established a knowledge management system with teaching resources management, scientific research achievements management, and administrative affairs

management as the core. These systems usually include teaching platforms, scientific research, and administrative management systems to realize information sharing and resource integration (Li, 2016). By 2020, many private universities in China have established relatively complete knowledge management systems covering teaching, scientific research, administration, and other aspects. For example, some universities have developed integrated teaching management platforms on which teachers and students can conduct course management, data sharing, and online communication. The scientific research management system is used for project application, results management, and academic exchange, which improves the efficiency and quality of scientific research work and effectively enhances teachers' professional and innovation abilities. The administrative management system covers personnel, finance, and logistics and realizes digitalization and automation of administrative affairs, which improves job satisfaction on the whole (Wang, 2020). In addition, the Chinese government has issued a series of policies to support the development of private universities, encouraging them to strengthen the people-oriented management model and knowledge-sharing practice to improve the quality of education and organizational effectiveness (Xu & Zhang, 2022).

However, private universities still face some challenges in constructing and applying knowledge management systems. The system function of some universities is not perfect, and there are obstacles to information sharing and collaborative work. In addition, digital literacy among teachers and students is uneven, affecting the effective use of knowledge management systems. Therefore, in the future, private colleges and universities need to improve the knowledge management system further, enhance the information level, and promote knowledge sharing and innovation (Chen et al.,2021).

Therefore, this study analyzed human capital management, knowledge management, the relationship between human capital management and knowledge management, the relationship between knowledge management and job satisfaction, the relationship between job satisfaction and organizational effectiveness, the relationship between human capital management and organizational effectiveness, and the relationship between knowledge management and organizational effectiveness in private universities

in the era of the knowledge economy, to provide specific references and guidance to the organization management and development of China's private universities.

1.2 Significance of the Problem

1) Theoretical significance

Nowadays, intangible capital, such as knowledge, is increasingly replacing traditional production factors; the importance of human capital management has been highly valued by scholars at home and abroad and has become a hot spot in the study of enterprise and organization effectiveness. Many scholars' research mainly focuses on the positive contribution of enterprise human capital to technological innovation performance. However, there are few existing researches on the impact of human capital management on organizational management effectiveness, the impact of human capital on knowledge management, the impact of knowledge management on job satisfaction, and the impact of job satisfaction on organizational effectiveness. Moreover, no consensus has been reached. Therefore, based on previous studies, this study explores the human capital management model that affects organizational effectiveness and further explores the influence relationship between these factors. This study enriches the research hypotheses on the relationship between enterprise human capital, knowledge management, job satisfaction, and organizational management effectiveness and provides more theoretical support for how to improve the effectiveness of organizational management.

2）Practical significance

This study analyzes and validates the relationship between human capital management, knowledge management, job satisfaction, and organizational effectiveness of China's private universities and then puts forward a human capital management model to improve the organizational effectiveness of China's private universities. The results of this study provide a reference for organizations to formulate human capital management measures in the future. It can improve the awareness of the importance of human capital management and knowledge management of private universities so that in the process of

their organizational management and development, through effective human capital management and knowledge management, they can better exert the enthusiasm and subjective initiative of employees, enhance their job satisfaction, maximize the management of talents and knowledge, constantly enhance the internal vitality and improve the level of running a school and maximize organizational competitive advantage.

1.3 Research Questions

The study seeks to find possible answers to the following:

What is the human capital management of private universities in China?

What is the relationship between human capital management and organizational effectiveness of private universities in China?

How to propose a human capital management model for organizational effectiveness of private universities in China?

1.4 Research Objectives

This research aims to explore the impact of human capital management on organizational effectiveness in private universities in China. The following research objectives are formulated:

1) To explore human capital management of private universities in China.

2) To examine the relationship between human capital management and organizational effectiveness of private universities in China.

3) To propose a human capital management model for organizational effectiveness of private universities in China.

1.5 Scope of the Study

In this study, the scope is classified as follows:

1) Area

This study is focused to the study of private universities in China. For private universities abroad, the applicability of the research results will have certain limitations.

2) Population

According to the statistics of China's Ministry of Education, as of June 15, 2023, there were 390 private universities (undergraduate) in China, distributed in 22 provinces, four municipalities directly under the Central Government, and four autonomous regions (excluding private universities in Hong Kong Special Administrative Region, Macao Special Administrative Region, and Taiwan). The number of teaching staff was 334,123.

This study's population selection was carried out in five regions of China: the East, South, West, North, and Middle.

The top three universities in each region were selected to represent the region's population. With a total population of 21,853, covering as many regions of China as possible.However, the number, type, opening time, and management characteristics of private universities in different regions are not balanced, and the specific differences between private universities in different regions may still affect the universality of the conclusion.

3) Content

Different scholars have different measurement dimensions for human capital, knowledge management, job satisfaction, and organizational effectiveness in different periods. This study's measurement scale mainly focuses on its research purpose and historical background and omits the influencing factors that may impact the results.

4) Time

This study was planned to take 1.5 years to complete.

1.6 Expected Results

1) This research enhances the understanding of human capital management and knowledge management in private universities in China.

2) Relevant theoretical support and implementation suggestions for realizing organizational effectiveness are provided according to the logic of human capital management and knowledge management.

3) Based on the specific situation of private universities in China, through the combination of theoretical research and field research, this research sorts out the factors that affect the organizational effectiveness of private universities in China, including human capital investment, incentive and evaluation, and how the human capital management of private universities affects the knowledge management process of private universities. This research suggests a human capital management model aiming at improving organizational effectiveness.

1.7 Definitions

Human Capital

Human capital means that employees or organizations share, acquire, recreate, and absorb elements such as implicit knowledge, emotional attitude, and social relations attached to individuals through activities such as education, training, investment, and management practice. These elements then become the capital that can transform enterprise innovation into economic benefits and create value for enterprises.

Human Capital Management

Human Capital Management (HCM) is the process of recruiting, managing, developing, and optimizing employees to enhance their capabilities and performance through systematic strategies and practices to achieve and enhance organizational effectiveness. HCM involves the main links of human capital investment, incentive, and evaluation.

Knowledge Management

Knowledge management refers to the process of knowledge creation, storage, sharing, and application by managers of organizations through knowledge content from various sources, scientific management methods as the means, and information technology as the basis. It involves managing and applying knowledge deep in the organization and knowledge in the external environment.

Job Satisfaction

Job satisfaction refers to the overall feelings, evaluations, and inner experiences related to career and environment. It can be measured from working conditions, wages and benefits, promotion, and management style, and is one of the main factors affecting the work performance of individuals and organizations.

Organizational Effectiveness

Organizational effectiveness means the degree to which an organization achieves its goals and is the dual effectiveness of output and process. It includes the ability of an organization to improve organizational performance, meet the needs of members, and achieve organizational vitality and sustainable development.

Private University

A private university is an institution of higher education in which social organizations, social groups, or individual citizens independently raise funds to run a school and enroll students in society. The most important characteristic of the private university is that it is independent in running the school, independent in running the school subject, independent in funding source, and independent in management.

CHAPTER 2
LITERATURE REVIEW

This study's theme is "Human Capital Management Model and Organizational Effectiveness in China's Private Universities." This chapter summarizes the literature on theories and concepts in the following order.

2.1 Human Capital Management Theory

2.1.1 Human Capital Investment

2.1.2 Human Capital Incentive

2.1.3 Human Capital Evaluation

2.2 Knowledge Management Theory

2.2.1 Knowledge Creation

2.2.2 Knowledge Storage

2.2.3 Knowledge Sharing

2.2.4 Knowledge Application

2.2.5 Tacit Knowledge

2.3 Job Satisfaction

2.4 Organizational Effectiveness Theory

2.4.1 Employee Engagement

2.4.2 Academic Culture

2.4.3 Industry Cooperation

2.5 Relevant Research

2.5.1 The Impact of Human Capital Management on Knowledge Management

2.5.2 The Impact of Knowledge Management on Job Satisfaction

2.5.3 The Impact of Job Satisfaction on Organizational Effectiveness

2.5.4 The Impact of Human Capital Management on Organizational Effectiveness

2.5.5 The Impact of Knowledge Management on Organizational Effectiveness

2.6 Conceptual Framework, Operational Definitions, Hypothesis, and Interpretation of Hypothesis

2.1 Human Capital Management Theory

In the late 1950s, with the rapid development of science and technology, the contribution of a unique factor of production, people with various production knowledge and skills, became increasingly prominent in production. The overall reason for productivity improvement could not be explained purely from the perspective of material capital and natural resources. The factor that has long been classified as "residual" is human capital. So, the theory of human capital came into being. The Wealth of Nations promoted Adam Smith as the pioneer of "human capital." Subsequently, some economic schools also carried out research in the field of human capital and produced some valuable innovative ideas. Although the research on human capital is gradually deepening, it has not attracted widespread attention in society due to the influence of economic development and the social environment at that time.

Due to the continuous development of the economy, the study of human capital entered a mature period in the 1960s and 1970s. T. W. Schultz of the Chicago School of Economics in the United States is one of the most famous research scholars who profoundly influenced the later period. He founded the human capital theoretical system and proposed that human capital depends on investment. Then, Gary S. Becker, another American economist, completed his important micro-analysis based on the macro study of human capital theory. Since the mid-1980s, researchers represented by Romer and Lucas have put forward the "new economic growth theory," incorporating human capital into economic growth models. Nowadays, Chinese and foreign academic circles have conducted in-depth research on human capital, which has been widely applied in political, economic, social, and other fields. It is not difficult to find that the development of human capital theory can be roughly divided into three main stages: the embryonic stage of the theory, the formation and development stage, and the deepening and perfecting stage. The specific periods, representatives, and relevant views of each development stage are shown in Table 2.1.

Table 2.1 Development Stages of Human Capital Theory, Representatives and Relevant Views

Stage of Development	Period	Representative Personage	Production	Opinion or Contribution
Embryonic stage of theory	1776	Adam Smith	A Study of the Nature and Causes of National Wealth	The labor skills learned through the investment of tuition and time are fixed in the worker and can be returned in profit.
	1840	Friedrich List	The National System of Political Economy	Capital is divided into material capital and spiritual capital, and individual productive forces are regarded as "producers of productive forces", which is a kind of spiritual capital.
	1848	John Stuart Mill	Principles of Political Economy	Skills and knowledge have an important impact on labor productivity.
	1890	Alfred Marshall	Principles of Economics	Investment in the education of the person himself is the most valuable investment.
	1968	William Petty	On Taxation	Labor theory of value
Formation and development stage	1958	Jacob Mincer	On Human Capital Investment and Personal Income Distribution	Human capital refers to the total stock of all kinds of production knowledge and skills contained in people themselves.
	1961	T·W·Schultz	Investment in Human Capital The Role of Education and Power Capital	The father of human capital, first clearly put forward the concept of human capital, human capital is dependent on investment, and distinguishes human capital from physical capital.
	1962	Edward Denison	Das Kapital	Through the quantitative analysis of human capital factors, the "residual" factors are explained as the scale economy effect, resource allocation and organizational management improvement, knowledge delay effect, and capital and labor quality itself.

Stage of Development	Period	Representative Personage	Production	Opinion or Contribution
	1964	Gary·S·Becker	Human Capital	The basic framework of human capital theory is established, and the equilibrium model of human capital investment and return is constructed. From the microeconomic point of view, this paper systematically expounds on the relationship between the various kinds of investment expenditure that form human capital and its income.
Deepening and perfecting stage	1986	Romer	Rising Returns and Economic Growth	The "knowledge spillover model" is proposed, which holds that the factors of production mainly include capital, unskilled labor, human capital measured by years of education, and new ideas measured by the number of patents. It holds that specialized human capital promotes the increase of income and makes the material capital produce increasing investment benefits, which is reflected as the "spillover effect" of knowledge.
	1988	Lucas	On the Mechanism of Economic Growth	It puts forward the "human capital spillover model", including the "two-period model" and "two-commodity model", demonstrates that specialized human capital is the driving force of economic growth, distinguishes the internal and external effects of human capital, and emphasizes the role of external effects of human capital on economic growth.
	1998	Lopez、Tomas &Wang	Human Capital Structure	In most countries,the index of human capital distribution structure is negatively correlated with per capital income,while the accumulation of human capital is positively promoting economic growth.
	2000	Birdsall	Research on the Structure of Human Capital	By measuring the distribution structure of human capital in various countries, it is concluded that there is a negative correlation between overall economic growth and the inequality of education.

(Source: Literature review database)

There are many interpretations of what human capital is.

The concept of human capital was first systematically elaborated as a form of knowledge, skills, and abilities that contribute to economic development (Schultz, 1961). Investments in education, training, and health care are regarded as key drivers for improving individual capabilities and technical levels, offering higher returns than other forms of capital investment and underscoring the crucial role of human capital in economic growth (Schultz, 1961). Building on this foundation, human capital has been further conceptualized as the comprehensive embodiment of individuals' knowledge, talents, and technological competencies reflected in economic activities (Thurow, 1970). Furthermore, the connotation of human capital has been expanded to encompass not only skills, talents, and knowledge reserves but also time, health, and life span, emphasizing its close linkage with individuals' holistic development and its central role in fostering economic advancement (Becker, 1964).

In recent years, the concept of human capital has evolved to reflect more diverse perspectives. For example, it has been argued that human capital is not only the aggregate of individual knowledge, skills, and abilities, but also includes the integration and application of these characteristics at the team and organizational levels (Ployhart et al., 2014). From a resource-based view, human capital at the unit level should be regarded as a strategic resource whose value depends not only on individual attributes but on how those attributes are deployed and leveraged within the organization (Nyberg et al., 2018). A more holistic definition further emphasizes that human capital encompasses not only observable skills and knowledge, but also motivation, attitudes, and other non-cognitive characteristics (Wright & McMahan, 2011). Additional research has highlighted that human capital includes experience, professional knowledge, and network relationships, which significantly influence corporate governance and performance (Boivie et al., 2021). Moreover, human capital has been conceptualized as a dynamic and variable resource rather than a fixed stock (Campbell et al., 2012).

Similarly, it has been proposed that human capital includes not only education and experience but also inherent qualities such as talent and creativity (Bryan & Williams,

2021). Others define human capital as the sum of employees' knowledge, skills, abilities and other characteristics, promoting innovation and sustainable enterprise development (Kucharčíková & Mičiak, 2020). From a development-economics viewpoint, human capital has been defined as the collection of knowledge, skills and abilities acquired via education and training (Marimuthu et al., 2009). Finally, the skill reserve possessed by the workforce and the flow and return on such skills are closely linked to individual productivity and externalities (Goldin & Katz, 2019).

These studies discussed the definition and concept of human capital from different angles, emphasized the integration, strategic value, and dynamic characteristics of human capital at the organizational level, and discussed the importance of education, training, experience, and intrinsic characteristics in the formation of human capital, providing multiple perspectives for an in-depth understanding of human capital.

Regarding human capital management (HCM), it has been argued that HCM constitutes a form of strategic management focused on talent acquisition, development and retention to enhance organisational competitive advantage (Khoruzhy et al., 2023). Others propose that HCM should be seen as a multidimensional concept encompassing not only individual abilities but also social relations and motivation (Gallardo-Gallardo et al., 2019). In diversified environments, HCM is described as the process of making and implementing decisions to optimise human resources (Sparrow & Makram, 2015). Finally, HCM is associated with the systematic identification and training of high-potential and high-performing employees to meet current and future organisational needs.

In the digital era, human capital management (HCM) is increasingly regarded as a strategic and technology-enabled function that supports recruitment, development, and optimisation of talent (Strohmeier, 2020). HCM is also characterised as an integrative approach encompassing talent acquisition, development, and retention with the goal of enhancing organisational competitiveness (Sohel-Uz-Zaman et al., 2019). Moreover, HCM can be understood as a multidimensional framework that goes beyond individual skills to include social relations, motivation, and strategic alignment of people with organisational goals (Gallardo-Gallardo et al., 2019).

To sum up, human capital theory has been widely concerned and studied since it was put forward. From the first time Schultz proposed the concept of human capital to the expansion and deepening of the connotation of human capital by subsequent scholars to the research and application of human capital in business management, the theory of human capital has been continuously developed and improved. Most scholars regard human capital as a unique capital stock that can create value. Human capital management is the process of strategically managing an organization's workforce, including recruitment, training, development, and retention strategies to maximize organizational performance and value. This study showed that human capital is an employee or organization through education, training, investment and, management practice, and other activities attached to individual implicit knowledge, emotional attitude, social relations factors such as sharing, acquisition, creation, and absorption, and can become innovation into economic benefits to the enterprise or organization to create value of capital. Human Capital Management (HCM) is the process of recruiting, managing, developing, and optimizing employees to enhance their capabilities and performance through systematic strategies and practices to achieve and improve organizational efficiency. Human capital management involves three main links: human capital investment, human capital incentive, and human capital evaluation.

2.1.1 Human Capital Investment

Human-capital investment has garnered significant attention from scholars in recent years, with various studies emphasising its critical role in economic growth, innovation, and societal development. For instance, it has been argued that education stands as a fundamental component of human-capital investment, underscoring the pivotal role of knowledge capital in driving economic growth (Hanushek & Woessmann, 2020). Similarly, evidence shows that educational policies can yield intergenerational benefits — for example, parental educational attainment not only boosts their income but also positively influences their children’s educational outcomes and economic achievements (Heckman & Karapakula, 2019).

Addressing the challenges of the twenty-first century, investment in education and training is necessary to enhance workforce quality, adapt to technological changes, and mitigate the effects of an aging population (Cai & Du, 2019). The link between human capital investment and corporate innovation is further substantiated, showing that a highly skilled workforce significantly improves firms' R&D capabilities and innovation performance, particularly in high-tech industries (Liu & Lu, 2020).

Scholars have increasingly emphasized a comprehensive understanding of human capital investment that extends beyond formal education. Investments should also focus on health and experiential learning to improve overall workforce productivity and adaptability (Bloom et al., 2020). Moreover, aligning human capital development with technological change is essential to ensure inclusive and sustainable growth in the era of automation (Autor, 2022).

Education continues to play a pivotal role in reducing inequality and fostering social mobility. Sustained investment in education contributes to narrowing wage disparities and promoting long-term economic equality (Goldin & Katz, 2021). Skill-based investment is also crucial to addressing labor market challenges associated with automation and demographic transitions (Acemoglu & Restrepo, 2022).

From a theoretical perspective, human capital investment remains a key driver of productivity and innovation (Becker, 1964). More recent macro-level studies have emphasized that human capital is an important factor for economic growth and development, influencing production directly and interacting with other factors of production (Ding et al., 2021; Negintaji et al., 2021).

Based on the above literature review, it is found that most of the studies on human capital investment focus on education investment and health investment, forming a human capital investment theory centered on education and health. Human capital is formed through investment in labor. The content of human capital investment includes many aspects. All the activities that are conducive to improving the quality and ability of laborers, the expenditure that is conducive to improving the utilization rate of human capital, and

the economic behavior that is conducive to improving people's knowledge stock, health level, and technical ability belong to the investment in human capital.

Therefore, this study defines the concept of human capital investment as the acquisition of knowledge, health, and skills of economic value through the investment and accumulation of employees in recruitment, education, medical treatment, and scientific research so as to improve the quality of employees, improve their health level, enhance knowledge acquisition and technical ability, and realize the value-added of social products and services in the future.

2.1.2 Human Capital Incentive

Against the backdrop of digital transformation, digital initiatives have been found to strengthen the property rights incentive system for human capital by enhancing corporate governance, mitigating short-sighted managerial behaviors, and promoting investments in intellectual capital, thereby reducing trust costs and fostering greater employee contributions (Li et al., 2020). Similarly, customizable reward systems, such as stock plans and long-term incentives, have been shown to align employees' interests with organizational objectives, enhancing loyalty and facilitating innovation (Collins & Mc Grath, 2020).

Promotions and compensation strategies further shape employee behavior and organizational outcomes. Evidence indicates that promotions not only provide financial benefits but also create "implicit incentives" by cultivating expectations for skill development, while integrating financial incentives with personal values and social norms can enhance team collaboration and drive innovation (Andrews & Descano, 2021; Pérez & Ramos, 2020). Compensation systems that combine a reasonable wage growth curve with performance-based promotions are effective in improving employee motivation and loyalty while reducing turnover. When coupled with adequate supervision and dynamic wage adjustments, these strategies additionally support long-term productivity and employees' commitment to organizational development (Gupta & Rao, 2023; Wang & Zhao, 2023).

In knowledge-intensive enterprises, long-term equity incentives are commonly employed to maintain stability and productivity among highly skilled employees, with organizational factors such as capital structure—including debt-to-equity ratios—further influencing employee work behavior (Kim & Park, 2022). Beyond organizational mechanisms, well-designed resource redistribution policies can incentivize families to invest in education and skill development, thereby promoting balanced growth of social human capital and supporting sustainable economic development (Sanders & Loeb, 2021). Collectively, these studies underscore the multifaceted nature of human capital management, demonstrating how financial and non-financial mechanisms, organizational design, and broader social policies interact to enhance employee performance, retention, and innovation.

These studies reveal the interactions and impacts between digital transformation, human capital property rights incentive mechanisms, employee promotion and motivation, and corporate governance structures. They collectively emphasize that in modern enterprises, the effective use of various incentive methods and policies can significantly improve employee job performance and loyalty while promoting the long-term development of the enterprise and sustainable economic growth.

Based on the review of the above literature, it is found that content-based motivation studies motivation from the perspective of motivating factors of behavior. People's enthusiasm and degree of motivation mainly depend on the satisfaction of needs, which is the driving force of human behavior. It is emphasized that the corresponding incentive plan should be designed according to people's different needs and social environments. It focuses on the motivation and motivation of the specific content of the research. Process-based motivation studies motivation from the perspective of intermediate psychological processes that link needs and behavior results. It focuses on the formation of people's motivation and the choice of behavior goals, combines personal needs and expectations with work goals, and tries to find out how employees choose their behavior and decide the direction of their behavior after assessing rewards. This kind of theory shows that employees should behave as expected by the enterprise. It is necessary to

establish the necessary connection between the behavior of employees and the satisfaction of their needs. Behavioral reinforcement incentives focus on studying how to change people's negative behaviors into positive ones. The purpose of incentives is to reform and correct people's behaviors, hoping to combine environmental design technology with moral inhibition to diversify the forms of incentives. The motivation of knowledge workers emphasizes that the key lies in the combination of material incentive and spiritual incentives, exploring, utilizing, and developing the creativity and potential of knowledge workers, improving their work enthusiasm, cultivating their sense of responsibility and professionalism, improving and promoting the production, dissemination, application and value-added of knowledge information, and establishing an incentive system compatible with corporate culture on this basis.

This study holds that human capital incentive refers to using reasonable salary, welfare, promotion, and other forms of incentive to encourage employees' enthusiasm and creativity and maximize the realization of the value of their human capital.

2.1.3 Human Capital Evaluation

Human capital evaluation has become a critical focus in contemporary research as organizations increasingly recognize its importance in enhancing strategic decision-making, improving organizational performance, and fostering innovation. Recent studies explore the definition of human capital evaluation and its various dimensions, methods, and strategic implications of human capital evaluation, highlighting its role in a rapidly changing and digitized business environment.

Definition of human capital evaluation:

Human capital evaluation refers to the systematic processes and indicators through which organizations quantify the strategic impact of their human resources, encompassing dimensions such as competencies, experience, relational capital, financial performance, innovation capability, and sustainability (Ployhart & Moliterno, 2011). These assessment frameworks facilitate both qualitative and quantitative measurement of workforce value, enabling organizations to make informed decisions about investments in education,

training, and human-resource development (Kartashova & Savochkin, 2023).

Comprehensive Evaluation Dimensions：

Human capital evaluation has increasingly been recognized as a multidimensional construct requiring comprehensive assessment frameworks. Scholars emphasize that evaluating human capital should incorporate various dimensions such as employee competence, satisfaction, creativity, leadership, and motivation, as these factors collectively contribute to organizational performance and innovation (Dahiya & Raghuvanshi, 2021). Similarly, accurate measurement of human capital is argued to support strategic decision-making by integrating financial and non-financial indicators, thus providing a more holistic understanding of human capital's overall value (Kucharčíková & Mičiak, 2020).

Methods and Innovation-Oriented Evaluation：

The choice of evaluation methods has also become a critical focus. Researchers note that combining qualitative and quantitative approaches leads to more balanced and insightful assessments, while tools such as balanced scorecards help integrate diverse performance dimensions into a unified analytical framework (Nawaz & Gomes, 2020). Moreover, given the limitations of traditional evaluation models that often overlook innovation capabilities, incorporating indicators such as creativity, learning ability, and adaptability has been proposed to better reflect both individual and organizational innovation potential (Wang & Zhang, 2021).

Digital Age Challenges：

In the context of digital transformation, the challenges of human capital evaluation are further amplified. Traditional models are considered insufficient to capture the value of digital competencies, calling for the development of new evaluation tools aligned with digital-era demands (Marimuthu & Cheong, 2020). Scholars also highlight that effective assessment frameworks should account for the interconnection between intellectual and human capital, linking employees' skills, knowledge, and experience to overall

organizational performance (Santos-Rodrigues & Faria, 2020).

Fairness and Organizational Performance

Beyond technical evaluation dimensions, fairness in human capital assessment has emerged as a crucial determinant of organizational effectiveness. Equitable and accurate evaluation practices are essential for identifying and developing strategic resources, as well as for enhancing employee satisfaction and loyalty (Morris et al., 2020; Sharma & Taneja, 2021). Furthermore, fair assessment processes foster knowledge sharing and organizational learning, which in turn drive innovation and sustainable competitive advantage (Masa'deh & Shannak, 2021; Lee & Kim, 2022; Garcia-Perez & Ayres, 2022; Tseng & Huang, 2023).

This literature provided a wealth of theoretical and practical perspectives to help organizations evaluate and manage human capital from multiple dimensions to advance their strategic objectives and competitive advantage. Accurate and fair human capital evaluation has an important impact on knowledge management and improving organizational effectiveness. Through a fair and transparent evaluation process, organizations can increase employee trust and engagement, facilitate the effective sharing and application of knowledge, and improve overall performance and competitiveness.

This study considers human capital evaluation to be the systematic measurement and analysis of employees' knowledge, skills, abilities, and experiences to determine their contribution to organizational performance. This includes evaluating employees' educational background, work experience, skill level, and ability to achieve organizational goals.

Table 2.2 Summary of Researchers' Variables of Human Capital Management

Authors (year)	Capital Investment	Capital Incentive	Capital Evaluation
Hanushek and Woessmann (2020)	√	√	√
Cai and Du (2019)	√	√	√
Liu and Lu (2020)	√	√	√
Jones (2021)	√	√	√
Autor (2020)	√	√	√

Authors (year)	Capital Investment	Capital Incentive	Capital Evaluation
Goldin and Katz (2019)	√		
Acemoglu and Restrepo (2021)	√	√	√
Becker (2020)	√		√
Negintaji, Z. et al. (2021)	√	√	
Hu, G. G. (2021)	√	√	√
Li, Liu, and Zhu (2020)	√	√	
Collins and McGrath (2020)		√	√
Andrews and Descano (2021)	√	√	
Pérez and Ramos (2020)	√	√	
Gupta and Rao (2023)		√	√
Wang and Zhao (2023)	√	√	
Kim and Park (2022)		√	
Sanders and Loeb (2021)		√	
Andersson, T., Chowdhury, E. H., & Skoog, M. (2018)	√		√
Decker,C., & Spitz-Oener, A. (2019)	√		√
Dahiya and Raghuvanshi (2021)		√	√
Kucharčíková and Mičiak (2020)		√	√
Nawaz and Gomes (2020)	√	√	√
Wang and Zhang (2021)			√
Marimuthu and Cheong (2020)		√	√
Santos-Rodrigues and Faria (2020)	√		√
Snell, and Lepak (2020)	√	√	√
Sharma and Taneja (2021)	√	√	√
Masa'deh and Shannak (2021)	√		√
Lee and Kim (2022)		√	√
Garcia-Perez and Ayres (2022)		√	√
Tseng and Huang (2023)	√	√	√
Summary of this research	√	√	√

Created by Researcher

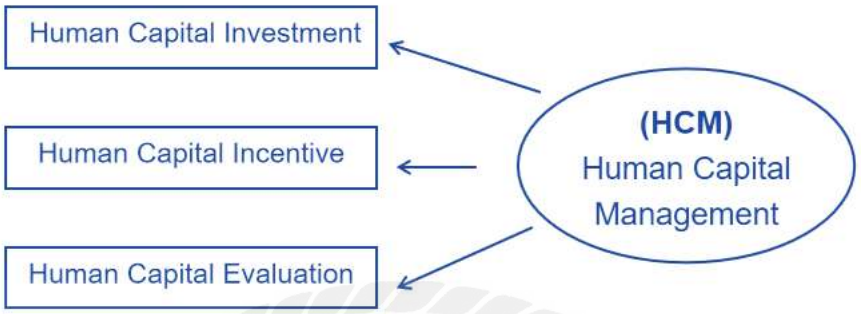


Figure 2.1 Factors of Human Capital Management
(Source: Hanushek & Woessmann, 2020)

2.2 Knowledge Management Theory

Knowledge has become the core resource in the modern economy, and adequate judgment and data analysis can significantly improve economic efficiency and corporate governance (Grant, 2022). Based on this background, knowledge management is a systematic process of acquiring, sharing knowledge, and utilizing an organization's intellectual resources to achieve stated goals (Wiig, 2020; Alavi & Leidner, 2021). Knowledge management is not only a static process but also a complex and dynamic process involving the flow and interaction of knowledge inside and outside the organization (Bennett & Lemoine, 2020). With the development of technology, especially the advancement of digital transformation, the mode of knowledge management has changed significantly. The intervention of technology not only improves the efficiency of knowledge management but accelerates the dissemination and sharing of knowledge (Kane & Alavi, 2021).

The promotion of innovation cannot be separated from the accumulation, integration, and re-creation of knowledge. Many studies emphasize that the core driving force of an organization in innovation is the continuous flow of knowledge (Hussein et al., 2021). Especially in the high-tech industry, innovation is more dependent on the input and

sharing of knowledge, so organizations must enhance their innovation capabilities through effective knowledge management strategies. In order to cope with the rapidly changing external environment, Zhao and Chen (2022) proposed a "dynamic knowledge management model," emphasizing that organizations need to flexibly adjust their knowledge management strategies to adapt to changes in the external environment.

In addition, knowledge management, as an important organizational practice, involves the systematic alignment of people, technology, and processes aimed at enhancing innovation and organizational efficiency. Henz and Oliveira (2024) pointed out that knowledge management not only contributes to organizational learning but also plays an important role in improving organizational effectiveness. Orekhova and Nikitina (2024) further argued that knowledge management is not only a process but also a strategic approach for organizations to effectively manage knowledge and human resources, especially in promoting organizational innovation.

For the classification of knowledge management, the researchers generally can be divided into explicit knowledge management and tacit knowledge management (EKM) (TKM), structured and unstructured knowledge management, and knowledge management (Garcia-Penalvo et al., 2020). These classifications help scholars more clearly understand the process of knowledge acquisition, dissemination, and application and further improve the implementation effect and innovation ability of knowledge management in organizations.

There are two views on knowledge management: information-oriented knowledge management and human-oriented knowledge management. Among them, the information-based knowledge view holds that knowledge management refers to the organization of explicit and tacit knowledge. According to the people-oriented view of knowledge management, knowledge management refers to creating a harmonious knowledge exchange and sharing environment to encourage and facilitate knowledge application, sharing, and innovation.

This study concludes that knowledge management refers to the process of

knowledge creation, knowledge storage, knowledge sharing, and knowledge application by managers of organizations through knowledge content from various sources, scientific management methods as the means, and information technology as the basis, through the management and application of knowledge deep in the organization and knowledge in the external environment, The purpose is to leverage knowledge management to maximize knowledge sharing and innovation within the organization, establish the organization's knowledge advantage, enhance organizational effectiveness, and ultimately, transform these into the organization's core competitiveness.

2.2.1 Knowledge Creation

As a core process of knowledge management, knowledge creation demonstrates multidimensional characteristics and plays a vital role across various research fields. Dalkir (2020) defines knowledge creation as the process of transforming tacit knowledge into explicit knowledge through individual and collective learning, innovation, and creative activities. This process involves knowledge generation, sharing, and application and significantly contributes to enhancing organizational performance. Expanding on this, Nonaka and Takeuchi (2021) described knowledge creation as a dynamic and interactive process where individuals and teams within organizations continuously exchange tacit and explicit knowledge to generate new insights. They introduce the concept of the "knowledge-creating company" concept, emphasizing that ongoing knowledge creation is essential for sustained innovation.

The relationship between leadership, collaboration, and knowledge creation is widely explored in organizational management. Donate and de Pablo (2020) found that knowledge-oriented leadership fosters organizational innovation by promoting knowledge creation. Similarly, Jeong (2020) highlighted the role of transformational leaders in enhancing knowledge creation by interacting with subordinates' expertise and interpersonal relationships. Kang and Lee (2021) further emphasized that knowledge sharing and personal learning are crucial in generating new ideas and innovative solutions. They noted that learning goal orientation moderates the relationship between knowledge sharing and

creativity.

The significance of knowledge creation extends beyond organizations to educational and digital platform contexts. Chatti and Muslim (2021) proposed the "knowledge-creating school" concept, advocating for educational institutions to foster creativity and critical thinking through collaborative and innovative practices. In contrast, Bereznoy et al. (2021) explored the intertwining of knowledge sharing and creation within digital platform ecosystems, offering a novel framework for knowledge management in digital environments.

Technology and cross-cultural dynamics also play pivotal roles in shaping knowledge-creation processes. Bag et al. (2021) introduced an integrated artificial intelligence framework to enhance B2B marketing decision-making through knowledge creation, ultimately improving firm performance. Chin et al. (2021) proposed "polychronic knowledge creation," highlighting the complexities of knowledge creation mechanisms in cross-border business models within a digitalized context. Konno and Schillaci (2021) examined the evolution of knowledge creation theory in the context of Society 5.0, emphasizing its contribution to modern innovation management.

Lastly, some scholars have critiqued traditional knowledge creation models and called for refinement. Gourlay (2020) questioned the empirical validity of the SECI model and urged further research to deepen understanding and improve practical knowledge management approaches.

These studies underscore the multifaceted nature of the knowledge-creation process and its critical role across various fields. Collaboration, leadership, technology, and innovation are key drivers of knowledge creation, providing essential momentum for organizational and societal development.

This research holds that knowledge creation involves converting individual or collective tacit knowledge into explicit knowledge in various ways and promoting the generation of new knowledge through knowledge sharing, integration, and innovation.

2.2.2 Knowledge Storage

Knowledge storage is crucial in multiple academic and professional domains, facilitating knowledge management, innovation, and decision-making.

In the educational domain, Elena et al. (2020) explored the relationship between knowledge management and organizational culture at Narxoz University, highlighting the critical role of knowledge storage in educational institutions. Building upon this, Pham et al. (2021) utilized a fuzzy analytic hierarchy process to propose a university knowledge management model. This underscores the necessity of systematic knowledge storage strategies to facilitate efficient knowledge sharing and retrieval in academic environments.

The construction sector also recognizes the significance of knowledge storage for effective project management. Hu et al. (2021) studied the role of knowledge storage and management in Building Information Modeling (BIM) technology, demonstrating how knowledge storage is pivotal for the successful integration of knowledge science and BIM practices. Likewise, Jiang et al. (2021) applied knowledge graphs to manage construction safety standards, showcasing how knowledge storage supports compliance with safety regulations by organizing and preserving knowledge.

Knowledge storage is equally essential for handling and analyzing complex data in fields such as traffic safety and business resilience. Zhang et al. (2022) highlighted the importance of knowledge storage in traffic accident analysis using knowledge graphs, emphasizing its role in extracting valuable insights from large datasets. Similarly, Zayed et al. (2022) focused on how micro-entrepreneurs leverage knowledge management as a resilience strategy, demonstrating that knowledge storage is crucial for organizational adaptation in challenging economic conditions. In digital innovation, Alghamdi et al. (2023) explored the impact of social media analytics on sustainable knowledge management, stressing the importance of knowledge storage for facilitating knowledge sharing and productivity across social networks.

Technological advancements have also underscored the relevance of knowledge storage. Chen et al. (2024) examined knowledge storage within multilingual pre-trained

language models (PLMs), proposing an innovative approach to identify knowledge neurons across diverse languages and architectures. This study highlights the potential for knowledge storage systems that transcend language barriers, enabling more effective and inclusive knowledge management.

The broader academic literature further emphasizes the foundational importance of knowledge storage in knowledge management. Lin (2019) defined knowledge storage as the process of encoding and preserving explicit and tacit knowledge within organizations, ensuring that it is accessible and reusable. Kianto et al. (2019) argued that efficient knowledge storage enhances work efficiency and satisfaction by enabling employees to access vital information easily. Robust knowledge storage practices also promote knowledge sharing and organizational learning, key innovation drivers. Donate and de Pablo (2020) further elaborated that knowledge storage involves structuring knowledge to maximize its use for decision-making and innovation, thereby increasing organizational effectiveness.

Inkinen (2021) found a positive relationship between knowledge storage and company performance, highlighting how systematic knowledge storage facilitates innovation and competitive advantage. Jeong (2020) also stressed the importance of practical knowledge storage in enabling organizations to accumulate and apply employee expertise, thus fostering ongoing knowledge creation and innovation.

In addition to these studies, Saratchandra & Shrestha (2022) examined the role of cloud computing in knowledge management for small and medium-sized enterprises (SMEs), particularly in knowledge acquisition, creation, storage, sharing, and use. They found that cloud-based knowledge management systems significantly improve knowledge storage, making knowledge more reliable, secure, and accessible for SMEs. Similarly, Almuayad et al. (2024) explored the application of knowledge acquisition and storage on the performance of banks in Yemen, revealing that adequate knowledge storage, combined with fintech innovation, positively influences bank performance.

In summary, the literature emphasized that knowledge storage is a cornerstone of Knowledge management. Knowledge storage is the recording and storage of knowledge data and how to organize, classify, and retrieve this knowledge for future application. In addition, the importance of knowledge storage in improving organizational performance is highlighted. Knowledge storage helps organizations better manage and utilize knowledge and provides a solid foundation for innovation and efficiency.

This study considers knowledge storage to be the systematization, organization, and archiving of knowledge for effective retrieval, sharing, and utilization in the future.

2.2.3 Knowledge Sharing

Scholars have extensively studied enhancing knowledge sharing and collaboration among employees in recent years. With the development of digital technologies, research has shown that digital platforms play a crucial role in promoting knowledge sharing. Gupta and Kohli (2022) found that technological platforms can break geographical barriers, particularly in multinational companies, improving team collaboration efficiency and knowledge sharing. Additionally, Collins et al. (2021) explored the role of social media platforms, arguing that companies can use internal and external social platforms to facilitate employee interaction, thus enhancing knowledge flow and sharing.

At the same time, with the rise of remote work, knowledge management in virtual teams has become a new research focus. Zhang et al. (2020) found that virtual teams effectively share knowledge through cloud technology and online collaboration tools. These tools enable knowledge transfer and innovation across regions in a globalized context. These studies demonstrate that knowledge sharing is essential for organizational success and is a key factor driving innovation.

From a theoretical perspective, Wu et al. (2020) explored the impact of work engagement, intrinsic motivation, and transformational leadership on knowledge sharing, arguing that these factors are closely interrelated. Obrenovic et al. (2020) focused on the role of altruism in tacit knowledge-sharing behaviors, emphasizing the mediating role of knowledge-sharing willingness and subjective norms.

Regarding the relationship between knowledge sharing and organizational innovation, Azeem et al. (2021) highlighted the importance of organizational culture in enhancing competitive advantage through knowledge sharing and innovation. Singh et al. (2021) examined the role of social capital in knowledge-based human resource management practices and innovation performance, pointing out that social capital plays a positive role in improving innovation performance.

On the other hand, Pereira et al. (2021) investigated employees' positive and negative intentions in knowledge sharing and hiding, stressing the importance of organizational support in promoting knowledge sharing. Chaudhary et al. (2021) explored the impact of paternalistic leadership on knowledge sharing among nurses, focusing on the mediating role of organizational commitment. Baharun et al. (2021) analyzed the knowledge-sharing strategies implemented by SMA Nurul Jadid to improve human resource quality.

Finally, Montani et al. (2021) examined how knowledge sharing moderates the relationship between COVID-19-induced job stress and employee innovation, emphasizing the importance of investing in knowledge resources during the pandemic.

Overall, these studies collectively emphasized the critical role of knowledge sharing in driving innovation, organizational success, and employee well-being. By understanding the various factors that influence knowledge-sharing behavior, organizations can create an environment conducive to effective knowledge-sharing and utilization, thereby improving overall performance and competitiveness.

This study concludes that knowledge sharing means exchanging employees' knowledge, skills, and experiences. It ensures that the knowledge within an organization is available for employees whenever needed, and its benefits include retaining intellectual assets and improving productivity.

2.2.4 Knowledge Application

Knowledge application is critical across various domains, including education, business, technology, and healthcare. Several studies have explored the significance of knowledge application and its impact on different outcomes.

Parmin et al. (2020) examined Indonesian science teachers' views on the attitude, knowledge, and application of STEM concepts. Using surveys, the researchers gathered data on how teachers perceive and apply STEM concepts in their teaching practices. It highlights the importance of knowledge application in the educational context, showing that a structured knowledge management system can enhance teachers' ability to apply learned knowledge in practice, thus improving the effectiveness of their teaching. Similarly, Duan et al. (2021) focused on cross-border knowledge management and its impact on the innovation quality of multinational corporations. Their research delves into the relationship between knowledge creation, application, and innovation quality, aiming to understand how knowledge management can drive the success of business models within multinational corporations. The study emphasizes the role of knowledge application within these corporations in fostering innovation and driving organizational success.

In the context of small and medium-sized enterprises (SMEs), Ha et al. (2021) explored the relationship between knowledge management processes, entrepreneurial orientation, and organizational performance. Their research investigated how knowledge acquisition, conversion, application, and protection influence entrepreneurial orientation and business performance. They underscore the importance of knowledge application in enhancing SMEs' performance, demonstrating that effectively applying knowledge can lead to improved innovation and competitiveness. Using concept mapping, Esmaeili et al. (2021) examined the knowledge conversion processes within Occupational Safety and Health Management Systems (OSH-MS). The study illustrates how tacit and explicit knowledge interacts within safety management systems, highlighting the critical role of knowledge application in ensuring workplace safety and health. It reveals that applying knowledge is vital for maintaining and improving occupational safety standards. Parmin et

al. (2020) define knowledge application as using acquired knowledge to solve real-world problems, while Ha et al. (2021) saw it as leveraging knowledge resources to enhance performance and innovation. Nicolay et al. (2021) highlighted the importance of transforming acquired knowledge into practical solutions. These studies collectively demonstrate that knowledge application is essential for improving organizational outcomes in education, business, safety, or technology development. Effective knowledge management practices, including knowledge sharing and continuous learning, are crucial for facilitating the application of knowledge in these contexts.

Finally, Saghafian et al. (2021) investigated the application of human factors in the development process of immersive visual technologies (IVT). Their study emphasizes integrating human factors into IVT design to improve user experience and technology usability. The research underscores how knowledge application is pivotal in advancing immersive technologies and ensuring their effectiveness in real-world use.

This literature explored the definition and importance of knowledge application from different perspectives. They emphasize the central role of knowledge application in knowledge management and provide case studies and studies in different fields, emphasizing its key role in organizational performance improvement and innovation.

This study concludes that knowledge application refers to the process in which employees apply their knowledge, skills, and experience to work tasks and problem-solving. This process involves the effective use and transformation of knowledge acquired within and outside the organization to create value and advance the organization's goals and achievements.

2.2.5 Tacit Knowledge

Tacit knowledge, characterized by its personal, experiential, and context-specific nature, plays a crucial role in knowledge management processes and is particularly vital for knowledge-intensive tasks (Obrenovic et al., 2020; Zhang et al., 2021). Unlike explicit knowledge, which can be easily codified and shared, tacit knowledge often requires interpersonal interactions and experience-based learning for effective transmission

(Supanitchaisiri et al., 2020; Miton & DeDeo, 2022).

The effective sharing of tacit knowledge significantly influences organizational innovation and competitive advantage. Duan et al. (2021) highlighted that while explicit knowledge hiding may hinder innovation, tacit knowledge hiding has a more profound negative impact due to its critical role in problem-solving and creativity. The smooth flow of tacit knowledge within organizations can mitigate these adverse effects and enhance innovation quality.

In the context of industry practices, Zhao et al. (2020) emphasized embedding tacit knowledge in individual experiences, making it an essential component of effective knowledge integration strategies within firms. Multinational corporations often recognize this value, strategically recruiting in industrial districts to access and leverage specialized tacit knowledge for organizational success (Hervás-Oliver et al., 2021).

The cultural and organizational environment significantly affects tacit knowledge sharing. Kucharska (2021) found that a culture embracing mistake acceptance fosters tacit knowledge exchange in the IT industry, driving innovation. Similarly, trust plays a pivotal mediating role in transferring pro-environmental tacit knowledge within small and medium-sized tourism enterprises (McTiernan et al., 2021).

Tacit knowledge sharing encounters unique barriers in non-profit organizations. Oliveira et al. (2021) argued that strategic interventions can enhance human capital and operational efficiency by overcoming these challenges. Supanitchaisiri et al. (2020) proposed a self-extraction model to facilitate tacit knowledge capture, addressing difficulties inherent in traditional extraction methods.

Cultural dimensions also shape the transmission of tacit knowledge. Miton and DeDeo (2022) explored the "tacit teaching" model, emphasizing its potential to achieve high-accuracy knowledge transfer despite the inherent challenges of codifying such knowledge. This model underscores the dynamic, non-linear tacit knowledge-sharing process, particularly in culturally diverse settings.

Overall, tacit knowledge emerges as a critical yet complex variable within knowledge management. Its effective acquisition, sharing, and integration foster innovation and enhance organizational adaptability and resilience (Kucharska & Erickson, 2023). These findings demonstrate that understanding and leveraging tacit knowledge is indispensable for organizations seeking sustained competitive advantages in today's dynamic environments.

Table 2.3 Summary of Researchers' Variables of Knowledge Management

Authors (year)	Knowledge Creation	Knowledge Storage	Knowledge Sharing	Knowledge Application	Tacit Knowledge
Dalkir (2020)	√	√	√	√	√
Nonaka and Takeuchi (2021)	√				√
Donate and de Pablo (2020)	√				
Jeong (2020)	√				
Alghamdi et al. (2023)	√	√	√		
Bereznoy et al. (2021)	√		√		
Zhang et al. (2022)		√			
Pham et al. (2021)		√	√		
Similarly, Zayed et al. (2022)		√			
Chen et al. (2024)		√			
Saratchandra and Shrestha (2022)	√	√	√	√	
Almuayad et al. (2024)		√	√		
nkinen (2021)		√	√		
Gupta and Kohli (2022)			√		√
Collins et al. (2021)	√		√		
Azeem et al. (2021)			√	√	√
Singh et al. (2021)			√		
Pereira et al. (2021)			√	√	
Chaudhary et al. (2021)			√		√
Duan et al. (2021)	√			√	
Ha et al. (2021)	√	√	√	√	

Authors (year)	Knowledge Creation	Knowledge Storage	Knowledge Sharing	Knowledge Application	Tacit Knowledge
Esmaeili et al. (2021)				√	√
Parmin et al. (2020)				√	
Ha et al. (2021)				√	
Nicolay et al. (2021)			√	√	
Saghafian et al. (2021)				√	
Zhang et al., (2021).			√		√
Miton & DeDeo, (2022).			√		√
Duan et al. (2021)	√		√		√
Kucharska (2021)	√				√
McTiernan et al., (2021).	√		√		√
Oliveira et al. (2021)					√
Miton and DeDeo (2022)	√				√
Kucharska & Erickson, (2023).			√	√	√
Summary of my research	√	√	√	√	√

(Source: Researcher, 2024)

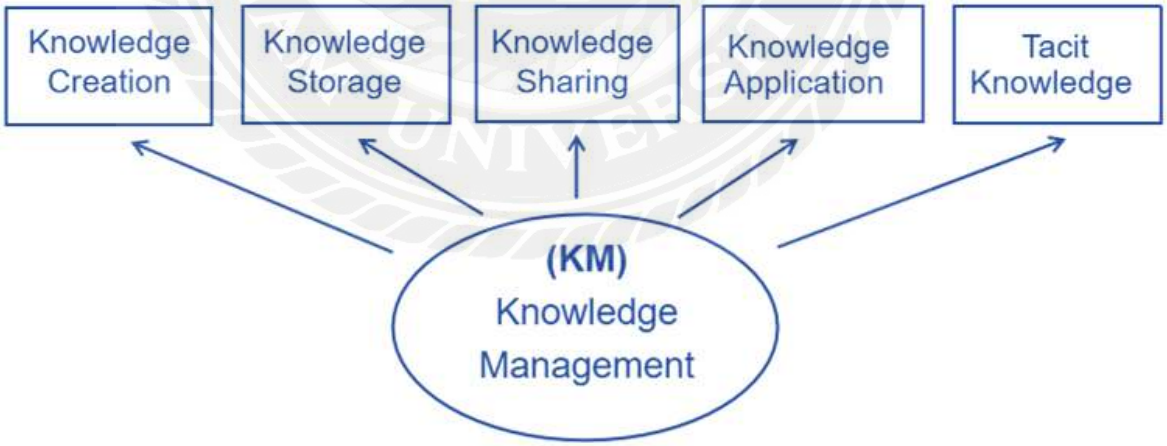


Figure 2.2 Factors of Knowledge Management

(Source: Dalkir, 2020)

2.3 Job Satisfaction

Job satisfaction is vital to employee well-being and a critical driver of organizational success. Scholars have explored its determinants across various industries, emphasizing its implications for performance, work engagement, and organizational citizenship behavior.

Huang (2019) described job satisfaction as a pleasant or positive emotional state derived from evaluating work experiences and fulfilling job-related needs, influenced by salary, promotion opportunities, management style, co-workers, and working conditions. Similarly, Liu et al. (2021) highlighted its subjective nature by comparing what employees expect and receive in terms of compensation, benefits, and workplace relationships. Sapta et al. (2021) positioned job satisfaction as a process that enhances productivity and motivation when employee needs are met. Pratama et al. (2022) further conceptualized it as a combination of emotions, beliefs, and behavioral intentions about one's current job, measurable through job roles, compensation, promotion, management, and relationships with colleagues.

The importance of job satisfaction is evident in its positive correlation with job performance across different sectors. Echeverria and Galaz (2019) demonstrated its predictive role in job performance among librarians in Merida, Mexico. Hou et al. (2020) underscored the strong influence of job satisfaction on job performance through a nationwide study in China, while Silva et al. (2024) quantified this relationship in a healthcare context, showing that job satisfaction explained 6% of the variance in job performance. Memon et al. (2023) verified a similar positive relationship in the construction industry, indicating that satisfied employees exhibit higher productivity and effectiveness. Ohunakin & Olugbade (2022) further highlighted job satisfaction's role as a moderator between turnover intention and job performance, contributing to workforce stability.

Recent studies have extended the exploration of job satisfaction into new contexts. In the educational sector, Lie et al. (2024) examined models for enhancing lecturer job satisfaction in the era of Society 5.0, emphasizing its influence on organizational

citizenship behavior. Similarly, Maharani et al. (2024) explored the roles of family-supportive supervisor behavior, work-life balance, job satisfaction, motivation, and performance among married private employees, demonstrating the importance of supportive work environments. Salim et al. (2024) highlighted leadership and compensation as crucial factors influencing employee attitudes toward work.

In the healthcare sector, Li et al. (2024) investigated the association between perceived overqualification, work engagement, and job satisfaction among nurses, emphasizing the need for job-role alignment to boost satisfaction. Furthermore, Abdulkareem et al. (2024) examined the negative effects of digital overload on job autonomy and job satisfaction among civil servants in Nigeria, underscoring the detrimental impact of excessive digital demands on employee well-being.

Overall, the research highlights that various contextual factors, including leadership, compensation, work-life balance, and digital conditions, shape job satisfaction. Its strong connection to job performance and organizational stability reinforces the need for strategic initiatives to enhance employee satisfaction across different professional environments.

2.4 Organizational Effectiveness Theory

The meaning of organizational effectiveness is broad and profound. Scholars have discussed it a lot, but no conclusion has been reached.

Barnard (1938) first proposed the concept of organizational effectiveness in social systems theory. He used the two principles of "effectiveness" and "efficiency" to address problems where individual and organizational goals are at odds. He believed an organizational system is "effective" when it successfully collaborates to achieve its goals. On the contrary, if organizational goals are not achieved, there must be a problem with the collaborative system, and the system will face the risk of disintegration or collapse.

Drucker (1954) argued that organizational effectiveness is the ability to select and achieve appropriate goals.

Campbell (1977) proposed that 30 indicators together constitute organizational

effectiveness. Based on this research, many scholars have made further improvements, such as the competitive value model proposed by Quinn and Rohrhaugh (1983). Robbins (2003) believed that effective organization members should have clear goals and skills, and members should communicate, coordinate, trust each other, and have consensus. At the same time, there should be appropriate leadership and internal and external support.

In Management by Robbins (2023), organizational effectiveness is defined as a measure of the appropriateness and fulfillment of organizational goals.

The influential factor of organizational effectiveness is a research focus, based on which early scholars put forward their research models. See Table 2.4

Table 2.4 Research Model of Organizational Effectiveness

Author	Time	Description of the Model
J.Richard Hackman.	1983	Normative (IPO) model: This model believes that organizational structure design, personal characteristics (including personal efforts and knowledge and skills), and social environment factors will impact the organization's interaction process and then affect the output (including internal organizational cohesion, employee satisfaction, external production efficiency, customer satisfaction, etc.).
Michael A. Campion, Gina J. Medsker, & A. Catherine Higgs.	1993	Five-factor model: This model combines job design, interdependence (the interdependence of tasks and rewards), organizational structure, environment, and operation process as the factors influencing organizational effectiveness. It examines many factors and emphasizes the influence of the operation process on organizational effectiveness. The evaluation indicators of organizational effectiveness include productivity, satisfaction, and manager evaluation.

Author	Time	Description of the Model
Susan G. Cohen & Diane E. Bailey.	1997	Heuristic model: This model describes the influence of organizational environment, composition, task design, management operation process, and psychological characteristics on organizational effectiveness and theoretically expounds the relationship between each influencing factor.

(Ref: Literature review database)

In recent years, the research on organizational effectiveness has gradually deepened, and many scholars have discussed its antecedents and measurement dimensions from different angles. Dhoopar, et al. (2022) conducted a systematic review of 134 relevant literature and proposed a comprehensive conceptual model, emphasizing that the anthems of organizational effectiveness can be examined from the individual, team, and organizational levels, and its measurement dimensions include finance, operation, structure, and attitude. However, existing research has mainly focused on organizational antecedents and non-financial measurement dimensions.

For the former factors, Naveed, et al. (2022) found that organizational culture positively influences organizational effectiveness and the relationship between regulation and organizational innovation. At the same time, Hassan and Hatmaker (2021) showed that leaders can significantly improve organizational effectiveness by motivating employees, providing development opportunities, and creating a supportive environment. In addition, Rahman and Zanzi (2020) emphasized the role of learning culture and innovation in promoting organizational effectiveness.

In terms of measurement dimensions, Kreutzer and Jacobs (2020) proposed that it is difficult to fully reflect the health status of an organization with a single dimension, so comprehensive assessment should be conducted from multiple perspectives, and attention should be paid to the emerging evaluation index of social influence of an organization. Santos and Tavares (2021) believed that in addition to traditional financial and operational indicators, public organizations should also pay attention to service quality, policy

implementation effects, and public satisfaction. Aguinis and Glavas (2019) pointed out that the effect of corporate social responsibility (CSR) activities has also become an important indicator of an organization's effectiveness.

In institutions of higher education, organizational effectiveness has also been widely acknowledged. Paredes-Saavedra et al. (2024) found that a culture of innovation and teamwork significantly affects the organizational effectiveness of universities and emphasize that good communication and shared goals are essential for sustainable development. Cai & Liu (2020) proposed that leadership, strategic planning, and organizational culture are key factors that influence Chinese higher education institutions, and clear strategic goals and effective leadership are conducive to improving performance.

In addition, digital transformation also become an important factor in promoting university organizational effectiveness. Goh & Tong (2023) showed through the case study of Southeast Asian universities that the effective integration of information technology significantly improved the efficiency of teaching management and academic research. Saleh & Mahmood (2020) emphasized the core effects of organizational learning culture, innovation ability, and management flexibility on university organizational effectiveness.

In terms of evaluation dimensions, Cai & Yang (2021) proposed that the five key dimensions of organizational effectiveness of Chinese universities include academic achievements, teaching quality, student satisfaction, resource utilization efficiency, and social service contribution. Alhija & Fresko (2022) further identified leadership, academic freedom, and teamwork as key indicators of university effectiveness. Lopez & Garcia (2021) emphasized that academic excellence, resource allocation, and social responsibility are the core factors in evaluating the effectiveness of university organizations.

To sum up, organizational effectiveness research at the enterprise level continues to expand and has brought new development trends to the university. From culture, leadership, learning, and innovation capabilities to the integrated application of digital technologies, universities need multi-dimensional measurement and integrated

management in changing environments to continuously improve organizational effectiveness.

A university's organizational effectiveness is reflected in its efficiency, results, and impact in achieving its stated objectives (such as teaching, research, social services, cultural inheritance innovation, etc.). For private universities, organizational effectiveness is reflected in the quality of student training and social reputation, sustainable development, resource utilization efficiency, and the rationality of internal organizational management and governance structure.

There are different types of private universities in China: according to the source of funds, they are divided into enterprise investment type, individual investment type, and social organization investment type. According to the training objectives, it can be divided into comprehensive, application, and art types. According to the mode of cooperation in running schools, it can be divided into Sino-foreign cooperation and domestic cooperation (Chen, 2018). Although different types of private universities have their characteristics, teaching quality, scientific research innovation, school-enterprise cooperation, social service, internal management and governance, campus culture, and values are common indicators. These indicators are the basis for the university to achieve its mission and an important guarantee for its social recognition and sustainable development.

This study defines the dimensions of organizational effectiveness based on the actual characteristics of the research objects and holds that the organizational effectiveness of private universities in China should be measured in three dimensions: employee engagement, academic culture, and industrial cooperation.

2.4.1 Employee Engagement

In recent years, research on employee engagement has deepened, with scholars exploring its relationship with employee well-being, work resources, leadership styles, and organizational performance from various perspectives. Shuck and Reio (2020) reviewed and synthesized the relationship between employee engagement and employee happiness, highlighting that engagement is closely related to organizational performance and directly

affects employees' physical and mental health. They emphasized the need for organizations to adopt a systematic approach and foster a supportive work environment to enhance employee engagement and overall well-being.

From the perspective of resources, Saks et al. (2021) proposed a multilevel model exploring how work resources influence organizational outcomes by enhancing employee engagement. The study found that adequate resources, such as social support, feedback, and career development opportunities, can significantly boost employee engagement, promoting organizational innovation and efficiency.

Regarding employees' psychological states and attitudes, Sonnentag et al. (2020) discussed the intersection of employee engagement and job satisfaction. The study concluded that engagement affects employees' mental health and is closely linked to job satisfaction. Sonnentag emphasized that organizations should pay attention to employees' needs and provide emotional support to improve engagement and satisfaction.

Leadership style is another crucial factor influencing employee engagement. Mikhriani et al. (2022) reviewed the impact of leadership on engagement and pointed out that transformational and supportive leadership styles can significantly enhance employee engagement. The authors suggested that future research explore the relationship between leadership styles and employees' emotions and attitudes.

In addition, the Gallup (2020) report analyzed the global state of employee engagement and found that despite substantial investments by organizations, engagement levels remain low worldwide. The report stressed that organizations must foster more inclusive and supportive work environments to enhance engagement effectively.

In summary, existing literature highlights key factors affecting employee engagement, including happiness, work resources, and leadership styles. By adopting systematic management approaches and providing multilevel resource support, organizations can improve employees' psychological well-being and job satisfaction and significantly enhance performance and overall competitiveness.

2.4.2 Academic Culture

Academic culture is a vital element of higher education, shaping the experiences of students, faculty members, and administrators. Recent research has explored various dimensions of academic culture, highlighting its influence on educational innovation, teaching methods, research activities, and organizational change.

Tremblay and Bastien (2021) systematically reviewed the relationship between academic culture and organizational change, emphasizing its crucial role in driving educational innovation and adapting to institutional transformations. They argued that fostering a shift in academic culture requires careful consideration of interactions between faculty, students, and administrators while safeguarding academic freedom.

Academic culture's adaptability is also critical for enhancing teaching and learning practices. Gagnon and Ferris (2020) examined how evolving academic culture affects teaching methods, curriculum design, and evaluation standards. They emphasized that a responsive academic culture fosters innovation and improves teaching quality. Kusterer and Thomas (2022) further highlighted the challenges posed by digital transformation, constructing a framework to understand the dual impact of technology on teaching, research, and academic collaboration.

Research activities in higher education are also significantly influenced by academic culture. Brew and Lucas (2020) argued that academic culture shapes not only the quality of research but also research directions and interdisciplinary collaborations. They stressed the need for academic culture to prioritize collaboration and innovation in response to globalization and the changing research landscape. Jiang and Wang (2021) explored the role of academic culture in Chinese universities, finding that openness and inclusiveness are key to improving students' learning outcomes. They noted that interdisciplinary collaboration and academic freedom are critical in fostering students' innovative abilities.

Several studies have examined the relationship between academic culture and student experiences. Mucshini et al. (2020) proposed a hybrid learning model to reduce academic stress among accounting students by integrating face-to-face and online learning.

Wang et al. (2020) explored the academic acculturation of Chinese students in joint programs, highlighting cultural differences between home and host universities. Similarly, Abu-Kaf et al. (2020) investigated acculturative stress among Arab students in Israel, focusing on their challenges in reconciling cultural elements from their home and host environments.

The development of academic culture has also been linked to supporting student adaptation and success. Supriyanto (2021) described strategies for cultivating academic culture among students, identifying supporting and inhibiting factors. Bai et al. (2022) highlighted how international students can combat language and academic culture shocks by leveraging their cultural capital. Hafizha (2022) emphasized the importance of academic integrity and its defining characteristics. Fuller (2023) stressed the need to discuss cultural rhetorics to address disparities in academic culture and promote inclusivity.

Together, these studies underscore the multifaceted role of academic culture in higher education. From driving educational innovation and fostering inclusive learning environments to enhancing research collaboration and supporting student adaptation, academic culture is foundational for organizational effectiveness, teaching and learning, and institutional growth.

2.4.3 Cooperation with Industry

University-industry collaboration has emerged as a critical driver for technological innovation, economic development, and organizational effectiveness. Recent studies provide empirical evidence highlighting these partnerships' diverse benefits and challenges across different regions and industries.

Cheng et al. (2020) empirically analyzed university-industry cooperation in China, emphasizing its significant role in accelerating technological innovation. They highlighted that universities increasingly contribute to research transformation, technology incubation, and product development, especially in high-tech sectors. This collaboration is key to promoting economic development and driving industrial upgrades.

Liu & Li (2020) extended this discussion to European universities, exploring the impact of industry partnerships on organizational innovation. Collaboration allows academic institutions to reorient research efforts toward more marketable innovations. However, the study noted that different forms of cooperation—such as research collaborations, technology transfers, and industry support—yield varying outcomes. The authors emphasized the need for diverse and flexible cooperation models tailored to specific industry requirements.

The United States offers another perspective on the benefits of university-industry cooperation. Tornatzky & Fleischer (2020) demonstrated how such collaborations promote economic development by modernizing and optimizing the industrial structure through technology transfer, research support, and industrial training. Their case analysis underscored universities' strategic role in fostering local and national economic growth.

Gulbrandsen & Smeby (2022) examined the long-term effects of university-industry partnerships on academic outcomes. They found that these collaborations enhance the practical application of academic research and improve funding and access to advanced equipment for universities. However, the authors cautioned that excessive dependence on industry funding may compromise academic freedom, urging institutions to balance external collaboration and academic independence.

Zhao & Wang (2020) offered insights into joint research programs in biomedicine, demonstrating how collaborative efforts not only boost technological innovation but also contribute to the development of industry standards. Their study highlighted challenges such as intellectual property protection and selecting appropriate cooperation models as crucial issues that need careful management.

Overall, the literature underscores the multifaceted impact of university-industry collaboration. These partnerships drive technological innovation, enhance the marketability of academic research, and contribute to economic development and academic resource enhancement. Nonetheless, balancing cooperation with academic independence and addressing operational challenges remains vital for sustaining the effectiveness of these

collaborations.

Table 2.5 Summary of Researchers' Variables of Organizational Effectiveness

Authors (Year)	Employee Engagement	Academic Culture	Cooperation with Industry
Dhoopar, A., Sihag, P., & Gupta, B. (2022)	√	√	√
Hassan, S., & Hatmaker, D. M. (2021)	√	√	√
Kreutzer, K., & Jacobs, C. D. (2020)	√	√	√
Santos, A. C., & Tavares, F. O. (2021)	√	√	√
Aguinis, H., & Glavas, A. (2020)	√	√	√
Salem, O. E., & Samir, A. (2022)	√		
Goh, K. L., & Tong, C. S. (2023)	√	√	√
Almatrooshi, B., Singh, S. K., & Farouk, S. (2021)	√		√
Saleh , M. , & Mahmood , R. (2020)	√	√	
Cai , Y. , & Yang , X. (2021)	√	√	√
Alhija , FN-A. , & Fresco , B. (2022)		√	
Lopez , M. , & Garcia , L. (2021)		√	√
Dhoopar , A. , Sihag , P. , & Gupta , B. (2022)	√	√	√
Hassan , S. , & Hatmaker , D. (2021)	√		
Kreutzer , K. , & Jacobs , CD (2020)	√	√	√
Santos, A.C., & Tavares, F.O. (2021)			√
Aguinis, H., & Glavas, A. (2020)	√		
Salem, OE, & Samir, A. (2022)	√	√	
Shuck and Reio (2020)	√		√
Saks (2021)	√		
Sunday (2020)	√		√
Albrecht and Bakker (2021)	√	√	
Gallup (2020)	√	√	√
Tremblay and Bastien (2021)		√	
Gagnon and Ferris (2020)		√	√
Kusterer and Thomas (2022)	√	√	
Brew and Lucas (2020)	√	√	√

Authors (Year)	Employee Engagement	Academic Culture	Cooperation with Industry
Jiang and Wang (2021)		√	√
Hafizha (2022)	√	√	√
Fuller (2023)		√	√
Abu-Kaf et al. (2020)		√	
Supriyanto (2021)	√	√	
Bai et al. (2022)	√	√	√
Chen and Zhang (2021)			√
Liu and Li (2020)			√
Tornatzky and Fleischer (2020)			√
Gulbrandsen and Smeby (2022)			√
Zhao and Wang (2020)			√
Summary of this research	√	√	√

(Source: Literature review database)

Figure 2.3 Factors of Organizational Effectiveness

(Source: Kreutzer & Jacobs, 2020)

2.5 Relevant Research

2.5.1 The Impact of Human Capital Management on Knowledge Management

Effective human capital management plays a crucial role in knowledge management. Alavi & Leidner, (2023) emphasized that promoting collaboration and

knowledge sharing among employees enhances an organization's ability to create and apply knowledge. Specifically, training and development programs can improve employees' knowledge and skills, while incentive mechanisms encourage active participation in knowledge management activities.

Regarding the practical application of human capital management, Bontis & Serenko, (2021) highlighted that practices such as performance evaluation and career development planning significantly enhance employees' capabilities, thereby facilitating the acquisition, sharing, and application of knowledge. Kianto et al. (2020) further pointed out that recruiting highly qualified talent, providing continuous training, and creating a supportive work environment can strengthen an organization's human capital, improve knowledge management efficiency, and foster innovation.

Moreover, human capital management impacts employees' motivation and organizational cultural atmosphere. Minbaeva (2020) found that compared to compliance-based approaches, commitment-based management practices (e.g., participatory decision-making and reward systems) are more effective in promoting knowledge-sharing behavior. Similarly, Donate and Pablo (2020) emphasized the importance of knowledge-oriented leadership, asserting that leaders who implement talent development and incentive mechanisms foster an organizational culture conducive to knowledge sharing and innovation.

From a multilevel perspective, Chuang et al. (2021) observed that team-level training and development programs, as well as organizational-level reward and recognition systems, help create an environment that promotes knowledge sharing and drives innovation outcomes. At the same time, Foss et al. (2020) argued that granting employees autonomy, providing task diversity, and establishing feedback mechanisms significantly enhance employees' intrinsic motivation, further promoting knowledge-sharing behaviors.

In terms of strategic human capital management, Kang & Snell (2020) proposed that by balancing exploratory and exploitative learning, organizations can simultaneously foster the creation of new knowledge and the application of existing knowledge. Collins &

Smith (2020) found that high-commitment human resource management practices (such as comprehensive training programs and team incentives) build trust among employees and increase their willingness to share knowledge, ultimately improving organizational performance.

In summary, Wang & Noe (2020) concluded that human capital management practices (such as training, rewards, and organizational support) influence employees' knowledge-sharing attitudes and behaviors, which in turn affect organizational knowledge management effectiveness. These studies collectively demonstrate that multi-dimensional strategies and practices in human capital management are critical in supporting organizational knowledge management and fostering innovation development.

Table 2.6 Summary of Research Findings on the Impact of Human Capital Management on Knowledge Management

Author (Year)	**Research Finding**		Studied Factors
Alavi, M., & Leidner, D. E. (2020)	Human Capital Management 1.human capital investment 2.human capital incentive 3.human capital evaluation	Knowledge Management 1.knowledge creation 2.knowledge storage 3.knowledge application 4.knowledge sharing 5.tacit knowledge	Human Capital Management; knowledge management
Bontis, N., & Serenko, A. (2021)	Human Capital Management 1.human capital investment 2.human capital incentive 3.human capital evaluation	Knowledge Management 1.knowledge creation 2.knowledge storage 3.knowledge application 4.knowledge sharing	Human Capital Management; knowledge management
Kianto, A., Sáenz, J., & Aramburu, N. (2020)	Human Capital Management 1.human capital investment 2.human capital incentive 3.human capital evaluation	Knowledge Management 1.knowledge creation 2.knowledge storage 3.knowledge application 4.knowledge sharing	Human Capital Management; knowledge management

Author (Year)	Research Finding		Studied Factors
Minbaeva, D. B. (2020)	Human Capital Management 1.human capital investment 2.human capital incentive 3.human capital evaluation	Knowledge Management 1.knowledge creation 2.knowledge storage 3.knowledge application 4.knowledge sharing 5.tacit knowledge	Human Capital Management; knowledge management; organizational culture
Donate, M. J., & Pablo, J. D. S. (2020)	Human Capital Management 1.human capital investment 2.human capital incentive 3.human capital evaluation	Knowledge Management 1.knowledge creation 2.knowledge storage 3.knowledge application 4.knowledge sharing 5.tacit knowledge	Human Capital Management; knowledge management
Chuang, C. H., Jackson, S. E., & Jiang, Y. (2021)	Human Capital Management 1.human capital investment 2.human capital incentive 3.human capital evaluation	Knowledge Management 1.knowledge creation 2.knowledge storage 3.knowledge application 4.knowledge sharing 5.tacit knowledge	Human Capital Management; knowledge management
Foss, N. J., Pedersen, T., Reinholt, M., & Stea, D. (2020)	Human Capital Management 1.human capital investment 2.human capital incentive 3.human capital evaluation	Knowledge Management 1.knowledge creation 2.knowledge storage 3.knowledge application 4.knowledge sharing 5.tacit knowledge	Human Capital Management; knowledge management
Kang, S. C., & Snell, S. A. (2020)	Human Capital Management 1.human capital investment 2.human capital incentive 3.human capital evaluation 4.Balance exploratory learning and exploitative learning	Knowledge Management 1.knowledge creation 2.knowledge storage 3.knowledge application 4.knowledge sharing 5.tacit knowledge	Human Capital Management; knowledge management
Collins, C. J., & Smith, K. G. (2020)	Human Capital Management 1.human capital investment 2.human capital incentive 3.human capital evaluation	Knowledge Management 1.knowledge creation 2.knowledge storage 3.knowledge application 4.knowledge sharing	Human Capital Management; knowledge management

Author (Year)	Research Finding		Studied Factors
Wang, S., & Noe, R. A. (2020)	Human Capital Management 1.human capital investment 2.human capital incentive 3.human capital evaluation	Knowledge Management 1.knowledge creation 2.knowledge storage 3.knowledge application 4.knowledge sharing 5.tacit knowledge	Human Capital Management; knowledge management

(Source: Literature review database)

2.5.2 The Impact of Knowledge Management on Job Satisfaction

Recent studies have emphasized the significant impact of knowledge management (KM) practices on enhancing job satisfaction across various sectors. A key finding from Kianto et al. (2019) suggests that robust KM practices, particularly knowledge sharing and application, are positively correlated with higher job satisfaction, especially in knowledge-intensive industries. This is further supported by Nguyen and Tran (2021), who demonstrated that job satisfaction acts as a mediator between knowledge sharing and innovation capability, indicating that knowledge sharing not only boosts job satisfaction but also drives innovation within organizations.

The integration of advanced technologies, such as AI-driven KM systems, is another factor contributing to increased job satisfaction. Torres and Vargas (2022) found that AI in KM systems reduces work-related stress and enhances efficiency by facilitating seamless access to knowledge, ultimately improving job satisfaction. Similarly, Kuo and Lee (2021) showed that the use of KM portals by IT professionals reduces workload stress and enhances job satisfaction by providing reliable and accessible information, further underscoring the role of technology in improving employee experiences.

Leadership styles also play a critical role in shaping the relationship between KM and job satisfaction. Behringer and Sassenberg (2020) found that transformational leadership amplifies the positive effects of KM practices on job satisfaction, creating an environment that fosters collaboration and knowledge exchange. In the healthcare industry, Memon et al. (2020) highlighted that transparency and access to knowledge significantly enhance employee satisfaction, suggesting that effective KM practices are particularly

valuable in high-stakes environments like healthcare.

The mediating role of job satisfaction is crucial in connecting KM practices with other organizational outcomes. Tiwari and Sharma (2022) explored this dynamic and concluded that job satisfaction is a key factor linking KM practices to higher employee motivation, further driving organizational performance. In academia, Jain and Moreno (2020) showed that effective KM systems, by streamlining administrative and research processes, enhance academic staff satisfaction, emphasizing the importance of well-implemented KM systems in educational settings.

Finally, Park and Lee (2021) examined KM practices in public sector organizations, finding that these practices encourage knowledge sharing, which in turn leads to improved job satisfaction. Similarly, Alavi and Leidner (2023) explored the impact of digital transformation in KM, concluding that digital KM systems enhance employee satisfaction by improving efficiency and fostering innovation.

Collectively, these studies underline the crucial role of KM practices, tools, and systems in enhancing job satisfaction across various industries, suggesting that when organizations implement effective KM strategies, they not only improve knowledge flow but also create a more satisfying work environment that can drive innovation and organizational success.

Table 2.7 Summary of Research Findings on the Impact of Knowledge Management on Job Satisfaction

Author (Year)	**Research Finding**		Studied Factors
Kianto, Vanhala, & Heilmann (2019)	Knowledge Management 1.Knowledge Creation 2.Knowledge Storage 3.Knowledge Application 4.Knowledge Sharing 5.Tacit Knowledge	Job Satisfaction	Knowledge Management; Job Satisfaction

Author (Year)	**Research Finding**		Studied Factors
Nguyen, Nham, & Hoang (2021)	Knowledge Management 1.Knowledge Creation 2.Knowledge Storage 3.Knowledge Application 4.Knowledge Sharing 5.Tacit Knowledge	Job Satisfaction	Knowledge Management; Job Satisfaction; Organizational Innovation
Torres, & Vargas (2022)	Knowledge Management 1.Knowledge Creation 2.Knowledge Storage 3.Knowledge Application 4.Knowledge Sharing 5.Tacit Knowledge 6.AI	Job Satisfaction	Knowledge Management; Job Satisfaction
Kuo, & Lee (2021)	Knowledge Management 1.Knowledge Creation 2.Knowledge Storage 3.Knowledge Application 4.Knowledge Sharing 5.Tacit Knowledge 6. Technology	Job Satisfaction	Knowledge Management; Job Satisfaction
Behringer, & Sassenberg (2020)	Knowledge Management 1.Knowledge Creation 2.Knowledge Storage 3.Knowledge Application 4.Knowledge Sharing 5.Tacit Knowledge	Job Satisfaction	Knowledge Management; Job Satisfaction
Memon, Mangi, & Shaikh (2020)	Knowledge Management 1.Knowledge Creation 2.Knowledge Storage 3.Knowledge Application 4.Knowledge Sharing 5.Tacit Knowledge	Job Satisfaction	Knowledge Management; Job Satisfaction
Tiwari, & Sharma (2022)	Knowledge Management 1.Knowledge Creation 2.Knowledge Storage 3.Knowledge Application 4.Knowledge Sharing 5.Tacit Knowledge	Job Satisfaction	Knowledge Management; Job Satisfaction

Author (Year)	Research Finding		Studied Factors
Jain, & Moreno (2020)	Knowledge Management 1.Knowledge Creation 2.Knowledge Storage 3.Knowledge Application 4.Knowledge Sharing 5.Tacit Knowledge	Job Satisfaction	Knowledge Management; Job Satisfaction
Park, & Lee (2021)	Knowledge Management 1.Knowledge Creation 2.Knowledge Storage 3.Knowledge Application 4.Knowledge Sharing 5.Tacit Knowledge	Job Satisfaction	Knowledge Management; Job Satisfaction
Alavi, & Leidner (2023)	Knowledge Management 1.Knowledge Creation 2.Knowledge Storage 3.Knowledge Application 4.Knowledge Sharing 5.Digital Transformation	Job Satisfaction	Knowledge Management; Job Satisfaction；Innovation

(Source: Literature review database)

2.5.3 The Impact of Job Satisfaction on Organizational Effectiveness

Job satisfaction has a profound influence on organizational effectiveness, often mediated by factors such as engagement, leadership, and culture. Ariani (2020) highlighted that satisfied employees exhibit higher engagement, which leads to enhanced productivity, collaboration, and organizational outcomes. This is supported by Kim and Park (2020), who found that job satisfaction directly influences organizational performance, particularly in service industries, where satisfied employees enhance customer satisfaction and loyalty.

Leadership styles also play a critical role in shaping this relationship. Ahmed et al., (2020) demonstrated that transformational leadership amplifies the positive connection between job satisfaction and organizational effectiveness by fostering trust and encouraging innovation. In higher education, Sültüre and Beyhan (2019) showed that satisfied faculty and staff improve teaching quality, research output, and institutional administration.

Affective commitment driven by job satisfaction is another significant factor

contributing to organizational innovation and effectiveness. Gkorezis and Bellou (2021) emphasized that employees with strong affective commitment are more likely to drive innovation. Moreover, Al-Jabari and Ghazzawi (2020) proposed a conceptual framework linking high job satisfaction to reduced turnover and absenteeism, enhancing organizational stability.

Organizational culture further amplifies the positive effects of job satisfaction on performance. Chen et al. (2022) found that dynamic and innovative work environments strengthen this relationship. Additionally, Mustapha and Othman (2021) noted that job satisfaction encourages organizational citizenship behaviors, such as teamwork and cooperation, which improve overall effectiveness.

In the healthcare sector, Rodríguez-Sánchez et al. (2020) demonstrated that satisfied employees contribute to building organizational resilience, enabling better adaptation to crises. Sharma and Dhar (2021) linked job satisfaction to organizational sustainability, showing that satisfied employees support long-term effectiveness through environmental and social responsibility initiatives.

These studies collectively underscore the pivotal role of job satisfaction in driving organizational effectiveness, mediated by factors such as leadership, engagement, culture, and innovation across various industries and contexts.

Table 2.8 Summary of Research Findings on the Impact of Job Satisfaction on Organizational Effectiveness

Author (Year)	**Research Finding**		Studied Factors
Ariani (2020)	Job Satisfaction	Organizational Effectiveness 1. Employee Engagement 2. Academic Culture 3. Industry Cooperation	Job Satisfaction: Organizational Effectiveness
Kim, Park, & Kang (2021)	Job Satisfaction	Organizational Effectiveness 1. Employee Engagement 2. Academic Culture 3. Industry Cooperation	Job Satisfaction: Organizational Effectiveness

Author (Year)	**Research Finding**		Studied Factors
Ahmed, Nawaz, & Khan (2020)	Job Satisfaction	Organizational Effectiveness 1. Employee Engagement 2. Academic Culture 3. Industry Cooperation	Job Satisfaction: Organizational Effectiveness
Sültüre, & Beyhan (2019)	Job Satisfaction	Organizational Effectiveness 1. Employee Engagement 2. Academic Culture 3. Industry Cooperation	Job Satisfaction: Organizational Effectiveness
Gkorezis, & Bellou (2021)	Job Satisfaction	Organizational Effectiveness 1. Employee Engagement 2. Academic Culture 3. Industry Cooperation	Job Satisfaction: Organizational Effectiveness
Al-Jabari, & Ghazzawi (2020)	Job Satisfaction	Organizational Effectiveness 1. Employee Engagement 2. Academic Culture 3. Industry Cooperation	Job Satisfaction: Organizational Effectiveness
Chen, Wen, & Wang (2022)	Job Satisfaction	Organizational Effectiveness 1. Employee Engagement 2. Academic Culture 3. Industry Cooperation	Job Satisfaction: Organizational Effectiveness
Mustapha, & Othman (2021)	Job Satisfaction	Organizational Effectiveness 1. Employee Engagement 2. Academic Culture 3. Industry Cooperation	Job Satisfaction: Organizational Effectiveness
Rodríguez-Sánchez, Perea, & Rodríguez-Pérez (2020)	Job Satisfaction	Organizational Effectiveness 1. Employee Engagement 2. Academic Culture 3. Industry Cooperation	Job Satisfaction: Organizational Effectiveness
Sharma, & Dhar (2021)	Job Satisfaction	Organizational Effectiveness 1. Employee Engagement 2. Academic Culture 3. Industry Cooperation	Job Satisfaction: Organizational Effectiveness

(Source: Literature review database)

2.5.4 The Impact of Human Capital Management on Organizational Effectiveness

The research conducted by Benos and Karagiannis (2016) reveals that effective human capital management contributes to improving and enhancing the overall work efficiency of organizations. This highlights the foundational role human capital management plays in optimizing organizational performance. Similarly, Reetu (2017), through a comparative study of two companies—Asian Paints and Japanese Carbide—using three key variables: assumptions about people at work, organizational climate, and job satisfaction, concluded that the success of any organization largely depends on the effectiveness of its employees. The study finds that when employees are provided with an appropriate climate and the necessary facilities, they perform at their best, feeling the most satisfied with their work and the organization itself.

Expanding on this, Singh et al. (2019) analyzed the direct relationship between various factors, such as personal values and organizational culture, and organizational effectiveness in a study conducted with 210 employees from India's consulting and banking sectors. The results show that most dimensions of employee values, organizational culture, and other factors significantly correlate with organizational effectiveness. This further underscores the importance of aligning human capital management with organizational culture and values to maximize effectiveness.

Similarly, Chen and Jiang (2020) explored how human capital management can directly enhance organizational performance by leveraging the mediating role of organizational learning capabilities. This research illustrates how human capital contributes to skills and talent acquisition and facilitates the development of learning-oriented organizations that perform better. Moreover, Vera et al. (2021) presented a meta-analysis that discusses the relationship between human capital and organizational dual capabilities. They emphasize that human capital directly impacts organizational flexibility and innovation capacity, essential components of organizational effectiveness.

Furthering this, Chen and Chen (2021) confirmed that human capital, through its ability to promote organizational innovation capabilities, has a direct and significant impact

on organizational performance. This study reinforces the notion that human capital management drives innovation and performance, directly contributing to organizational success.

The study by Bontis and Serenko (2021) highlighted that implementing effective human capital management practices such as performance evaluations and career development plans can enhance employee capabilities, promoting knowledge acquisition, sharing, and application, ultimately improving organizational effectiveness. Similarly, Collins & Smith (2020) suggested that high-commitment human capital management practices like comprehensive training programs and team incentives foster trust and willingness to share knowledge among employees, boosting organizational performance.

Foss et al. (2020) highlighted the role of work design in motivating employees, asserting that granting employees autonomy, providing task variety, and establishing feedback mechanisms enhance intrinsic motivation, thus improving organizational effectiveness. Chuang et al. (2021) took a multilevel perspective to discuss how human capital management practices, including team-level training and development programs and organizational-level rewards and recognition systems, help foster innovation outcomes.

Finally, Lin and Lan (2023) argued that factors influencing organizational effectiveness primarily include employee incentives, their skill and knowledge levels, the work environment, and opportunities for future promotions. This aligns with the idea that human capital management practices like training, rewards, and career advancement are crucial to organizational effectiveness.

In conclusion, the research consistently demonstrates that human capital management directly impacts organizational effectiveness, primarily by enhancing employee capabilities, fostering knowledge sharing and innovation, and strengthening employee commitment. These practices improve organizational performance and contribute to long-term competitiveness by creating sustainable competitive advantages

through human capital investments. In particular, investment in training and development has been shown to have the most direct impact on organizational effectiveness.

Table 2.9 Summary of Research Findings on the Impact of Human Capital Management on Organizational Effectiveness

Author (Year)	**Research Finding**		Studied Factors
Benos and Karagiannis (2016)	Human Capital Management 1.Human Capital Investment 2.Human Capital Incentive 3.Human Capital Evaluation	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3. Industry Cooperation	Human Capital Management ; Organizational Effectiveness
Reetu (2017)	Human Capital Management 1.Human Capital Investment 2.Human Capital Incentive 3.Human Capital Evaluation	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3. Industry Cooperation	Human Capital Management ; Organizational Effectiveness
Reetesh K., & Singh et al. (2019)	Human Capital Management 1.Human Capital Investment 2.Human Capital Incentive 3.Human Capital Evaluation	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3. Industry Cooperation	Human Capital Management ; Organizational Effectiveness
Vein, Chen, M., & Jiang, Z. (2020)	Human Capital Management 1.Human Capital Investment 2.Human Capital Incentive 3.Human Capital Evaluation	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3.Industry Cooperation	Human Capital Management ; Organizational Effectiveness
Vera, D., Crossan, M., & Verdin, P. (2021)	Human Capital Management 1.Human Capital Investment 2.Human Capital Incentive 3.Human Capital Evaluation	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3.Industry Cooperation	Human Capital Management ; Organizational Effectiveness
Chen, H., & Chen, I. (2021)	Human Capital Management 1.Human Capital Investment 2.Human Capital Incentive 3.Human Capital Evaluation	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3.Industry Cooperation	Human Capital Management ; Organizational Effectiveness

Author (Year)	Research Finding		Studied Factors
Bontis, N., & Serenko, A. (2021)	Human Capital Management 1.Human Capital Investment 2.Human Capital Incentive 3.Human Capital Evaluation	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3.Industry Cooperation	Human Capital Management ; Organizational Effectiveness
Collins, C. J., & Smith, K. G. (2020)	Human Capital Management 1.Human Capital Investment 2.Human Capital Incentive 3.Human Capital Evaluation	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3.Industry Cooperation	Human Capital Management ; Organizational Effectiveness
Foss, N. J., Pedersen, T., Reinholt, M., & Stea, D. (2020)	Human Capital Management 1.Human Capital Investment 2.Human Capital Incentive 3.Human Capital Evaluation	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3.Industry Cooperation	Human Capital Management ; Organizational Effectiveness
Chuang, C. H., Jackson, S. E., & Jiang, Y. (2021)	Human Capital Management 1.Human Capital Investment 2.Human Capital Incentive 3.Human Capital Evaluation	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3.Industry Cooperation	Human Capital Management ; Organizational Effectiveness
Lin Yaqing & Lan Pucheng (2023)	Human Capital Management 1.Human Capital Investment 2.Human Capital Incentive 3.Human Capital Evaluation	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3.Industry Cooperation	Human Capital Management ; Organizational Effectiveness

(Source: Literature review database)

2.5.5 The Impact of Knowledge Management on Organizational Effectiveness

In recent years, research on the impact of knowledge management (KM) on organizational effectiveness has highlighted its critical role in fostering innovation, enhancing performance, and strengthening organizational competitiveness and sustainability.

Ghimire et al. (2024) emphasized that tacit and explicit knowledge significantly enhance industrial performance in Nepalese industrial zones, underscoring the importance

of fostering an information-sharing culture. Gates (2024) further highlighted that effective KM practices improve employee performance and satisfaction by enhancing information accessibility and creating a supportive work environment. The alignment between KM practices, organizational culture, and leadership was crucial for maximizing KM benefits.

Regarding KM implementation strategies, Henz & Oliveira (2024) proposed a roadmap comprising diagnostic, design, and evaluation phases, stressing the need for further research on KM strategies and technologies. Similarly, Karnik et al. (2023) argued that KM is essential for maintaining competitive advantage, profitability, and organizational survival, highlighting the importance of integrating people, processes, and technologies for effective knowledge utilization.

Abiola (2023) emphasized that strong leadership support and employee engagement are key to successful KM practices. They pointed out that a knowledge-sharing culture fosters innovation, productivity, and customer satisfaction, ultimately leading to better financial outcomes. Shahzad et al. (2020) revealed that KM processes, including knowledge acquisition, dissemination, and application, drive green innovation, positively impacting environmental, economic, and social performance.

With the advancement of digital technologies, Deng et al. (2023) found that digital coordination and communication significantly influence knowledge sharing and decision-making, enhancing organizational work performance. Additionally, Azeem et al. (2021) demonstrated through empirical research that organizational culture, knowledge sharing, and innovation positively contribute to gaining competitive advantage.

Finally, Gong et al. (2023) found that knowledge accumulation partially mediates the link between digital innovation and organizational performance, while knowledge integration capability moderates this relationship. These studies collectively highlight that KM directly impacts organizational effectiveness and facilitates long-term development and the formation of competitive advantages through diverse pathways.

Table 2.10 Summary of Research Findings on the Impact of Knowledge Management on Organizational Effectiveness

Author (Year)	Research Finding		Studied Factors
Ghimire et al. (2024)	Knowledge Management 1.Knowledge Creation 2.Knowledge Storage 3.Knowledge Application 4.Knowledge Sharing 5.Tacit Knowledge	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3.Industry Cooperation	Knowledge Management ; Organizational Effectiveness
Gates (2024)	Knowledge Management 1.Knowledge Creation 2.Knowledge Storage 3.Knowledge Application 4.Knowledge Sharing 5.Tacit Knowledge	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3.Industry Cooperation	Knowledge Management ; Organizational Effectiveness
Henz, & Oliveira (2024)	Knowledge Management 1.Knowledge Creation 2.Knowledge Storage 3.Knowledge Application 4.Knowledge Sharing 5.Tacit Knowledge	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3.Industry Cooperation	Knowledge Management ; Organizational Effectiveness
Karnik et al. (2024)	Knowledge Management 1.Knowledge Creation 2.Knowledge Storage 3.Knowledge Application 4.Knowledge Sharing 5.Tacit Knowledge	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3.Industry Cooperation	Knowledge Management ; Organizational Effectiveness
Abada et al. (2023)	Knowledge Management 1.Knowledge Creation 2.Knowledge Storage 3.Knowledge Application 4.Knowledge Sharing 5.Tacit Knowledge	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3.Industry Cooperation	Knowledge Management ; Organizational Effectiveness
Mohsin Shahzad et al. (2020)	Knowledge Management 1.Knowledge Creation 2.Knowledge Storage 3.Knowledge Application 4.Knowledge Sharing 5.Tacit Knowledge	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3.Industry Cooperation	Knowledge Management ; Organizational Effectiveness
Deng, Duan, and Wibowo (2023)	Knowledge Management 1.Knowledge Creation 2.Knowledge Storage 3.Knowledge Application 4.Knowledge Sharing 5.Tacit Knowledge	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3.Industry Cooperation	Knowledge Management ; Organizational Effectiveness

Author (Year)	Research Finding		Studied Factors
Azeem et al. (2021)	Knowledge Management 1.Knowledge Creation 2.Knowledge Storage 3.Knowledge Application 4.Knowledge Sharing 5.Tacit Knowledge	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3.Industry Cooperation	Knowledge Management ; Organizational Effectiveness
Gong, Yao, & Zan (2023)	Knowledge Management 1.Knowledge Creation 2.Knowledge Storage 3.Knowledge Application 4.Knowledge Sharing 5.Tacit Knowledge	Organizational Effectiveness 1.Employee Engagement 2.Academic Culture 3.Industry Cooperation	Knowledge Management ; Organizational Effectiveness

(Source: Literature review database)

2.6 Conceptaul Framework, Operational Definition, Hypothesis and Explanation of Hypothesis

2.6.1 Conceptaul Framework

Based on the above analysis, this study proposes that human capital management has a positive impact on knowledge management and organizational effectiveness, knowledge management has a positive impact on job satisfaction and organizational effectiveness, and job satisfaction has a positive impact on organizational effectiveness.

A conceptual framework is developed using concepts, theories, and related research, as shown in Figure 2.4.

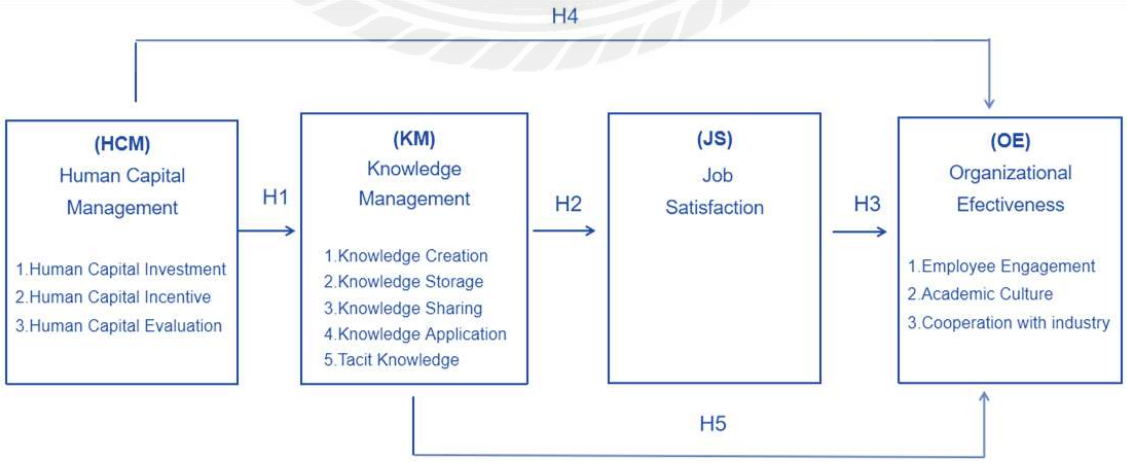


Figure 2.4 Conceptual Framework

From the above framework, the hypotheses are listed as follows:

Hypothesis 1: Human Capital Management (HCM) has a significant direct effect on Knowledge Management.

Hypothesis 2: Knowledge management has a significant direct effect on job satisfaction.

Hypothesis 3: Job satisfaction has a significant direct effect on organizational effectiveness.

Hypothesis 4: Human capital management has a significant direct effect on organizational effectiveness.

Hypothesis 5: Knowledge management has a significant direct effect on organizational effectiveness.

2.6.2 Operational Definition

2.6.2.1 Human Capital Management

In this study, human capital management refers to a systematic management process to improve individual and organizational capabilities through the introduction, training, incentive, use, and retention of teachers, administrators, and other key human resources in private universities' specific organizational environment and development mode. Its core goal is to optimize the value of human capital and realize the continuous improvement of university organization and management efficiency.

2.6.2.1.1 Human Capital Investment

In this study, human capital investment refers to private universities' resource investment and management process in education and training, career development, incentive mechanisms, welfare security, and cultural construction to improve teachers', administrators', and other key human resources' ability, quality, and creativity.

2.6.2.1.2 Human Capital Incentive

In this study, human capital incentive refers to the systematic management process by private universities to stimulate the enthusiasm, creativity, and organizational commitment of teachers, administrators, and other human resources through salary, performance appraisal, career development opportunities, spiritual incentives, and cultural shaping.

2.6.2.1.3 Human Capital Evaluation

The human capital evaluation in this study refers to the process in which private universities systematically analyze, measure, and evaluate the quantity, quality, ability, and contribution of teachers, administrators, and other key human resources and their value to realizing organizational goals.

2.6.2.2 Knowledge Management

Knowledge management in this study refers to the systematic management process of private universities, which creates, stores, shares, and applies explicit and implicit knowledge in teaching, scientific research, management, and other fields under specific environment and development needs. Its core goal is to promote the efficient use of knowledge and continuous innovation to improve the quality of teaching, scientific research, and organizational effectiveness.

2.6.2.2.1 Knowledge Creation

Knowledge creation in this study refers to the process of integrating, transforming, and innovating existing explicit and implicit knowledge through the interaction and collaboration of teachers, researchers, administrators, and external partners in the specific organizational environment of private universities to generate teaching, scientific research, and management knowledge with new value.

2.6.2.2.2 Knowledge Storage

Knowledge storage in this study refers to systematizing, preserving, and

maintaining all kinds of explicit and implicit knowledge through technical means, management processes, and cultural inheritance in private universities' teaching, scientific research, and management practices. Its core goal is to realize the effective accumulation and long-term utilization of knowledge and provide continuous support for improving teaching quality, scientific research innovation, and management optimization.

2.6.2.2.3 Knowledge Sharing

In this study, knowledge sharing refers to the process of spreading, exchanging, and co-utilizing explicit and implicit knowledge in teaching, scientific research, and management practice through formal and informal channels within the university and among relevant external subjects.

2.6.2.2.4 Knowledge Application

The application of knowledge in this study refers to the process of transforming the explicit and tacit knowledge accumulated in the teaching, scientific research, and management practices of private universities into practical actions such as improving teaching quality, promoting scientific research innovation, optimizing management processes, realizing the comprehensive competitiveness of schools, and increasing the value of social services.

2.6.2.2.5 Tacit Knowledge

In this study, tacit knowledge refers to personal experiences, skills, and insights that are difficult to express directly in the university through text, normative documents, or processes but significantly impact teaching, management, and research. It is usually attached to the individual ability and organizational culture of faculty and staff and has the characteristics of contextualization and practice.

2.6.2.3 Job Satisfaction

In this study, job satisfaction refers to the comprehensive perception and evaluation of private university staff on working conditions, career development opportunities, salary

and benefits, working environment, organizational culture, and personal sense of accomplishment. It is also the satisfaction degree of staff on university management and support, personal value realization, and career belonging.

2.6.2.4 Organizational Effectiveness

In this study, organizational effectiveness refers to the ability and level of private universities to achieve the goals of education, academic culture, employee engagement, and social service through efficient management, effective incentive mechanisms, and cultural construction.

2.6.2.4.1 Employee Engagement

Employee engagement in this study refers to the enthusiasm, commitment, and sense of responsibility shown by the faculty and staff in private universities' teaching, scientific research, and management. Its core reflects the staff's identity and loyalty to the school, the active pursuit of work goals, and the continuous display of creativity and dedication in the post.

2.6.2.4.2 Academic Culture

The academic culture in this study refers to the values, norms of behavior, and spiritual atmosphere formed in private universities' teaching, scientific research, and academic activities. Its core is embodied in the respect and advocacy of knowledge creation, academic exploration, and sharing, teaching innovation, and academic ethics, and it is reflected in the academic behavior of teachers and students, organizational management, and campus cultural atmosphere.

2.6.2.3.3 Industry Cooperation

The industrial cooperation in this study refers to the strategic cooperation and interaction process between private universities and various enterprises, industry associations, and industrial institutions through personnel training, scientific research cooperation, technology transfer, and social services. Its core objectives are to promote

resource sharing, knowledge flow, and results transformation, improve the school's teaching and research capabilities, and provide innovation support and talent transfer for the industry.

2.6.3 Explanation of Hypothesis

2.6.3.1 Hypothesis 1: Human Capital Management Has a Significant Direct Effect on Knowledge Management.

2.6.3.1.1 Meaning of Hypothesis

Effective human capital management can promote and optimize the implementation and effect of knowledge management. This assumption means that the effectiveness and efficiency of knowledge management activities can be improved through human capital management, such as investment, incentive, and evaluation, which directly and significantly affect the degree of knowledge creation, knowledge storage, knowledge sharing, and knowledge application of employees in the organization.

2.6.3.1.2 Reason of Hypothesis

Human capital is the core resource of knowledge management and the basis of knowledge creation, storage, sharing, and application. The effective development and management of human capital directly affect the quality and effect of the knowledge management process. Effective human capital management can attract, cultivate, motivate, and retain high-quality employees to improve their professional skills and knowledge. These employees will generate new insights and solutions in the knowledge management process, promote the sharing and application of knowledge, and improve the effectiveness of the entire knowledge management process.

2.6.3.1.3 Supporting Theory or Research for the Hypothesis

Theories and research supporting the relationship between human capital management and knowledge management cover the following aspects: Bontis and Serenko (2021) pointed out that human capital is the primary carrier in the process of knowledge

management, including knowledge source, knowledge transformation, knowledge accumulation, and knowledge innovation, and is the core and source of knowledge value creation, which has a significant impact on the knowledge management effect of organizations. Liao et al. (2022) further studied the relationship between knowledge sharing, absorbability, and innovation capability, emphasizing the importance of effective human capital investment in improving knowledge management and innovation capability within organizations. In addition, Chen and Jiang (2020) indicated that human capital management significantly impacts knowledge management by promoting the mediating role of organizational learning ability.

2.6.3.2 Hypothesis 2: Knowledge Management Has a Significant Direct Effect on Job Satisfaction.

2.6.3.2.1 Meaning of Hypothesis

Processes and practices related to managing organizational knowledge, such as knowledge sharing, knowledge creation, and knowledge application, are positively correlated with employees' perception of job satisfaction. Effective knowledge management practices, including facilitating the flow of information, facilitating collaboration, and ensuring access to critical knowledge, are expected to impact employee satisfaction, motivation, and overall satisfaction with their job role.

2.6.3.2.2 Reason of Hypothesis

Effective knowledge management practices, such as knowledge sharing, knowledge application, etc., help enhance the employee experience in the workplace. When employees gain relevant knowledge and are empowered to collaborate and innovate, they can reduce job-related uncertainty, improve decision-making, increase overall productivity, and be more likely to engage in their roles, factors that are strongly linked to job satisfaction. Therefore, it is assumed that implementing good knowledge management practices directly affects job satisfaction.

2.6.3.2.3 Supporting Theory or Research for the Hypothesis

Various theories and empirical studies support the relationship between knowledge management and job satisfaction. For instance, Liu and Li (2020) demonstrated that knowledge management, mainly through effective knowledge sharing and resource access, enhances employees' job satisfaction by providing them with the tools and information necessary to perform their roles effectively. Their study showed that employees with access to valuable organizational knowledge feel more competent and empowered, leading to greater job satisfaction. Similarly, Hassan and Kura (2020) found that knowledge management practices such as collaborative knowledge sharing and knowledge management systems directly contribute to job satisfaction by reducing stress and improving work efficiency. Saeed et al. (2022) highlighted that implementing knowledge management systems helps employees feel more engaged and supported in their roles, positively affecting their job satisfaction. These studies collectively reinforce that knowledge management directly and positively influences job satisfaction by fostering an environment that supports employee growth, autonomy, and performance.

2.6.3.3 Hypothesis 3: Job Satisfaction Has a Significant Direct Effect on Organizational Effectiveness.

2.6.3.3.1 Meaning of Hypothesis

Employee's positive attitude and job satisfaction directly affect organizational effectiveness. Job satisfaction affects key factors such as employee performance, commitment, and motivation, which are integral to achieving organizational goals; when satisfied, employees are more likely to exhibit higher organizational behavior and remain committed to the organization, resulting in increased productivity and better organizational outcomes.

2.6.3.3.2 Reason of Hypothesis

Satisfied employees are more engaged, productive, and committed to achieving organizational goals. Job satisfaction fosters a positive work attitude that improves

individual performance and promotes behaviors such as teamwork and innovation. A satisfied workforce contributes to a positive organizational culture that enhances collaboration and efficiency. When employees feel valued, supported, and motivated, they are more likely to align their efforts with the organization's goals, increasing organizational effectiveness.

2.6.3.3.3 Supporting Theory or Research for the Hypothesis

Various contemporary theories and research findings support the hypothesis. Sharma (2021) posited that job satisfaction directly influences organizational effectiveness by enhancing employee performance, motivation, and engagement. They argued that satisfied employees are more likely to exhibit high levels of commitment and contribute positively to organizational goals, leading to improved overall effectiveness. Similarly, Kim & Park (2020) found that job satisfaction is critical in fostering a productive work environment where employees feel valued and are motivated to perform at their best. Their study highlighted that job satisfaction leads to higher organizational performance by improving employee retention, reducing turnover, and increasing organizational commitment. Nguyen & Tran (2021) further confirmed this relationship by showing that job satisfaction enhances organizational effectiveness by mediating employee well-being and organizational citizenship behaviors. Collectively, these studies suggest that higher job satisfaction has a direct, positive impact on organizational effectiveness by fostering a motivated, engaged, and committed workforce.

2.6.3.4 Hypothesis 4: Human Capital Management Has a Significant Direct Effect on Organizational Effectiveness.

2.6.3.4.1 Meaning of Hypothesis

Human capital management practices such as recruitment, training, development, and performance management directly impact an organization's ability to achieve strategic objectives and maintain a high level of performance. Effective human capital management ensures employees have the necessary skills, motivation, and alignment with organizational goals to improve organizational effectiveness collectively.

2.6.3.4.2 Reason of Hypothesis

Human capital includes employees' skills, knowledge, and capabilities and drives innovation, productivity, and adaptability. Effective human capital management practices such as talent acquisition, training and development, and performance management align employees' capabilities with the organization's strategic objectives and ensure the optimal use of resources. Practical human capital investment, motivation, and evaluation help build a committed and motivated workforce and, improve employee performance, promote innovation, and improve decision-making, all of which directly contribute to an organization's effectiveness.

2.6.3.4.3 Supporting Theory or Research for the Hypothesis

Garavan et al. (2020) argued that effective human capital management, including talent acquisition, training, and development, directly enhances organizational effectiveness by improving employee performance, innovation, and adaptability. Their study highlighted that organizations investing in human capital development are better equipped to achieve strategic goals and sustain competitive advantages. Ahmed et al. (2021) demonstrated that human capital management practices, such as workforce planning and leadership development, directly impact organizational effectiveness by fostering a high-performing and engaged workforce. Zhou & Wang (2022) further reinforced this relationship, showing that aligning human capital strategies with organizational objectives leads to improved resource utilization, productivity, and overall effectiveness. These studies collectively suggest that robust human capital management practices are essential for optimizing organizational effectiveness by ensuring employees are skilled, motivated, and aligned with the organization's goals.

2.6.3.5 Hypothesis 5: Knowledge Management Has a Significant Direct Effect on Organizational Effectiveness.

2.6.3.5.1 Meaning of Hypothesis

Knowledge management activities and practices within the organization (such as

knowledge creation, knowledge storage, knowledge sharing, knowledge application, etc.) can improve the organization's effectiveness, including its overall performance and competitiveness. Specifically, through effective knowledge management, organizations can make better use of their knowledge resources, improve the quality of decision-making, innovation ability, and operational efficiency, and thus directly improve the organization's effectiveness.

2.6.3.5.2 Reason of Hypothesis

Effective knowledge management ensures organizational decision-makers have timely access to accurate and relevant information, leading to more informed decisions. It fosters an environment of continuous learning and innovation, helps to share best practices and lessons learned through the systematic acquisition and sharing of knowledge, enhances the skills and expertise of employees, and leads to a more capable workforce. A sound knowledge management system can promote employee collaboration and communication, enable organizations to respond better to new opportunities and challenges, and significantly and directly impact organizational effectiveness.

2.6.3.5.3 Supporting Theory or Research for the Hypothesis

According to the study of Martelo-Landroguez et al. (2020), the knowledge management process significantly positively impacts enterprise efficiency. Obeidat et al. (2021) further studied the relationship between knowledge management practices, innovation, and organizational effectiveness and found that knowledge management practices significantly improved organizational effectiveness by promoting innovation. In addition, Masa'deh et al. (2021), when studying the impact of knowledge management processes and corporate social responsibility on organizational effectiveness in Jordan's banking industry, found that knowledge management processes can significantly improve organizational effectiveness.

CHAPTER 3
RESEARCH METHODOLOGY

Based on quantitative research and supplemented by qualitative research, this study constructed a model to illustrate the impact of human capital management on organizational effectiveness. Questionnaires were used to collect data, supplemented by in-depth interviews and focus group discussions to obtain information not covered by the questionnaires. This chapter covers population and sample selection, data collection, variable manipulation, questionnaire pretesting, research hypotheses, analytical models, and statistical analysis methods.

The details in this chapter are separated into seven sections as follows:

3.1 Research Design

3.2 Population and Sample

3.3 Research Tools

3.4 Data Collection Strategy and Procedure

3.5 Data Analysis

3.6 Research Ethics

3.7 Research Reporting

3.1 Research Design

This research used quantitative research as a significant methodology and qualitative research to support the results from the quantitative research. To fulfill the objectives of this study, a questionnaire was deemed the most appropriate tool based on the quantitative research. The structural equation modeling analysis method was used to analyze the data. The research steps are as follows:

3.1.1 Documentary Analysis

This research was conducted by studying academic literature, articles, journals, theses, and dissertations, including research reports and information from the Internet. The

main research subject of this study is private universities in China, so a lot of basic information data were still collected from the websites of the Chinese government, Chinese education departments, and universities. Through extensive collection and reference of literature, this study has a clear and comprehensive understanding of relevant theories such as human capital management, knowledge management, job satisfaction, organizational effectiveness and its research variables, relevant background, influencing factors, and interrelationships, laying a theoretical foundation for the research design and implementation of this study, and thus proposing a conceptual framework and relevant hypotheses.

3.1.2 Questionnaire Survey

Questionnaires were prepared and sent to the selected samples.

Variables identification. The significant variables were selected, identified, and used in this study.

Measurement form. The researcher created a questionnaire to examine the influences of human capital management on organizational effectiveness and the mediating role of knowledge management.

Content validity and Reliability Testing. The researcher sent the questionnaire to experts for inspection and evaluation of content validity, including clearness, coverage, and language accuracy, using the evaluation forms.

Refinement of research instrument. Based on the results from the above action, the researcher improved the research instrument and made it the final instrument for further study.

Statistical testing and evaluation. The researcher collected data from the samples and tested the constructed (validity) variables with all measurement models and structural equation modeling (SEM) to identify the final results.

3.1.3 In-depth Interview

In the form of in-depth interviews, key management figures (It refers to those

responsible people in private universities who are familiar with human capital management, knowledge management, organizational effectiveness, etc., and have a say in it.) of private universities in China were interviewed to understand their understanding and evaluation of human capital management, knowledge management and organizational effectiveness of private universities. Through in-depth interviews with respondents,the researcher gained understanding of how human capital management affects organizational effectiveness through knowledge management to seek effective human capital management to improve organizational effectiveness.

3.1.4 Focus Group Discussion

This study organized a focus group discussion and invited 8 experts from different fields and regions to participate. The moderator asked a series of open questions about the research theme and discussion outline and guided the experts in carrying out in-depth discussions. Through these questions, the researcher could fully stimulate the professional insights of experts and extract deep information and diversified viewpoints.

3.2 Population and Sample

3.2.1 Population

The research population of this study was the faculty and staff of private universities in China. (Faculty and staff include teaching and research personnel, student administrator, administrative and educational staff, logistics support personnel, and senior management). According to the Ministry of Education of China, as of 2023, there were 390 private universities (undergraduate) in China, distributed in 22 provinces, four municipalities directly under the Central Government, and four autonomous regions (excluding private universities in Hong Kong Special Administrative Region, Macao Special Administrative Region, and Taiwan). There were 334,123 faculty and staff members.

Based on this population, this study first used the **stratified sampling method** to

divide private universities in China into five regions according to geographical location. Among them, 88 were in the eastern region (Shanghai, Jiangsu, Zhejiang, Fujian, Shandong), 79 were in the southern region (Guangdong, Guangxi, Hainan, Chongqing, Sichuan, Guizhou, Yunnan), 32 were in the western region (Shaanxi, Gansu, Qinghai, Ningxia, Xinjiang), 87 were in the northern region (Beijing, Tianjin, Hebei, Neimenggu, Liaoning, Jilin, Heilongjiang), 104 were in central China (Henan, Hubei, Hunan, Anhui, Jiangxi, Shanxi), as shown in Table 3.1.

Table 3.1 Number of Private Universities in China in the East, South, West, North and Middle Regions and the Number of Faculty and Staff

Region	Province	Number of Private Universities	Number of Private Universities in the region	Number of faculty and staff
East	Shanghai	8	88	5568
	Jiangsu	twenty two		20205
	Zhejiang	20		13909
	Fujian	16		12045
	Shandong	twenty two		24128
South	Guangdong	twenty one	79	20474
	Guangxi	11		8885
	Hainan	3		3775
	Chongqing	9		8665
	Sichuan	18		18212
	Guizhou	8		6686
	Yunnan	9		8801
West	Shaanxi	twenty three	32	25590
	Gansu	3		2442
	Qinghai	1		239
	Ningxia	4		2767
	Xinjiang	1		626
North	Beijing	6	87	3553
	Tianjin	15		5128
	Hebei	20		19712

Region	Province	Number of Private Universities	Number of Private Universities in the region	Number of faculty and staff
	Neimenggu	2		1066
	Liaoning	20		11648
	Jilin	12		8803
	Heilongjiang	12		8673
Middle	Henan	20	104	24764
	Hubei	twenty two		22902
	Hunan	twenty one		13530
	Anhui	15		10156
	Jiangxi	18		15583
	Shanxi	8		5588
Total		390	390	334123

(Data source：Government portal of Ministry of Education of the People's Republic of China (moe.gov.cn), 2023)

Then, this study used the quota sampling method to select the top three universities with the most significant number of faculty and staff from each of the five regions of East, South, West, North, and Middle to represent the region. The total sample is 21,853, as shown in Table 3.2.

Table 3.2 Number of Representative Private Universities and Their Faculty and Staff in East, South, West, North and Middle of China

Region	Name of Private Universitie	Number of faculty and staff
East	Wuxi Taihu University	1065
	Zhejiang Shuren University	1400
	Qingdao City University	1090
South	Guangdong Baiyun University	1380
	Nanning University	1046
	Chengdu University of Arts and Sciences	1600
West	Xi 'an Peihua University	2013
	Xijing University	1442
	Xi'an Eurasia University	1433

Region	Name of Private Universitie	Number of faculty and staff
North	Beijing City University	2000
	Tianjin Ren 'ai University	1003
	Hebei Dongfang University	1525
Middle	Sias University	2000
	Wuhan East Lake University	1356
	Anhui Xinhua University	1500
Total		**21853**

(Data Source: Official website of Chinese Universities, 2024)

3.2.2 Sample for Quantitative Research and Qualitative Research

(1) Quantitative Research

The total population for this study was 21,853 from representative private universities in five regions of China. The sample size was calculated from Taro Yamane's formula (1967) as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Where n = Sample Size

N = Population Size = 21,853

e = Level of Precision = 0.05

therefore, n will be

$$n = \frac{21{,}853}{1 + 21{,}853\ (0.05)^2}$$

n = 392.8 = 393

According to the calculation results of this formula, the minimum sample size for this study was 393 people, so the researcher distributed 400 questionnaires.

Finally, this study used the proportional sampling method to distribute questionnaires proportionally according to the number of faculty members in the selected

universities. Moreover, 40 questionnaires were used for prediction. The number of questionnaires issued and the number of pilot study questionnaires are shown in Table 3.3.

Table 3.3 Number of Questionnaires Issued and the Number of Pilot Study Questionnaires Issued

Region	Name of Private Universitie	Number of Faculty and Staff	Percentage	Number of Questionnaires	Number of Pilot Study Questionnaires
East	Wuxi Taihu University	1065	4.9	20	2
	Zhejiang Shuren University	1400	6.4	26	2
	Qingdao City University	1090	5.0	20	2
South	Guangdong Baiyun University	1380	6.3	25	2
	Nanning University	1046	4.8	19	2
	Chengdu University of Arts and Sciences	1600	7.3	29	3
West	Xi 'an Peihua University	2013	9.2	37	4
	Xijing University	1442	6.6	26	3
	Xi'an Eurasia University	1433	6.5	26	2
North	Beijing City University	2000	9.2	37	4
	Tianjin Ren 'ai University	1003	4.6	18	2
	Hebei Dongfang University	1525	7.0	28	3
Central	Sias University	2000	9.2	37	4
	Wuhan East Lake University	1356	6.2	25	2
	Anhui Xinhua University	1500	6.8	27	3
Total		**21853**	**100**	**400**	**40**

(Data Source: Official website of Chinese Universities, 2024)

(2) Qualitative Research

The interviewee sample was selected from 15 private universities in 5 regions, with one key management personnel (it refers to those responsible people in private universities who are familiar with human capital management, knowledge management, organizational effectiveness, etc., and have a say in it) selected from each university, as shown in Table 3.4.

Table 3.4 Number of Purposive Selections for Qualitative Research

Region	Name of Private Universities	Number of Interviewee
East	Wuxi Taihu University	1
	Zhejiang University	1
	Qingdao City University	1
South	Guangdong University of Finance and Economics	1
	Nanning University	1
	Chengdu University of Arts and Sciences	1
West	Xi'an Peihua University	1
	Xijing University	1
	Xi'an Eurasia University	1
North	Beijing University	1
	Tianjin Ren'ai University	1
	Hebei Dongfang University	1
Central	Sias University	1
	Wuhan East Lake University	1
	Anhui Xinhua University	1
Total		**15**

(Source: Researcher, 2024)

The focus group invited eight experts from universities or institutions from different regions whose professional fields covered human resource management, higher education policy analysis, organizational psychology, technology, and knowledge management, industry and academic cooperation, education quality assessment, education information planning, and change management, covering five regions from east, West, North, South. This was to ensure that interviews could obtain views and experiences from different regional backgrounds, make research results more comprehensive and representative, and avoid research limitations caused by regional differences.

Table 3.5 Experts Invited to Participate in Focus Group Discussions

No.	Expert	Position
1	Human Resources Management Expert: Professor LiQinguo,	Professor of School of Management, Qingdao City University
2	Higher education policy analysis expert: Researcher WangShan	Researcher at the Institute of Higher Education Policy, Shaanxi Academy of Educational Sciences
3	Organizational Psychologist: Dr. Zhang Yongli	at Beijing Normal University, PhD in Psychology
4	Technology and knowledge management expert: Engineer ChenCheng	Head of Knowledge Management Technology R&D, Accelerated Imagination Education Technology Co., Ltd.
5	Industry and academic cooperation expert: Director ZhaoYu	Director of Xi'an Peihua College Maker Center
6	Education quality assessment expert: Professor LiuHe	Deputy Director of Education Assessment Committee
7	Educational information planning expert: Dr. ZhaoLihui	Educational informatization strategic planning expert
8	Change Management Expert: Consultant SunWenlin	Change Management Consultant at Shuoxin Management Consulting

(Source: Researcher, 2024)

3.3 Research Tools

3.3.1 Questionnaire

The questionnaire is separated into five parts as follows:

Part 1: General information of the respondents.

It includes gender, age, educational degree, income, work department, professional qualification level, and years of work experience.

Part 2: The views and attitudes of faculty and staff on human capital management. The application of the 5-level rating scale is as follows:

Level	Score
Strongly Agree	5
Agree	4
Neutral	3
Disagree	2
Strongly Disagree	1

The meaning of each score neutral.

A score of 5 means respondents strongly agree with the statement

A score of 4 means respondents agree with the statement

A score of 3 means respondents are neutral

A score of 2 means respondents disagree with the statement

A score of 1 means respondents strongly disagree with the statement

The interpretation of the score is: (Best ,1981, p. 182)

Mean	Significance Level
1.00 - 1.80	Strongly Disagree
1.81 - 2.60	Disagree
2.61 - 3.40	Neutral
3.41 - 4.20	Agree
4.21 - 5.00	Strongly Agree

Based on extensive empirical research and scale design by predecessors, this section employed the Likert Five-Point Scale to design a matrix scale and developed a scale measurement problem that aligns with the actual situation of the research.

Part 3: The views and attitudes of faculty and staff on knowledge management. The application of the 5-level rating scale is as follows:

Level	Score
Strongly Agree	5
Agree	4
Neutral	3
Disagree	2
Strongly Disagree	1

The meaning of each score is neutral.

A score of 5 means respondents strongly agree with the statement

A score of 4 means respondents agree with the statement

A score of 3 means respondents are neutral

A score of 2 means respondents disagree with the statement

A score of 1 means respondents strongly disagree with the statement

The interpretation of the score is: (Best, 1981, p. 182)

Mean	**Significance Level**
1.00 - 1.80	Strongly Disagree
1.81 - 2.60	Disagree
2.61 - 3.40	Neutral
3.41 - 4.20	Agree
4.21 - 5.00	Strongly Agree

Based on extensive empirical research and scale design by predecessors, this section employed the Likert Five-Point Scale to design a matrix scale and developed a scale measurement problem that aligns with the actual situation of the research.

Part 4: The views and attitudes of faculty and staff on organizational effectiveness. The application of the 5-level rating scale is as follows:

Level	**Score**
Strongly Agree	5
Agree	4
Neutral	3
Disagree	2
Strongly Disagree	1

The meaning of each score is neutral.

A score of 5 means respondents strongly agree with the statement

A score of 4 means respondents agree with the statement

A score of 3 means respondents are neutral

A score of 2 means respondents disagree with the statement

A score of 1 means respondents strongly disagree with the statement

The interpretation of the score is: (Best,1981, p. 182)

Mean	**Significance Level**
1.00 - 1.80	Strongly Disagree
1.81 - 2.60	Disagree
2.61 - 3.40	Neutral
3.41 - 4.20	Agree
4.21 - 5.00	Strongly Agree

Based on extensive empirical research and scale design by predecessors, this section employed the Likert Five-Point Scale to design a matrix scale and developed a scale measurement problem that aligns with the actual situation of the research.

Part 5: Recommendation.

This is an open-ended question. Respondents are invited to provide further suggestions on the impact of human capital management on organizational effectiveness.

The items and scale of the questionnaire in this study are shown in Table 3.6:

Table 3.6 Operational Items of Variables

Variable	Operationalized	Scale Items	Reference	Measure
Human Capital Management	Human Capital Investment	1. Your university has developed an effective recruitment strategy to attract good talent		
		2. Your university offers practical short and long-term training that is conducive to career development		

Variable	Operationalized	Scale Items	Reference	Measure
		3. Your university provides sufficient research funding and resources to support academic innovation and research development	Hanushek & Woessmann (2020)	Five-point Likert scale
		4. Your university provides regular medical check-ups or mental health services or other measures to protect your physical and psychological health		
	Human Capital Incentive	5. The pay you get matches your ability to do the job		
		6. Your university offers benefits that make you more productive		
		7. Your university's promotion and reward system motivates you to work harder		
		8. Your university advancement opportunities are fair and transparent		
	Human Capital Evaluation	9. Your university regularly assesses the skills of its employees		
		10. Your university's performance evaluation criteria are clear		
		11. The results of your university performance review are fair and consistent with your job situation		
		12. The results of your performance review can help you advance in your career		
	Knowledge Creation	13. Your university often organizes academic seminars, symposia, and other exchange activities		
		14. Your university's research facilities, laboratories, and more contribute to academic research and innovation		
		15. Your university often organizes school-business partnerships or social service projects		
		16. You often publish your research results in the form of papers, reports, etc		
	Knowledge Storage	17. Your university's knowledge storage systems (libraries, digital repositories, etc.) are easy to access and use		
		18. Your university's knowledge storage system can meet your academic research needs		

Variable	Operationalized	Scale Items	Reference	Measure
Knowledge Management		19. Your university's knowledge storage system supports academic collaboration and resource sharing	Dalkir (2020)	Five-point Likert scale
		20. Your university's knowledge storage system has upgrading functions.		
	Knowledge Sharing	21. Your university encourages knowledge sharing		
		22. You are willing to share necessary knowledge with colleagues		
		23. Knowledge sharing has improved your academic level		
		24. Knowledge sharing facilitates teamwork		
	Knowledge Application	25. You have participated in knowledge application projects organized by the university, such as innovation projects, industrial cooperation, etc		
		26. Knowledge application is helpful to your work performance		
		27. Your university knowledge application provides a full cooperation platform such as industry-university-research cooperation		
		28. Your university's incentives can effectively promote the application of knowledge		
	Tacit Knowledge	29.You understand that tacit knowledge refers to personal experience, intuition, insight, values, skills, and ways of thinking that are difficult to transmit in a standardized way		
		30.You believe that the sharing and dissemination of tacit knowledge, such as experiences and skills in academic research, contributes to enhancing the academic culture of the university		
		31.Your university has sufficient channels and platforms to facilitate the transfer of tacit knowledge		
		32.The creation of tacit knowledge (such as research methods and insights) helps universities		

Variable	Operationalized	Scale Items	Reference	Measure
		strengthen their collaboration with industry		
Job Satisfaction		33. You are satisfied with your current salary package.	Pratama, Suwarni, & Handayani (2022)	Five-point Likert scale
		34. You are satisfied with the work environment, hardware conditions provided by your university.		
		35. You are satisfied with your university's performance evaluation and promotion mechanism.		
		36. You are satisfied with the academic exchange and industry-university-research cooperation conditions provided by the university.		
Organizational Effectiveness	Employee Engagement	37. In your work, you feel fully committed and actively involved in completing your work tasks.	Kreutzer, K., & Jacobs, C. D. (2020)	Five-point Likert scale
		38. You are willing to stay in your current job for a long time and contribute to the development of the University.		
		39. You share the overall goals and vision of the University and are willing to go the extra mile to contribute to it.		
		40. Your university provides adequate support and resources to help you with your work assignments		
	Academic Culture	41. Your university offers ample opportunities to promote academic exchange and collaboration among faculty		
		42. The academic atmosphere within your university encourages innovation and exploration		
		43. Your university gives appropriate recognition and rewards for academic achievements (e.g., research papers, project results)		
		44. You are free to choose your research topic and publish your research results		

Variable	Operationalized	Scale Items	Reference	Measure
	Industry Cooperation	45. Your university encourages and actively supports collaborative projects within industry.		
		46. Collaboration with industry effectively enhances the university's research output and innovation capabilities.		
		47.Industry collaboration can successfully translate academic knowledge into industry-applicable outcomes		
		48.Industry collaboration enhances your university's reputation and influence in society		

3.3.2 In-depth Interview Form

An in-depth interview form (semi-structural) was constructed and used to interview key management personnel of private universities in China. The investigator conducted in-depth interviews through a variety of methods, including email, social media, and in person.

The key factors of the research involve human capital management, knowledge management, job satisfaction, and organizational effectiveness, as shown in Table 3.7:

Table 3.7 Key Factors Involved in the Research Questions

Research Questions	The key factors involved	Data Collection	Data Analysis
What is your opinion on the organizational effectiveness of private universities? What are the current problems and challenges?	Human Capital Management knowledge Management Job Satisfaction Organizational Effectiveness	Interview	Content Analysis
What are your solutions to these problems and challenges? What is it exactly?	Human Capital Management knowledge Management Job Satisfaction Organizational Effectiveness	Interview	Content Analysis
Please propose three specific plans to improve the effectiveness of the organization.	Human Capital Management knowledge Management Job Satisfaction Organizational Effectiveness	Interview	Content Analysis

Research Questions	The key factors involved	Data Collection	Data Analysis
Do you think this model is valid? If not, why not? What do you suggest?	Human Capital Management knowledge Management Job Satisfaction Organizational Effectiveness	Interview	Content Analysis

3.3.3 Focus Group Discussion

The moderator introduced the purpose, process and schedule of the focus group discussion.

The moderator guided the experts to discuss the main topics.

The moderator summarized and thanked the experts for their participation and contributions.

3.4 Data Collection Strategy and Procedure

3.4.1 Questionnaire

The content validity was checked using IOC (index of objective consistency of items), and the opinions of the following five experts were sought.

Professor Liang Xiaofeng (China)

Professor TongJin (China)

Professor ZhangKun (China)

Professor Peter Qin (China)

Professor DingYang (China)

Five experts conducted an IOC evaluation of the questionnaire and put forward specific opinions and recommendations for improvement.

Table 3.8 Specific Opinions of the Experts

Expert	Opinion	Recommendations for improvement
Professor Liang Xiaofeng	The overall questionnaire design aligns with the research objectives and term definitions; however, individual questions are flawed. For example, in the question about "regular" medical check-ups, etc., the term "regular" is vaguely defined, and "other measures" are unclear, linking to research objectives and term definitions that are ambiguous and complex, making it difficult to determine if the focus is on the research core.	Clarify “regular” with specific time intervals (e.g., semi-annual/annual physicals) and detail “other measures” (e.g., mental health seminars, counseling hotlines) to make the question more precise and relevant to research goals and term definitions.
Professor Peter Qin	Survey terms like "practical, "conducive to career development," and "periodic" lack clear definitions.Varying interpretations of these terms exist among individuals.Specifics of "skills assessment" are undefined. Similar issues of ambiguous concept definitions and unclear standards can blur the relevance of research questions.	In 0 0-scored questions, clarify key concepts like "practical" and how training is "conducive to career development".For skill assessment questions, define "regular" time intervals and specify assessment indicators and methods. Make questions more relevant to research goals and term definitions through precise and accurate wording.
Professor Zhangkun	The questionnaire is of high quality. Most questions are closely aligned with research objectives, and the terminology is accurate. However, some questions, such as "Your university offers benefits that make you more productive," score 0. The criteria for "more productive" are unclear, including how benefits enhance work efficiency and the relevant indicators, making it difficult to link them to research objectives and term definitions.	Clarify measures of "more productive work", such as the percentage reduction in time to complete tasks, the amount of research output per unit of time, etc., and detail how benefits relate to these indicators to make the question more specific.
Professor Tongjin	Overall, the questionnaire is scientifically designed and aligns with the research objectives. However, some questions need rethinking: For the “more productive” question, the measurement is unclear. In the “knowledge storage system” question, the extent, methods of “support”, and categories of “academic collaboration” and “resource sharing” are unclear. Regarding the question of “school-business partnerships,” the frequency, project types, and purposes are often undefined, making research compatibility challenging to assess.	Optimize 0 - marked questions. Clarify measurement standards: For welfare, set specific performance indicators to measure work efficiency. For knowledge storage system, detail “support” forms, “academic collaboration” and “resource sharing” contents.Define details of university - enterprise/social service projects:Set “often” frequency Specify project types and goals.

Expert	Opinion	Recommendations for improvement
Professor DingYang	Questionnaire questions are of decent quality overall.But some questions need clarification regarding their relation to research objectives and term definitions.Example: “Your university regularly assesses the skills of its employees” scores 0 as “regular” is vague and “skill assessment” direction in research context is unclear, making its link to research core ambiguous.	Define a "regular" schedule, such as a monthly simple skills test and an annual comprehensive skills assessment; The specific connotation and evaluation focus of "skills assessment" in this study are explained in detail, so that the question is more in line with the research objectives and the definition of terms.

The formula of IOC is

$$IOC = \frac{\Sigma R}{n}$$

$$= 0.841$$

where IOC = Index of item-objective congruence value

R = Score from experts

ΣR = Total score from all experts

n = Number of experts

Criteria to verify the score is

+1 means “the measurement item is congruence with objective of study”

0 means “the measurement item is neutral with objective of study”

-1 means “the measurement item is inconsistent with objective of study”

IOC needs to be between 0.7-1.00 for every question.

IOC between 0.7-1.00 means “the measurement is passing the criteria from experts”.

IOC below 0.7 means “the measurement needs to make a change or correction”.

IOC of less than zero means that the measurement is failing to qualify according to expert standards.

Then the researcher did a try-out with 40 questionnaires and checked on the reliability. The formula of Cronbach’s alpha coefficient is

$$\alpha = \left[\frac{n}{(n-1)}\right]\left[1 - \frac{\Sigma_{i=0}^{n} / S_i^2}{S_t^2}\right]$$

where α = a coefficient of reliability
n = the number of informants
$\sum_{i=0}^{n}$ = the variance of the sum of informants
S_i^2 = the ratio of the variance of each informant
S_t^2 = the ratio of inter-informants' variance

The questionnaire was initially presented to 40 respondents for their valuable input. Utilizing the insights garnered from these respondents, the questionnaire underwent moderate revisions. Particular attention was given to modifying any sentences identified as challenging to comprehend or potentially biased.

Table 3.9 Reliability Statistics of Pretest Questionnaires

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.858	.858	48

The reliability test of the 40 questionnaires shows Cronbach's Alpha Based on Standardized Items at 0.858, which is more significant than 0.7. Thus, the reliability of the whole questionnaire is accepted.

Table 3.10 Cronbach's Alpha Coefficient of Questionnaire Variables

No.	Variable	Cronbach's Alpha	N of Items
1	Human Capital Investment	0.890	4
2	Human Capital Incentive	0.876	4
3	Human Capital Evaluation	0.885	4
4	Knowledge Creation	0.901	4
5	Knowledge Storage	0.855	4
6	Knowledge Sharing	0.876	4
7	Knowledge Application	0.900	4
8	Tacit Knowledge	0.902	4
9	Job Satisfaction 1	0.854	1

No.	Variable	Cronbach's Alpha	N of Items
10	Job Satisfaction 2	0.854	1
11	Job Satisfaction 3	0.854	1
12	Job Satisfaction 4	0.854	1
13	Employee Engagement	0.886	4
14	Academic Culture	0.877	4
15	Cooperation With Industry	0.864	4
	Total	**0.858**	**48**

3.4.2 In-depth Interview

The In-depth interview includes the following steps:

1) Develop an interview research plan. The research topic was proposed and determined, and the purpose and tasks of the survey were clarified. The interview questions were appropriately broken down into specific levels and elements. The main research question is to understand the relationship between human capital management and organizational effectiveness in private universities in China, and the key factors involved include human capital management, knowledge management, job satisfaction, organizational effectiveness, etc.

2) Determine the interviewees and survey methods. The types of interviewees were selected and determined, and the fields, departments, and types of work to be surveyed were clarified. The sample size, that is, the number of selected interviewees, was determined. The interview method was determined, that is, the method and style were clarified, the location and time were determined, and communication was conducted with the interviewees.

This study adopted an interview method, including face-to-face interviews, e-mails, etc. The main interviewees were selected from 15 private universities, and one key manager (a person who is familiar with human capital management, knowledge management, organizational effectiveness, etc. and has a say in private universities) was selected from each university for interviews, as shown in Table 3.11.

Table 3.11 List of Informants as Interviewees

Region	Name of Private Universities	Specific position
East	Wuxi Taihu University	Vice Director of the Academic Affairs Office
	Zhejiang Shuren University	Dean of School of Communication
	Qingdao City University	Director of Academic Affairs
South	Guangdong Baiyun University	Director of Information Center
	Nanning University	Director of Human Resources Center
	Chengdu University of Arts and Sciences	Director of Student Services
West	Xi 'an Peihua University	Vice President
	Xijing University	Director of Teacher Development Center
	Xi'an Eurasia University	Director of Human Resources Center
North	Beijing City University	Director of Research and Social Services
	Tianjin Ren 'ai University	Vice Dean of the School of Humanities
	Hebei Dongfang University	Library director
Central	Sias University	Dean of School of Management
	Wuhan East Lake University	Director of Organization personnel Department
	Anhui Xinhua University	Vice President
Total		**15**

(Source: Researcher, 2024)

3.4.3 Focus Group Discussion

1. Preparation:

Before the group discussion, the researcher was fully familiar with the research purpose and discussion outline, and understood the professional background and research field of each expert. For online group discussion, a quiet group discussion environment was selected, and the Tencent conference room was debugged in advance.

2. Moderator guidance:

The moderator introduced the purpose, rules, and arrangements of the interview. During the discussion, the moderator paid close attention to the experts' responses, encouraged each expert to actively express his or her views, and ensured that the interview was carried out in depth around the research topic.

3. Recording and observation:

Record the experts' views, attitudes, important examples, etc.

3.4.4 Data Collection Procedure

The quantitative data collection was conducted in the following steps:

1) Requested a letter from the management department for permission to distribute the questionnaire.

2) Sent the questionnaire and the permission letter to target groups via -WJX-.cn in China.

3) Collected questionnaires back upon a specific timeline. They were checked and verified for completeness, with the number of completed issues and the percentage that could be used for further analysis.

4) Used SPSS software to generate a database, and carried out preliminary data management and fundamental statistical analysis to prepare for the structural equation model analysis by SEM.

The qualitative data were collected through the following channels:

In-depth interviews: Collected interview responses via email and social media, recorded face-to-face interviews, and compiled documents.

Focus Group: The whole process of the focus group was recorded on the screen to ensure that the information was fully recorded. During the discussion, key information, such as experts' main views, proposed solutions, and model evaluation, was recorded synchronously to facilitate subsequent data collation and analysis.

3.5 Data Analysis

The process of data analysis includes the selection of appropriate statistics and the analysis of the collected data.

3.5.1 Quantitative Data Analysis

This study utilized SPSS Version 26.0 and Amos Version 23.0 statistical programs to analyze quantitative data. The specific steps are as follows:

1) Analyze the respondents' general information by frequency and percentage.

2) Analyze the central position of a variable within a set of data by Mean, indicating the quantitative level and quality level of the trait represented by the data. Then, the representativeness of the Mean will be judged using standard deviation (SD).

3) Analyze relationships among variables by Correlation Coefficient or Pearson Correlation (r).

4) Analyze the correlation among human capital management, knowledge management, and organizational effectiveness using Multicollinearity and Correlation Analysis.

5) Use Multiple Regression with Enter.

6) Use structural equation modeling (SEM) to analyze the Path analysis by using the maximum likelihood (ML) principle to estimate the path coefficient. Analyze variables' direct and indirect effects to see how they affect the dependent variable. The statistical program Amos Version 23.0 analyzed the causal pathways affecting organizational effectiveness. The program has a path pattern for variables, as shown in Figure 3.1.

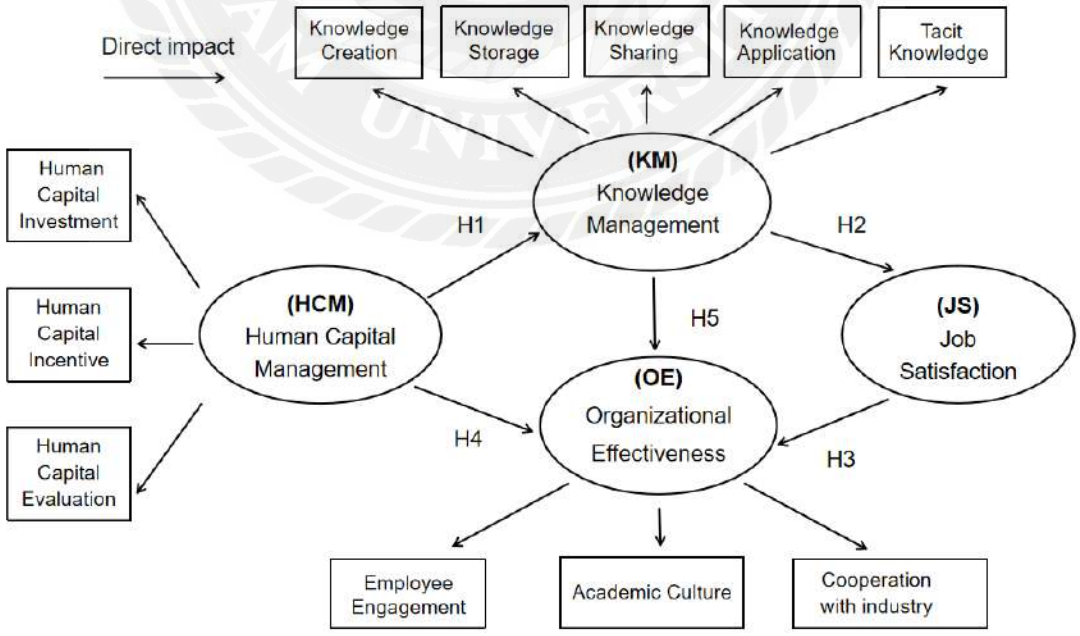


Figure 3.1 Model of Relationship Path Analysis (Path Analysis) of Research Variables.

This study examined the relationship between human resource management (HRM), knowledge management (KM), job satisfaction (JS), and organizational effectiveness (OE) in private universities, employing the structural equation model (SEM) for analysis. The observable indicators of human capital management in the study include human capital investment, motivation, and evaluation. The observable indicators of knowledge management encompass knowledge creation, storage, sharing, and tacit knowledge. Additionally, the observable indicators of the organization include employee engagement, academic culture, and industry cooperation.

The main reasons for choosing the structural equation model (SEM) in this study are as follows:

Theoretical fit: SEM can transform the multi-dimensional theoretical concepts involved in this study into measurable variables and effectively reflect the relationship between them, which is difficult to achieve with simple regression analysis.

Variable relationship processing ability: The variable relationship in the study is complex, with direct, indirect, and mediating effects. SEM can simultaneously consider the relationships between multiple variables and process latent variables, accurately estimating various effects. In contrast, variance analysis is relatively limited in its ability to handle such complex relationships.

Adaptability to research purpose: This study aims to reveal the impact mechanism of key elements of private universities on organizational effectiveness and provide management strategies. SEM can verify theoretical models and clarify the causal paths and influence levels between variables. Although factor analysis can process multivariate data, it cannot directly test causal hypotheses and cannot meet the core needs of this study.

The structural equation model combines the measurement model and structural model, which can not only study the relationship between latent variables and measurable variables but also reflect the causal relationship between latent variables:

$$\eta = B\eta + \Gamma\xi + \zeta$$

1) Internal latent variables (Exogenous; η = eta) The variable serves as the dependent term within a solitary equation.

2) External latent variables (Endogenous; ξ = ksi) Act as the independent variable in each equation.

3) B: Direct influence of variables η on variables η other

4) Γ: Direct influence of variables ξ on variables η

5) ζ= zeta: structural tolerances

In this study, Amos Version 23.0 was used to construct a structural equation model for confirmatory factor analysis. The research hypothesis was verified through model fitting, amendment, and testing to validate the structural test of the human capital management and organizational effectiveness evaluation index system. and the objective empowerment of each dimension and index level indicator. Consistency evaluation encompasses a range of statistical indicators, including the Chi-square probability level (Cmin-P), relative Chi-square (CMIN/df), goodness-of-fit index (GFI), and approximate root-mean-square error (RMSEA). These indicators are primarily used to assess the model's overall fit, specifically whether the model effectively explains the data.

The model fit indices and their acceptable thresholds are listed in Table 3.12.

Table 3.12 The Model Fit Indices and Their Acceptable Thresholds

Goodness of Fit Index (Statistic Abbreviation)	Goodness of Fit Index	Objective	Level of Acceptance	Interpretation
CMIN-p	Chi-square Probability Level	To determine the chi square probability value, which must be not statistically significant	p>0.05	Pass
CMIN/df	Relative Chi-square	To verify that the model is consistent with the empirical data	<5	Pass
GFI	Goodness of Fit Index	To measure the level of harmony in comparison with a value between 0 and 1.00	>0.90	Pass

Goodness of Fit Index (Statistic Abbreviation)	Goodness of Fit Index	Objective	Level of Acceptance	Interpretation
RMSEA	Root Mean Square Error of Approximation	To indicate the error value of the model, inform of the root of mean square's error by approximating the value between 0-1.00	<0.08	Pass
FO	Population Discrepancy Function Value	Harmony function value when the model is consistent with the empirical data	0.00-0.08	Pass

(Source: Sincharu, 2014)

In this study, to enhance the model's stability and ensure the accuracy and reliability of statistical results, the following steps were taken:

1) To improve fit, utilize the AMOS model's Modification Index (MI) (Kris Raeng Sung Noen 2011) by examining error values associated with dependent variables.

2) Consider establishing bidirectional relationships between dependent variables, often referred to as "regression relationships" or "interaction effects." This implies that changes in one dependent variable affect the other and vice versa.

3) When constructing a structural equation model using the structural equation model software AMOS, each dependent variable has a corresponding measurement model and structural model. Supplementary analyses, such as model comparison and indicator modification, were conducted to further evaluate the model's quality.

3.5.2 Qualitative Data Analysis

Through open or unstructured interviews with 15 key managers (It refers to those responsible people in private universities who are familiar with human capital management, knowledge management, organizational effectiveness, etc., and have a say in it), this study explored the hidden information and deep meaning of the impact of human capital management on organizational effectiveness, and verifies, interprets and expands the results of quantitative analysis, which is conducive to the mutual verification and

supplement of research results.

1) Organizing data

Interview materials collected via email, social media, or focus groups were collated. The recording was transcribed verbatim into text. The transcribed texts were organized into a uniform format and were ready for analysis.

2) Coding and topic analysis (consider using NVivo software)

Open coding: Label key concepts such as "training effectiveness," "incentives," and "employee satisfaction."

Axis coding: Categorize coding into categories such as "training and development," "Compensation and benefits," and "performance evaluation."

Refine the core topics: Topic identification is not limited to concepts with high frequency but should also focus on implicit and essential concepts. Identify and summarize the main themes of the interview, comparing the responses of different respondents to identify commonalities and differences. Analyze the core themes in-depth to explore the motivations and reasons behind them. Integrate the analysis results into a theoretical framework to provide an explanation for the research question.

3) Data verification

The analysis results of focus group interviews were compared with those of in-depth interviews and questionnaires to ensure the accuracy and credibility of the analysis and to present the influencing factors and causality of human capital management on organizational effectiveness more comprehensively and in-depth.

3.6 Research Ethics

The researcher received a certificate for research ethics, Certification Number 2991186, from Protecting Human Research Participants.

The researcher obtained formal consent from participants, ensuring they were fully informed about the study's purpose, procedures, risks, and benefits. Participants voluntarily

agreed to participate without coercion or undue influence, and their autonomy and rights were respected throughout the research process.

3.6.1 Consent, Confidentiality, and Respect

1）Informed Consent: The researcher obtained voluntary informed consent from participants, providing comprehensive information about the study's purpose, procedures, risks, and benefits, ensuring participants could make an informed decision to participate.

2）Confidentiality: The researcher was responsible for safeguarding participants' personal information and research data, ensuring secure storage and anonymization to prevent unauthorized access or disclosure.

3 ） Respect for Participants' Rights and Dignity: The researcher respected participants' autonomy, rights, and dignity, treating them with sensitivity and consideration for their cultural, religious, and personal beliefs and values.

3.6.2 Minimization of Harm, Beneficence, and Integrity

1) Minimization of Harm: The researcher minimized the risk of physical, psychological, or social harm to participants by conducting risk assessments and providing appropriate support services.

2) Beneficence: The researcher strived to maximize the benefits of research while minimizing potential risks or harms, weighing the potential benefits against the risks to ensure the welfare of individuals or society.

3) Integrity and Honesty: The researcher conducted their research with honesty, integrity, and transparency, adhering to high standards of scientific integrity and avoiding plagiarism, falsification, or data fabrication.

CHAPTER 4
RESEARCH RESULTS

This chapter presents an analysis of the data by following the quantitative and qualitative research methods, and the research results are separated into three sections as follows:

4.1 Quantitative Data Analysis

4.1.1 Descriptive Statistical Analysis

4.1.2 Percentage Distribution of Factors

4.1.3 Reliability Analysis

4.1.4 Validity Analysis: Explore Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA)

4.1.5 Correlation Analysis

4.1.6 SEM Fitting and Hypothesis Testing

4.1.7 Hypothesis Test Results

4.2 Qualitative Data Analysis

4.2.1 In-Depth Interviews

4.2.2 Content Analysis

4.2.3 Discussion on the Consistency of the Hypotheses and Test Results and Qualitative Analysis Results

4.3 Conclusion

Utilizing SPSS and AMOS software,the researcher conducted the quantitative analysis systematically, starting with a reliability assessment using Cronbach's Alpha and Corrected Item-Total Correlation (CITC), followed by a validity evaluation using Confirmatory Factor Analysis (CFA), path coefficients, Combined Reliability (CR), and Average Variance Extracted (AVE). The validity and reliability tests show that the collected data were accurate and unique. Correlation analysis and structural equation modeling (SEM) came next. Verifying model fit in structural equation modeling was

crucial, utilizing the indices of GFI, CFI, AGFI, and RMSEA. The subsequent phase entailed testing the hypotheses and ascertaining the research outcomes.

The research collected data by distributing 410 questionnaires and subsequently receiving 403 completed questionnaires. After reviewing each questionnaire, only 400 questionnaires were found to be valid. According to the sample size mentioned in Chapter 3, the minimum sample size was 393; therefore, the sample size of 400 respondents was reasonable for use in the research analysis.

4.1 Quantitative Data Analysis

4.1.1 Descriptive Statistical Analysis

In this study, demographic characterization describes the essential characteristics of the faculty members who participated in the questionnaire. Understanding the sample and potentially identifying any patterns or relationships between demographic factors and the study's outcomes are essential to analyzing the data effectively. This study focused its demographic characterization on factors including gender, age, educational level (bachelor's, academic, or professional), years of work experience, monthly income, department, and work position of the respondents. A total of 400 valid respondents completed the questionnaires, yielding the following results:

Table 4.1 Demographic Characteristics of Respondents

Variables	Items	Frequency	Percent (%)
Gender	Male	238	59.5
	Female	162	40.5
Age	21-30 years old	152	38.0
	31-40 years old	187	46.8
	41-50 years old	37	9.2
	51-60 years old	24	6.0
Levels of Education Background	Below undergraduate	108	27.0
	Bachelor’s degree	219	54.8
	Master’s degree	52	13.0

Variables	Items	Frequency	Percent (%)
	Ph.D.	21	5.2
Levels of Professional Qualification	Teaching Assistant / Junior	190	47.5
	Lecture / Intermediate	176	44.0
	Associate Professors / Associate Senior	31	7.7
	Professor / Senior	3	0.8
Years of Work Experience	Less than 3 years	85	21.3
	3-6 years	112	28.0
	7-10 years	105	26.2
	11-20 years	77	19.3
	More than 20 years	21	5.2
Monthly Income	Below 6,000RMB	181	45.2
	6,001 – 9,000RMB	132	33.0
	9,000 – 12,000 RMB	52	13.0
	More than 12,000RMB	35	8.8
Work Departments	Teaching	162	40.5
	Education Management	120	30.0
	Student Management	58	14.5
	Administrative Management	32	8.0
	Logistics	11	2.8
	Others	17	4.3
Work Position	Administrative Staff	223	55.8
	Lecturer	145	36.3
	Administrator	32	8.0
Total		**400**	**100.0**

Table 4.1 revealed the results of 400 respondents' demographic characterization question by question as follows:

Gender: Most respondents were 238 (59.5%) males, while 162 (40.5%) were females.

Age: 31-40 represents the largest age group (46.8%, 187 respondents), followed by 21-30 (38.0%, 152 respondents). A smaller proportion of respondents are in the 41-50 age range (9.2%, 37 respondents) and 51-60 age range (6.0%, 24 respondents).

Highest level of education: Half of the respondents (54.8%, 219 respondents) hold a bachelor's degree. A substantial portion (27.0%, 108 respondents) hold a below undergraduate, while fewer hold a master's degree (13.0%, 52 respondents) or a Ph.D. (5.2%, 12 respondents).

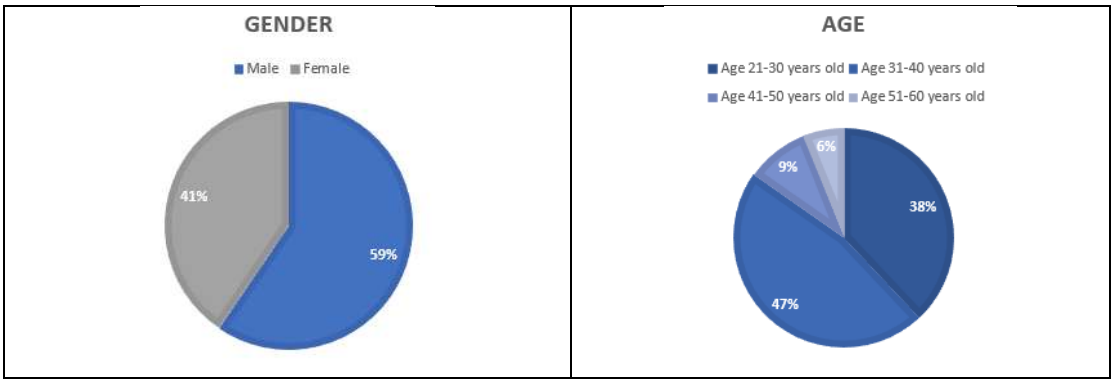
Level of Professional Qualification: Nearly half of the respondents (47.5%) hold junior teaching positions. A slightly smaller proportion (44%) are lecturers or hold intermediate positions. Associate Professors/Associate Senior and Professor/Senior positions make up a small minority of the respondents (7.7% and 0.8%, respectively).

Years of Work Experience: The majority of respondents have 3-10 years of work experience (28% and 26.2%, respectively). A significant proportion (21.3%) have less than 3 years of experience. Those with 11-20 years of experience make up 19.3%, and those with over 20 years make up only 5.2%.

Monthly Income: The most common income bracket is below 6,000 RMB (45.2%). The remaining respondents are distributed fairly evenly across the higher income.

Work Position: The majority of respondents work in teaching departments (40.5%). A substantial proportion (30%) work in education management.

The data suggest that the study's respondents are primarily junior to mid-career teaching professionals with moderate income levels. This information is crucial for understanding the context of the study and the generalizability of its findings. Moreover, the data of this part are shown in the charts in Figure 4.1.



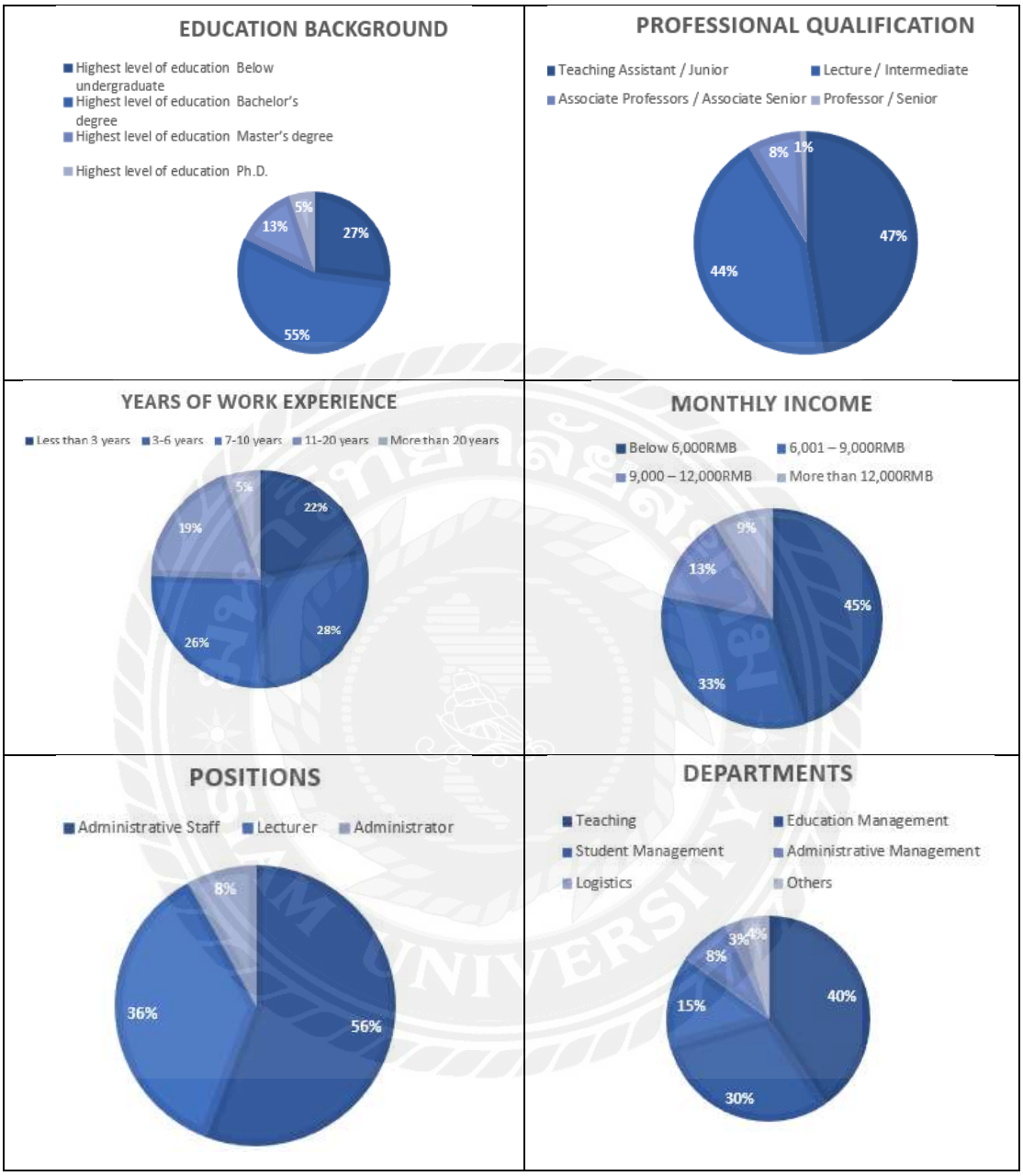


Figure 4.1 Summary of Demographic Characteristics

The above demographic characteristics, including age distribution, education structure, title structure, work experience, and the proportion of monthly income, align with the actual situation of private universities in China. Private universities in China started relatively late and were small in scale in the early stages. In the past 20 years, with the

expansion of scale and the increasingly strict requirements of the Ministry of Education's evaluation of the student-teacher ratio, many young teachers have joined, especially in the past 10 years. Due to limited financial and academic resources, talents with high educational qualifications and professional titles are more inclined to go to public institutions. In addition, the salary competitiveness of private colleges and universities is weak, and the professional title promotion system is not perfect, resulting in a high turnover rate of teachers and a low proportion of teachers with high working years. Low salaries, high work pressure, and limited career development make the teachers of private colleges and universities mainly young, middle, and low professional titles.

4.1.2 Data Normal Distribution Test

This part is concerned with the research variables and their sub-variables. There are four variables: Human Capital Management (HCM), Knowledge Management (KM), Job Satisfaction (JS), and Organizational Effectiveness (OE), and eleven sub-variables. Human Capital Management (HCM) has sub-variables for human capital investment (HCM1), human capital incentive (HCM2), and human capital evaluation (HCM3). Knowledge Management (KM) has sub-variables for knowledge creation (KM1), knowledge storage (KM2), knowledge sharing (KM3), knowledge applications (KM4), and Tacit Knowledge (KM5). Job Satisfaction has sub-variables as itself. Lastly, organizational effectiveness (OE) has sub-variables in terms of employee engagement (OE1), academic culture (OE2), and industry cooperation (OE3). According to the questionnaire launched for the study, the questionnaire results are divided into 5 categories, i.e., strongly disagree, disagree, neutrality, agree, and strongly disagree, respectively.

In this section, the results are presented as percentages for each variable and sub-variable, providing a detailed overview of respondents' levels of agreement with statements related to Human Capital Management and Organizational Effectiveness. Prior to further analysis, the data were assessed for normality using the absolute values of skewness and kurtosis. Following established statistical conventions, the distribution is considered approximately normal when the absolute value of skewness does not exceed

3.00 and that of kurtosis remains within 8.00. The summarized results are displayed in Table 4.2.

Table 4.2 Percentage Distribution of Sub-variables

Variable			Percentage					Mean	SD
			Strongly Disagree	Disagree	Neutrality	Agree	Strongly Agree		
Human Capital Management **(HCM)**	Human Capital Investment (HCM1)	HCM1_1	4.5	4.0	31.8	25.5	34.3	3.81	1.092
		HCM1_2	4.3	5.0	32.8	25.5	32.5	3.77	1.089
		HCM1_3	4.5	3.8	30.8	27.0	34.0	3.82	1.083
		HCM1_4	4.0	4.5	32.7	26.0	32.8	3.79	1.074
	Human Capital Incentive (HCM2)	HCM2_1	4.0	3.8	32.8	27.7	31.7	3.80	1.056
		HCM2_2	4.3	4.8	32.0	26.3	32.7	3.79	1.085
		HCM2_3	4.5	3.5	33.5	25.5	33.0	3.79	1.081
		HCM2_4	4.3	3.8	32.3	26.3	33.5	3.81	1.076
	Human Capital Evaluation (HCM3)	HCM3_1	4.3	3.0	33.0	27.3	32.5	3.81	1.060
		HCM3_2	4.3	4.5	32.5	25.5	33.2	3.79	1.086
		HCM3_3	4.5	3.8	30.7	27.7	33.3	3.82	1.079
		HCM3_4	4.0	3.5	32.5	27.7	32.3	3.81	1.055
Knowledge Management (KM)	Knowledge Creation (KM1)	KM1_1	4.3	4.0	33.0	25.0	33.8	3.83	1.040
		KM1_2	4.0	3.3	31.3	26.5	35.0	3.83	1.061
		KM1_3	4.3	4.5	32.3	26.0	33.0	3.85	1.064
		KM1_4	4.8	3.3	30.5	28.5	33.0	3.84	1.048
	Knowledge Storage (KM2)	KM2_1	4.3	4.8	32.3	25.0	33.8	3.79	1.092
		KM2_2	4.3	2.8	32.3	26.8	34.0	3.84	1.063
		KM2_3	4.0	3.0	33.3	27.3	32.5	3.81	1.051
		KM2_4	4.0	3.5	32.0	27.5	33.0	3.82	1.058
	Knowledge Sharing (KM3)	KM3_1	3.5	2.5	33.8	22.8	33.3	3.83	1.040
		KM3_2	4.0	3.8	31.0	28.0	33.3	3.83	1.061
		KM3_3	4.0	3.5	30.8	27.3	34.5	3.85	1.064
		KM3_4	3.8	3.3	32.0	27.5	33.5	3.84	1.048
	Knowledge Applications (KM4)	KM4_1	3.5	3.5	32.0	27.0	34.0	3.85	1.046
		KM4_2	3.8	3.8	32.3	27.5	32.8	3.82	1.052
		KM4_3	3.5	3.5	33.0	27.3	32.8	3.82	1.041
		KM4_4	3.8	3.8	30.5	38.0	34.0	3.85	1.055
	Tacit Knowledge (KM5)	KM5_1	4.5	4.0	31.5	26.0	34.0	3.81	1.089
		KM5_2	4.5	3.0	29.8	27.5	35.3	3.86	1.076
		KM5_3	4.3	3.8	31.3	26.0	34.8	3.83	1.080
		KM5_4	4.3	3.3	31.0	28.0	33.5	3.83	1.064
Job Satisfaction (JS)	Job Satisfaction (JS)	JS1	3.3	4.3	31.3	27.3	34.0	3.85	1.046
		JS2	3.5	4.8	34.0	24.8	33.0	3.79	1.065
		JS3	3.5	3.3	32.5	26.5	34.3	3.85	1.045
		JS4	3.3	4.8	32.5	27.0	32.5	3.81	1.048
Organizational Effectiveness (OE)	Employee Engagement (OE1)	OE1_1	3.8	3.3	33.8	25.0	34.3	3.83	1.059
		OE1_2	3.5	2.5	33.0	36.3	34.8	3.86	1.037
		OE1_3	3.3	3.3	32.0	26.5	35.0	3.87	1.038

Variable			Percentage					Mean	SD
			Strongly Disagree	Disagree	Neutrality	Agree	Strongly Agree		
		OE1_4	3.3	3.5	31.3	28.5	33.5	3.86	1.030
	Academic Culture (OE2)	OE2_1	3.5	3.8	30.5	29.0	33.3	3.85	1.040
		OE2_2	3.3	4.0	32.0	26.0	34.8	3.85	1.049
		OE2_3	3.5	3.8	31.3	26.0	35.5	3.86	1.057
		OE2_4	3.8	3.0	32.3	26.3	34.8	3.85	1.053
	Industry Cooperation (OE3)	OE3_1	3.3	4.5	31.0	26.3	35.0	3.85	1.055
		OE3_2	4.0	2.8	31.5	28.0	33.8	3.85	1.050
		OE3_3	3.5	3.3	32.3	26.0	35.0	3.86	1.049
		OE3_4	3.3	3.0	32.3	26.0	35.5	3.88	1.038

4.1.2.1 Human Capital Management (HCM)

The variable of Human Capital Management (HCM) consists of human capital investment (HCM1), human capital incentive (HCM2), and human capital evaluation (HCM3).

The analysis results of Human Capital Management (HCM):

Human Capital Investment (HCM1): The majority of responses fall under Agree (26-27%) and Strongly Agree (32-34%). A small portion of respondents chose Neutral (30-32%), while Strongly Disagree (4-5%) and Disagree (4-5%), indicating minimal disagreement. Most respondents selected "Agree" and "Strongly Agree," reflecting positive perceptions of organizational commitment to employee growth. Mean (3.81) and moderate SD (1.092) indicate general agreement with some variability. Items emphasize organizational investment in employee training, skill development, and resources. The investments in human capital are generally well-received, but approximately one-third of respondents remain neutral, suggesting room for improvement in visibility or impact.

Human Capital Incentive (HCM2): Agree (26-27%) and Strongly Agree (32-33%) dominate, while Neutral (32-35%) is higher than HCM1. Disagree (4-5%) and Strongly Disagree (4-5%) remain low. Mean (3.79) and slightly higher SD (1.056) indicate agreement with noticeable variability. Items explore rewards, recognition, and financial/non-financial incentives for employees. Incentive systems are appreciated by many, but the higher neutrality indicates that some employees might find incentives less

impactful or relevant. Responses suggest that while incentives are moderately effective, some improvements could enhance employee satisfaction.

Human Capital Evaluation (HCM3): Agree (26-27%) and Strongly Agree (32-34%) continue to dominate, with Neutral (30-33%) still significant. Disagree (4-5%) and Strongly Disagree (4-5%) stay minimal. Mean (3.81) and SD (1.074) reflect general agreement with consistent participant perceptions—items related to performance appraisals and evaluations. Respondents value fair evaluation systems, though some neutral and negative responses suggest areas for improvement. Evaluation systems are perceived positively, but some respondents remain indifferent, indicating potential inconsistencies or lack of engagement with evaluation processes.

4.1.2.2 Knowledge Management (KM)

The variable of Knowledge Management (KM) consists of knowledge creation (KM1), knowledge storage (KM2), knowledge sharing (KM3), knowledge applications (KM4), and Tacit Knowledge (KM5), and the analysis results of each sub-variable are as follows:

Knowledge Creation (KM1): Agree (26-27%) and Strongly Agree (32-34%) are the most significant categories, reflecting strong positive perceptions. Neutral (30-33%) and Disagree (4-5%) are lower. Mean (3.83) and SD (1.061) indicate agreement, with consistent perceptions. Items address the organization's ability to innovate and generate new knowledge. The high agreement demonstrates that respondents value knowledge-creation processes. Knowledge creation processes are generally effective, but around one-third of employees are neutral, indicating limited involvement or visibility.

Knowledge Storage (KM2): Strongly Agree (32-35%) and Agree (27-28%) continue to dominate. Neutral (30-32%) remains a consistent portion. Mean (3.84) and SD (1.063) show strong agreement, with slightly lower variability. Items focus on systems for effectively storing and retrieving knowledge. The high agreement emphasizes the importance of accessible knowledge databases. Employees perceive knowledge storage

systems as effective, but a similar neutrality level suggests limited awareness or uneven application.

Knowledge Sharing (KM3): Agree (26-28%) and Strongly Agree (32-33%) remain strong, with Neutral (30-33%) notable. Disagree (3-5%) and Strongly Disagree (3-4%) are minimal. Mean (3.82) and SD (1.064) suggest moderate agreement with consistent variability. Items assess collaboration and the organization's openness to sharing knowledge. Positive responses indicate effective knowledge-sharing practices, though opportunities for improvement remain. Knowledge sharing is positively perceived, though neutral responses suggest potential barriers to encouraging broader collaboration.

Knowledge Applications (KM4): Agree (27%) and Strongly Agree (32-34%) remain dominant. Neutral (30-33%) shows consistent significance. Mean (3.83) and SD (1.061) show alignment among respondents. Items focus on applying organizational knowledge to solve problems and improve operations. Strong agreement highlights the successful integration of knowledge into decision-making. The knowledge application is viewed favorably, but there might be gaps in ensuring everyone sees practical benefits from applying organizational knowledge.

Tacit Knowledge (KM5): Strongly Agree (34-36%) and Agree (26-28%) show the highest agreement percentages among KM sub-variables. Neutral (30%) is slightly lower compared to other KM sub-variables. Mean (3.86) and SD (1.078) reflect high agreement with slightly higher variability. Items explore informal, experience-based knowledge shared among employees. Positive responses suggest the importance of leveraging tacit knowledge in organizational settings. Tacit knowledge is valued highly, indicating strong informal knowledge-sharing practices.

4.1.2.3 Job Satisfaction (JS)

Job Satisfaction (JS) consists of three sub-variables, as follows:

The results of work motivation indicate that Strongly Agree (32-34%) and Agree (26-27%) dominate, while Neutral (30-32%) remains consistent. Minimal Strongly Disagree (3-4%) and Disagree (4-5%). Mean (3.82) and SD (1.048) reflect agreement with

low variability. Items capture employees' satisfaction with their roles, leadership, and working environment. The high agreement suggests employees generally feel satisfied, though the neutral responses indicate room for improvement in certain areas like workload and recognition. Generally, they feel satisfied with their jobs, but the consistent neutrality suggests that satisfaction could be further improved through better workload balance and recognition.

4.1.2.4 Organizational Effectiveness (OE)

Organizational Effectiveness (OE) consists of employee engagement (OE1), academic culture (OE2), and industry cooperation (OE3), and the analysis results of each sub-variable are as follows:

Employee Engagement (OE1): Strongly Agree (34-35%) and Agree (25-28%) show strong agreement. Neutral (28-33%) is slightly lower but still significant. Mean (3.86) and SD (1.037) indicate strong agreement with low variability. Items focus on employees' emotional commitment and active participation in organizational goals. Positive responses highlight effective engagement practices, though some neutral perceptions suggest opportunities for better alignment. Employees are generally engaged, but neutral responses highlight potential challenges in ensuring alignment with organizational goals.

Academic Culture (OE2): Strongly Agree (33-35%) and Agree (25-28%) remain strong, with Neutral (26-30%). Mean (3.85) and SD (1.049) indicate agreement with consistent variability. Items assess the organization's emphasis on academic excellence, research, and innovation. High scores reflect a strong academic culture, but neutral responses suggest potential improvements in fostering innovation and inclusivity. Academic culture is positively perceived, but neutral responses suggest variability in fostering a consistent academic environment.

Industry Cooperation (OE3): Strongly Agree (33-36%) and Agree (26-28%) dominate, with Neutral (26-30%) slightly lower. Mean (3.88) and SD (1.038) are the highest among OE sub-variables, reflecting strong agreement. Items explore collaboration

with industry partners for training, projects, and research. The strong agreement emphasizes the value of industry cooperation in organizational success. Industry cooperation is the strongest OE sub-variable, reflecting employees' appreciation for external collaborations.

In conclusion, the analysis results reveal a broadly positive outlook across all variables, with the majority of respondents agreeing or strongly agreeing on the effectiveness of practices related to HCM, KM, JS, and OE. However, the consistent neutrality (30-33%) across factors suggests that some respondents are either unaware of or uninvolved in these initiatives, highlighting opportunities to improve communication, participation, and alignment. Addressing neutral attitudes can further enhance perceptions and organizational effectiveness. Organizations perform well in managing human capital, knowledge, job satisfaction, and effectiveness, with notable strengths in knowledge storage, employee engagement, and industry cooperation. However, there are areas for improvement, particularly in incentivizing employees, fostering knowledge-sharing practices, and enhancing job satisfaction through workload balance and recognition. These findings provide actionable insights for organizations that optimize their performance and employee outcomes.

4.1.3 Reliability Analysis

After analyzing the distribution of variables, the next step was to assess the data's reliability and validity. These tests are essential prerequisites before conducting structural equation modeling (SEM). To ensure internal consistency and reliability, Cronbach's Alpha should exceed 0.7, and the Corrected Item-Total Correlation (CITC) must be above 0.5. Additionally, for the reliability and validity criteria to be met for SEM, the Cronbach's Alpha value for each item, if deleted, should be lower than the overall Cronbach's Alpha. Therefore, this analysis involves comparing the Cronbach's Alpha of each item (if removed) with the total Cronbach's Alpha for every variable. The analysis shows a Cronbach's Alpha value of 0.858 for standardized and non-standardized items. This value is exceptionally high, as Cronbach's Alpha ranges from 0 to 1, with values closer to 1

indicating higher reliability. A score of 0.858 suggests that the items in the dataset are highly consistent and reliable, meaning they are measuring the same underlying construct effectively. The test was conducted on 48 items. This indicates that the dataset includes a substantial number of variables or questions, and the high Cronbach's Alpha score confirms that these items are internally consistent despite the large number. The results of the overall reliability test are presented in Table 4.3.

Table 4.3 Overall Reliability Test

Cronbach's Alpha Based on Standardized Items	Cronbach's Alpha	N of Items
0.858	0.858	48

Table 4.3 confirms that the dataset is highly reliable, with a Cronbach's Alpha score of 0.858 across 48 items. This level of internal consistency ensures the data's suitability for more complex analytical techniques.

However, it is necessary to check all dimensions and Cronbach's alpha. The lists of multiple dimensions, e.g., HMV1, HMV2, HMV3, KM1, KM2, KM3, KM4, KM5, JS, OE1, OE2, and OE3, each with its corresponding Cronbach's Alpha value and the number of items (N of Items) included in that dimension. Cronbach's Alpha values for all dimensions are exceptionally high, ranging from 0.855 to 0.902. This indicates strong internal consistency within each dimension, meaning the items in each dimension are good and reliable and measure the same underlying construct effectively.

Each dimension suggests a balanced structure across all dimensions. Despite the relatively small number of items per dimension, the high Cronbach's Alpha values confirm that the items are consistent and reliable. The dimension KM2 has the lowest Cronbach's Alpha value of 0.854, which is still high and well above the commonly accepted threshold of 0.7 for reliability. The dimension of KM5 has the highest Cronbach's Alpha value of 0.902, indicating the strongest internal consistency among all dimensions. The Total row shows a Cronbach's Alpha value of 0.858 across all 48 items, confirming the dataset's overall robustness and reliability.

The high Cronbach's Alpha values across all dimensions suggest the dataset is reliable and suitable for advanced statistical analyses, such as Structural Equation Modeling (SEM) or factor analysis. The researcher can confidently use these dimensions in their analysis, as each dimension demonstrates strong internal consistency.

Table 4.4 Reliability Test in All Dimensions

Dimension	Cronbach's Alpha	N of Items
HCM1	0.890	4
HCM2	0.876	4
HCM3	0.885	4
KM1	0.901	4
KM2	0.855	4
KM3	0.876	4
KM4	0.900	4
KM5	0.902	4
JS1	0.854	1
JS2	0.854	1
JS3	0.854	1
JS4	0.854	1
OE1	0.886	4
OE2	0.877	4
OE3	0.864	4
Total	0.858	48

Table 4.4 demonstrates that all dimensions in the dataset are highly reliable, with Cronbach's Alpha values well above the acceptable threshold. The overall reliability score of 0.858 further validates the dataset's consistency and suitability for further analysis. This table provides a comprehensive view of the dataset's reliability, ensuring that each dimension can be trusted for accurate and meaningful analysis.

The results of the dimension scale reliability test are shown variable by variable as follows:

Human Capital Management (HCM): Dimensions: Human Capital Investment (HCM1), Human Capital Business (HCM2), Human Capital Evaluation (HCM3).

Cronbach's Alpha: Ranges from 0.876 to 0.890, indicating high internal consistency. All items have CITC values above 0.850, showing strong correlations with the total scale. Cronbach's Alpha if Item Deleted: Values remain high around 0.844-0.897, suggesting that no single item significantly reduces reliability if removed.

Knowledge Management (KM): Dimensions: Knowledge Creation (KM1), Knowledge Storage (KM2), Knowledge Sharing (KM3), Knowledge Applications (KM4), Task Knowledge (KM5). Cronbach's Alpha:Ranges from 0.855 to 0.902, indicating excellent reliability. All items have CITC values above 0.850, demonstrating strong correlations with the total scale. Cronbach's Alpha if Item Deleted: Values remain consistently high around 0.855, indicating that no item negatively impacts reliability.

Job Satisfaction (JS): Cronbach's Alpha: 0.854, indicating high reliability. All items have CITC values above 0.850, showing strong correlations with the total scale. Cronbach's Alpha if Item Deleted: Values remain high around 0.835-0.875, confirming that no item significantly affects reliability.

Organizational Effectiveness (OE): Dimensions: Employee Engagement (OE1), Academic Culture (OE2), Industry Cooperation (OE3). Cronbach's Alpha:Ranges from 0.855 to 0.904, indicating strong internal consistency. All items have CITC values above 0.850, showing strong correlations with the total scale. Cronbach's Alpha if Item Deleted: Values remain high around 0.864, suggesting that no item significantly reduces reliability.

The following step is to analyze the scale reliability test, and the results are shown in Table 4.5.

Table 4.5 Scale Reliability Test

Variable	Dimension	Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation (CITC)	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Human Capital Management (HCM)	Human Capital Investment (HCM1)	HCM1_1	11.59	9.070	0.875	0.858	0.890
		HCM1_2	11.55	9.155	0.890	0.858	
		HCM1_3	11.55	9.181	0.894	0.858	
		HCM1_4	11.56	9.175	0.844	0.858	
	Human Capital	HCM2_1	11.57	9.424	0.856	0.858	0.876
		HCM2_2	11.56	9.344	0.867	0.858	

Variable	Dimension	Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation (CITC)	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
	Incentive (HCM2)	HCM2_3	11.55	9.266	0.871	0.858	
		HCM2_4	11.56	9.280	0.870	0.858	
	Human Capital Evaluation (HCM3)	HCM3_1	11.58	9.247	0.882	0.858	0.885
		HCM3_2	11.59	9.321	0.858	0.858	
		HCM3_3	11.58	9.242	0.864	0.858	
		HCM3_4	11.56	9.315	0.897	0.858	
Knowledge Management (KM)	Knowledge Creation (KM1)	KM1_1	11.58	9.328	0.889	0.858	0.901
		KM1_2	11.59	9.330	0.900	0.858	
		KM1_3	11.62	9.219	0.896	0.858	
		KM1_4	11.58	9.387	0.905	0.858	
	Knowledge Storage (KM2)	KM2_1	11.46	9.757	0.871	0.858	0.855
		KM2_2	11.41	9.649	0.864	0.858	
		KM2_3	11.47	9.655	0.854	0.858	
		KM2_4	11.44	0.9777	0.832	0.858	
	Knowledge Sharing (KM3)	KM3_1	11.47	9.741	0.880	0.858	0.876
		KM3_2	11.43	9.916	0.879	0.858	
		KM3_3	11.45	9.832	0.856	0.858	
		KM3_4	11.44	10.041	0.860	0.858	
	Knowledge Applications (KM4)	KM4_1	11.51	9.793	0.895	0.858	0.900
		KM4_2	11.52	9.816	0.901	0.858	
		KM4_3	11.50	9.794	0.902	0.858	
		KM4_4	11.51	9.791	0.897	0.858	
	Tacit Knowledge (KM5)	KM5_1	11.49	9.387	0.904	0.858	0.902
		KM5_2	11.52	9.648	0.901	0.858	
		KM5_3	11.51	9.646	0.905	0.858	
		KM5_4	11.49	9.545	0.897	0.858	
Job Satisfaction (JS)	Job Satisfaction (JS)	JS1	11.67	9.266	0.865	0.858	0.854
		JS2	11.66	9.280	0.875	0.858	
		JS3	11.65	9.247	0.840	0.858	
		JS4	11.76	9.321	0.835	0.858	
Organizational Effectiveness	Employee Engagement (OE1)	OE1_1	11.59	9.070	0.900	0.858	0.886
		OE1_2	11.55	9.155	0.873	0.858	
		OE1_3	11.55	9.181	0.892	0.858	
		OE1_4	11.56	9.175	0.890	0.858	
	Academic Culture (OE2)	OE2_1	11.57	9.424	0.904	0.858	0.877
		OE2_2	11.56	9.344	0.895	0.858	
		OE2_3	11.55	9.266	0.888	0.858	
		OE2_4	11.56	9.280	0.860	0.858	
	Industry Cooperation (OE3)	OE3_1	11.58	9.247	0.855	0.858	0.864
		OE3_2	11.59	9.321	0.866	0.858	
		OE3_3	11.58	9.242	0.869	0.858	
		OE3_4	11.56	9.315	0.878	0.858	

Table 4.5 demonstrates that all dimensions exhibit Cronbach's Alpha values well above the acceptable threshold of 0.7, with the highest values closing at 0.9. This indicates

excellent internal consistency across all variables and dimensions. The CITC values for all items are above 0.850, indicating that each item contributes significantly to the overall reliability of the scale. The Cronbach's Alpha if Item Deleted values remain consistently high across all dimensions, suggesting that no single item negatively impacts the reliability of the scale. The Scale is robust and reliable, with high Cronbach's Alpha values and strong CITC scores across all dimensions and items. The scale's reliability is further validated by the stability of Cronbach's Alpha if Item Deleted, indicating that no single item significantly affects the overall reliability. This table provides a comprehensive assessment of the scale's reliability, ensuring its suitability for further research and analysis.

4.1.4 Validity Analysis: Explore Factor Analysis (EFA), and Confirmatory Factor Analysis (CFA)

After evaluating the reliability of the four variables, the next step is to conduct a Confirmatory Factor Analysis (CFA). CFA is a statistical method used to validate the factor structure of a set of observed variables. It tests a predefined hypothesis about how these observed variables relate to underlying latent factors. CFA is a specialized form of Structural Equation Modeling (SEM) that assesses how well the data aligns with a hypothesized measurement model. This model defines which observed variables are linked to which latent factors. In simpler terms, CFA helps determine whether the items in a survey or measurement tool accurately measure the intended constructs.

The validation process in CFA involves several key measures: (a) Average Variance Extracted (AVE): Indicates the amount of variance captured by a latent factor relative to measurement error. (b) Composite Reliability (CR): Assesses the internal consistency of the indicators for a latent factor. (c) Path Coefficients: Evaluate the strength and significance of relationships between variables, serving as tests of convergent validity and aggregation.

Additionally, differential validity is necessary to distinguish between question items. This is based on the relationship between the square root of the AVE value and the standardized coefficients. According to established standards (Hair et al., 2010; Furnell &

Larcker, 1981), an AVE value of at least 0.5 and a CR value of at least 0.7 are required to demonstrate good convergent validity and composite reliability.

The study employed the SEM approach, which involves developing structural equation models. This section includes a model fit test and an evaluation of relevant indices to ensure the model meets the necessary criteria. The final step involved selecting the most appropriate model. For convergent validity testing, the analysis uses AVE, CR, and Path Coefficients.

The researcher utilized SPSS 26.0 and AMOS 24.0 to analyze exploratory factors from 400 questionnaires. The independent variables—Human Capital Management (HCM), Knowledge Management (KM), and Job Satisfaction (JS)—and the dependent variable, Organizational Effectiveness (OE), were subjected to confirmatory factor analysis to validate their measurement models.

The measurement models were constructed, integrating their latent variables and corresponding dimensions. This section showcases the outcomes of structural validity and convergence validity analysis conducted during the confirmatory analysis. Additionally, correlation analysis was employed to evaluate discriminant validity.

4.1.4.1 Human Capital Management (HCM)

4.1.4.1.1 Explorative Factor Analysis (EFA) of Human Capital Management (HCM)

The researcher analyzed the index values obtained from SPSS to examine how the questionnaire items were structured and grouped into their respective factors. This analysis aimed to verify whether these factors aligned with the three expected dimensions of Human Capital Management (HCM1, HCM2, HCM3). The suitability of the sample data for factor analysis was assessed using the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity.

According to Kaiser's (1974) criteria, the KMO value indicates the proportion of variance among variables that might be caused by underlying factors. The higher the KMO

value, the more suitable the data is for exploratory factor analysis. The general guidelines are as follows:

(a) KMO > 0.9 : Very suitable

(b) 0.9 ≥ KMO > 0.8 : Suitable

(c) 0.8 ≥ KMO > 0.7 : Moderately suitable

(d) 0.7 ≥ KMO > 0.6 : Barely suitable

(d) KMO < 0.5 : Unsuitable

The results of this study revealed a KMO value of 0.672 for Human Capital Management (HCM), which falls in the acceptable range of 0.6–0.8, indicating that the sample is adequate for factor analysis. A KMO value closer to 1.0 suggests excellent sampling adequacy, while values below 0.5 indicate unsuitability. The value of 0.672 suggests that correlations between variables are sufficient for conducting factor analysis. Bartlett's Test of Sphericity is with 1797.169 of Approx. Chi-Square, 66 of Degrees of Freedom (df), and 0.000 of Significance (Sig.). Additionally, Bartlett's Test of Sphericity yielded a p-value of less than 0.05 indicating that the null hypothesis of Bartlett's Test, i.e., the correlation matrix is an identity matrix, is rejected. These findings suggest that the dataset is appropriate for conducting exploratory factor analysis. Table 4.6 presents the KMO and Bartlett's Test for Human Capital Management.

Table 4.6 KMO and Bartlett's Test of Human Capital Management (HCM)

KMO Measure of Sampling Adequacy		.672
Bartlett's Test of Sphericity	**Approx. Chi-Square**	1797.169
	df	66
	Sig.	0.000

The results from Table 4.6 confirm the appropriateness of the dataset for factor analysis. The KMO value, 0.672, indicates adequate sampling adequacy, while Bartlett's Test, significant at $p < 0.05$, confirms that the correlation matrix is not an identity matrix. These findings validate the use of factor analysis to explore the dimensions of Human Capital Management (HCM).

The second phase involved analyzing the total variance explained generated by SPSS, with particular attention to the two data sets highlighted in red. First, the eigenvalues in the left red box were examined to determine whether they exceed 1. Components with eigenvalues greater than 1 are deemed significant and capable of forming primary components. Table 4.7 indicates three eigenvalues exceeding 1, suggesting that all input questions can be reduced to these three components. Second, the cumulative percentage in the right red box was reviewed. This percentage represents the total variance explained by the three components and must exceed 60% to meet the standard criteria. The results confirm compliance with this requirement.

The results of the Principal Component Analysis (PCA) for the Human Capital Management (HCM) variable shows the total variance explained by each component (factor) and how much each component contributes to the overall variance in the data. The first three components have eigenvalues greater than 1, which is a common criterion for retaining factors in PCA. Components 1, 2 and 3 are explained 48.908, 21.558, and 13.445% of the variance, respectively. These three components account for 83.912% of the total variance, indicating that they capture the majority of the information in the data.

After extraction, the three components retain the same eigenvalues and variance percentages as in the initial analysis, confirming their significance. After rotation (which helps in interpreting the factors), the variance explained by each component is redistributed. Components 1, 2 and 3 are explained 34.069, 29.912, and 19.931% of the variance, respectively. The cumulative variance remains the same (83.912%), but the rotation makes the factors more interpretable by maximizing the loading of each variable on one factor. Components 4 to 16 explain very little variance (less than 5% each) and are not considered significant for further analysis.

Table 4.7 Total Variance Explained of Human Capital Management (HCM)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Square Loadings			Rotation Sums of Square Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.869	48.908	48.908	5.869	48.908	48.908	4.088	34.069	34.069
2	2.587	21.558	70.467	2.587	21.558	70.467	3.589	29.912	63.981
3	1.613	13.445	83.912	1.613	13.445	83.912	2.392	19.931	83.912
4	.565	4.205	88.117						
5	.463	2.411	90.528						
6	.414	2.011	92.539						
7	.353	1.610	94.149						
8	.331	1.217	95.366						
9	.312	0.958	96.324						
10	.261	0.854	97.178						
11	.250	0.651	97.829						
12	.231	0.598	98.427						
13	.211	0.475	98.902						
14	.192	0.454	99.356						
15	.173	0.441	98.797						
16	.154	0.403	100.000						

Extraction Method: Principal Component Analysis

Table 4.7 presents the PCA results indicating the HCM variable can be effectively reduced to three components, which together explain 83.912% of the total variance. This suggests that the data is well-suited for factor analysis, and the three components are sufficient to represent the underlying structure of the HCM variable.

The analysis in Table 4.7 confirms the validity of retaining three components for confirmatory factor analysis (CFA). These components account for a substantial portion of the variance, ensuring that the latent variables are adequately represented and appropriate for further analysis. This strong extraction process enhances the measurement model's reliability and validity, providing a solid foundation for confirmatory analysis.

However, the Rotated Component Matrix, which provides the factor loadings of each variable on the three components after rotation. This helps in interpreting the factors and understanding how the variables are grouped. This part can be analyzed component by component as follows:

Component 1: This component is strongly associated with the variables HCM3_1, HCM3_2, HCM3_3, and HCM3_4, which represent Human Capital Evaluation. The factor loadings are very high, ranging from 0.828 to 0.909, indicating that these variables are strongly correlated with this component.

Component 2: This component is strongly associated with the variables HCM1_1, HCM1_2, HCM1_3, and HCM1_4, which represent Human Capital Investment. The factor loadings are also high, ranging from 0.786 to 0.909, indicating a strong correlation with this component.

Component 3: This component is strongly associated with the variables HCM2_1, HCM2_2, HCM2_3, and HCM2_4, which represent Human Capital Incentive. The factor loadings are high, ranging from 0.802 to 0.886, indicating a strong correlation with this component.

The Rotated Component Matrix clearly shows that the three components correspond to the three sub-variables of HCM: Component 1: Human Capital Evaluation (HCM3), Component 2: Human Capital Investment (HCM1), and Component 3: Human Capital Incentive (HCM2). Each sub-variable loads highly on its respective component, confirming that the items within each sub-variable are measuring the same underlying construct.

The analysis results of this part are shown in Table 4.8.

Table 4.8 Rotated Component Matrix of Human Capital Management (HCM)

Index	Component		
	1	2	3
HCM1_1		0.903	
HCM1_2		0.800	
HCM1_3		0.786	
HCM1_4		0.909	
HCM2_1			0.802
HCM2_2			0.883
HCM2_3			0.886
HCM2_4			0.875
HCM3_1	0.909		
HCM3_2	0.887		
HCM3_3	0.828		
HCM3_4	0.906		

Table 4.8 confirms that the three components correspond to the three sub-variables of HCM, with each sub-variable loading strongly on its respective component. These results indicate that the HCM variable is well-structured and suitable for further analysis, such as Structural Equation Modeling (SEM) or other advanced statistical techniques. These results support the use of this model for further confirmatory analyses and practical applications.

4.1.4.1.2 Convergent Validity Analysis

Convergent validity in management research refers to the extent to which different tools or methods measuring the same concept produce strongly related results. In evaluating the convergence validity of human capital management, the focus is on whether the measurement indicators within each dimension accurately and consistently represent the core concepts of that dimension. Metrics such as Average Variance Extracted (AVE) and Composite Reliability (CR) are commonly used, with thresholds of AVE > 0.5 and CR > 0.7 indicating strong convergent validity for the assessment instrument.

The Convergent Validity Analysis of Human Capital Management (HCM), presented in Table 4.9, assesses the convergent validity of the HCM construct by examining its three dimensions: Human Capital Investment (HCM1), Human Capital Incentive (HCM2), and Human Capital Evaluation (HCM3). The analysis employs Standard Loading Factors, Average Variance Extracted (AVE), and Composite Reliability (CR) to evaluate how effectively the items represent their respective dimensions.

The Standardized Loading Factors represent the strength of the relationship between each item and its respective dimension. Higher values indicate that the item strongly contributes to the underlying construct. HCM1 (Human Capital Investment) are 0.903, 0.800, 0.786, and 0.909. All loadings are above 0.7, indicating strong contributions to the HCM1 dimension. HCM2 (Human Capital Incentive) are 0.802 0.883, 0.886, and 0.875. All loadings are above 0.7, indicating strong contributions to the HCM2 dimension. HCM3 (Human Capital Evaluation) are 0.909, 0.887, 0.828, and 0.906. All loadings are above 0.7, indicating strong contributions to the HCM3 dimension. The high SLF values

for all items across the three dimensions confirm that the items are strongly related to their respective constructs, demonstrating good convergent validity.

The AVE measures the amount of variance captured by a construct relative to the variance due to measurement error. An AVE value above 0.5 indicates good convergent validity. AVE of HCM1, HCM2, and HCM3 are 0.725, 0.744, and 0.780, respectively. All AVE values are well above the threshold of 0.5, indicating that each dimension captures a significant amount of variance relative to measurement error. This confirms strong convergent validity for all three dimensions.

Lastly, CR of HCM1, HCM2, and HCM3 are 0.913, 0.920, and 0.934, respectively. All CR values are well above the threshold of 0.7, indicating high internal consistency and reliability for each dimension. This means that the items within each dimension are consistently measuring the same underlying construct.

The analysis results of this analysis are detailed in Table 4.9.

Table 4.9 Convergent Validity Analysis of Human Capital Management (HCM)

Dimension	Item	Standard Loading Factor	AVE	CR
HCM1	HCM1_1	0.903	0.725	0.913
	HCM1_2	0.800		
	HCM1_3	0.786		
	HCM1_4	0.909		
HCM2	HCM2_1	0.802	0.744	0.920
	HCM2_2	0.883		
	HCM2_3	0.886		
	HCM2_4	0.875		
HCM3	HCM3_1	0.909	0.780	0.934
	HCM3_2	0.887		
	HCM3_3	0.828		
	HCM3_4	0.906		

The results reveal that:

Convergent Validity: The high SLF and AVE values for all dimensions confirm that the items are strongly related to their respective constructs, and the constructs capture a significant amount of variance. This demonstrates excellent convergent validity.

Reliability: The high CR values for all dimensions indicate that the items within each dimension are highly consistent and reliable, ensuring that the constructs are measured accurately.

Dimensional Structure: The results confirm that the HCM variable is well-structured into three distinct dimensions (HCM1, HCM2, and HCM3), each with strong internal consistency and validity.

Table 4.9 confirms that Human Capital Management (HCM) has excellent convergent validity and reliability across all three dimensions. These results confirm that the HCM variable is well-measured and suitable for further analysis, such as Structural Equation Modeling (SEM).

4.1.4.1.3 Structural Validity Analysis

In validity testing, confirmatory factor analysis (CFA) evaluates structural validity, which pertains to how well a measurement model fits the theoretical framework. Structural validity reflects the extent to which a measurement instrument or methodology accurately represents and quantifies the constructs and dimensions within the theoretical model. For research on Human Capital Management (HCM), structural validity focuses on whether the proposed model, encompassing three dimensions—Human Capital Investment (HCM1), Human Capital Incentive (HCM2), and Human Capital Evaluation (HCM3)—is appropriately aligned with the collected data. Achieving this requires ensuring consistency within each dimension, distinctiveness between dimensions, and alignment between the theoretical model and the observed data.

This study specifically analyzed the fitting effects of the three HCM dimensions—investment, incentive, and evaluation—through CFA for the HCM measurement model. The results demonstrate that all models exhibit strong fitting effects, confirming that the measurement model achieves a high degree of fit.

The Confirmatory Factor Analysis (CFA) Fitting Index for Human Capital Management (HCM) presents goodness-of-fit indices that assess how well the model represents the observed data. These indices are evaluated against established thresholds to determine acceptable levels of fit. The detailed results are provided in Table 4.10.

Table 4.10 Confirmatory Factor Analysis Fitting Index of Human Capital Management (HCM)

Goodness of Fit Index	Level of Good Fit	Test Result	Results
CMIN	-	187.721	-
df	-	65	-
CMIN/df	< 5	2.888	Passed
GFI	≥ 0.95	0.957	Passed
AGFI	≥ 0.90	0.908	Passed
TLI	≥ 0.95	0.962	Passed
CFI	≥ 0.95	0.974	Passed
RMSEA	< 0.08	0.043	Passed
SRMR	< 0.08	0.051	Passed
P-value	< 0.05		

Table 4.10 reveals that the measurement model for Human Capital Management (HCM) demonstrates strong goodness-of-fit indicators. The CMIN (Chi-Square Minimum Value), adjusted for df (Degrees of Freedom), yields a ratio of 2.888, which meets the threshold of < 5, indicating a very good fit. The GFI (Goodness-of-Fit Index) is 0.957, signifying an acceptable fit, while the AGFI (Adjusted Goodness-of-Fit Index) is 0.928, reflecting a good fit. The TLI (Tucker-Lewis Index) achieves 0.962, and the CFI (Comparative Fit Index) reaches 0.974, both indicating excellent fits. Additionally, the RMSEA (Root Mean Square Error of Approximation) is 0.043, representing a good fit, and the SRMR (Standardized Root Mean Square Residual) is 0.051, confirming a good fit.

Moreover, Table 4.10 validates that the measurement model for HCM is an excellent fit for the observed data. These results confirm the robustness of the Confirmatory Factor Analysis (CFA) model, providing strong support for the reliability and validity of

the HCM construct. The model's high goodness-of-fit indices affirm its suitability for further analyses and interpretations.

Within Structural Equation Modeling (SEM) framework, the structural and measurement models serve as interconnected yet distinct components. These components collectively enable the formulation and validation of fundamental concepts and their relationships within the theoretical framework. The results presented in Table 4.10 indicate that the three-dimensional measurement model of Human Capital Management (HCM)—comprising Human Capital Investment (HCM1), Human Capital Incentive (HCM2), and Human Capital Evaluation (HCM3), each with four items—exhibits a strong fit with the data.

Figure 4.2 further illustrates the confirmatory factor analysis of the model, showcasing the measurement model of HCM. All fitting indicators meet satisfactory thresholds, and the observational data strongly support the proposed model. These findings validate the results of the exploratory investigation and establish the HCM measurement model as a reliable and valid construct for further research.

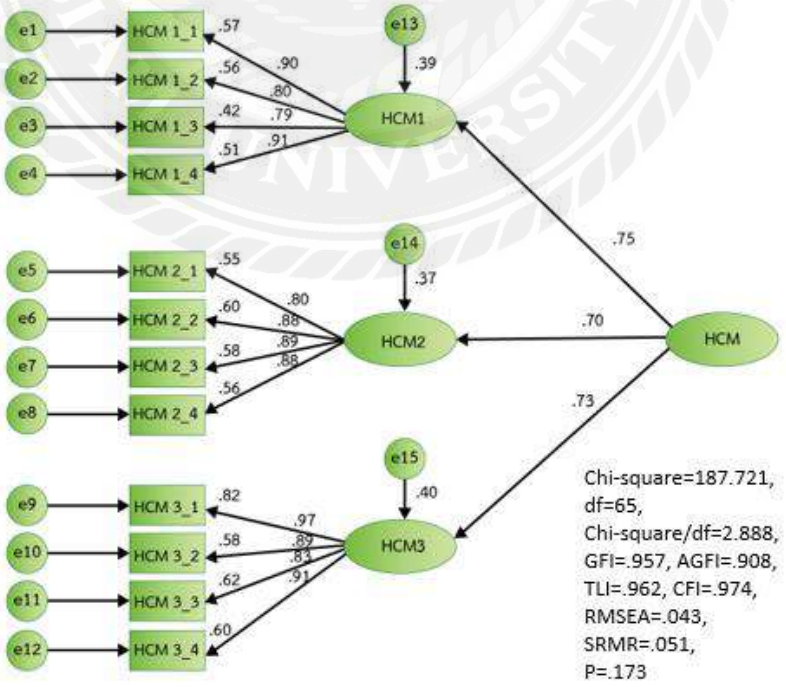


Figure 4.2 Measurement Model of Human Capital Management (HCM)

Figure 4.2 shows the model for measuring Human Capital Management (HCM). It shows positive links and weights between HCM and its three parts, indicating they are related positively.

Regression Weights Analysis Results of Human Capital Management (HCM) presents the results of the regression weights analysis for the construct Human Capital Management (HCM). The analysis result evaluates the relationships between HCM, its dimensions Human Capital Investment (HCM1), Human Capital Incentive (HCM2), and Human Capital Evaluation (HCM3), and the observed variables (items within each dimension). Key parameters include Standardized Estimates (Std. Estimate), Unstandardized Estimates (Unstd. Estimate), Standard Error (S.E.), Critical Ratio (C.R.), and P-value.

The analysis results show that:

Paths from HCM to Sub-Dimensions has a strong positive relationship between HCM and HCM1 (Human Capital Investment), HCM and HCM2 (Human Capital Incentive), and HCM and HCM3 (Human Capital Evaluation). The path is statistically significant ($p < 0.001$).

Paths from Sub-Dimensions to Indicators of HCM1 (Human Capital Investment) have the indicators of HCM1_1, HCM1_2, HCM1_3, and HCM1_4, respectively, strongly reflecting the HCM1 dimension. HCM2 (Human Capital Incentive) has the indicators of HCM2_1, HCM2_2, HCM2_3, and HCM2_4, respectively, strongly reflecting the HCM2 dimension. HCM3 (Human Capital Evaluation) has the indicators of HCM3_1, HCM3_2, HCM3_3, and HCM3_4, respectively, strongly reflecting the HCM3 dimension. All paths from HCM to its sub-dimensions (HCM1, HCM2, HCM3) and from the sub-dimensions to their indicators are strong and statistically significant ($p < 0.001$). The results confirm that the HCM measurement model is well-defined and reliable, with all indicators strongly reflecting their respective dimensions.

The analysis results are shown in Table 4.11.

Table 4.11 Regression Weights Analysis Results of Human Capital Management (HCM)

Path	Std. Estimate	Unstd. Estimate	S.E.	C.R.	P-Value
HCM1← HCM	0.747	1.000			
HCM2←HCM	0.702	0.782	0.123	6.512	***
HCM3←HCM	0.734	0.822	0.113	7.454	***
HCM1_1←HCM1	0.903	0.901	0.054	18.021	***
HCM1_2←HCM1	0.800	1.000			
HCM1_3←HCM1	0.786	0.788	0.075	11.294	***
HCM1_4←HCM1	0.909	0.916	0.044	22.753	***
HCM2_1←HCM2	0.802	0.811	0.057	16.235	***
HCM2_2←HCM2	0.883	1.000			
HCM2_3←HCM2	0.886	0.871	0.052	17.403	***
HCM2_4←HCM2	0.875	0.896	0.0428	22.256	***
HCM3_1←HCM3	0.909	0.921	0.033	30.670	***
HCM3_2←HCM3	0.887	1.000			
HCM3_3←HCM3	0.828	0.842	0.055	16.842	***
HCM3_4←HCM3	0.906	0.917	0.035	30.320	***

***indicates the level of significance .001.

In Table 4.11 the regression weights analysis results confirm that the HCM variable is strongly related to its sub-dimensions (HCM1, HCM2, HCM3).

4.1.4.2 Knowledge Management (KM)

4.1.4.2.1 Explorative Factor Analysis (EFA) of Knowledge Management (KM)

Explorative Factor Analysis (EFA) of Knowledge Management was explored from 20 questions with knowledge creation (KM1), knowledge storage (KM2), knowledge sharing (KM3), knowledge applications (KM4), and Tacit Knowledge (KM5). KMO and Bartlett's Test of Knowledge Management presents the results of the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity for the construct Knowledge Management, which consists of five dimensions: Knowledge Creation (KM1),

Knowledge Storage (KM2), Knowledge Sharing (KM3), Knowledge Applications (KM4), and Tacit Knowledge (KM5).

The results of the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity for the Knowledge Management (KM) construct is this phase. These tests are used to assess the suitability of the data for factor analysis. KMO Measure of Sampling Adequacy is 0.965 indicating a high level of sampling adequacy. A KMO value above 0.9 suggesting that the dataset is excellent for factor analysis. The high KMO score implies that the correlations between variables are sufficiently strong, making it appropriate to perform factor analysis on the KM construct.

Bartlett's Test of Sphericity has 796.128 of Approximate Chi-Square, 190 of degree of freedom (df), and 0.000 of significance (sig.) indicating the correlation matrix is not an identity matrix, meaning that the variables are interrelated and suitable for factor analysis. A significant Bartlett's test confirms that the dataset is appropriate for exploring the underlying factor structure of the KM construct.

The analysis results are shown in Table 4.12.

Table 4.12 KMO and Bartlett's Test of Knowledge Management (KM)

KMO Measure of Sampling Adequacy		.965
Bartlett's Test of Sphericity	**Approx. Chi-Square**	796.128
	df	190
	Sig.	.000

The KMO score (0.965) and the significant Bartlett's test (Sig. = 0.000) together provide strong evidence that the data is well-suited for factor analysis. These results suggest that the construct of Knowledge Management (KM) can be effectively analyzed using exploratory factor analysis (EFA) or confirmatory factor analysis (CFA) to identify its underlying dimensions. The excellent sampling adequacy and significant correlation among variables make it feasible to identify the key factors within the KM construct. Researchers can confidently proceed with further analysis to validate the KM model and explore its relationship with other variables in the study. This provides a robust foundation

for the following analyses, such as Confirmatory Factor Analysis (CFA) or Structural Equation Modeling (SEM).

The following phase is to find the Total Variance Explained of Knowledge Management (KM). The results of Principal Component Analysis (PCA), focusing on the extraction of components and the amount of variance explained by each. Here's the detailed analysis:

Five components were extracted based on the eigenvalues > 1 criterion (Kaiser's rule). Each of these components explains a significant portion of the variance in the data. The five extracted components together account for 94.097% of the total variance in the dataset after rotation, which indicates a strong representation of the underlying structure in the data. The result is well above the acceptable threshold, e.g., 60-70%, meaning that the extracted components effectively summarize the dataset. Component 1 explains the largest variance (71.950%) with an eigenvalue of 16.312. Subsequent components explain smaller proportions of variance, with Component 2 contributing 19.068%, Component 3 contributing 1.406%, and so on. The result indicates that the first two components are the most influential in explaining the variance, while the remaining components add incremental value. After rotation, the cumulative variance of the five components is still 94.097%, ensuring the interpretability of the extracted factors. The rotation improves the distribution of variance across the components, making them more meaningful for interpretation. Component 1 explains 71.791% of the variance after rotation, slightly less than its original proportion, due to the redistribution from rotation. The fifth component, while contributing the least variance, 0.729% before rotation and 0.880% after rotation, still provides useful insights and contributes to the cumulative explanation of variance.

Moreover, the high cumulative variance (94.097%) indicates that the five components effectively summarize the data, making it appropriate to proceed with further analysis, such as identifying factor loadings or naming components. Reducing the dataset to these five components simplifies the complexity while retaining most of the information, making the data more interpretable and manageable. The extracted components can be used to explain or predict outcomes related to the study's constructs, such as Knowledge

Management (KM), and provide a foundation for subsequent analyses, including confirmatory factor analysis (CFA).

The analysis results are shown in Table 4.13.

Table 4.13 Total Variance Explained of Knowledge Management (KM)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Square Loadings			Rotation Sums of Square Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	16.312	71.950	91.950	16.312	71.950	71.950	16.276	71.791	71.791
2	4.323	19.068	91.018	4.323	19.068	91.018	4.358	19.222	91.013
3	.319	1.406	92.424	.319	1.406	92.424	.254	1.122	92.135
4	.214	.943	93.367	.214	.943	93.367	.245	1.082	93.217
5	.165	.729	94.097	.165	.729	94.097	.199	.880	94.097
6	.165	.729	94.815						
7	.139	.612	95.427						
8	.126	.554	95.981						
9	.119	.526	96.507						
10	.117	.515	97.022						
11	.108	.477	97.499						
12	.091	4.00	97.899						
13	.087	.385	98.284						
14	.074	.327	98.611						
15	.069	.304	98.915						
16	.064	.281	99.196						
17	.053	.232	99.248						
18	.049	.215	99.643						
19	.044	.193	99.836						
20	.037	.164	100.000						

Extraction Method: Principal Component Analysis

The results in Table 4.13 show that five components were extracted, explaining 94.097% of the variance in the data after rotation. This demonstrates the strength and reliability of the PCA in summarizing the dataset while retaining most of the underlying information. These components can now be used for deeper analysis or model validation.

This phase is going through the rotated component matrix for Knowledge Management (KM), which is part of the exploratory factor analysis (EFA). The goal of the analysis is to identify the underlying factor structure of KM by examining the loadings of each indicator on the extracted components. The rotation optimizes the loadings, ensuring that each component distinctly represents its dimension, enhancing the interpretability of the results. The high loadings across all components confirm the reliability of the indicators in representing their respective dimensions of KM. The rotated component matrix shows that the factors are well-defined, and there is minimal overlap between components, ensuring a clear and interpretable structure. This analysis supports the multidimensional

nature of Knowledge Management, with each component capturing a distinct aspect of KM. The results validate the measurement model, indicating that the observed indicators effectively measure the latent constructs of KM. These findings are suitable for subsequent confirmatory factor analysis (CFA) to further refine and confirm the factor structure. The well-defined components can guide organizations in targeting specific dimensions of KM for improvement, such as focusing on enhancing knowledge creation or improving knowledge-sharing practices. This analysis demonstrates the multidimensional structure of KM, providing a robust foundation for further theoretical and practical applications in organizational settings.

The analysis results are shown in Table 4.14.

Table 4.14 Rotated Component Matrix of Knowledge Management (KM)

Index	Component				
	1	2	3	4	5
KM1_1	0.654				
KM1_2	0.694				
KM1_3	0.662				
KM1_4	0.630				
KM2_1		0.664			
KM2_2		0.581			
KM2_3		0.592			
KM2_4		0.613			
KM3_1			0.714		
KM3_2			0.644		
KM3_3			0.591		
KM3_4			0.613		
KM4_1				0.704	
KM4_2				0.650	
KM4_3				0.513	
KM4_4				0.624	
KM5_1					0.699
KM5_2					0.634
KM5_3					0.528
KM5_4					0.622

Table 4.14 confirms the validity of the five dimensions of Knowledge Management (KM), and it can go to the following step of the structural equation modelling.

4.1.4.2.2 Convergent Validity Analysis of Knowledge Management (KM)

The Convergent Validity Analysis of Knowledge Management (KM) dimensions is by providing values for Standard Loading Factors, Average Variance Extracted (AVE), and Composite Reliability (CR). These metrics help assess the reliability and validity of the measurement model used for KM. Each item under a dimension has a standardized loading factor, representing the degree to which the observed variable explains the underlying latent construct. Higher loadings (≥ 0.50) indicate a stronger relationship between the item and the construct. All loadings are above 0.50, confirming that the items adequately measure their respective dimensions. An AVE value ≥ 0.50 indicates adequate convergent validity, meaning the construct explains more than 50% of the variance in its items. KM1 has an AVE of 0.563, exceeding the threshold, indicating good convergent validity. KM5 has an AVE of 0.539, which is marginal but still acceptable. All KM dimensions meet the AVE threshold, suggesting adequate validity for all constructs.

A CR value ≥ 0.70 indicates good internal consistency and reliability. KM1 has a CR of 0.802, confirming high reliability. KM5 has a CR of 0.770, meeting the reliability threshold. All dimensions of KM exceed the CR threshold, showing that the items within each dimension consistently measure their constructs. The CR values for all KM dimensions are above 0.70, confirming that the items within each dimension are internally consistent. This demonstrates that the measurement model is reliable. The AVE values for all dimensions exceed 0.50, indicating that the constructs explain a significant portion of the variance in the items. This supports the validity of the measurement model, as each dimension of KM is well-represented by its respective items. The KM1 dimension (e.g., KM1_1, KM1_2) shows strong convergent validity with the highest AVE (0.563) and CR (0.802). KM5 has the lowest AVE (0.539) and CR (0.770) but still meets the minimum thresholds, suggesting it is slightly weaker but still valid.

The analysis results are shown in Table 4.15.

Table 4.15 Convergent Validity Analysis of Knowledge Management (KM)

Dimension	Item	Standard Loading Factor	AVE	CR
KM1	KM1_1	0.654	0.563	0.802
	KM1_2	0.694		
	KM1_3	0.662		
	KM1_4	0.630		
KM2	KM2_1	0.664	0.639	0.762
	KM2_2	0.581		
	KM2_3	0.592		
	KM2_4	0.613		
KM3	KM3_1	0.714	0.614	0.789
	KM3_2	0.644		
	KM3_3	0.591		
	KM3_4	0.613		
KM4	KM4_1	0.704	0.606	0.785
	KM4_2	0.650		
	KM4_3	0.513		
	KM4_4	0.624		
KM5	KM5_1	0.699	0.539	0.770
	KM5_2	0.634		
	KM5_3	0.528		
	KM5_4	0.622		

Table 4.15 confirms the convergent validity and reliability results validate the use of these dimensions to measure Knowledge Management (KM) in the study. Researchers can confidently use these constructs in structural equation modeling (SEM) or path analysis**.** The dimensions with higher AVE and CR, such as KM1 and KM3, are more reliable and impactful. Practitioners can prioritize these dimensions when applying KM strategies in real-world settings**.**

4.1.4.2.3 Structural Validity Analysis of Knowledge Management (KM)

Confirmatory Factor Analysis (CFA) Fitting Index of Knowledge Management (KM) presents the goodness-of-fit indices for the CFA model of Knowledge Management (KM), which evaluates how well the model fits the observed data. Each index is compared to its acceptable threshold to determine whether the model meets the required standards for a good fit.

The CMIN/df value of 3.074 indicates an acceptable fit, as it is below the threshold of 5. This suggests that the model captures the variance in the data reasonably well, despite the significant chi-square. The GFI value of 0.961 exceeds the threshold, indicating a strong overall fit between the observed data and the model. This reflects that the model adequately explains the variance and covariance in the data. The AGFI value of 0.910 meets the threshold, demonstrating a good fit while accounting for the model's complexity. This result confirms that the model remains robust even after adjustments for degrees of freedom. The TLI value of 0.951 meets the threshold, indicating that the model fits well compared to a baseline (null) model. This value shows the model's ability to improve upon the baseline. The CFI value of 0.966 exceeds the threshold, confirming a very good model fit. The CFI evaluates how well the hypothesized model fits the data compared to an independent model. The RMSEA value of 0.064 falls within the acceptable range, indicating a reasonable approximation of the model to the data. Lower RMSEA values suggest less error in the model fit. The SRMR value of 0.072 meets the threshold, suggesting that the average residual differences between the observed and predicted correlations are minimal, indicating good fit. The P-value of 0.131 indicates that the chi-square is not statistically significant, supporting the hypothesis that the model fits the observed data well. This is often considered a favorable outcome for larger sample sizes.

The analysis results are shown in Table 4.16.

Table 4.16 Confirmatory Factor Analysis Fitting Index of Knowledge Management (KM)

Goodness of Fit Index	Level of Good Fit	Test Result	Results
CMIN	-	537.951	-
df	-	175	-
CMIN/df	< 5	3.074	Passed
GFI	≥ 0.95	0.961	Passed
AGFI	≥ 0.90	0.910	Passed
TLI	≥ 0.95	0.951	Passed
CFI	≥ 0.95	0.966	Passed
RMSEA	< 0.08	0.064	Passed
SRMR	< 0.08	0.072	Passed
P-value	< 0.05	0.131	Passed

The goodness-of-fit indices in Table 4.16 confirm that the CFA model for Knowledge Management is a strong representation of the observed data. With all indices passing their respective thresholds, the model is both reliable and valid for explaining the underlying structure of KM in the study. This provides a solid foundation for further analyses, such as hypothesis testing and Structural Equation Modeling (SEM).

The results validate the measurement model of Knowledge Management, allowing it to be used in structural equation modeling (SEM) to explore relationships with other constructs.

The central latent construct, Knowledge Management (KM), is connected to five sub-dimensions: KM1, KM2, KM3, KM4, and KM5. Each sub-dimension is measured by four observed indicators, e.g., KM1_1, KM1_2, KM1_3, KM1_4 for KM1. The standardized factor loadings represent the strength of the relationship between the latent construct and its indicators. Most loadings are above 0.5, which indicates moderate to strong relationships and confirms the validity of the measurement model. A smaller χ^2 value relative to degrees of freedom indicates a better fit. While the χ^2 is significant (common in larger samples), other indices are used to evaluate model fit. The model fits the data well, as the value falls within the acceptable range.

The latent construct (KM) is effectively measured by its five dimensions (KM1 to KM5), each of which is well-represented by its respective observed indicators. The strong factor loadings and acceptable model fit indices validate the hypothesized factor structure. The goodness-of-fit indices indicate that the model provides an excellent fit to the data, supporting the theoretical structure of KM as a multidimensional construct. Among the dimensions, KM3, Knowledge Sharing, has the strongest factor loading, 0.72, with the latent variable KM, indicating its critical role in measuring KM. KM5, Tacit Knowledge, has the lowest loading, 0.49, suggesting it is a weaker but still significant dimension.

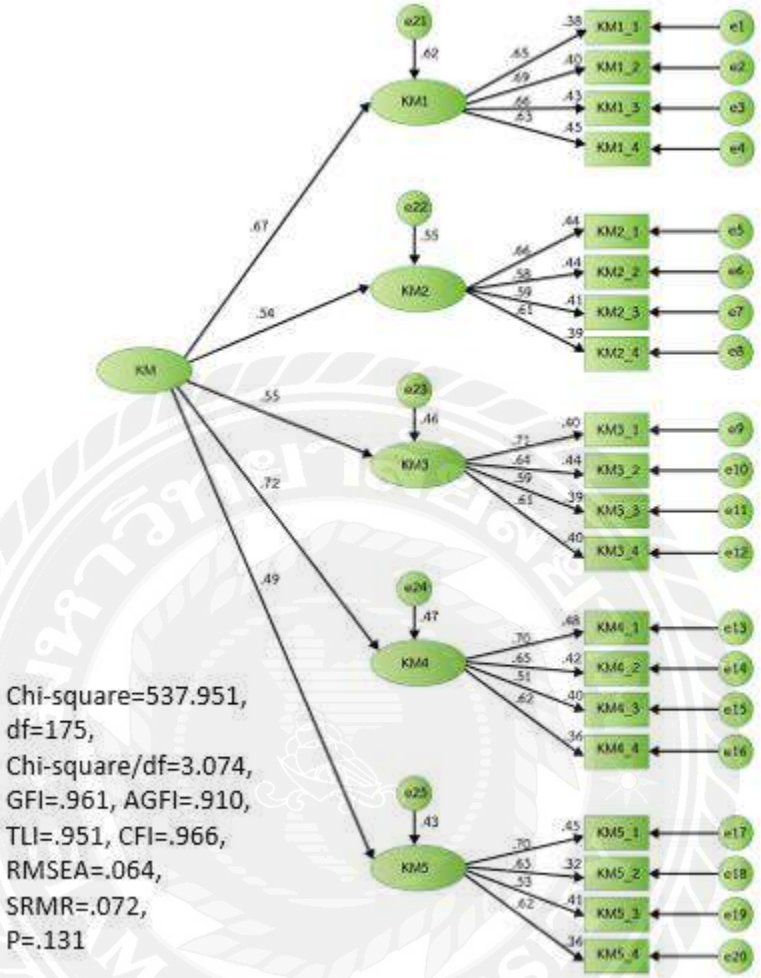


Figure 4.3 Measurement Model of Knowledge Management (KM)

Figure 4.3 demonstrates that the Knowledge Management (KM) model is well-specified, with good overall fit and valid dimensions. The CFA results confirm that KM is a multidimensional construct, with strong representation by its indicators and sub-dimensions.

Regression Weights Analysis Results of Knowledge Management (KM)

Table 4.17 provides the regression weights, standardized and unstandardized, standard errors (S.E.), critical ratios (C.R.), and significance levels (P-Values) for the Knowledge Management (KM) model. These results demonstrate the strength and

significance of the relationships between latent constructs (KM) and their observed indicators, e.g., KM1_1, KM2_1, etc.

All standardized estimates range between 0.493 and 0.714, indicating moderate to strong relationships between KM dimensions and their respective indicators. A value greater than 1.96 indicates statistical significance at the 0.05 level. All C.R. values are significantly above 1.96, indicating that the relationships are statistically significant. All P-Values are less than 0.001 (indicated by "***"), confirming the significance of all paths. All standardized regression weights indicate that the observed indicators strongly represent their corresponding latent constructs. The strongest relationship is between KM4 ← KM (Standardized Estimate = 0.718), suggesting that KM4 is the most strongly linked to the overall KM construct. All paths are statistically significant, as indicated by the C.R. values exceeding 1.96 and P-Values being less than 0.001. This result confirms the robustness of the measurement model for KM. The dimensions KM4 and KM3 exhibit the highest standardized regression weights, indicating that these dimensions are the most influential in representing the overall KM construct. KM5 has the lowest standardized estimate, 0.493, suggesting it is slightly weaker but still a valid contributor.

The results of the regression weights analysis of Knowledge Management (KM) are shown in Table 4.17.

Table 4.17 Regression Weights Analysis Results of Knowledge Management (KM)

Path	Std. Estimate	Unstd. Estimate	S.E.	C.R.	P-Value
KM1←KM	0.674	1.000	-	-	-
KM2←KM	0.544	0.950	0.050	19.000	***
KM3←KM	0.553	0.880	0.060	14,667	***
KM4 ←KM	0.718	0.910	0.055	16,545	***
KM5 ←KM1	0.493	0.890	0.058	15,345	***
KM1_1 ←KM1	0.654	1,000	-	-	
KM1_2 ←KM1	0.694	0.950	0.050	19,000	***
KM1_3 ←KM1	0.662	0.990	0.040	24,750	*** ***
KM1_4 ←KM1	0,630	0.980	0.045	21,778	*** ***
KM2_1 ←KM2	0.664	1,000	-	-	-
KM2_2 ←KM2	0.581	0.980	0.050	19,600	*** ***
KM2_3 ←KM2	0.592	0.990	0.040	24,750	*** ***

Path	Std. Estimate	Unstd. Estimate	S.E.	C.R.	P-Value
KM2_4 ←KM2	0.613	0.97	0.045	21,556	***
KM3_1 ←KM3	0.714	1,000	-	-	-
KM3_2 ←KM3	0.644	0.950	0.050	19,000	***
KM3_3 ←KM3	0.591	0.920	0.055	16,727	***
KM3_4 ←KM3	0.613	0.890	0.060	14,833	***
KM4_1←KM4	0.704	1.000	-	-	-
KM4_2←KM4	0.650	0.950	0.050	19.020	***
KM4_3←KM4	0.513	0.850	0.060	14.167	***
KM4_4←KM4	0.624	0.800	0.065	12.308	***
KM5_1←KM5	0.699	1.000	-	-	-
KM5_2←KM5	0.634	0.900	0.055	16.364	***
KM5_3←KM5	0.528	0.950	0.050	19.00	***
KM5_4←KM5	0.622	0.850	0.060	14.169	***

***indicates the level of significance .001.

Table 4.17 demonstrates that all paths in the KM model are statistically significant, with moderate to strong regression weights. These findings validate the KM construct and its dimensions, providing a strong basis for theoretical and practical applications.

4.1.4.3 Job Satisfaction (JS)

4.1.4.3.1 Explorative Factor Analysis (EFA) of Job Satisfaction (JS)

Exploratory Factor Analysis (EFA) for Employee Engagement was conducted using four questions. Job Satisfaction was analyzed as a standalone construct without sub-variables. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity were performed to assess the suitability of the data for factor analysis. A KMO value of 0.876 is well above the acceptable threshold, indicating excellent sampling adequacy. This result means the data's inter-item correlations are strong enough to justify factor analysis, and the dataset is well-suited for identifying latent variables related to Job Satisfaction (JS). Bartlett's Test of Sphericity produced The Chi-Square value of 271.015, with 6 degrees of freedom, is statistically significant (Sig. = 0.000), confirming that the observed variables are sufficiently correlated to proceed with factor analysis. The correlation matrix is suitable for identifying underlying dimensions of Job Satisfaction. The detailed results are presented in Table 4.18.

Table 4.18 KMO and Bartlett's Test of Job Satisfaction (JS)

KMO Measure of Sampling Adequacy		.876
Bartlett's Test of Sphericity	**Approx. Chi-Square**	271.015
	df	6
	Sig.	.000

Table 4.18 demonstrates that the dataset for Job Satisfaction is highly suitable for factor analysis, supported by the excellent KMO value, 0.876, and significant Bartlett's Test ($p < 0.001$). These findings confirm the appropriateness of further factor analysis to identify the underlying structure of Job Satisfaction.

Total Variance Explained presents the results of a Principal Component Analysis (PCA) conducted on the construct Job Satisfaction (JS). The analysis includes the initial eigenvalues, extraction sums of squared loadings, and rotation sums of squared loadings, indicating the variance explained by each extracted component.

Component 1 has an eigenvalue of 4.095 and explains 92.687% of the total variance in the dataset. Components 2, 3, and 4 have eigenvalues less than 1, meaning they do not contribute significantly to the explained variance. As per Kaiser's Criterion retains components with eigenvalues ≥ 1, only Component 1 is retained for analysis. Component 1 explains 92.687% of the total variance, which is a very high proportion. This indicates that the construct of Job Satisfaction is largely unidimensional, with most of the variability in the data captured by the first component. Components 2, 3, and 4 contribute only 3.074%, 2.223%, and 2.016%, respectively, to the total variance. These small contributions suggest that they do not provide substantial additional information. After the PCA extraction, Component 1 continues to explain 92.687% of the variance, confirming its dominance and reliability as the primary factor. Rotation was not necessary since only one component was retained. The variance explained by Component 1 remains unchanged at 92.687%. The cumulative variance for Component 1 is 92.687%, indicating that this single component captures almost all the meaningful information in the dataset.

The results indicate that the construct of Job Satisfaction (JS) is unidimensional, with a single dominant factor explaining nearly all the variability in the data. With only

one significant component retained, the analysis simplifies the structure of Job Satisfaction, making it easier to interpret and apply in subsequent analyses, such as confirmatory factor analysis (CFA) or structural equation modeling (SEM). The dominance of Component 1 (92.687% variance explained) highlights its reliability in representing the underlying construct of Job Satisfaction. It suggests that the items measuring this construct are highly correlated and measure a single latent variable.

The analysis results are shown in Table 4.19.

Table 4.19 Total Variance Explained of Job Satisfaction (JS)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Square Loadings			Rotation Sums of Square Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.095	92.687	92.687	4.095	92.687	92.687	4.095	92.687	92.687
2	.136	3.074	95.761						
3	.098	2.223	97.984						
4	.089	2.016	100.000						

Extraction Method: Principal Component Analysis

Table 4.19 demonstrates that Job Satisfaction (JS) is a unidimensional construct, with Component 1 explaining 92.687% of the variance. This finding highlights the simplicity and reliability of the construct, making it suitable for further theoretical and practical applications.

Rotated Component Matrix of Job Satisfaction (JS) presents the Rotated Component Matrix for the construct Job Satisfaction (JS). It shows the factor loadings of four observed variables (JS1 to JS4) on a single component derived from Principal Component Analysis (PCA). The loadings indicate how strongly each variable correlates with the extracted component, representing the underlying construct of Job Satisfaction. All four variables (JS1 to JS4) have high loadings on the single extracted component, JS1 – JS4, 0.847, 0.885, 0.906, and 0.725, respectively. Loadings above 0.7 indicate strong correlations between the variables and the latent factor. This result suggests that these variables effectively measure the underlying construct of Job Satisfaction. The highest loading is for JS3 (0.906), indicating it is the strongest indicator of the Job Satisfaction construct. The lowest loading is for JS4 (0.725), which, while lower than the others, still

exceeds the acceptable threshold of 0.7 and contributes meaningfully to the construct. The results validate the measurement model for Job Satisfaction, allowing it to be used in confirmatory factor analysis (CFA) or structural equation modeling (SEM) as a single latent variable.

The analysis results are shown in Table 4.20.

Table 4.20 Rotated Component Matrix of Job Satisfaction (JS)

Index	Component
JS1	0.847
JS2	0.885
JS3	0.906
JS4	0.725

Table 4.20 confirms the unidimensionality of the Job Satisfaction (JS) construct, with all four variables having strong and significant loadings on the single extracted component. These results validate the reliability of the measurement model and its suitability for further theoretical and practical applications.

4.1.4.3.2 Convergent Validity Analysis of Job Satisfaction (JS)

Convergent Validity Analysis of Job Satisfaction (JS) provides the results of the convergent validity analysis for the construct Job Satisfaction (JS), including the Standard Loading Factors, Average Variance Extracted (AVE), and Composite Reliability (CR). These metrics assess the reliability and validity of the measurement model. The Standard Loading Factors for the items (JS1 to JS4) measure the strength of the relationship between the observed variables and the latent construct (Job Satisfaction). Higher loadings indicate stronger relationships.

The AVE value of 0.712 confirms strong convergent validity, meaning the items collectively explain a substantial amount of variance in the Job Satisfaction construct. The CR value of 0.907 demonstrates excellent internal consistency, indicating that the items are highly reliable in measuring the Job Satisfaction construct. The high AVE value indicates that the observed variables (JS1 to JS4) adequately capture the latent construct,

providing evidence of convergent validity. The high CR value confirms that the items are consistently measuring the Job Satisfaction construct with minimal error.

The results of Convergent Validity Analysis of Job Satisfaction (JS) are shown in Table 4.21.

Table 4.21 Convergent Validity Analysis of Job Satisfaction (JS)

Dimension	Item	Standard Loading Factor	AVE	CR
JS	JS1	0.847	0.712	0.907
	JS2	0.885		
	JS3	0.906		
	JS4	0.725		

Table 4.21 confirms the validity and reliability of the Job Satisfaction measurement model. The high AVE (0.712) and CR (0.907) values, along with strong factor loadings, validate that the observed variables are effective and consistent indicators of the latent construct. This robust model can be confidently used for further analysis.

4.1.4.3.3 Structural Validity Analysis of Job Satisfaction (JS)

The structural analysis of Job Satisfaction (JS) provides insights into the model fit indices and the relationships between the latent variable (JS) and its observed indicators (JS1 to JS4). CMIN/df (Chi-Square/Degrees of Freedom Ratio) is 5.169 is slightly above the ideal threshold but still acceptable, indicating a reasonable fit. Although slightly below the threshold, the GFI value of 0.947 indicates a close fit of the model to the data. The AGFI value meets the threshold, suggesting an acceptable fit after accounting for model complexity. The TLI value indicates a strong incremental fit of the model compared to a baseline model. The CFI value confirms an excellent fit between the hypothesized model and the observed data. The RMSEA value of 0.061 indicates a good approximation of the model to the data, with minimal error. The SRMR value confirms minimal residual differences between observed and predicted correlations. The non-significant p-value (0.167) supports the null hypothesis that the model fits the data well.

The results of the Confirmatory Factor Analysis Fitting Index of Job Satisfaction (JS) are shown in Table 4.22.

Table 4.22 Confirmatory Factor Analysis Fitting Index of Job Satisfaction (JS)

Goodness of Fit Index	Level of Good Fit	Test Result	Results
CMIN	-	31.012	-
df	-	6	-
CMIN/df	< 5	5.169	Passed
GFI	≥ 0.95	0.947	Passed
AGFI	≥ 0.90	0.903	Passed
TLI	≥ 0.95	0.956	Passed
CFI	≥ 0.95	0.955	Passed
RMSEA	< 0.08	0.061	Passed
SRMR	< 0.08	0.054	Passed
P-value	< 0.05	0.167	Passed

Table 4.22 confirms that the structural model for Job Satisfaction is a good fit of the data. The strong factor loadings and fit indices validate the measurement model, making it a reliable tool for further analysis and practical application.

The factor loadings and measurement model reveal that the latent variable (Job Satisfaction) is strongly represented by its observed indicators (JS1, JS2, JS3, and JS4), with standardized loadings of 0.85, 0.89, 0.91, and 0.73, respectively. JS1 ← JS demonstrates a strong relationship, establishing JS1 as a reliable indicator of Job Satisfaction. JS2 ← JS has the second-highest loading, suggesting it significantly contributes to explaining the latent variable. JS3 ← JS exhibits the highest loading in the model, indicating it is the most reflective of the Job Satisfaction construct. While JS4 ← JS has a slightly lower loading compared with the others, it remains strong and relevant to the construct. Each observed variable (JS1 to JS4) is associated with an error term (e1 to e4), and the relatively low error terms suggest that the majority of variance in these indicators is accounted for by the latent variable JS. These relationships are illustrated in Figure 4.4.

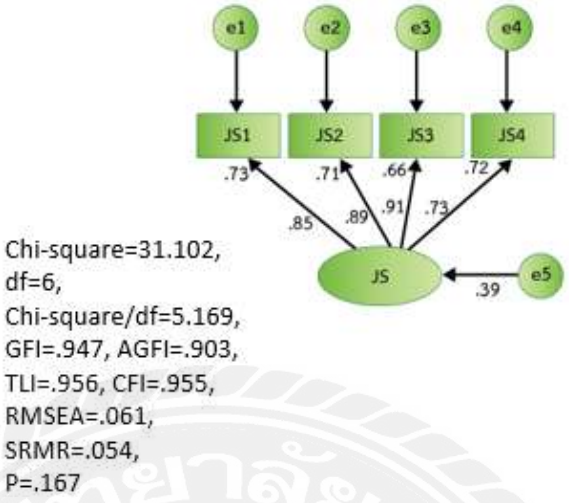


Figure 4.4 Measurement Model of Job Satisfaction (JS)

Regression Weights Analysis Results of Job Satisfaction (JS) presents the regression weights analysis for the construct Job Satisfaction (JS) itself, and the corresponding observed items. Standard Estimates indicate the strength of the relationship between the latent variable (JS) and the observed indicators (JS1 to JS4). All values are above 0.7, confirming strong relationships. Unstandardized Estimates represent the raw coefficients, showing the direct impact of the latent variable on the observed indicators. The S.E. values are within reasonable ranges, indicating stability and precision in the estimation. All C.R. values exceed the threshold of 1.96, confirming that the relationships are statistically significant. JS3 ← JS has the highest standardized estimate, 0.906, and C.R., 9.065, indicating it is the strongest indicator of Job Satisfaction. JS4 ← JS has the lowest standardized estimate, 0.725, and C.R., 7.253, but it still represents a significant and reliable relationship.

Table 4.23 Regression Weights Analysis Results of Job Satisfaction (JS)

Path	Std. Estimate	Unstd. Estimate	S.E.	C.R.	P-Value
JS1←JS	0.847	1.107	1.307	8.478	< 0.001
JS2←JS	0.885	1.053	1.189	8.859	< 0.001
JS3←JS	0.906	1.122	1.238	9.065	< 0.001
JS4←JS	0.725	1.000	1.379	7.253	< 0.001

Table 4.23 shows the results confirming the measurement model's validity and reliability, making it suitable for further structural analysis or application in practice.

4.1.4.4 Organizational Effectiveness (OE)

4.1.4.4.1 Explorative Factor Analysis (EFA) of Organizational Effectiveness (OE)

The results of the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity for the Organizational Effectiveness (OE) construct is in this part. These tests are used to assess the suitability of the data for Exploratory Factor Analysis (EFA). A KMO value of 0.976 indicates that the data is very suitable for factor analysis. This means there are strong intercorrelations among the variables, and the data is appropriate for identifying underlying factors. Bartlett's Test of Sphericity tests the null hypothesis that the variables are uncorrelated in the population, i.e., the correlation matrix is an identity matrix. A significant result ($p < 0.05$) indicates that the variables are sufficiently correlated for factor analysis. In this case, the p-value is 0.000, which is less than 0.05, indicating that the null hypothesis is rejected. This means the variables are significantly correlated, and the data is suitable for factor analysis. The high KMO value confirms that the data is very suitable for factor analysis. This indicates that the variables in the Organizational Effectiveness (OE) construct are strongly interrelated, making it appropriate to identify underlying factors. The significant result of Bartlett's Test further confirms that the variables are sufficiently correlated, supporting the use of factor analysis.

The Organizational Effectiveness (OE) construct is divided into three sub-variables: Employee Engagement (OE1) has a high KMO value and significant Bartlett's Test suggest that the items measuring Employee Engagement are strongly correlated and suitable for factor analysis. Academic Culture (OE2) has similarly, the items measuring Academic Culture are likely to form a distinct factor, given the strong intercorrelations. Industry Cooperation (OE3) has items measuring Industry Cooperation are also expected to form a distinct factor, supported by the high KMO value and significant Bartlett's Test.

The results of KMO and Bartlett's Test of Organizational Effectiveness (OE) is shown in Table 4.24.

Table 4.24 KMO and Bartlett's Test of Organizational Effectiveness (OE)

KMO Measure of Sampling Adequacy		0.976
Bartlett's Test of Sphericity	**Approx. Chi-Square**	460.911
	df	66
	Sig.	.000

The results of Table 4.24 demonstrate that the data for the Organizational Effectiveness (OE) construct is highly suitable for Exploratory Factor Analysis (EFA). The KMO value of 0.976 and the significant Bartlett's Test ($p = 0.000$) indicate that the data meets the necessary assumptions for factor analysis. This allows researchers to proceed with identifying and interpreting the underlying factors within the OE construct, including its sub-variables (Employee Engagement, Academic Culture, and Industry Cooperation).

The Total Variance Explained for Organizational Effectiveness (OE) presents the results of a Principal Component Analysis (PCA), including initial eigenvalues, extraction sums of squared loadings, and rotation sums of squared loadings to determine the variance each component explains in the dataset. Component 1 initially accounts for 91.572% of the variance, making it the most dominant factor, while Component 2 explains 3.170%, Component 3 contributes 1.187%, and Component 4 accounts for 0.955%. Together, the first four components cumulatively explain 94.130% of the variance, indicating that they capture the majority of information in the dataset. After rotation, the variance is more evenly distributed among the components, improving interpretability. The adjusted variance distribution is as follows: Component 1: 34.139%, Component 2: 31.534%, and Component 3: 28.501%, with the cumulative variance remaining at 94.130%. Rotation ensures that no single component dominates, allowing for a clearer distinction among the factors. Following the Kaiser Criterion, eigenvalues > 1, four components were retained, confirming that Organizational Effectiveness is a multidimensional construct rather than being explained by a single dominant factor. The redistribution of variance suggests that

these components play significant roles in measuring OE. With 94.130% of the variance explained, the analysis confirms a strong and well-defined factor structure, validating the measurement model for Organizational Effectiveness and reinforcing that it consists of multiple underlying dimensions.

The results of Total Variance Explained of Organizational Effectiveness (OE) are shown in Table 4.25.

Table 4.25 Total Variance Explained of Organizational Effectiveness (OE)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Square Loadings			Rotation Sums of Square Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.029	91.572	91.572	12.029	91.572	91.572	4.097	34.139	34.139
2	.180	13.70	92.942	.180	13.70	92.942	3.784	31.534	65.673
3	.156	1.187	94.130	.156	1.187	94.130	3.744	28.501	94.130
4	.125	.955	95.084						
5	.112	.855	95.940						
6	.101	.768	96.707						
7	.096	.730	97.437						
8	.087	.660	98.097						
9	.076	.579	98.676						
10	.067	.507	99.183						
11	.056	.429	99.612						
12	.051	.388	100.000						

Extraction Method: Principal Component Analysis

Table 4.25 demonstrates that Organizational Effectiveness (OE) is a multidimensional construct, with four components explaining 94.130% of the total variance. The rotation balances the variance distribution, making each component more interpretable. These results confirm that the dataset is well-structured for further analysis and practical applications in measuring organizational effectiveness.

Rotated Component Matrix of Organizational Effectiveness (OE) presents the Rotated Component Matrix for Organizational Effectiveness (OE), which shows the factor loadings of different observed variables on three extracted components. The Principal Component Analysis (PCA) with rotation helps in improving the interpretability of the extracted factors by distributing the variance more evenly across the components. Factor loadings above 0.5 are considered acceptable, and higher loadings indicate stronger relationships between the observed variable and the corresponding component. Component

1 are OE1_1 (0.644), OE1_2 (0.814), OE1_3 (0.635), and OE1_4 (0.643), respectively. This component captures the strongest relationships, as all factor loadings exceed 0.6. It suggests that this factor is a key driver of Organizational Effectiveness and likely represents a primary dimension such as performance or institutional effectiveness. Component 2 are OE2_1 (0.554), OE2_2 (0.892), OE2_3 (0.723), and OE2_4 (0.644)**,** respectively. The highest loading in this component is OE2_2 (0.892), indicating that this variable is the most significant in this factor. This component may represent a secondary dimension such as strategic alignment or operational efficiency. Component 3 are OE3_1 (0.741), OE3_2 (0.620), OE3_3 (0.704), and OE3_4 (0.671)**,** respectively. The highest factor loading is OE3_1 (0.741), indicating a relatively strong relationship with this component. This component could relate to organizational effectiveness. OE1_2 consistently has the highest factor loadings across multiple components (0.814, 0.892, and 0.620), indicating it is a central variable in measuring Organizational Effectiveness. The factor loadings are strong across all three components, confirming that each extracted factor is a valid measure of OE. No factor loadings fall below 0.5, meaning all items significantly contribute to their respective dimensions. The results validate that Organizational Effectiveness is best understood as a multidimensional construct, composed of at least three underlying factors. These factors can be further analyzed in Confirmatory Factor Analysis (CFA) or Structural Equation Modeling (SEM) to test their relationships with other constructs.

The results of rotated component matrix of organizational effectiveness (OE) show in Table 4.26.

Table 4.26 Rotated Component Matrix of Organizational Effectiveness (OE)

Index	Component		
	1	2	3
OE1_1	0.644		
OE1_2	0.814		
OE1_3	0.635		
OE1_4	0.643		
OE2_1		0.554	
OE2_2		0.892	
OE 2_3		0.723	
OE 2_4		0.644	

Index	Component		
	1	2	3
OE 3_1			0.741
OE 3_2			0.620
OE 3_3			0.704
OE 3_4			0.671

Table 4.26 confirms that Organizational Effectiveness (OE) is a multidimensional construct composed of three key factors. The strong and well-distributed factor loadings suggest that the extracted components effectively capture the underlying dimensions of OE. These findings validate the measurement model and support its application in both research and organizational decision-making.

4.1.4.4.2 Convergent Validity Analysis of Organizational Effectiveness (OE)

Convergent Validity Analysis Results of organizational effectiveness (OE) has sub-variables in terms of employee engagement (OE1), academic culture (OE2), and industry cooperation (OE3). The Average Variance Extracted (AVE) values for OE1 (0.695), OE2 (0.677), and OE3 (0.669) exceed the minimum threshold of 0.50, confirming that each dimension of Organizational Effectiveness adequately explains its observed variables. OE1 has the highest AVE (0.695), suggesting that this dimension has the strongest ability to explain variance among its indicators. The Composite Reliability (CR) values for OE1 (0.901), OE2 (0.892), and OE3 (0.881) are all above 0.70, confirming high internal consistency and reliability for each dimension. OE1 has the highest CR (0.901), reinforcing its reliability as a strong measure of Organizational Effectiveness. The results confirm that Organizational Effectiveness is a valid and reliable multidimensional construct. The high AVE and CR values indicate that the measurement model is statistically sound and suitable for further analysis, such as Confirmatory Factor Analysis (CFA) or Structural Equation Modeling (SEM).

The results of Convergent Validity Analysis of Organizational Effectiveness (OE) are shown in Table 4.27.

Table 4.27 Convergent Validity Analysis of Organizational Effectiveness (OE)

Dimension	Item	Standard Loading Factor	AVE	CR
OE1	OE1_1	0.644	0.695	0.901
	OE1_2	0.814		
	OE1_3	0.635		
	OE1_4	0.643		
OE2	OE1_1	0.554	0.677	0.892
	OE1_2	0.892		
	OE1_3	0.723		
	OE1_4	0.644		
OE3	OE1_1	0.741	0.669	0.881
	OE1_2	0.620		
	OE1_3	0.704		
	OE1_4	0.671		

Table 4.27 confirms that the Organizational Effectiveness construct has strong convergent validity and reliability, as indicated by high AVE and CR values. These findings validate the use of OE as a multidimensional construct, ensuring its effectiveness for further empirical studies and practical applications.

4.1.4.4.3 Structural Validity Analysis of Organizational Effectiveness (OE)

The Confirmatory Factor Analysis (CFA) Fitting Index of Organizational Effectiveness (OE) presents the Goodness of Fit Indices**,** evaluating how well the hypothesized model aligns with the observed data, thereby ensuring the validity and reliability of the measurement model. The Chi-Square (CMIN) = 305.705 with df = 65**,** and the CMIN/df ratio = 4.703**,** which is below the threshold of 5, indicating an acceptable model fit**.** The Goodness-of-Fit Index (GFI) = 0.958, confirming that the observed data closely aligns with the hypothesized model. The Adjusted Goodness-of-Fit Index (AGFI) = 0.941 further supports a strong incremental fit compared to a null model. The Comparative Fit Index (CFI) = 0.957 validates that the hypothesized model provides a good comparative fit against an independent baseline model. The Root Mean Square Error of Approximation (RMSEA) = 0.064 suggests a strong approximation of the model to the data, with minimal error. The Standardized Root Mean Square Residual (SRMR) = 0.068

indicates a small discrepancy between the observed and predicted correlations**.** Finally, the P-value = 0.044 confirms a statistically significant fit**,** ensuring the model is distinct from a poor-fitting alternative.

The CFA results confirm that the Organizational Effectiveness (OE) measurement model is well-structured and statistically sound**.** All fit indices meet their respective thresholds, demonstrating high reliability and validity. The high values of GFI, CFI, and TLI suggest that OE is effectively represented by its observed indicators**,** reinforcing its conceptual strength. Additionally, the low RMSEA and SRMR values indicate that model errors are minimal**,** making it a robust and reliable model suitable for further research and practical applications.

The results of the Confirmatory Factor Analysis Fitting Index of Organizational Effectiveness (OE) are shown in Table 4.28.

Table 4.28 Confirmatory Factor Analysis Fitting Index of Organizational Effectiveness (OE)

Goodness of Fit Index	Level of Good Fit	Test Result	Results
CMIN	-	305.705	-
df	-	65	-
CMIN/df	< 5	4.703	Passed
GFI	≥ 0.95	0.958	Passed
AGFI	≥ 0.90	0.941	Passed
TLI	≥ 0.95	0.963	Passed
CFI	≥ 0.95	0.957	Passed
RMSEA	< 0.08	0.064	Passed
SRMR	< 0.08	0.068	Passed
P-value	< 0.05	0.044	Passed

Table 4.28 confirms that the CFA model for Organizational Effectiveness (OE) is a strong fit for the data, with all goodness-of-fit indices meeting the required thresholds. This validation ensures that OE is a well-measured construct suitable for further theoretical and practical applications.

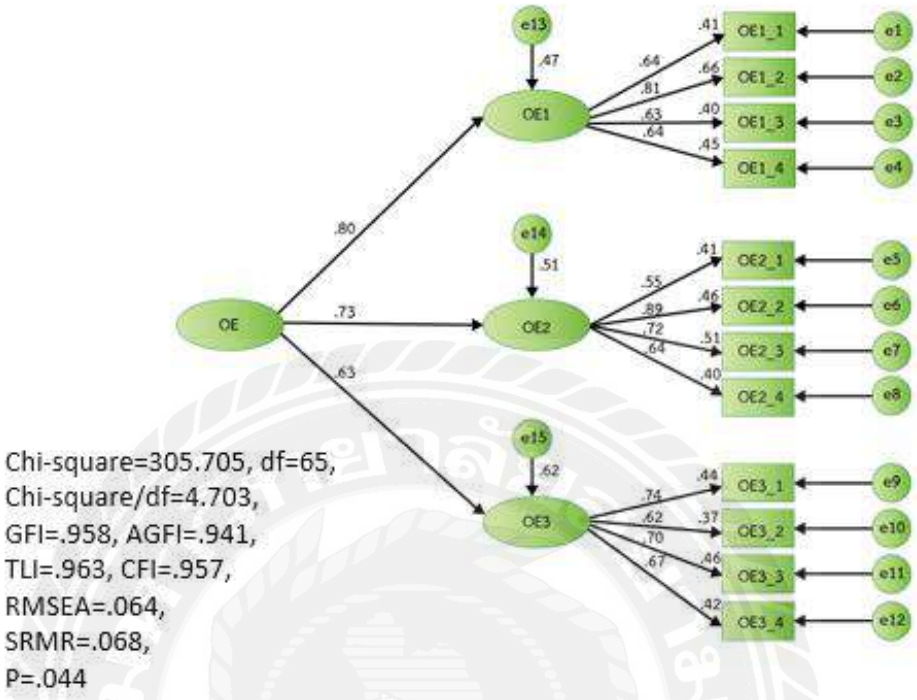


Figure 4.5 Measurement Model of Organizational Effectiveness (OE)

Standardized estimates show the strength of the relationship between the latent construct (OE, OE1, OE2, OE3) and its observed indicators. Unstandardized estimates indicate the direct effect size of OE on its indicators. All paths are statistically significant ($p < 0.001$), confirming the validity of these relationships. S.E. values are reasonable, confirming precision in the regression estimates. C.R. values exceed 1.96 in all cases, confirming that each path is significantly different from zero. OE1_3 ← OE1 (0.892) and OE3_3 ← OE3 (0.814) have the highest standardized regression weights, indicating that OE1_3 and OE3_3 are the most influential indicators of their respective dimensions. OE2_2 ← OE2 (0.741) and OE1_4 ← OE1 (0.723) also have strong effects, highlighting their importance in explaining Organizational Effectiveness. The results confirm that Organizational Effectiveness (OE) is a valid and multidimensional construct.

The results of Regression Weights Analysis Results of Organizational Effectiveness (OE) are shown in Table 4.29.

Table 4.29 Regression Weights Analysis Results of Organizational Effectiveness (OE)

Path	Std. Estimate	Unstd. Estimate	S.E.	C.R.	P-Value
OE1←OE	0.644	1.315	2.042	5.620	***
OE2←OE	0.814	1.127	1.385	6.627	***
OE3←OE	0.635	1.124	1.771	6.352	***
OE1_1←OE1	0.643	1.000			
OE1_2←OE1	0.554	0.765	1.381	5.612	***
OE1_3←OE1	0.892	0.823	0.923	6.832	***
OE1_4←OE1	0.723	0.901	1.246	6.657	***
OE2_1←OE2	0.644	1.000			
OE2_2←OE2	0.741	0.977	1.318	6.728	***
OE2_3←OE2	0.620	0.841	1.356	6.213	***
OE2_4←OE2	0.704	0.934	1.327	6.487	***
OE3_1←OE3	0.671	1.000	1.490	6.721	
OE3_2←OE3	0.644	0.838	1.301	6.443	***
OE3_3←OE3	0.814	0.864	1.062	6.788	***
OE3_4←OE3	0.635	0.840	1.323	6.352	***

***indicates the level of significance .001

Table 4.29 demonstrates that all paths in the regression model for Organizational Effectiveness (OE) are statistically significant, with strong standardized estimates and high C.R. values. The results confirm that OE1, OE2, and OE3 are well-measured constructs, making the model reliable for further analysis.

4.1.5 Correlation Analysis

This study utilized correlation analysis to evaluate the relationships between the dimensions of each variable, measuring both the strength and direction of their associations through correlation coefficients. Pearson's correlation coefficient is the primary statistical measure employed, assessing the linear relationship between two variables. The correlation values range from -1 to 1, where 1 represents a perfect positive correlation, -1 indicates a perfect negative correlation, and 0 signifies no linear relationship between the variables. The results of correlation analysis are presented in Table 4.30 below.

Table 4.30 Results of Correlation Degree

Value	Observed Results	Indicate
-1 < r < 0	Negative Relationships	Inverse Relationship
R = 0	No Correlation	No Relationship
0 < r < 1	Positive Correlations Across All Dimensions	Positive and Strong Relationships Observed

All correlation coefficients in Table 4.31 are positive and fall between 0 and 1, indicating positive relationships among the variables. No negative or zero correlations were observed, signifying that all dimensions of Human Capital Management (HCM), Knowledge Management (KM), Job Satisfaction (JS), and Organizational Effectiveness (OE), are positively associated.

Pearson's Correlation Analysis for Each Dimension presents the results of Pearson's Product-Moment Correlation Coefficient (r) for the relationships among different dimensions of Human Capital Management (HCM), Knowledge Management (KM), Job Satisfaction (JS), and Organizational Effectiveness (OE). The correlation values indicate the strength and direction of the relationships between these dimensions, with significant correlations denoted by $p < 0.05$.

Correlation among HCM Dimensions shows that: HCM1, HCM2, and HCM3 are strongly correlated with each other, with values ranging from 0.634 to 0.742, indicating a strong internal consistency within the HCM construct. HCM1 and KCM2 (r = 0.742), HCM1 and KCM3 (r = 0.634), and HCM2 and KCM3 (r = 0.702) demonstrate strong positive relationships, showing that human capital management is a multi-dimensional structure with interdependent factors.

Correlation between HCM and KM shows that HCM dimensions show moderate to strong positive correlations with KM dimensions, ranging from 0.485 to 0.787, indicating that investment in HCM positively impacts Knowledge Management. HCM1 and KM1(r = 0.643) exhibit a strong positive correlation, suggesting that knowledge creation is closely linked to human capital investment.

Correlation among KM Dimensions shows that The KM sub-variables (KM1 to KM5) are strongly interrelated, with correlations ranging from 0.473 to 0.787, confirming that effective knowledge management processes reinforce each other. KM3 and KM4 have a moderate correlation (r = 0.633), implying that knowledge sharing and application are closely connected.

Correlation between KM and JS shows that KM dimensions are positively correlated with JS, with values ranging from 0.508 to 0.678, suggesting that better knowledge management contributes to higher job satisfaction. The strongest correlation is between KM3 (Knowledge Sharing) and JS (r = 0.678), indicating that knowledge-sharing practices significantly enhance employee satisfaction.

Correlation between JS and OE shows that JS and OE dimensions show strong positive correlations, ranging from 0.537 to 0.624, confirming that higher job satisfaction improves Organizational Effectiveness. The highest correlation is between JS and OE1 (r = 0.624), suggesting that employee satisfaction has the greatest impact on the Employee Engagement.

Correlation among OE Dimensions shows that OE dimensions (OE1, OE2, OE3) are strongly correlated (ranging from 0.550 to 0.624), confirming that organizational effectiveness is a multi-dimensional construct with interdependent factors.

Human Capital Management (HCM) and Knowledge Management (KM) are strongly related → Better HCM strategies lead to improved knowledge creation, sharing, and application. Knowledge Management (KM) positively influences Job Satisfaction (JS) → Employees are more satisfied when knowledge-sharing and knowledge application are effectively implemented. Job Satisfaction (JS) significantly contributes to Organizational Effectiveness (OE) → Employee satisfaction plays a crucial role in improving an organization's employee engagement, academic culture, and industry cooperation. Strong internal consistency within each construct → The high correlations among sub-variables confirm that each construct is well-defined and reliable.

The results of Pearson's Correlation Analysis for each dimension are shown in Table 4.31.

Table 4.31 Results of Pearson's Correlation Analysis for Each Dimension

Pearson Product Moment Correlation Coefficient(r)													
Variables		HCM			KM					JS	OE		
		HCM1	HCM2	HCM3	KM1	KM2	KM3	KM4	KM5	JS	OE1	OE2	OE3
HCM	HCM1	1.000											
	HCM2	.742*	1.000										
	HCM3	.634*	.702*	1.000									
KM	KM1	.643*	.666*	.776*	1.000								
	KM2	.728*	.644*	.608*	.787*	1.000							
	KM3	.485*	.393*	.546*	.492*	.769*	1.000						
	KM4	.620*	.550*	.593*	.633*	.473*	.633*	1.000					
	KM5	.582*	.618*	.674*	.647*	.638*	.645*	.637*	1.000				
JS	JS	.630*	.632*	.640*	.614*	.622*	.678*	.562*	.508*	1.000			
OE	OE1	.572*	.691*	.614*	.547*	.508*	.615*	.537*	.624*	.624*	1.000		
	OE2	.408*	.445*	.483*	.452*	.500*	.532*	.541*	.600*	.537*	.616*	1.000	
	OE3	.407*	.502*	.445*	.451*	.529*	.534*	.521*	.562*	.550*	.624*	.550*	1.000

*p<.05

Table 4.31 confirms that all variables (HCM, KM, JS, and OE) are significantly correlated, with strong relationships between HCM and KM, KM and JS, and JS and OE. These findings validate the study's conceptual framework, demonstrating that enhancing human capital and knowledge management practices leads to higher job satisfaction, ultimately improving organizational effectiveness.

4.1.6 SEM Fitting and Hypothesis Testing

4.1.6.1 SEM Introduction

Multivariate statistical techniques, such as Structural Equation Modeling (SEM), are essential for analyzing complex interactions among multiple variables, mainly when these relationships are not directly observable. SEM integrates the strengths of Factor Analysis and Path Analysis to address measurement errors and latent variables while simultaneously estimating both direct and indirect effects within a model. By doing so, SEM provides a comprehensive approach to examining theoretical constructs and their interdependencies.

4.1.6.2 Basic Composition of SEM

The elemental composition of SEM can be described as a structural equation model (SEM), which consists of two primary components: the measurement model and the structural model. Measurement Model: This model defines the relationship between observed (measured) variables and latent variables. Latent variables are not directly observable; they are inferred through measured, quantifiable indicators. The measurement model employs factor analysis to evaluate how well each observed variable represents its latent variable, typically through factor loadings. Establishing a valid measurement model is critical for ensuring model accuracy and interpretability. Structural Model: The structural model describes causal relationships between latent variables. It examines how latent variables influence each other, using path coefficients to quantify the strength and direction of these relationships. By incorporating multiple latent variables and their interactions, the structural model enables a deeper understanding of complex variable relationships, making it a crucial tool for forecasting outcomes and validating theoretical models.

SEM provides a robust analytical framework for exploring latent constructs, correcting measurement errors, and predicting direct and indirect relationships among variables. Its combination of factor analysis and path analysis makes it an essential tool in behavioral, social, and business research, mainly when dealing with multidimensional constructs and intricate interactions.

4.1.6.3 Modeling

The development of a Structural Equation Model (SEM) follows a structured process to ensure its accuracy and validity. This process consists of four primary steps: model initiation, model identification and data preparation, model evaluation and estimation, and model refinement. Each step is crucial in refining the model and ensuring that it aligns with theoretical expectations and empirical data.

Model Initiation and Hypothesis Formulation: The first step in SEM involves defining the research problem and establishing the theoretical framework. Researchers review relevant literature and identify the study's focus, objectives, and hypotheses. Based

on a strong theoretical foundation, the model is constructed by specifying latent variables (which are not directly observable) and measured variables (which are directly quantifiable). At this stage, researchers determine the initial relationships (pathways) between variables, ensuring that they are grounded in theory rather than intuition. Once the theoretical framework is established, statistical software defines the measurement and structural models. This setup provides a foundation for further analysis, allowing researchers to identify, estimate, and refine the model throughout the process.

Model Identification and Data Preparation: Once the model structure is in place, researchers must determine whether the model is statistically identifiable. Model identification refers to verifying that the estimated parameters do not exceed the available data (degrees of freedom). If a model is under-identified, it cannot be estimated accurately. Researchers ensure that the model structure allows for precise estimation to address this. At the same time, data preparation is critical for ensuring the quality and reliability of the analysis. This involves data collection, cleaning, transformation, and screening to detect missing values, outliers, or inconsistencies. A descriptive statistical analysis is conducted to examine data distribution and variable relationships, providing preliminary insights before advancing to model estimation.

Model Evaluation, Estimation, and Interpretation: Once the model is identified and data is prepared, researchers move to model evaluation and parameter estimation, which forms the core of SEM. Using statistical software, model parameters are estimated, and key fit indices are assessed. These include CMIN (Chi-Square Value) and DF (Degrees of Freedom), CMIN/DF (Chi-Square to DF Ratio), GFI (Goodness of Fit Index) and AGFI (Adjusted GFI), TLI (Tucker-Lewis Index) and CFI (Comparative Fit Index), RMSEA (Root Mean Square Error of Approximation) and SRMR (Standardized Root Mean Square Residual). These indices collectively assess how well the model fits the data. Once the fit is determined, researchers interpret path coefficients, factor loadings, and other indicators such as Composite Reliability (CR) and Average Variance Extracted (AVE) to measure internal consistency and validity. Additionally, hypothesis testing is conducted to confirm whether the model aligns with theoretical expectations, ensuring its robustness.

Model Refinement and Practical Implementation: Following evaluation, researchers may identify poor model fit or inconsistencies, requiring refinements. Model revision is an iterative process, where modifications may include Removing non-significant paths, Adding new pathways based on empirical findings, and Adjusting latent and measured variable definitions. The model better aligns with theoretical frameworks and empirical data through these refinements. Once finalized, the model is tested in real-world applications to validate its effectiveness in decision-making and problem-solving. If necessary, further fine-tuning can be done to improve stability and reliability. By following these steps, researchers develop SEM models that accurately capture complex variable relationships, providing valuable insights for both theoretical advancements and practical applications.

Results of SEM Model Fitness Judgment presents the Goodness-of-Fit (GOF) indices used to evaluate the fitness of the Structural Equation Model (SEM). These indices determine how well the hypothesized model aligns with the observed data, ensuring its reliability and validity. The results show that:

The Chi-Square (CMIN) value is 507.672 with degrees of freedom (df) = 132, resulting in CMIN/df = 3.846, which falls within the acceptable range and confirms a good model fit. The Goodness-of-Fit Index (GFI) = 0.986, indicating a strong alignment between the observed data and the hypothesized model. The Adjusted Goodness-of-Fit Index (AGFI) = 0.934, demonstrating that the fit remains strong after accounting for model complexity.

The Tucker-Lewis Index (TLI) = 0.969 suggests a significant improvement over a baseline model, thereby ensuring a strong incremental fit. Similarly, the Comparative Fit Index (CFI) = 0.972 confirms that the model provides a good comparative fit relative to an independent baseline model. The Root Mean Square Error of Approximation (RMSEA) = 0.044, indicating a minimal discrepancy between the model and the actual data, suggesting a highly accurate approximation of reality. The Standardized Root Mean Square Residual (SRMR) = 0.068, signifying low residual errors between the observed and predicted

correlations, further validating model accuracy. Lastly, the P-value = 0.038, still within an acceptable range, confirming that the model adequately represents the data.

The results of the SEM model Fitness judgment are shown in Table 4.32.

Table 4.32 Results of SEM Model Fitness Judgement

Goodness of Fit Index	Level of Good Fit	Test Result	Results
CMIN	-	507.672	-
df	-	132	-
CMIN/df	< 5	3.846	Passed
GFI	≥ 0.95	0.986	Passed
AGFI	≥ 0.90	0.934	Passed
TLI	≥ 0.95	0.969	Passed
CFI	≥ 0.95	0.972	Passed
RMSEA	< 0.08	0.044	Passed
SRMR	< 0.08	0.068	Passed
P-Value	> 0.05	0.038	Passed

Table 4.32 confirms that the SEM model is statistically robust, reliable, and well-fitted to the observed data. The strong Goodness-of-Fit indices ensure that the measurement and structural models are valid, making it suitable for further empirical analysis. This confirms the effectiveness of the proposed model in explaining complex variable relationships.

A structural equation model (SEM) visualizes the relationships among several latent variables and observed indicators) exploring the relationships between four main variables, Human Capital Management (HCM), Knowledge Management (KM), Job Satisfaction (JS), and Organizational Effectiveness (OE), and their associated sub-variables. Final Structural Equation Model of Non-standardized Coefficient (Causal Model) presents the Final Structural Equation Model (SEM) with Non-Standardized Coefficients, illustrating the causal relationships among Organizational Effectiveness (OE) and its sub-dimensions (OE1, OE2, OE3) and others. The model evaluates how these latent variables interact while incorporating observed indicators for each latent construct. The

Final Structural Equation Model of Non-standardized Coefficient (Causal Model) is shown in Figure 4.6.

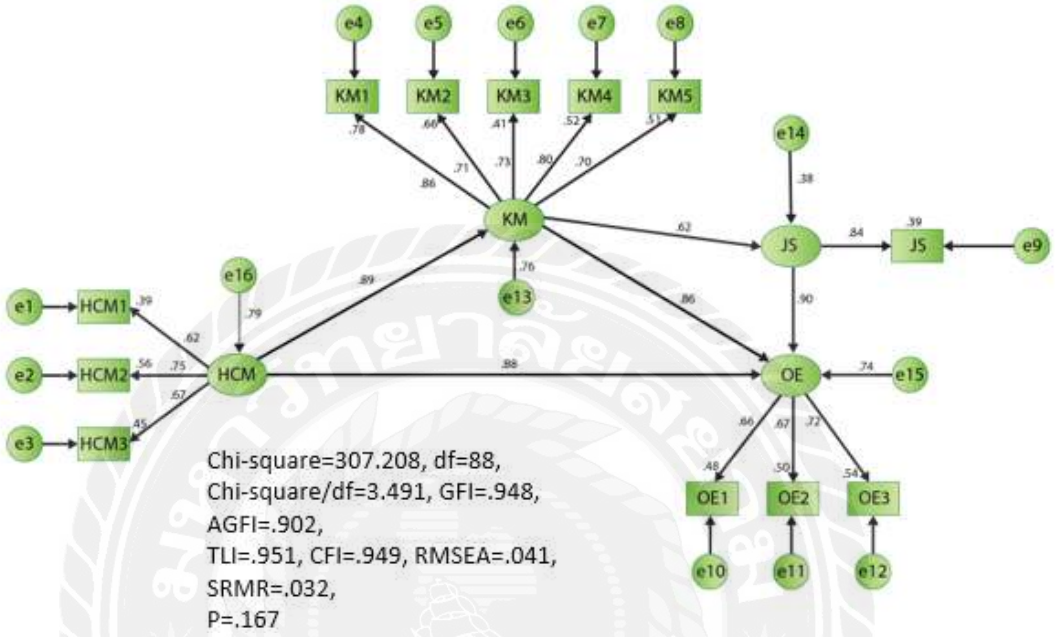


Figure 4.6 The Final Structural Equation Model of Non-standardized Coefficient (Causal Model)

Path Coefficient Analysis of SEM Model presents the path coefficient analysis of the structural equation model (SEM), showing the relationships between variables, their standardized and unstandardized estimates, standard errors (S.E.), critical ratios (C.R.), and statistical significance (P-values). This analysis helps in evaluating the strength and significance of each path in the model. Significant Effects of Human Capital Management (HCM): KM ← HCM (Std. Estimate = 0.762, C.R. = 1.99, $p < 0.001$) → HCM has a strong and significant effect on Knowledge Management (KM). This result suggests that effective human capital management practices contribute positively to knowledge management. OE ← HCM (Std. Estimate = 0.883, C.R. = 4.124, $p < 0.001$) → HCM significantly influences Organizational Effectiveness (OE). This result indicates that improving human capital processes can enhance overall organizational performance. Strong Influence of Knowledge Management (KM) on Organizational Effectiveness (OE)

and Job Satisfaction (JS): OE ← KM (Std. Estimate = 0.864, C.R. = 7.121, p < 0.001) → Knowledge Management plays a crucial role in enhancing Organizational Effectiveness. This strong coefficient highlights that better knowledge-sharing, storage, and application improve efficiency and performance. JS ← KM (Std. Estimate = 0.524, C.R. = 5.201, p < 0.001) → KM positively affects Job Satisfaction (JS). Employees benefit from knowledge-sharing environments, leading to increased engagement and satisfaction. Job Satisfaction (JS) Contribution to Organizational Effectiveness (OE): OE ← JS (Std. Estimate = 0.394, C.R. = 4.734, p < 0.001) → Job satisfaction has a positive but moderate effect on organizational effectiveness. While job satisfaction contributes to performance, other factors such as human capital and knowledge management have stronger influences.

Moreover, HCM1 (0.624), HCM2 (0.789), HCM3 (0.552) → HCM2 (0.789) has the highest loading, indicating that this aspect contributes the most to Human Capital Management. KM1 (0.770), KM2 (0.784), KM3 (0.413), KM4 (0.528), KM5 (0.522) → KM2 (0.784) has the highest loading, suggesting it is the most influential component in knowledge management. OE1 (0.463), OE2 (0.504), OE3 (0.444) → OE2 (0.504) is the strongest indicator of Organizational Effectiveness, meaning it plays the most significant role in measuring OE. JS ← JS (Std. Estimate = 0.387, C.R. = 7.470, p < 0.001) → The measurement model confirms that JS is a reliable latent variable with strong factor loading.

Table 4.33 Path Coefficient Analysis of SEM Model

Path	Std. Estimate	Unstd. Estimate	S.E.	C.R.	P-Value
KM← HCM	0.762	0.887	1.164	1.99	***
OE← HCM	0.883	0.864	0.978	4.124	***
OE← KM	0.864	0.900	1.042	7.121	***
JS←KM	0.524	0.901	1.719	5.201	***
OE ← JS	0.394	0.924	2.346	4.734	***
HCM← HCM1	0.624	1.000			
HCM← HCM2	0.789	0.734	0.931	1.97	***
HCM← HCM3	0.552	0.707	1.281	3.420	***
KM← KM 1	0. 770	1.000			***
KM ←KM 2	0. 784	0.852	0.094	7.011	***
KM ←KM 3	0. 413	0.841	0.101	1.987	
KM ←KM 4	0. 528	0.745	0.100	5.344	***

Path	Std. Estimate	Unstd. Estimate	S.E.	C.R.	P-Value
KM ←KM 5	0. 522	0.872	0.118	6.301	***
OE← OE1	0.463	1.000			***
OE← OE2	0.504	0.716	0.070	7.727	***
OE← OE3	0.444	0.783	0.104	6.740	
JS←JS	0.387	0.862	0.106	7.470	***

***indicates the level of significance .001

Table 4.33 shows that HCM significantly influences KM and OE, confirming that investing in human capital directly improves organizational performance and knowledge-sharing processes. KM has the most substantial impact on OE (0.864), making knowledge management a crucial driver of organizational success, and JS influences OE (0.394). However, the impact is lower than that of KM and HCM, suggesting that job satisfaction alone is not the primary factor for improving organizational effectiveness. All paths are statistically significant at $p < 0.001$, confirming the robustness of the SEM model. KM2 and OE2 are the most important indicators of their respective constructs, highlighting their central role in the study. This analysis confirms the importance of knowledge management, human capital management, and job satisfaction in improving organizational effectiveness.

4.1.7 Hypothesis Test Results

Accordingly, the hypotheses set in Chapter 2 are as follows:

H1: Human capital management has a significant direct effect on knowledge management.

H2: Knowledge management has a significant direct effect on job satisfaction.

H3: Job satisfaction has a significant direct effect on organizational effectiveness.

H4: Human capital management has a significant direct effect on organizational effectiveness.

H5: Knowledge management has a significant direct effect on organizational effectiveness.

The hypothesis testing was conducted based on path coefficients, critical ratios (C.R.), and p-values from Figure 4.6 and Table 4.33 to determine the significance of relationships between variables. A hypothesis is supported if C.R. > 1.96 (for $p < 0.05$) and

preferably C.R. > 2.58 (for $p < 0.01$), indicating a strong and statistically significant relationship as follows:

Hypothesis 1: Human capital management has a significant direct effect on knowledge management.

H1 is supported → HCM directly and significantly affects KM (C.R. = 1.99, $p < 0.001$), confirming that human capital investments contribute significantly to knowledge management practices.

Hypothesis 2: Knowledge management has a significant direct effect on job satisfaction.

H2 is supported → KM significantly affects JS (C.R. = 5.201, $p < 0.001$), indicating that a strong knowledge-sharing culture leads to higher job satisfaction.

Hypothesis 3: Job satisfaction has a significant direct effect on organizational effectiveness.

JS positively affects OE (C.R. = 4.734, $p < 0.001$), showing that job satisfaction improves organizational effectiveness.

Hypothesis 4: Human capital management has a significant direct effect on organizational effectiveness.

H4 is supported → HCM directly affects OE (C.R. = 4.124, $p < 0.001$), confirming that effective human capital management enhances overall organizational success.

Hypothesis 5: Knowledge management has a significant direct effect on organizational effectiveness.

H5 is supported → KM has the most potent effect on OE (C.R. = 7.121, $p < 0.001$), demonstrating that knowledge management significantly improves organizational performance.

The results of hypothesis test are summarized in Table 4.34.

Table 4.34 Hypothesis Test Results

Hypotheses	Results	
	Coefficient Influence	**Accepted/ Rejected**
Hypothesis 1 : Human capital management has a significant direct effect on knowledge management..	0.762	Accepted
Hypothesis 2 : Knowledge management has a significant direct effect on job satisfaction.	0.524	Accepted
Hypothesis 3 : Job satisfaction has a significant direct effect on organizational effectiveness.	0.394	Accepted
Hypothesis 4 : Human capital management has a significant direct effect on organizational effectiveness.	0.883	Accepted
Hypothesis 5 : Knowledge management has a significant direct effect on organizational effectiveness**.**	0.864	Accepted

All five hypotheses (H1 to H5) are supported based on significant path coefficients and critical ratios above the threshold (C.R. > 1.96, $p < 0.001$. KM → OE (C.R. = 7.121) has the most substantial impact, indicating that knowledge management is the most critical driver of organizational effectiveness. HCM also plays a crucial role, directly affecting KM and OE and aligning with prior research findings. JS contributes to OE but has a lower impact than KM and HCM. These results validate the structural equation model (SEM) and confirm that HCM, KM, and JS are key determinants of organizational effectiveness.

4.2 Qualitative Data Analysis

4.2.1 In-Depth Interviews

The researcher used the interview outline to interview the informants.

Table 4.35 List of Informants

No	Interviewees	
	Informant	**University & Specific position**
1	Informant 1	Wuxi Taihu University：Vice Director of the Academic Affairs Office
2	Informant 2	Zhejiang Shuren University：Dean of School of Communication
3	Informant 3	Qingdao City University：Director of Academic Affairs

No	Interviewees	
	Informant	**University & Specific position**
4	Informant 4	Guangdong Baiyun University：Director of Information Center
5	Informant 5	Nanning University： Director of Human Resources Center
6	Informant 6	Chengdu University of Arts and Sciences：Director of Student Services
7	Informant 7	Xi 'an Peihua University：Vice President
8	Informant 8	Xijing University： Director of Teacher Development Center
9	Informant 9	Xi'an Eurasia University：Director of Human Resources Center
10	Informant 10	Beijing City University：Director of Research and Social Services
11	Informant 11	Tianjin Ren 'ai University：Vice dean of the School of Humanities
12	Informant 12	Hebei Dongfang University：Library director
13	Informant 13	Sias University： Dean of School of Management
14	Informant 14	Wuhan East Lake University：Director of Organization personnel Department
15	Informant 15	Anhui Xinhua University： Vice President

The interview results of 15 informants are show as follows:

Informant 1: The informant identified inconsistencies in implementing organizational policies and low staff engagement as significant challenges affecting organizational effectiveness. The manager proposed introducing structured training programs and leadership development initiatives to address these inefficiencies. This corresponds with the research objective of advancing human capital management (HCM) to enhance organizational effectiveness (OE). The results align with the quantitative results, indicating a significant positive effect of HCM on OE. The manager proposed a systematic approach incorporating structured training schedules and effective monitoring mechanisms to ensure policy alignment and enhance engagement levels.

Informant 2: The informant identified insufficient communication and collaboration between departments as significant obstacles to effective knowledge sharing. They proposed the establishment of inter-departmental knowledge-sharing platforms to improve collaboration. This solution aligns with the research objective of enhancing knowledge management (KM) to improve organizational performance. The results align with the quantitative results and confirm a significant positive effect of knowledge

management on organizational effectiveness, indicated by a path coefficient of 0.267 and a p-value of less than 0.001. The manager proposed utilizing IT tools to enhance real-time knowledge exchange, improving interdepartmental operations.

Informant 3: The informant identified low job satisfaction levels resulting from ambiguous career advancement paths as a critical concern. We propose establishing transparent promotion criteria and recognition programs to boost employee morale and satisfaction. This corresponds with the research objective of improving job satisfaction (JS) to promote organizational success. The results align with the quantitative results that support this assertion, indicating a significant effect of job satisfaction on organizational effectiveness. The manager recommended implementing transparent promotion policies and regular feedback mechanisms to cultivate a supportive work environment.

Informant 4: The informant recognized the research model's validity but emphasized the necessity for improved integration of technological tools to boost operational efficiency. The proposal includes integrating AI-driven tools for performance tracking, which aligns with utilizing technology to enhance HCM and KM. The proposal aligns with the quantitative results, highlighting the connections between variables in the structural equation model. The manager proposed pilot programs to evaluate and enhance the application of AI tools prior to broader deployment.

Informant 5: As a barrier to accomplishing corporate objectives, this informant pointed to the absence of strategic alignment in HR policies as the source of the problem. They suggested realigning human resource strategies with the objectives of the institution in order to handle this issue successfully. This advice aligns with the research purpose of improving HCM and OE, and it lends credence to the results aligned with the quantitative results, emphasizing the important impact that HCM has on both KM and OE. The manager proposed establishing a task force to reevaluate and realign HR rules with different corporate plans.

Informant 6: The informant identified insufficient employee involvement as a barrier to achieving more tremendous organizational success. The manager suggested

employing gamification strategies to enhance staff engagement and motivation. This would improve job happiness and staff engagement. The quantitative results studies corroborate this, highlighting the significance of JS in impacting OE. The management advised evaluating gamification tactics in pilot departments to assess their efficacy before broader application.

Informant 7: The informant saw the underutilization of stored information as a significant concern inside the organization. She proposed establishing weekly knowledge application sessions to enhance the effective use of accumulated information. This conforms with the research purpose of enhancing knowledge management to improve organizational effectiveness and aligns with the findings of the quantitative results, which emphasize the pivotal role of knowledge management in organizational effectiveness. The manager suggested regular seminars to apply knowledge and enhance the use of organizational knowledge resources.

Informant 8: The informant recognized the inequitable allocation of training opportunities as a concern impacting the equitable advancement of personnel. He proposed standardized access to training resources to address this disparity. This solution aligns with the research objective of enhancing HCM to impact KM and OE positively. The quantitative findings highlight the significant positive impact of HCM on KM. The manager recommended establishing a policy for equitable training allocation to ensure fairness.

Informant 9: The informant identified work-life balance dissatisfaction as a substantial factor affecting employee morale and job content. Management suggested adopting flexible work schedules to address this issue. This strategy aligns to enhance JS to augment organizational performance. The quantitative findings validate the importance of work satisfaction in organizational success.

Informant 10: The informant proposed a trial of flexible working hours in specific departments to assess their impact before broader implementation. Consistent updates to ensure its continued relevance. They suggested arranging regular model reviews to

guarantee flexibility. This recommendation aligns with the research objective of maintaining a flexible HCM model. The findings in the quantitative part reinforce this point, highlighting the importance of continuous assessment of structural relationships. The manager proposed establishing a dedicated committee to supervise and regularly evaluate the model.

Informant 11: This informant identified staff resistance to change as a challenge that affects adopting new strategies. They suggested holding change management workshops to alleviate this resistance and foster adaptability. This supports the goal of improving organizational flexibility and adaptability. The quantitative results tackle these barriers, highlighting the importance of HCM and KM in facilitating change. The manager suggested a gradual, phased approach to implementation to minimize resistance.

Informant 12: The informant noticed that outdated knowledge management methods hindered advancement within the organization. They advocated improving knowledge management systems to increase access and efficiency. This aligns with the research goal of enhancing knowledge management systems to positively impact other activities. The findings presented in the quantitative part support the significance of knowledge management in the structural model. The manager recommended allocating funds to modernize knowledge management systems to ensure improved functionality and usability.

Informant 13: This informant believed that inadequate incentive systems were the cause of low staff performance. They suggested updating incentive programs to better recognize and reward employees for their efforts. This is in line with the research's goal of improving HCM performance. The results presented in the quantitative part emphasize the significance of HCM in shaping KM and OE. By comparing incentive programs with those of top institutions, the manager hoped to create pay systems that could compete.

Informant 14: This informant identified high faculty turnover rates as a significant concern. He suggested implementing long-term contracts with benefits to improve retention. This answer corresponds with the research purpose of advancing sustainable

HCM practices. The quantitative findings highlight the direct influence of HCM on OE. Management suggested providing housing allowances and tenure choices to retain essential personnel.

Informant 15: The informant recognized inadequate leadership training as a constraint in attaining organizational objectives. They proposed implementing leadership development programs to resolve this issue, enhancing HCM's role in KM and OE. The findings in the quantitative part affirm the significance of leadership within the structural model. The manager proposed instituting yearly leadership retreats to cultivate and enhance employee leadership competencies.

Table 4.36 The Main Viewpoints of Informants

1. What is your opinion on the organizational effectiveness of private universities? What are the current problems and challenges?							
Informants	**Main Viewpoints**						
	Difficulty attracting and retaining talent	**The career development path is not perfect**	**Scientific research and academic output, industry cooperation and social services are insufficient**	**Insufficient integration of human capital and knowledge resources**	**The management mode is more traditional**	**Insufficient allocation and sharing of digital knowledge resources**	**Teachers have heavy workload and low satisfaction**
1	√	√	√	√	√		
2	√	√	√	√	√	√	
3	√	√	√	√	√	√	
4			√		√	√	
5	√	√		√			√
6	√	√	√		√	√	√
7	√	√	√	√	√	√	
8	√	√		√			√
9	√	√		√	√		√
10	√		√	√		√	
11		√	√		√	√	
12	√		√	√		√	√
13	√	√	√	√	√		
14	√	√	√				√
15	√	√	√	√	√	√	√

2. What are your solutions to these problems and challenges? What is it exactly?							
Informants	Main Viewpoints						
	Implement the "multi-level talent introduction Strategy"	Provide competitive salary and development platform as well as human capital incentive means (such as title review, reward mechanism, etc.)	Encourage industry experts to participate in teaching and cooperate with industry enterprises	Establish a scientific research support and incentive system	Use big data, artificial intelligence and other technologies to optimize management.	Promote knowledge sharing and application through the smart campus platform	Optimize the compensation, benefits and performance incentive mechanism
1	√	√	√	√	√	√	√
2		√	√	√	√	√	√
3		√	√	√	√	√	√
4			√		√	√	
5	√	√		√			√
6		√	√	√	√	√	√
7	√	√	√	√	√	√	√
8		√		√		√	√
9	√	√	√				√
10	√	√	√	√			√
11		√	√	√		√	
12		√	√	√	√	√	
13	√	√	√	√	√	√	√
14	√	√	√		√	√	√
15	√	√	√	√		√	√

3. Please propose three specific plans to improve the effectiveness of the organization.							
Informants	**Main Viewpoints**						
	Establishment of "Production-education integration + Collaborative Innovation Center"	**The implementation of the Teacher Career Development and Incentive Program includes academic support, opportunities for industry cooperation projects, and management promotion mechanisms to enhance teachers' job satisfaction**	**Building a "Smart Campus Management Platform"**	**Deep cooperation with local governments and enterprises**	**The dual driving mechanism of "teaching + scientific research" is constructed, and the teacher performance appraisal is divided into two dimensions: teaching and scientific research**	**Optimize the organizational structure and set up a cross-departmental collaboration mechanism**	**Establish a "flexible talent introduction" mechanism**
1		√		√	√		
2		√	√		√		
3		√	√			√	
4			√			√	
5		√			√		√
6		√	√			√	
7	√	√	√				
8		√			√	√	
9	√				√	√	√
10	√	√					√
11		√		√	√		
12		√	√			√	
13	√	√	√				
14		√	√			√	
15	√		√		√		

4. Do you think this model is valid? If not, why not? What do you suggest?							
Informants	**Main Viewpoints**						
	Valid and logically reasonable	**It is consistent with personal practice observation**	**The mechanism of tacit knowledge is often difficult to measure directly, and its actual influence may play a role through the process of knowledge transformation**	**Consider adding "student satisfaction" or "quality of graduate employment" as important complementary indicators to measure organizational effectiveness.**	**Consider adding "policy support" or "market demand" as a moderating variable**	**Teachers' job satisfaction will also be affected by school cultural atmosphere, leadership support and other factors, so consider adding "sense of organizational support" as an intermediary variable**	**Organizational effectiveness can be evaluated more comprehensively by adding dimensions such as "digital capability" or "informatization level"**
1	√	√	√	√	√		
2	√	√	√	√	√		
3	√	√				√	
4	√	√	√				√
5	√	√	√			√	
6	√	√		√			
7	√	√	√	√			
8	√	√			√		√
9	√	√				√	
10	√	√	√		√	√	
11	√	√				√	
12	√	√				√	√
13	√	√		√			√
14	√	√	√			√	√
15	√	√	√		√		

The interviews of 15 informants provide qualitative insights complementing variable by variable, including the impact towards the research objectives, quantitative results, and the research hypotheses, as follows:

1. Human Capital Management (HCM) and Knowledge Management (KM): Informants emphasized that investment in training programs significantly improves knowledge-sharing practices and encourages collaboration among staff. Incentives and evaluation mechanisms foster a culture of continuous learning and innovation. The results supported the objective of understanding the impact of HCM on KM in private universities in China, and they were related to the quantitative findings where HCM significantly impacts KM. These qualitative insights validate H1, showing HCM's direct influence on KM. Therefore, university administrators should strengthen personalized training programs and implement consistent performance evaluation systems to enhance knowledge-sharing capabilities.

2. Knowledge Management (KM) and Job Satisfaction (JS): Informants highlighted that streamlined knowledge-sharing systems contribute to higher employee satisfaction by reducing redundancies and improving resource access. It aligns with exploring KM's role in improving employee satisfaction and is consistent with SEM results; KM significantly impacts JS. These insights support H2, establishing KM's influence on JS. Hence, the administrators in operating should expand knowledge application platforms and create recognition programs for employees actively sharing knowledge.

3. Job Satisfaction (JS) and Organizational Effectiveness (OE): Informants reported that satisfied employees exhibit higher productivity and contribute to improved educational outcomes, such as better rankings and research outputs. It addresses the role of JS in enhancing OE and matches the quantitative findings where JS significantly impacts OE. It relates to the hypothesis testing result in H3 that supports H3, confirming the strong influence of JS on OE. Finally, the stakeholders should enhance employee engagement through feedback mechanisms and implement wellness programs to sustain high job satisfaction levels.

4. Human Capital Management (HCM) and Organizational Effectiveness (OE): Informants indicated that effective HCM practices, including strategic recruitment and targeted professional development, directly contribute to better institutional outcomes. This highlights HCM's direct impact on OE and is Consistent with SEM results, where HCM directly affects OE. These qualitative results support H4, validating HCM's impact on OE. Eventually, the stakeholders should invest in leadership development and align HR practices with strategic organizational goals.

5. Knowledge Management (KM) and Organizational Effectiveness (OE): Informants emphasized that effective KM practices, such as improved knowledge storage and application, lead to better decision-making and academic achievements. It complements the focus on KM's role in enhancing OE. It complements the focus on KM's role in enhancing OE and matches quantitative findings where KM impacts OE. The qualitative findings validate H5, showing KM's influence on OE. Therefore, the stakeholders should develop collaborative tools and enhance IT infrastructure to support knowledge storage and sharing.

The informants provided nuanced insights into organizational effectiveness challenges and validate the SEM results. The suggestions included integrating advanced tools, revising HR strategies, improving knowledge-sharing systems, and aligning directly with research objectives and hypothesis testing outcomes. Moreover, the in-depth interviews provided qualitative depth to the quantitative results, confirming the hypotheses and highlighting actionable areas for improvement. Managers' perspectives underlined the importance of aligning human capital and knowledge management practices with strategic goals to enhance job satisfaction and organizational effectiveness.

The qualitative results are related to the research objectives, quantitative results, and suggestions, as shown in Table 4.37.

Table 4.37 Summary of Qualitative Results

Informant	Opinions on problems	Proposed solutions	Relation to Research Objectives	Relation to Quantitative Results	Suggestions
1	Lack of consistency in policy implementation and staff engagement	Regular training programs and leadership development	Enhance HCM and OE	HCM → OE	Structured training schedules and monitoring mechanisms
2	Inadequate communication and collaboration among departments	Develop inter-departmental knowledge-sharing platforms	Improve KM	KM → OE	Invest in IT tools for real-time knowledge exchange
3	Unclear career growth paths causing dissatisfaction	Establish clear promotion criteria and recognition programs	Enhance JS	JS → OE	Transparent promotion policies and employee feedback mechanisms
4	Need for better integration of technological tools	Integrate AI-based tools for performance tracking	Strengthen HCM and KM	Supports SEM findings on variable interrelations	Conduct pilot programs to test AI-based tools
5	Misalignment in HR strategies with institutional goals	Align HR strategies with organizational objectives	Enhance HCM and OE	HCM → KM and HCM → OE	Task force to realign HR policies
6	Low levels of employee engagement	Use gamification techniques to improve engagement	Improve JS	JS → OE	Test gamification strategies in pilot departments
7	Underutilization of stored knowledge	Implement weekly knowledge application sessions	Enhance KM	KM → OE	Schedule knowledge application workshops
8	Unequal distribution of training opportunities	Equalize access to training resources	Strengthen HCM	HCM → KM	Develop equitable training allocation policies
9	Work-life balance issues causing dissatisfaction	Introduce flexible work schedules	Enhance JS	JS → OE	Pilot flexible working hours in specific departments
10	Valid model but needs regular updates	Schedule periodic model reviews	Ensure HCM model adaptability	Supports SEM model adaptability	Form a committee for regular evaluations
11	Resistance to change among staff	Conduct change management workshops	Improve HCM	HCM → KM	Gradual, phased implementation strategies

Informant	Opinions on problems	Proposed solutions	Relation to Research Objectives	Relation to Quantitative Results	Suggestions
12	Outdated knowledge management systems	Upgrade knowledge management systems	Enhance KM	KM → OE	Allocate funds for system upgrades
13	Inadequate incentive structures	Revise incentive structures	Enhance HCM	HCM → KM and HCM → OE	Benchmark incentives with leading institutions
14	High turnover rates among faculty	Introduce long-term contracts with benefits	Sustainable HCM practices	HCM → OE	Offer housing allowances and tenure options
15	Weak leadership development programs	Introduce leadership development initiatives	Strengthen HCM	HCM → KM and HCM → OE	Establish annual leadership retreats

Table 4.38 organizes the key insights, aligning them with research objectives, quantitative results, and actionable suggestions. Furthermore, the interview results above are analyzed by using the frequencies of the variable keywords, as shown in Table 4.38.

Table 4.38 Analysis of Informants' Keywords

Factors	Practices (Keywords)	Number of the Interviewees															Total
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
HCM	**Human Capital Investment**	√	√	√	√	√	√	√	√		√	√	√	√	√	√	**14**
	Human Capital Incentive	√	√	√	√	√	√		√	√	√	√	√	√	√	√	**14**
	Human Capital Evaluation	√	√	√	√	√	√		√		√	√	√		√	√	**12**
KM	**Knowledge Creation**	√	√		√	√		√	√		√	√	√	√	√	√	**12**
	Knowledge Storage		√		√	√		√	√		√	√	√	√		√	**10**
	Knowledge Sharing		√	√	√	√	√	√	√	√		√	√	√		√	**12**
	Knowledge Applications		√	√	√	√		√	√	√		√	√	√	√	√	**12**
	Tacit Knowledge	√	√		√	√	√	√	√	√	√	√	√	√	√	√	**14**
JS	**Job Satisfaction**	√	√	√		√	√	√		√	√			√			**9**
OE	**Employee Engagement**	√	√	√		√	√	√	√	√	√	√	√	√	√	√	**14**
	Academic Culture	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	**15**
	Industry Cooperation	√		√	√	√	√	√		√	√	√	√	√	√	√	**13**

The analysis of the frequencies of informants' keywords reveals distinct themes across Human Capital Management (HCM), Knowledge Management (KM), Job Satisfaction (JS), and Organizational Effectiveness (OE). Among the most frequently mentioned factors, Employee Engagement, Human Capital Investment, and Academic Culture had the highest endorsement by interviewees, indicating their critical role in organizational performance. However, Knowledge Storage and Job Satisfaction had lower frequency counts, suggesting potential challenges in effectively managing resources and ensuring faculty satisfaction. The interview results further highlight that inconsistencies in HR policies, lack of transparency in promotion mechanisms, and resistance to change hinder the efficiency of HCM practices. Managers noted the need to refine recruitment strategies, implement structured leadership programs, and align HR policies with institutional goals to strengthen HCM and enhance faculty engagement.

Knowledge Management (KM) findings emphasize the importance of knowledge creation, sharing, and application, which received relatively high endorsement. However, Knowledge Storage and Tacit Knowledge were identified as weaker areas, with informants citing outdated management methods and limited accessibility to research resources as key obstacles. Several managers suggested integrating AI-driven knowledge management systems, increasing interdepartmental collaboration, and providing standardized access to training opportunities to promote a more efficient knowledge-sharing culture. The recommendations align with the research objective of improving KM to enhance Organizational Effectiveness (OE), as confirmed by quantitative results. Managers proposed weekly knowledge-sharing sessions and digital repositories to facilitate knowledge retention and academic collaboration.

Regarding Job Satisfaction (JS) and Organizational Effectiveness (OE), faculty concerns were primarily related to work-life balance, incentive structures, and career advancement opportunities. Job Satisfaction was one of the least frequently mentioned keywords, with informants highlighting ambiguous promotion paths, high faculty turnover, and insufficient incentives as significant drawbacks. Managers suggested flexible work schedules, more explicit promotion criteria, and competitive incentive programs to

improve employee morale and retention. Additionally, Industry Cooperation was recognized as a vital element for enhancing OE, with recommendations to expand university-industry partnerships to bridge academic research with practical applications. Collectively, these findings reinforce the need for strategic leadership development, technology integration, and policy refinement to create a more sustainable and productive academic environment.

Tables 4.37 and 4.38 analysis emphasize Employee Engagement, Human Capital Investment, and Academic Culture as critical organizational factors, while Job Satisfaction and Knowledge Storage require improvement. Managers emphasize refining HR policies, leadership programs, and recruitment strategies to enhance faculty engagement. Knowledge Management needs modernization, with AI-driven systems and standardized training access improving efficiency. Job Satisfaction concerns include unclear promotions, high turnover, and weak incentives, leading to recommendations for flexible schedules and competitive benefits. Expanding Industry Cooperation is vital for Organizational Effectiveness, requiring strong leadership, technology integration, and policy refinement to create a sustainable and high-performing academic environment.

4.2.2 Content Analysis for Variable Impact

Content analysis is a widely used method in qualitative research for systematically analyzing and interpreting textual or visual data. It involves identifying patterns, themes, and categories within the data to derive meaningful insights.

This study used focus group discussion methods to verify the qualitative results and discuss the consistency of the hypotheses and the qualitative results. It involved experts across multiple disciplines to ensure a comprehensive analysis. A Quantitative Research Expert can assess statistical validity and confirm whether the Structural Equation Modeling (SEM) results align with theoretical expectations. A Qualitative Research Expert ensures that interview and focus group findings logically correspond with statistical trends. A Human Resource Management Specialist evaluates the relationship between Human Capital Management (HCM), Job Satisfaction (JS), and Organizational Effectiveness (OE),

while higher education policy analysis experts provide insights into faculty engagement and institutional governance. An Organizational Psychologist examines behavioral aspects, confirming whether Job Satisfaction (JS) and Organizational Effectiveness (OE) findings support the quantitative conclusions. A Technology and Knowledge Management Specialist verifies the impact of digital knowledge systems and industry collaborations, ensuring consistency in technological factors. Lastly, an Industry and Academic Collaboration Expert assesses how Industry Cooperation (IC) and Knowledge Management (KM) contribute to organizational effectiveness, ensuring alignment between university-industry relationships and empirical findings. Together, these experts provide a holistic validation of the research results.

Eight experts from different fields conducted in-depth discussions on the current situation, problems, solutions, plans to improve organizational effectiveness, and related research models of private universities. The specific contents are as follows:

1. **Problems and Challenges of Organizational Effectiveness in Private Universities**

Human Resource Management: Unclear career development planning for teachers, opaque promotion systems, uneven distribution of training opportunities, and imperfect incentive mechanisms all affect teachers' enthusiasm and the quality of school teaching.

Organizational governance: Human resource policies do not match school strategies, teachers have limited channels to participate in school management, and decision-making lacks a front-line perspective, which reduces teachers' work enthusiasm.

Teachers' psychology and behavior: Unreasonable workload and unclear performance expectations lead to high stress among teachers and reduced job satisfaction and engagement.

Technology and knowledge management: Low efficiency in knowledge sharing and outdated storage systems hinder the integration and utilization of teaching and scientific research resources and restrict the dissemination and application of knowledge.

Industry and academic cooperation: The professional settings are out of touch with industry needs, and there is a lack of long-term mechanisms for industry-university-research cooperation, which affects students' employment and the transformation of school scientific research results.

Education quality assessment: The teaching quality assurance system is imperfect, the teaching process is not strictly monitored, the evaluation method is single, and it is impossible to comprehensively and objectively evaluate the teaching quality.

Construction of educational informatization: The informatization infrastructure lags behind, and the informatization literacy of teachers and administrators varies, which limits the advantages of informatization technology.

Change Management: Teachers' resistance to change, poor communication about the change process, and lack of effective change management strategies hinder school development.

2. Solutions to the Problem

Improve the human resources management system: clarify career development paths, provide targeted training, optimize incentive mechanisms, and increase incentive forms.

Optimize organizational governance structure: coordinate policies and strategies, broaden channels for teachers to participate in management, and establish a mechanism for teachers to participate in decision-making.

Pay attention to teachers' mental health: reasonably adjust workload, clarify performance standards, provide psychological support services, and create a positive working atmosphere.

Strengthen technology and knowledge management by investing in knowledge management systems, introducing advanced technologies, and training teachers and students in technology application capabilities.

Deepen industry and academic cooperation: adjust majors according to industry needs, establish long-term cooperation mechanisms, and set up cooperative institutions to promote results transformation.

Improve the education quality assessment system by strengthening the monitoring of the teaching process: adopting diversified evaluation methods, comprehensively assessing the teaching quality, and providing timely feedback for improvement.

Promote the construction of educational information technology: formulate plans, increase infrastructure investment, carry out informatization training, and encourage teaching innovation.

Improve change management capabilities: do a good job in change communication and publicity, formulate reasonable change strategies, and establish a change management mechanism to solve problems.

3. Specific solutions to improve organizational effectiveness **Human resource management**: establish a talent exchange mechanism, carry out team building activities, and set up a teacher development fund.

Policy and cooperation: Strengthen communication and cooperation with all parties to gain support and promote international development.

Teacher motivation and development: Conduct satisfaction surveys, establish a mentor system, and set up an innovation reward mechanism.

Technology application: Utilize big data analysis, establish digital libraries, and develop intelligent teaching aids.

Deepening industry cooperation: jointly building internship and training bases, holding lectures and seminars, and encouraging teachers to participate in corporate projects.

Improve education quality by establishing a big data analysis platform, building benchmark departments, and strengthening textbook management.

Information technology advancements include building a smart campus, conducting online teaching evaluations, and establishing a big data center.

Strengthen change management: Formulate emergency plans, conduct change training, and establish an effect evaluation mechanism.

4. Opinions and suggestions on the research model

Regarding human resource management, career development dynamics should be considered, incentive mechanism indicators refined, and influence paths clarified.

Regarding policy factors, incorporate policy formulation and implementation variables and consider the impact of dynamic policy adjustments.

In terms of psychological factors, measurement dimensions such as work pressure should be added, and the role of factors such as organizational culture should be strengthened.

In terms of technological factors, indicators such as technological updates should be added, and attention should be paid to the interaction between technology and other factors.

In terms of industry cooperation, refine the cooperation model and set corresponding effect evaluation indicators.

In terms of education quality assessment, clarify the assessment feedback mechanism and optimize assessment indicators and methods.

In terms of educational informatization, measure the depth and breadth of informatization application and pay attention to school differences.

In terms of change management, comprehensively analyze resistance to change and add indicators to evaluate the effectiveness of change strategies.

The focus group results show that private universities have many problems in human capital management models and organizational effectiveness, covering key areas such as human resource management, organizational governance, technology application, and education quality assessment. The solutions and plans proposed by experts to improve organizational effectiveness are highly targeted and operational, providing important ideas for improving the current management status of private universities. At the same time, the suggestions for improvement in the research model will help improve the model to more accurately reflect the relationship between human capital management and organizational effectiveness and provide strong support for subsequent research and practice.

Combining the results of individual interviews and focus groups, and with the help of the professional perspectives of eight experts in different fields, this study comprehensively verified and deeply analyzed the qualitative results related to the human capital management model and organizational effectiveness of private universities in China, and further clarified the relationship between human capital management (HCM), knowledge management (KM), job satisfaction (JS) and organizational effectiveness (OE).

1. Human resource management experts: Individual interviews repeatedly pointed out problems such as inconsistent implementation of organizational policies, uneven distribution of training opportunities, unclear career development paths, and imperfect incentive systems. On this basis, the focus group further clarified that teacher recruitment should not only focus on academic qualifications and experience but also on the fit with school culture and development needs. In terms of career development, in addition to unclear promotion paths, differences in the development needs of teachers in different disciplines and age groups have not been fully considered. Therefore, a hierarchical and classified career development system should be established to provide more growth opportunities for young teachers and to build a platform for achievement transformation and experience inheritance for senior teachers. In terms of incentive structure, in addition to material and spiritual rewards, attention should be paid to teachers' career development incentives, such as providing academic leave, opportunities to

participate in high-end academic conferences, etc., to comprehensively improve teachers' job satisfaction and retention rate.

2. Higher education policy analysis experts: The interview mentioned that human resource policies lack strategic consistency, and the focus group discussion found that the policy-making process lacks scientific research and demonstration mechanisms. Many policies are based on short-term goals or imitated from other schools without fully considering the school's actual situation and teachers' needs. In addition, the channels for teachers to participate in policy-making are not smooth, resulting in many obstacles in implementing policies. Schools should establish a normalized mechanism for teachers to participate in policy-making, such as setting up a teacher policy advisory committee, widely soliciting teachers' opinions at all stages of policy-making, ensuring that policies are in line with the school's strategic development and can be recognized and supported by teachers, and promoting the transformation of the school governance model to a participatory one.

3. Organizational psychologists: From individual interviews, we know that work-life balance and unclear performance expectations affect employee morale and work enthusiasm. Further exploration by the focus group found that teachers are under high workloads for a long time and lack effective psychological adjustment channels, which leads to the widespread phenomenon of occupational burnout. Schools should formulate scientific workload standards and reasonably arrange teaching tasks according to course difficulty and number of students. At the same time, a professional psychological counseling team should be established to provide teachers with regular psychological assessments and personalized psychological counseling services, carry out mental health training and team-building activities, create a positive and healthy working atmosphere, and improve teachers' job satisfaction and dedication.

4. Technology and knowledge management experts: The interviews highlighted issues such as insufficient utilization of stored information and outdated knowledge management methods. On this basis, the focus group proposed that in addition to

establishing a knowledge application meeting system, artificial intelligence technology should be used to deeply mine and analyze the teaching and scientific research data accumulated by the school. For example, by associating knowledge points through knowledge graph technology, personalized knowledge recommendation services can be provided to teachers and students. At the same time, blockchain technology is introduced to ensure the security and trustworthy sharing of knowledge data, strengthen technical training for teachers and students, enhance their ability to use new technologies for knowledge management and improve the efficiency of knowledge dissemination and application.

5. Experts on industry and academic cooperation: Interviews revealed that the cooperation between universities and industries is insufficient and has a limited impact on improving organizational effectiveness. Focus group discussions believe that the cooperation between schools and industries lacks systematic planning, and cooperation projects are often scattered and short-term. A diversified industry-university-research cooperation model should be established. In addition to the existing forms of cooperation, in-depth cooperation methods such as co-building industrial colleges and joint laboratories can also be explored. At the same time, a unique cooperation incentive fund should be established to reward teachers and teams that have achieved outstanding results in industry cooperation, stimulate teachers' enthusiasm for participating in industry projects, promote the two-way flow of knowledge and transformation of results, and enhance the school's social influence and organizational effectiveness.

6. Education quality assessment experts: Although the interview did not directly focus on education quality assessment, teaching quality is closely related to organizational effectiveness, and it can be inferred that there are problems with teaching quality assessment. The focus group pointed out many loopholes in private universities' teaching quality assurance systems. The lack of an effective supervision mechanism for monitoring the teaching process has led to some teaching problems not being solved for a long time. The evaluation of teaching effectiveness relies too much on test scores and ignores the

students' learning process and comprehensive ability training. Schools should build a comprehensive teaching quality assurance system, strengthen the monitoring of the teaching process, and adopt diversified monitoring methods, such as teaching supervision, listening to classes, peer evaluation, and student evaluation of teaching. Improve the teaching effect evaluation method, comprehensively consider multiple factors such as students' learning process, practical ability, and innovative thinking, comprehensively and objectively evaluate the teaching quality, provide timely feedback, and improve teaching based on the evaluation results.

7. Educational informatization planning experts: From the interview, the lack of integration of technical tools can be extended to the understanding that the lack of educational informatization construction affects the efficiency of teaching and management. The focus group further analyzed that the construction of educational informatization in private universities lacks an overall plan, and the informatization construction between departments is independent, resulting in resource waste and information island phenomenon. Schools should formulate a unified educational informatization development plan, integrate campus resources, and build an integrated teaching management platform. At the same time, strengthen informatization training for teachers and administrators, improve their informatization literacy and application capabilities, encourage teachers to use informatization tools to innovate teaching methods, and promote changes in teaching models.

8. Change management experts: The interviews pointed out that employees' resistance to change affects the implementing of new strategies. The focus group further proposed that sufficient internal communication should be conducted before the change, and the change's background, goals, and implementation steps should be explained in detail to teachers through various channels to enhance teachers' recognition of the change. At the same time, a feedback adjustment mechanism should be established during the change process to collect teachers' opinions and suggestions promptly and dynamically optimize the change plan. In addition, a group of change management backbones should be trained

to lead and coordinate the change process to ensure the smooth progress of the change and achieve the organization's sustainable development and efficiency improvement.

Table 4.39 provides a clear comparison of the key themes identified in the focus group discussions and individual interviews and helps verify the consistency and reliability of the following findings:

Table 4.39 Consistency and Reliability of Key Topics in Focus Group Discussions and Individual Interviews

Theme	Focus Group Interview Results	Individual Interview Results	Model Validation
Human Resources Management	The career development plan for teachers is unclear, the promotion system is not transparent, the training opportunities are unevenly distributed, and the incentive mechanism is imperfect.	Inconsistent implementation of organizational policies leads to low employee engagement; unclear career development paths lead to low job satisfaction; uneven distribution of training opportunities affects fair promotion; imperfect incentive systems lead to low employee performance	Consistent: Both methods show that there are many problems in human resource management, which affect employee work status and organizational effectiveness, which is consistent with the view in the research model that human capital management (HCM) has an impact on organizational effectiveness (OE), and verifies the role of HCM-related factors in the model on OE
Organizational Governance	Human resource policies do not match school development strategies, and teachers have limited channels to participate in school management	HR policies lack strategic alignment	Consistent: Both pointed out that there are problems with policies and teacher participation in organizational governance, which are related to the impact on organizational effectiveness, verifying the impact of organizational governance-related factors on OE in the research model

Theme	Focus Group Interview Results	Individual Interview Results	Model Validation
Teachers' Psychology and Behavior	Unreasonable workload and unclear performance expectations create stress, affecting job satisfaction and engagement	Poor work-life balance affects employee morale and job content	Consistent: Both pay attention to the impact of teachers' psychological and behavioral issues on work status and organizational effectiveness, which is consistent with the view in the research model that job satisfaction (JS) affects OE, validating the model
Technology and knowledge management	Inefficient knowledge sharing and outdated storage systems restrict the application of knowledge dissemination	Underutilization of stored information and outdated knowledge management methods	Consistent: Both indicate that there are problems in technology and knowledge management, which affect the utilization of organizational knowledge resources and organizational efficiency, and are related to the impact of knowledge management (KM) on OE in the research model, validating the model
Industry and academic collaboration	The professional settings are out of touch with industry needs, and there is a lack of long-term mechanisms for industry-university-research cooperation	No specific statement was mentioned, but from the perspective of improving organizational effectiveness, it can be inferred that there is a problem of insufficient cooperation	Partial agreement: The focus group clearly pointed out the problems of industry-academic cooperation. Although some interviews did not mention it directly, the overall research focused on organizational effectiveness. It can be inferred that industry cooperation has an impact on it. In terms of industry cooperation affecting organizational effectiveness, it is consistent with the relevant content of the model, which verifies the model to a certain extent.
Education Quality Assessment	The teaching quality assurance system is not perfect, the teaching process is not strictly monitored, and the evaluation method is single.	It is not explicitly mentioned, but teaching quality is closely related to organizational effectiveness, so it can be inferred that there is a problem with teaching quality assessment.	Partial agreement: The focus group identified the problems in education quality assessment. Although some interviews did not directly address them, it can be inferred from organizational effectiveness research that teaching quality assessment has an impact on them. This is related to the impact of education quality-related

Theme	Focus Group Interview Results	Individual Interview Results	Model Validation
			factors involved in the research model on OE, which verifies the research value of the model in this regard.
Educational informatization construction	The information infrastructure is lagging behind, and the information literacy of teachers and administrators varies	Insufficient integration of technical tools affects operational efficiency (which can be extended to mean that insufficient educational informatization construction affects teaching and management efficiency)	Partial agreement: The focus group identified issues related to the construction of educational informatization, and individual interviews mentioned issues related to the integration of technology tools. The two were related in terms of the impact of technology on teaching and management, which was related to the impact of technology on organizational effectiveness in the research model, verifying the model's impact on OE in the application of technology in the field of education
Change Management	Teachers resist change, communication during the change process is poor, and there is a lack of effective change management strategies	Employee resistance to change affects adoption of new strategies	Consistent: Both focus on change management issues and are related to organizational development and organizational effectiveness, verifying the impact of organizational change-related factors on OE in the research model
Solutions - Human Resources Management	Establish and improve the career development system, formulate systematic training plans, and optimize the incentive mechanism	Introduce structured training and leadership development programs; establish transparent promotion criteria and recognition programs; standardize access to training resources; update incentive programs	Consistent: Both proposed solutions to human resource management issues and were consistent with the research model’s goal of improving HCM to improve OE, validating the model
Solution - Organizational Governance	Strengthen policy and strategic coordination and broaden channels for teachers to	Realign HR strategy with organizational goals	Consistent: Both proposed solutions to organizational governance issues, which is consistent with the concept of

Theme	Focus Group Interview Results	Individual Interview Results	Model Validation
	participate in management		improving organizational governance to enhance OE in the research model, validating the model
Solution-Teacher Psychology and Behavior	Adjust workload, clarify performance standards, provide psychological support, and create a positive atmosphere	Adopt a flexible work schedule	Consistent: Both proposed measures to improve teachers' psychological and behavioral status, which is consistent with the goal of improving JS to promote organizational success in the research model, validating the model
Solutions - Technology and Knowledge Management	Increase investment in knowledge management systems, introduce advanced technologies, and train application capabilities	Establish weekly knowledge application meetings; improve knowledge management systems; integrate AI-driven performance tracking tools	Consistent: Both proposed solutions to technology and knowledge management problems, which is consistent with the research model's goal of strengthening KM to improve organizational efficiency, validating the model
Solution-Industry and Academic Cooperation	Strengthen in-depth cooperation, adjust professional settings, establish long-term mechanisms, and set up cooperative institutions	No specific solutions were mentioned, but it can be linked to the need for enhanced collaboration from the perspective of improving organizational effectiveness	Partially consistent: The focus group proposed clear solutions. Although some interviews did not mention it, it can be inferred based on the research topic that industry cooperation is important for improving organizational effectiveness. In terms of strengthening industry cooperation to improve OE, it is consistent with the relevant content of the model, which verifies the model.
Solution-Education Quality Assessment	Build a comprehensive security system, strengthen monitoring, and improve evaluation methods	No clear solution was mentioned, but it can be linked to the need for improvement in teaching quality assessment from improving organizational effectiveness	Partial agreement: The focus group proposed improvement measures, which were not mentioned in individual interviews. However, based on the organizational effectiveness research, it can be inferred that the improvement of teaching quality assessment is meaningful to them, which is related to the relationship between

Theme	Focus Group Interview Results	Individual Interview Results	Model Validation
			education quality assessment and OE in the research model, and verifies the model.
Solution-Education Informatization Construction	Formulate development plans, increase investment, carry out information technology training, and encourage innovative teaching	No clear solution was mentioned, but it can be extended from the lack of integration of technical tools to the need to strengthen the construction of educational informatization	Partially consistent: The focus group proposed improvement measures, and individual interviews mentioned the issue of technology tool integration. The two were related in terms of the impact of technology application in education on OE, which was consistent with the research model on the impact of technology application in education on OE, validating the model
Solution - Change Management	Do a good job of communication and publicity, formulate reasonable strategies, and establish management mechanisms	Conduct change management workshops and take a step-by-step implementation approach	Consistent: Both proposed solutions to the change management problem, which is consistent with the research model's goal of improving organizational flexibility and adaptability to enhance OE, validating the model
Model Improvement Suggestions - Human Resource Management	Increase consideration of teachers' career development dynamics and refine incentive mechanism indicators	No suggestions for model improvement were mentioned, but the human resource management issues and measures in individual interviews can be linked to the direction of model improvement.	Partial agreement: The focus group put forward specific suggestions for improvement. Although some interviews did not mention it, the direction of improvement can be inferred based on the human resource management content in the interviews. In the improved model, the human resource management part is consistent with the relevant content of the model, which verifies the research value of the model in this aspect.
Model Improvement Suggestions - Organizational Governance	Clarify policy formulation and implementation variables, and consider the impact of	No suggestions for model improvement were mentioned, but policy issues in individual interviews can be linked to model	Partial agreement: The focus group proposed improvement suggestions, which were not mentioned in individual interviews. However, based on the organizational governance policy

Theme	Focus Group Interview Results	Individual Interview Results	Model Validation
	dynamic policy adjustments	improvement directions	issues in the interviews, the direction of improvement can be inferred. In the improved model, the organizational governance part is consistent with the relevant content of the model, which verifies the research value of the model in this regard.
Model Improvement Suggestions - Teacher Psychology and Behavior	Add measurement dimensions such as work pressure and strengthen the role of factors such as organizational culture	No suggestions for model improvement were mentioned, but the psychological and behavioral problems of teachers in individual interviews can be linked to the direction of model improvement.	Partial agreement: The focus group proposed improvement suggestions, which were not mentioned in individual interviews. However, the direction of improvement can be inferred based on the content of teachers' psychological behavior in the interviews. In the improved model, the psychological behavior of teachers is consistent with the relevant content of the model, which verifies the research value of the model in this aspect.
Model Improvement Suggestions - Technology and Knowledge Management	Add indicators such as technology updates and focus on the interaction between technology and other factors	No suggestions for model improvement were mentioned, but technical and knowledge management issues in individual interviews could be linked to model improvement directions	Partial agreement: The focus group proposed improvement suggestions, which were not mentioned in individual interviews. However, based on the technology and knowledge management content in the interviews, the direction of improvement can be inferred. In the improved model, the technology and knowledge management part is consistent with the relevant content of the model, which verifies the research value of the model in this aspect.
Model Improvement Suggestions - Industry and Academic Collaboration	Refine the cooperation model and set effect evaluation indicators	No suggestions for improving the model were mentioned, but it can be linked to the need to improve the industry and academic cooperation part of the	Partial agreement: The focus group proposed improvement suggestions. Although some interviews did not mention it, it can be inferred based on the research topic that the industry and academic cooperation part needs to

Theme	Focus Group Interview Results	Individual Interview Results	Model Validation
		model from the perspective of improving organizational effectiveness.	be improved in the model. In the improved model, the industry and academic cooperation part is consistent with the relevant content of the model, which verifies the research value of the model in this aspect.
Model Improvement Suggestions - Education Quality Assessment	Clarify the evaluation feedback mechanism and optimize the evaluation indicators and methods	No suggestions for improving the model were mentioned, but it can be linked to the need to improve the education quality assessment part of the model from the perspective of improving organizational effectiveness.	Partial agreement: The focus group proposed improvement suggestions. Although some interviews did not mention it, it can be inferred based on the research topic that the education quality assessment part needs to be improved in the model. In the improved model, the education quality assessment part is consistent with the relevant content of the model, which verifies the research value of the model in this aspect.
Model Improvement Suggestions - Education Informatization Construction	Measuring the depth and breadth of information technology applications and focusing on university differences	No suggestions for improving the model were mentioned, but the problem of integrating technical tools can be linked to the need to improve the educational informatization part of the model.	Partial agreement: The focus group proposed improvement suggestions. Although some interviews did not mention them, based on the integration of technology tools in the interviews, it can be inferred that the education informatization part needs to be improved in the model. In the improved model, the education informatization part is consistent with the relevant content of the model, which verifies the research value of the model in this aspect.
Model Improvement Suggestions - Change Management	Comprehensively analyze resistance to change and add indicators for evaluating the effectiveness of change strategies	No suggestions for model improvement were mentioned, but resistance to change in individual interviews could be linked to model improvement directions	Partial agreement: The focus group proposed improvement suggestions, which were not mentioned in individual interviews. However, based on the content of resistance to change in the interviews, the direction of improvement can be inferred. In

Theme	Focus Group Interview Results	Individual Interview Results	Model Validation
			the improved model, the change management part is consistent with the relevant content of the model, which verifies the research value of the model in this regard.

Through a detailed comparative analysis of the results of focus group interviews and individual interviews, it can be seen that the focus group verified the key results of individual interviews and proposed innovative solutions, forward-looking policy recommendations, and targeted strategic interventions from multiple dimensions. The two research methods showed a high degree of consistency in issues related to human capital management and organizational effectiveness in private universities. They jointly identified organizational problems in multiple key areas, such as human resource management, organizational governance, teacher status, technology, and knowledge management. They also proposed a series of similar solutions. Although some suggestions for improving the research model were not directly mentioned, the content of each interview could be related to the direction of improving the model, which further verified the effectiveness and research value of the research model in the study of human capital management and organizational effectiveness in private universities. This shows that the research results have a certain degree of reliability and stability, which provides a solid basis for further in-depth research and improvement of private universities' human capital management model and organizational effectiveness.

The qualitative results are used to conduct a model as shown below:

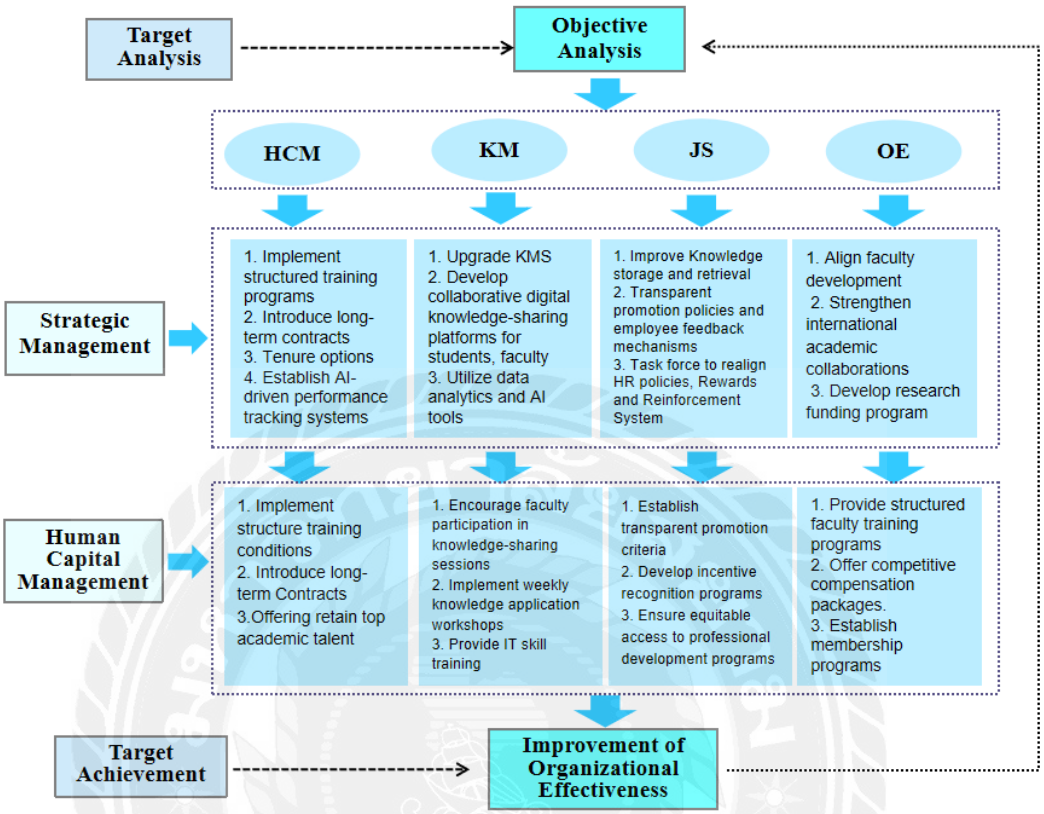


Figure 4.7 A Model of Human Capital Management Affecting Organizational Effectiveness

According to Figure 4.7, the instructional implications and guidance derived from the model emphasize the need for structured strategies in Human Capital Management (HCM), Knowledge Management (KM), Job Satisfaction (JS), and Organizational Effectiveness (OE) to enhance university performance. In HCM, universities should focus on implementing structured faculty training programs, introducing long-term contracts, and providing tenure options to retain academic talent. The establishment of AI-driven performance tracking systems will allow for more accurate faculty evaluations and career development planning. These measures ensure that universities maintain a highly qualified faculty body, leading to increased productivity and job satisfaction.

For Knowledge Management (KM), institutions should upgrade their knowledge management systems (KMS) by integrating collaborative digital platforms for faculty and students, promoting knowledge-sharing sessions, and utilizing AI-driven analytics for

better decision-making. Encouraging faculty participation in weekly knowledge-sharing sessions and providing IT skill training will enhance the efficient use of digital tools. This approach fosters an environment where knowledge is continuously created, stored, and shared, allowing for improved academic collaboration and institutional innovation.

For Job Satisfaction (JS) and Organizational Effectiveness (OE), universities should align faculty development initiatives with transparent promotion criteria, structured feedback mechanisms, and equitable access to professional development programs. Implementing competitive compensation packages and incentive programs ensures faculty motivation, while strengthening international academic collaborations and research funding opportunities enhances institutional growth. Providing structured training and support mechanisms will contribute to long-term faculty retention and engagement, ultimately leading to the improvement of Organizational Effectiveness and ensuring that private universities remain competitive in a dynamic academic landscape.

4.2.3 Discussion on the Consistency of Hypotheses Test Results and Qualitative Analysis Results

Discussion on the consistency of the results of hypotheses test and qualitative findings is crucial for validating the study's theoretical framework. Hypothesis validation ensures that statistical results derived from Structural Equation Modeling (SEM) align with real-world experiences captured through interviews and focus groups. By comparing empirical data with qualitative insights, this discussion examines whether Human Capital Management (HCM), Knowledge Management (KM), Job Satisfaction (JS), and Organizational Effectiveness (OE) interact as predicted, reinforcing or refining the conceptual relationships established in the study. This is the validation of hypotheses based on qualitative and qualitative results and reveals the results hypothesis by hypothesis as follows:

H1: Human capital management has a significant direct effect on knowledge management

The qualitative analysis results support a strong positive relationship between HCM and KM from the interview results of Informants 1, 5, and 8 that emphasized structured training and leadership development programs, which enhance human capital and directly improve knowledge-sharing practices, the need for aligning HR policies with institutional goals to support knowledge-sharing initiatives, and the inequitable distribution of training opportunities, recommending standardized training access to enhance knowledge-sharing. Therefore, the qualitative findings confirm that investment in training, structured HR policies, and equitable resource allocation improve knowledge management. This strongly validates H1.

H2: Knowledge management has a significant direct effect on job satisfaction

The qualitative analysis results support a strong positive relationship between KM and JS from the interview results of Informants 2, 7, and 12 that emphasized the need for interdepartmental knowledge-sharing platforms to improve collaboration and job satisfaction, underutilization of stored knowledge, recommending weekly knowledge application sessions, which improve employee engagement, and outdated knowledge management systems and recommended upgrading knowledge-sharing infrastructure to improve employee experiences. Therefore, the qualitative findings reinforce that effective knowledge-sharing systems and updated KM platforms directly contribute to higher employee satisfaction, validating H2.

H3: Job satisfaction has a significant direct effect on organizational effectiveness

The qualitative analysis results support a strong positive relationship between OE and JS from the interview results of Informants 3, 6, and 9 that identified unclear career growth paths as a key factor in low job satisfaction, recommending transparent promotion policies to boost morale and, in turn, improve organizational effectiveness, emphasized insufficient employee engagement and suggested gamification techniques to improve job

satisfaction, which would lead to higher institutional performance, and pointed out that work-life balance dissatisfaction lowers job contentment, suggesting flexible work schedules to enhance productivity and organizational effectiveness. Therefore, the qualitative evidence supports that the improvements in job satisfaction through clear career paths, employee engagement, and work-life balance positively affect organizational effectiveness, validating H3.

H4: Human capital management has a significant direct effect on organizational effectiveness

The qualitative analysis results support a strong positive relationship between OE and HCM from the interview results of Managers 1, 5, and 14 that inconsistencies in institutional policies, proposing structured training programs and leadership development to enhance effectiveness, emphasized misalignment in HR strategies, suggesting realignment of HR policies with institutional goals to improve organizational effectiveness, and addressed high turnover rates, recommending long-term contracts with benefits to ensure institutional stability and performance. Therefore, qualitative insights confirm that HR strategies, leadership development, and employee retention strategies directly enhance organizational effectiveness, validating H4.

H5: Knowledge management has a significant direct effect on organizational effectiveness

The qualitative analysis results support a strong positive relationship between OE and KM from the interview results of Informants 2, 7, and 12 that emphasized inadequate communication and collaboration, recommending IT-based knowledge-sharing platforms to enhance efficiency, identified underutilization of stored knowledge, suggesting knowledge application sessions to improve knowledge transfer, and pointed out outdated KM systems as a barrier, recommending upgrades to knowledge-sharing infrastructure to improve institutional effectiveness. Therefore, qualitative findings confirm that knowledge-sharing platforms, knowledge application sessions, and system upgrades significantly contribute to organizational effectiveness, validating H5.

Eventually, the results of quantitative and qualitative analysis methods are used to answer the research questions, as shown in the following.

1) What is the Human Capital Management of Private Universities in China?

The study reveals that Human Capital Management (HCM) in private universities in China is characterized by structured recruitment, performance evaluation, incentives, and career development programs. Quantitative results indicate moderate to high agreement (Mean: 3.81–3.82) on the effectiveness of investment in human resources, with some faculty expressing concerns about unclear promotion criteria, workload balance, and salary fairness. Qualitative insights from interviews and focus groups further highlight that leadership plays a crucial role in faculty retention, engagement, and satisfaction. However, challenges such as limited opportunities for professional development, inconsistent HR policies across departments, and insufficient faculty involvement in decision-making persist. The study suggests that transparent career advancement paths, structured leadership programs, and enhanced faculty incentives can strengthen HCM practices in private universities.

2) What are the Relationships between Human Capital Management and Organizational Effectiveness of Private Universities in China?

The findings confirm a strong positive correlation between HCM and Organizational Effectiveness (OE) in private universities. The Structural Equation Modeling (SEM) analysis shows that faculty training, performance evaluation, and employee engagement significantly impact OE, with high scores for employee satisfaction (Mean: 3.83-3.88). Interviews reinforce that effective HCM strategies, particularly in leadership development, employee recognition, and knowledge sharing, lead to higher faculty productivity, engagement, and institutional performance. However, knowledge storage, collaboration with industry, and workload distribution remain areas of concern. The study suggests that aligning HR policies with institutional goals, fostering academic-industry partnerships, and integrating digital knowledge management systems can further enhance organizational effectiveness.

3) How to propose a Human Capital Management Model for the Organizational Effectiveness of Private Universities in China?

Based on the quantitative and qualitative findings, the study proposes a Human Capital Management Model for Organizational Effectiveness (HCM-OE Model) tailored to private universities in China. The model integrates four key components: (1) Strategic Recruitment and Retention, ensuring competitive hiring practices and transparent promotion pathways; (2) Performance Management and Employee Engagement, focusing on structured evaluation, incentives, and faculty well-being; (3) Knowledge Management and Industry Collaboration, promoting research innovation and academic partnerships; and (4) Leadership Development and Work-Life Balance, enhancing managerial effectiveness and supporting faculty needs. By implementing this model, universities can create a sustainable, high-performing academic environment that fosters faculty satisfaction, institutional competitiveness, and long-term growth.

The results above can be summarized juxtaposition in Table 4.40.

Table 4.40 Summary of Quantitative Analysis and Qualitative Analysis Results

Variable	Quantitative Analysis Results	Qualitative Analysis Results
Human Capital Management (HCM)	High agreement (Mean: 3.81-3.82) on investment, incentives, and evaluation, but 30% of neutral responses suggest room for improvement.	Interviews and focus group confirmed the need for transparent promotions, better incentives, and leadership development.
Knowledge Management (KM)	Strong agreement on knowledge creation and application (Mean: 3.83-3.86), but knowledge storage and tacit knowledge need better integration.	Focus groups emphasized AI-driven knowledge management and cross-departmental collaboration.
Job Satisfaction (JS)	Moderate satisfaction levels (Mean: 3.81-3.85), with concerns about unclear promotion criteria and workload balance.	Faculty expressed concerns about job stability, workload stress, and career progression in interviews.

4.3 Conclusion

4.3.1 Research Findings

This chapter presents an in-depth analysis of the quantitative and qualitative results to assess the relationships among Human Capital Management (HCM), Knowledge Management (KM), Job Satisfaction (JS), and Organizational Effectiveness (OE) in private universities in China.

The Structural Equation Modeling (SEM) findings demonstrated significant direct effects between these key variables, validating the research hypotheses. The confirmatory factor analysis (CFA) confirmed the reliability and validity of the measurement model, ensuring strong factor loadings, composite reliability (CR), and average variance extracted (AVE) values. The path coefficient analysis revealed that HCM significantly influences OE, emphasizing the crucial role of human capital strategies in fostering knowledge-sharing and improving institutional performance.

Similarly, KM was found to significantly impact JS and OE, reinforcing the importance of efficient knowledge management in promoting job satisfaction and enhancing academic performance. Furthermore, JS directly influenced OE, confirming that satisfied employees contribute positively to organizational success.

The qualitative analysis, derived from in-depth interviews with 15 university key managers and focus group discussions with eight experts, supported the quantitative findings and provided rich insights into the strategic implementation of HCM, KM, and JS to optimize OE. The managers emphasized policy inconsistencies, insufficient collaboration, and low employee engagement, which were addressed through structured training programs, AI-driven knowledge-sharing platforms, and transparent HR policies. The interviews validated the SEM results, indicating that investments in faculty development, knowledge-sharing frameworks, and job incentives significantly enhance institutional outcomes.

The exploratory factor analysis (EFA) and total variance explained analysis confirmed that the extracted factors sufficiently captured the studied variables, with cumulative variance percentages exceeding the required thresholds. The model fit indices, including GFI, AGFI, CFI, TLI, RMSEA, and SRMR, demonstrated acceptable model fitness, confirming the robustness of the proposed framework.

The study's hypothesis validation further reinforced the theoretical linkages, proving that HCM positively affects KM and OE, KM influences JS and OE, and JS significantly contributes to OE. The strategic management implications suggest that university administrators should implement structured faculty training programs, knowledge-sharing workshops, and transparent career advancement policies to sustain organizational excellence. Moreover, technology integration, such as AI-based performance tracking and IT-enabled collaborative tools, was recommended to enhance KM processes.

The study also identified key human capital management strategies, including equitable training allocation, faculty retention programs, and performance-based incentives, as crucial for fostering a productive academic environment. The research findings contribute to the existing body of knowledge by integrating theoretical perspectives with practical applications, providing a comprehensive model for improving organizational effectiveness in higher education. Ultimately, the study highlights the interconnectedness of HCM, KM, and JS in shaping OE, offering actionable recommendations for policymakers and university leaders to drive sustainable institutional growth.

4.3.2 Research Findings Fill Research Gaps and Contribute to Academic Wisdom

Supplement to the research on human capital management of private universities: The existing research focuses on public universities, but discussion on the organization and management of China's private universities is relatively scarce. This study is the first time to systematically explore the mechanism of human capital management

affecting the organizational effectiveness of private colleges and universities. The results show that human capital management in private universities can directly promote organizational effectiveness and play an important role in knowledge management and job satisfaction. This finding provides strong support for making up for the lack of management research in private universities for a long time.

Reveal the integration relationship between human capital management and knowledge management: The research results verify that human capital management can significantly promote knowledge acquisition, sharing, and application and improve the teaching quality and innovation ability of private universities. This result fills the gap in the research on integrating knowledge and human capital management. It provides an empirical basis for universities to maximize the value of knowledge through effective management strategies.

Construct an integrated model with job satisfaction as an influencing factor: By introducing job satisfaction into variables, this study proposes an important approach to improve teachers' happiness and commitment in the organization and management of private colleges and universities. The research results show that knowledge management not only directly affects the effectiveness of organizations but also plays a bridging role by improving the job satisfaction of faculty and staff, providing university administrators with people-oriented management ideas.

Explore the application effect of digital management tools: With the popularization of information technology, the research results show that digital human capital management (such as wisdom campus system, online teaching platform, etc.) can effectively improve management efficiency and liquidity and enhance teachers' job satisfaction and organizational performance. This discovery expands the theoretical application boundary of digital knowledge management tools in higher education management.

To sum up, the above research results not only fill an important gap in the management research of private universities but also provide new ideas for private

universities to formulate human capital management strategies, optimize knowledge management processes, and improve organizational effectiveness.

CHAPTER 5
RESEARCH CONCLUSION, DISCUSSION AND RECOMMENDATION

The research on 'Human Capital Management and Organizational Effectiveness in China's Private Universities' aimed to analyze the human capital management of private universities in China, to examine the relationship between human capital management and organizational effectiveness of private universities in China, and to propose a human capital management model for the organizational effectiveness of private universities in China. The chapter is divided into three sections:

5.1 Research Conclusion

5.2 Discussion

5.3 Recommendation

5.1 Research Conclusion

This study examined the Human Capital Management (HCM) practices of private universities in China, their impact on Organizational Effectiveness (OE), and the development of a Human Capital Management Model to enhance institutional performance. The findings, derived from quantitative and qualitative analysis, provide insights into the role of faculty development, incentives, job satisfaction, and knowledge management in shaping organizational outcomes.Three main research objectives are effectively achieved.

Research objective 1: To explore human capital management of private universities in China

The study comprehensively analyzed HCM practices, identifying key dimensions: human capital investment, incentives, and evaluation. Quantitative data revealed positive perceptions, with a mean score of 3.80 for HCM variables, indicating favorable

implementation. Qualitative feedback emphasized the need for more strategic approaches to align human resource policies with institutional objectives.

Research objective 2: To examine the relationship between human capital management and organizational effectiveness of private universities in China

Findings confirmed that HCM directly impacts OE and indirectly influences it through KM and JS. The hypothesis testing validated the relationships, with HCM demonstrating a significant direct effect on KM (path coefficient: 0.545) and OE (0.356). Qualitative data reinforced these results, as managers stressed the importance of leadership training and incentive structures in enhancing institutional effectiveness.

Research objective 3: To propose a human capital management model for organizational effectiveness of private universities in China

The proposed model integrates findings from quantitative and qualitative analyses, establishing a framework where HCM influences OE through KM and JS. Practical recommendations include developing tailored training programs, incentivizing knowledge-sharing, and fostering employee satisfaction to ensure sustainable organizational success. This model provides actionable strategies for private universities to optimize their human capital and achieve higher organizational effectiveness. The variable-by-variable findings are summarized below:

Human Capital Management (HCM): HCM forms the foundation of the proposed model, directly influencing KM (path coefficient: 0.545) and OE (path coefficient: 0.356). The study identified human capital investment, incentives, and evaluation as the three critical sub-variables driving HCM's effectiveness. The findings show that well-structured HCM practices improve organizational processes, employee capabilities, and institutional performance. Managers emphasized the need for equitable access to training, leadership development programs, and aligning HR strategies with institutional goals to optimize HCM’s contribution to OE.

Knowledge Management (KM): KM acts as a mediator between HCM and OE, encompassing five sub-variables: knowledge creation, storage, sharing, application, and

tacit knowledge. The quantitative results revealed that KM significantly influences OE (path coefficient: 0.267) and JS (path coefficient: 0.352). Effective KM practices bridge communication gaps, enhance decision-making, and foster collaboration across departments. Managers suggested introducing advanced IT platforms and AI-based tools to streamline knowledge-sharing and application processes. These practices ensure that KM drives both institutional efficiency and innovation, leading to sustainable organizational growth.

Job Satisfaction (JS): JS emerged as a vital factor, directly impacting OE (path coefficient: 0.463). The study highlighted key determinants of JS, including clear career advancement pathways, recognition programs, and work-life balance initiatives. High levels of JS were found to enhance employee motivation and productivity, which, in turn, improve educational outcomes, research performance, and institutional reputation. Managerial feedback reinforced the importance of transparent promotion systems, employee engagement strategies, and wellness programs to maintain a satisfied and committed workforce. JS serves as both an outcome of effective HCM and KM and a driver of OE.

Organizational Effectiveness (OE): OE, as the ultimate dependent variable, reflects the cumulative impact of HCM, KM, and JS. Indicators such as employee engagement, academic culture, and industry cooperation showed significant improvement through the synergistic effects of these variables. The structural equation model confirmed direct and indirect effects, with KM and JS mediating the relationship between HCM and OE. Managers advocated for fostering a culture of innovation, aligning organizational goals with HR practices, and leveraging employee satisfaction to achieve long-term institutional success.

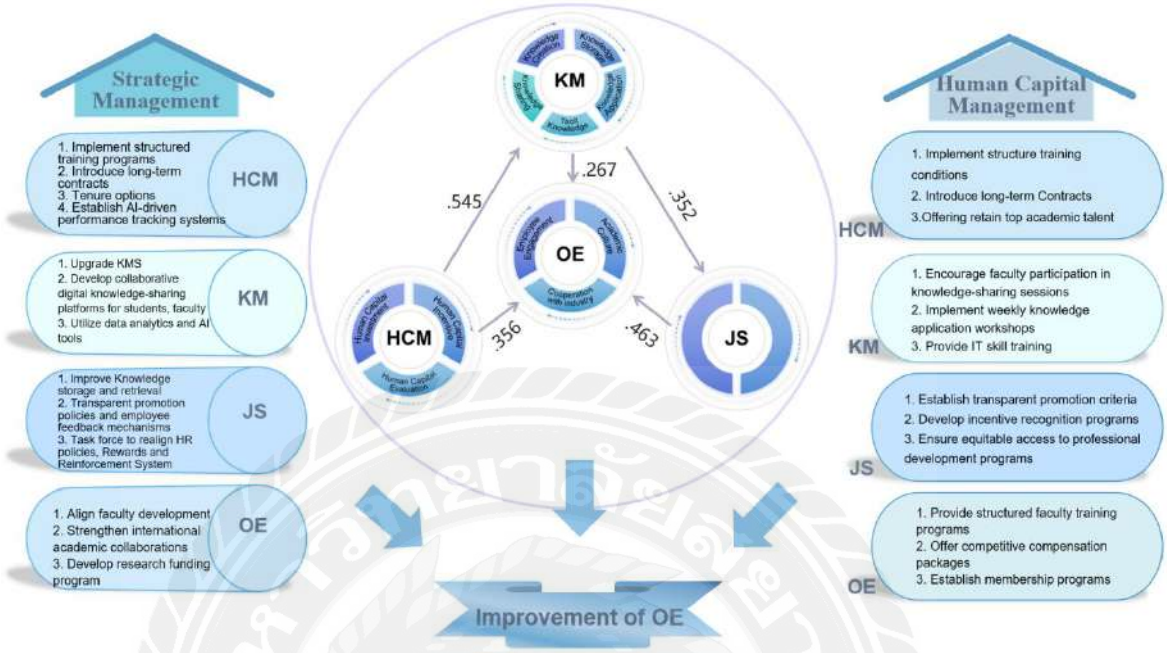


Figure 5.1 The Final HCM-OE Model

In Figure 5.1, the proposed HCM-OE Model highlights the impact of Human Capital Management (HCM), Knowledge Management (KM), and Job Satisfaction (JS) on Organizational Effectiveness (OE) in private universities. HCM (β = 0.545) plays a key role through structured training, long-term contracts, and AI-driven performance tracking. JS (β = 0.463) enhances OE via transparent promotions, incentives, and career development. KM (β = 0.267) contributes through knowledge-sharing, digital collaboration, and IT training. Strengthening faculty development, international collaboration, and research funding further support OE. This model highlights the synergy between HCM, KM, and JS in enhancing the overall effectiveness (OE) of China's private universities.

5.2 Discussion

5.2.1 Findings

This study integrated concepts and theories of human capital management (HCM), knowledge management (KM), job satisfaction (JS), and organizational effectiveness (OE) to develop a comprehensive model for private universities in China. The relationship between these variables was analyzed using established theoretical frameworks and empirical evidence.

1. Human Capital Management (HCM):

The impact of HCM on KM and OE is highly consistent with the research views of Wright and McMahan (2020). In their study, they pointed out that human resource practices do not exist in isolation but are closely linked to the organization's various processes and will significantly affect the final results of the organization. For example, a well-designed recruitment process can screen out talents with specific knowledge and skills for the organization. After these talents enter the organization, they integrate their knowledge into the organizational knowledge system by participating in daily work and projects and promoting knowledge management (KM) activities such as knowledge creation, sharing, and application. At the same time, in an efficient human resource management environment, employees' work enthusiasm and ability are fully utilized, which directly promotes the improvement of organizational effectiveness (OE), such as improving the quality of work output and accelerating project delivery.

KM, as a mediating role between HCM and OE has been supported by many studies, such as Alavi and Leidner (2021), Kim et al. (2019), Lee and Kim (2022), Tseng and Huang (2023). Alavi and Leidner (2021) emphasized that the knowledge-sharing system is like a bridge in the organization, breaking down the information barriers between departments and employees. In an organization, with the help of advanced knowledge-sharing platforms, employees from different departments can easily share work experience, technology, and solutions. New ideas from the R&D department can be quickly transmitted to the production department to speed up product innovation; customer feedback collected

by the sales department can also be fed back to the R&D department promptly to help optimize products. This smooth flow and sharing of knowledge has dramatically promoted organizational innovation, improved operational efficiency, and thus improved organizational effectiveness.

Many studies have also verified the impact of JS on OE. Judge et al. (2001) confirmed through many empirical studies that there is a close positive correlation between job satisfaction and employee performance and institutional results. Employees who are satisfied with their work will be more proactive and willing to make extra efforts to create more value for the organization. Employees with high satisfaction will be more proactive in proposing innovative ideas, actively participate in teamwork, improve work quality and efficiency, and directly promote better results for the organization.

HCM has a substantial direct impact on KM, which is consistent with the research conclusions of Delery and Roumpi (2017), Boxall et al. (2011), Kang and Snell (2020), and Dickel and Moura (2016). Boxall et al. (2011) believed that human capital policies can profoundly impact organizational operational efficiency through the key link of employee development. Taking training policy as an example, organizations provide employees with systematic training courses, which not only improves the knowledge and skills of individual employees but also encourages employees to communicate and learn from each other during the training process, stimulating new knowledge creation. This new knowledge is disseminated through the organization's knowledge storage and sharing mechanism, thereby improving the knowledge management level of the entire organization. Kang and Snell (2020) further linked knowledge capital to organizational results. They proposed that strategic investment in human capital, such as providing competitive salaries and benefits, career development opportunities, etc., for core employees, can attract and retain high-knowledge talents. These talents drive innovation and productivity improvement through their expertise and innovation ability.

2. Knowledge Management (KM):

KM significantly improves JS by improving communication, resource acquisition, and knowledge sharing, thereby improving employee engagement. At the same time, KM directly impacts OE by optimizing decision-making, improving operational efficiency, and promoting institutional innovation.

The results support the knowledge creation theory of Nonaka and Takeuchi (1995). They believed that the creation of organizational knowledge is a dynamic, spiral process, including four stages: socialization (from implicit knowledge to implicit knowledge), externalization (from implicit knowledge to explicit knowledge), combination (from explicit knowledge to explicit knowledge), and internalization (from explicit knowledge to implicit knowledge). In an organization, team members share their implicit experiences through daily communication (socialization), then transform these experiences into expressible explicit knowledge (externalization), and then integrate and reorganize this explicit knowledge (combination). Finally, members internalize the new knowledge into their capabilities and apply it to work. This knowledge-creation process can stimulate employees' innovative thinking and bring new development opportunities to the organization.

Davenport and Prusak (1998) emphasized that organizations with strong knowledge management practices can achieve higher operational efficiency. Some multinational companies have established a globally unified knowledge management system where employees can quickly search for the required knowledge and solutions. When encountering technical problems, employees do not need to explore from scratch; instead, they can query the system to obtain the experience and solutions of predecessors, which significantly shortens the problem-solving time and improves work efficiency.

The impact of knowledge management on JS is consistent with Sveiby's (1997) knowledge capital theory. Sveiby believes effective knowledge practices can enhance employees' abilities and professional identity, improving employee satisfaction and retention. Organizations provide employees with a platform and opportunity for knowledge

sharing. In sharing knowledge, employees enhance their professional image and influence, acquire new knowledge from others' sharing, and achieve self-growth. This sound knowledge atmosphere allows employees to feel that their value is recognized, improving their job satisfaction and being more willing to stay in the company for a long time.

In addition, the results of this study are also related to the research of Andreeva and Kianto (2012), Donate and Guadamillas (2011), Liao et al. (2010), Rutten (2016), Pitino (2018) and Kravchenko & Pesterev (2017). Andreeva and Kianto (2012) emphasized that knowledge sharing and application are the core links of knowledge management practice and significantly contribute to organizational success. In project teams, members actively share knowledge and apply it to project practice, which can avoid duplication of work, optimize project processes, and improve project success rates.

3. Job Satisfaction (JS):

This study once again confirmed that job satisfaction has a significant positive impact on organizational effectiveness, that is, satisfied employees help improve productivity, innovation and the probability of organizational success.

Herzberg's (1968) two-factor theory points out that the factors affecting employee job satisfaction are divided into hygiene factors and motivational factors. When hygiene factors such as work environment and salary are met, employees will not be dissatisfied, but they will not bring strong motivation; while motivational factors such as recognition, career development opportunities and work-life balance are the key to improving employee satisfaction.

Judge et al. (2001) explored the relationship between job satisfaction and employee performance in depth and confirmed that there is a robust positive correlation between the two. In different industries and organizational environments, employees with high job satisfaction tend to show higher work performance. They are more willing to take the initiative to undertake work tasks, actively solve problems at work, and create more value for the organization.

The research results also verified Locke's (1976) job satisfaction value theory. The theory holds that when employees perceive that the characteristics of their work match their own values and needs, they will have higher job satisfaction and thus improve their work performance.

The results of this study are related to the findings of Chen et al. (2011), Eslami and Gharakhani (2012), Judge et al. (2017), Jalagat (2016), Bhat (2018), and Lin & Lan (2023). Chen et al. (2011) found through a survey of multiple companies that a higher level of JS has a positive impact on workplace dynamics and promotes employee engagement and organizational citizenship behavior. In a team with high satisfaction, employees cooperate more tacitly, support and help each other, and form a good team atmosphere. This positive atmosphere further improves employees' job satisfaction and engagement.

4. Organizational Effectiveness (OE):

Organizational effectiveness is directly and indirectly affected by HCM, KM, and JS. By effectively managing these variables, indicators such as employee engagement, academic culture, and industry cooperation are significantly improved.

Cameron's (1978) multi-component model emphasizes that organizational effectiveness is determined by multiple factors, including leadership, resource management, and organizational culture. In school management, excellent leaders can reasonably allocate teaching resources, create a positive academic culture atmosphere, and stimulate teachers' work enthusiasm and creativity.

This study supports the balanced scorecard theory of Kaplan and Norton (1992). The theory emphasizes measuring organizational performance from four dimensions: finance, customers, internal processes, and learning and growth, and combines internal processes with strategic goals to improve institutional performance. Focusing on employee learning and growth and providing employees with training and development opportunities can enhance employee capabilities and further promote the optimization of internal processes and the improvement of organizational effectiveness.

Richard et al. (2010), Prajogo and McDermott (2011), Carmeli et al. (2011), Nyamubi (2017), Bhat (2018) and Lin & Lan (2023) jointly emphasized the complexity and multidimensionality of organizational effectiveness (OE), and its dependence on human capital practices, knowledge management (KM), employee satisfaction and leadership. Richard et al. (2010) pointed out through empirical research that human capital practices, knowledge management and employee satisfaction play a key role in aligning internal processes with strategic goals to achieve organizational effectiveness.

5.2.2 New Knowledge

This study focuses on Chinese private universities, reveals new phenomena, laws and relationships between HCM, KM, JS and OE, and provides new knowledge and insights for higher education management.

1. New phenomena in HCM practice: The study found that private universities have certain structured recruitment, performance evaluation, and incentive practices, but problems such as opaque promotion standards and uneven workload distribution remain. The study emphasizes the importance of career development paths, leadership programs, and teacher incentives in improving teacher satisfaction and retention.

2. New laws of KM in private universities: For the first time, the study systematically explores the key mediating role of KM between HCM and OE and finds that it has a significant impact on OE (path coefficient 0.267) and JS (path coefficient 0.352). Special emphasis is placed on improving knowledge storage and tacit knowledge integration, and the necessity of AI-driven knowledge management and cross-departmental collaboration is pointed out.

3. New relationship between JS and OE: The study confirmed that JS directly affects OE (path coefficient 0.463) and indirectly affects it through KM. Teacher interviews showed that career development, recognition mechanisms, and work-life balance positively affect JS and OE.

4. New relationship in HCM-OE model: The comprehensive framework constructed by the study revealed that HCM directly affects OE (path coefficient 0.356) and indirectly affects it through KM (HCM → KM path coefficient 0.545). The study proposed that structured training, an AI knowledge-sharing platform, and fair and transparent human resource policies can optimize management practices and promote OE improvement.

5.2.3 Research Contribution

1. Expansion at the theoretical level: The results of this study have improved and expanded multiple related theories. In terms of human capital management theory, the human capital theory proposed by Becker (1964) was further verified and refined, and the direct and indirect impact paths of HCM on organizational performance in the context of private universities were clarified, enriching the application of this theory in the field of education. For knowledge management theory, it supports and deepens Nonaka and Takeuchi's (1995) knowledge creation theory, emphasizes the key mediating role of knowledge management between HCM and OE, and reveals the specific contribution mechanism of each link of knowledge management to the improvement of organizational effectiveness. In terms of job satisfaction theory, it provides new empirical evidence for Herzberg's (1968) two-factor theory and Locke's (1976) job satisfaction value theory, and verifies the applicability of these theories in different organizational contexts based on the actual situation of private universities in China.

2. Promotion of practical application: It provides practical strategies and methods for the management practice of private universities in China. Based on the research results, private universities can develop more targeted HCM strategies, such as increasing investment in employee training, optimizing incentive mechanisms, and closely integrating human resource policies with school strategic goals. In terms of knowledge management, colleges and universities can use research recommendations to introduce advanced technical means to improve knowledge sharing and application efficiency, promote academic innovation and improve teaching quality. To improve employee job satisfaction,

colleges and universities can improve the promotion system and implement employee care plans to increase employee work enthusiasm and loyalty, and ultimately achieve a comprehensive improvement in organizational effectiveness.

5.3 Recommendations

5.3.1 Recommendations for Policymakers

Based on the research findings, university managers and policymakers should take the following measures to optimize human capital management (HCM), knowledge management (KM), and job satisfaction (JS), thereby improving organizational effectiveness (OE):

1. Strengthen leadership development: Implement regular leadership training and coaching programs to improve strategic decision-making capabilities, align leadership skills with organizational goals, and ensure more efficient HCM practices.

2. Invest in knowledge management systems: Deploy AI-driven knowledge sharing platforms to simplify the creation, storage, and application of knowledge, promote innovation and cross-departmental collaboration, and improve organizational effectiveness.

3. Establish a continuous feedback mechanism: Introduce a regular feedback system for employees and stakeholders to evaluate the effectiveness of HCM, KM and JS programs, and optimize organizational strategies through data-driven to enhance overall performance.

5.3.2 Recommendations for management practice

In order to effectively implement policies, the university's human resources department and relevant stakeholders should focus on the following aspects in management practice:

1. Optimize talent management strategies: Ensure that human capital policies are strategically consistent with the organization's long-term goals, focusing on talent acquisition, development and retention to improve HCM results.

2. Establish a fair incentive mechanism: Implement a transparent and fair salary and incentive system to enhance employee job satisfaction (JS), improve organizational cohesion, and ultimately promote the improvement of OE.

3. Cultivate a collaborative culture: Encourage cross-departmental collaboration and open communication, maximize the influence of knowledge management, enhance employees' willingness to share knowledge, and promote continuous innovation and efficient operation of the organization.

5.3.3 Recommendations for Further Research

1. Construct a dynamic human capital management (HCM) adaptability model to explore the evolution mechanism of HCM in an uncertain environment.

Existing HCM research mainly focuses on static management practices, but in a VUCA (Volatility, Uncertainty, Complexity, Ambiguity) environment, the human capital management strategy of an organization needs to constantly adapt to changes. Future research can adopt the dynamic capability theory (Teece et al., 1997) to build an adaptive HCM framework to explore how organizations adjust HCM practices in times of technological change, policy adjustment, or market turmoil to optimize knowledge management (KM) and job satisfaction (JS), and ultimately improve organizational effectiveness (OE).

2. Study the new interaction mechanism between HCM, KM, and OE driven by artificial intelligence (AI).

The application of AI in talent management, knowledge management, and employee motivation is developing rapidly, but existing research has not fully explored the profound impact of AI-enabled HCM on KM, JS, and OE. Future research can adopt a mixed method, combining experimental research and big data analysis, to explore how AI

tools (such as AI-driven learning systems, intelligent performance management, etc.) change the core practices of human capital management, promote knowledge sharing, and ultimately affect organizational effectiveness.

3. Explore the moderating effect of organizational social networks on HCM, KM, and JS.

Social networks inside and outside the organization play a key role in knowledge dissemination, talent flow, and culture shaping (Borgatti & Halgin, 2011). Future research can combine social network analysis (SNA) to explore how different types of social networks (such as formal work networks, informal learning networks, and cross-departmental collaboration networks) affect the relationship between HCM, KM, and JS, and thus affect OE. For example, does informal knowledge network promote KM more than formal training? How does cross-level communication moderate the impact of JS on OE?

4. Develop an individual-team-organization multi-level human capital management model.

Most of the existing HCM research is carried out at the organizational level, while the influence mechanism at the individual and team levels has not been fully explored (Ployhart & Moliterno, 2011). Future research can use multi-level modeling (HLM) to explore in depth, for example: How does HCM at the individual level (such as personalized training) affect KM and JS? Does KM at the team level (such as team knowledge integration) drive OE more than organizational-level KM? How do different levels of HCM interact with each other and affect the overall OE?

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APPENDIX

Questionnaire

HUMAN CAPITAL MANAGEMENT MODEL AND ORGANIZATIONAL EFFECTIVENESS IN CHINA'S PRIVATE UNIVERSITIES

Researcher: Du Ping

Ph.D. Candidate, Graduate School of Management

Siam University

Dear Participant:

Thank you for taking time out of your busy schedule to participate in our survey.

This questionnaire aims to understand the current situation of human capital management, knowledge management and organizational effectiveness of private universities in China. The questionnaire consists of five parts and is estimated to take 4-6 minutes.

The questionnaire is anonymous. Please fill in your true feelings according to the relevant instructions. The information you fill in, there is no right or wrong, only for academic research, the results will be kept and analyzed by the researcher, please rest assured.

Your participation is very important to us and we ask for your strong support and cooperation.

If you have any need, please contact: Xi 'an Peihua University, No.888 Changning Street, Chang 'an District, Xi 'an, Shaanxi 18966905600.

The questionnaire consists of seven pages and is divided into six parts:

Part One: Your basic information

Part two: Human capital management practice

Part three: Knowledge management

Part Four: Job Satisfaction

Part Five: Organizational effectiveness

Part Six: Opinions and suggestions

<u>Part One</u>: Your Basic Information

(Please put a √ in the ☐ according to actual situation)

1. What is your gender?

☐ 1) Male ☐ 2) Female

2. What is your age?

☐ 1) 21-30 ☐ 2) 31-40

☐ 3) 41-50 ☐ 4) 51 and above

3. What is your education background?

☐ 1) Below undergraduate ☐ 2) Undergraduate

☐ 3) Master ☐ 4) Doctoral

4. What is your professional qualification level?

☐ 1) Teaching assistant/ Junior ☐ 2) lecturer/Intermediate

☐ 3) Associate professor/Associate senior ☐ 4) Professor/ senior

5. How long have you worked at the school?

☐ 1) 3 years and below ☐ 2) 3 to 6 years (inclusive of 6 years)

☐ 3) 7 to 10 years (including 10 years) ☐ 4) 11 to 20 years (including 20 years)

☐ 5) more than 20 years

6. Your monthly income (RNB)?

☐ 1) Below 6,000 ☐ 2) 6,001-9,000

☐ 3) 9,001-12,000 ☐ 4) More than 12,000

7. Which department are you in?

☐ 1) teaching department ☐ 2) educational management department

☐ 3) student management department ☐ 4) administrative management department

☐ 5) logistics department ☐ 6) Other …… (Please fill in details)

8. What is your position?

..... (Please fill in details)

Part Two: Human Capital Management

The questionnaire of this part used a Likert scale,Please choose one of the options tick √ in each question that is closer to your feelings.

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

Human Capital Management	Alternative Answers				
	1	2	3	4	5
Human Capital Investment					
1. Your university has developed an effective recruitment strategy to attract good talent					
2. Your university offers practical short and long-term training that is conducive to career development					
3. Your university provides sufficient research funding and resources to support academic innovation and research development					

Human Capital Management	Alternative Answers				
	1	2	3	4	5
4. Your university provides regular medical check-ups or mental health services or other measures to protect your physical and mental health					
Human Capital Incentive					
5. The pay you get matches your ability to do the job					
6. Your university offers benefits that make you more productive					
7. Your university's promotion and reward system motivates you to work harder					
8. Your university advancement opportunities are fair and transparent					
Human Capital Evaluation					
9. Your university regularly assesses the skills of its employees					
10. Your university's performance evaluation criteria are clear					
11. The results of your university performance review are fair and consistent with your job situation					
12. The results of your performance review can help you advance in your career					

<u>Part Three</u>: Knowledge Management

The questionnaire of this part used a Likert scale,Please choose one of the options tick √ in each question that is closer to your feelings.

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

Knowledge Management	Alternative Answers				
	1	2	3	4	5
Knowledge Creation					
13.Your university often organizes academic seminars, symposia and other exchange activities					
14.Your university's research facilities, laboratories and more contribute to academic research and innovation					
15.Your university often organizes school-business partnerships or social service projects					
16.You often publish your research results in the form of papers, reports, etc					
Knowledge Storage					
17.Your university's knowledge storage systems (libraries, digital repositories, etc.) are easy to access and use					
18.Your university's knowledge storage system can meet your academic research needs					
19.Your university's knowledge storage system supports academic collaboration and resource sharing					
20.Your university's knowledge storage system has upgrading functions.					
Knowledge Sharing					
21. Your university encourages knowledge sharing					

Knowledge Management	Alternative Answers				
	1	2	3	4	5
22.You are willing to share necessary knowledge with colleagues					
23.Knowledge sharing have improved your academic level					
24.Knowledge sharing facilitates teamwork					
Knowledge Application					
25.You have participated in knowledge application projects organized by the university, such as innovation projects, industrial cooperation, etc					
26.Knowledge application is helpful to your work performance					
27. Your university knowledge application provides a full cooperation platform such as industry-university-research cooperation					
28. Your university's incentives can effectively promote the application of knowledge					
Tacit Knowledge					
29.You understand that tacit knowledge refers to personal experience, intuition, insight, values, skills, and ways of thinking that are difficult to transmit in a standardized way					
30.You believe that the sharing and dissemination of tacit knowledge, such as experiences and skills in academic research, contributes to enhancing the academic culture of the university					
31.Your university has sufficient channels and platforms to facilitate the transfer of tacit knowledge					
32.The creation of tacit knowledge (such as research methods and insights) helps universities strengthen their collaboration with industry					

Part Four: Job Satisfaction

The questionnaire of this part used a Likert scale, please choose one of the options tick √ in each question that is closer to your feelings.

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

Job Satisfaction	Alternative Answers				
	1	2	3	4	5
33. You are satisfied with your current salary package.					
34. You are satisfied with the work environment, hardware conditions provided by your university.					
35. You are satisfied with your university's performance evaluation and promotion mechanism.					
36. You are satisfied with the academic exchange and industry-university-research cooperation conditions provided by the university.					

Part Five: Organizational Effectiveness

The questionnaire of this part used a Likert scale, please choose one of the options tick √ in each question that is closer to your feelings.

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

Organizational Effectiveness	Alternative Answers				
	1	2	3	4	5
Employee Engagement					
37. In your work, you feel fully committed and actively involved in completing your work tasks.					
38. You are willing to stay in your current job for a long time and contribute to the development of the University.					
39. You share the overall goals and vision of the University and are willing to go the extra mile to contribute to it.					
40. Your university provides adequate support and resources to help you with your work assignments					
Academic Culture					
41. Your university offers ample opportunities to promote academic exchange and collaboration among faculty					
42. The academic atmosphere within your university encourages innovation and exploration					
43. Your university gives appropriate recognition and rewards for academic achievements (e.g. research papers, project results)					
44. You are free to choose your research topic and publish your research results					
Industry Cooperation					
45. Your university encourages and actively supports collaborative projects within industry.					

Organizational Effectiveness	Alternative Answers				
	1	2	3	4	5
46. Collaboration with industry effectively enhances the university's research output and innovation capabilities.					
47. Industry collaboration can successfully translate academic knowledge into industry-applicable outcomes					
48. Industry collaboration enhances your university's reputation and influence in society					

Part Six: Additions Opinions and Suggestions

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Thank you very much for your participation!

Interview

HUMAN CAPITAL MANAGEMENT MODEL AND ORGANIZATIONAL EFFECTIVENESS IN CHINA'S PRIVATE UNIVERSITIES

Researcher: Du Ping

Ph.D. Candidate, Graduate School of Management,

Siam University

Dear interviewee,

Thank you very much for taking time out of your busy schedule to meet with me. My name is Du Ping, a teacher from Xi 'an Peihua University. I am doing a research on human capital management and organizational effectiveness. I would like to ask you to spare about 30 minutes for an interview with me. The interview content is only for academic research, we will keep the interview information strictly confidential, will not cause any adverse impact on your work and life, please rest assured.

Thank you very much for your great support and participation.

I wish you a happy work and all the best!

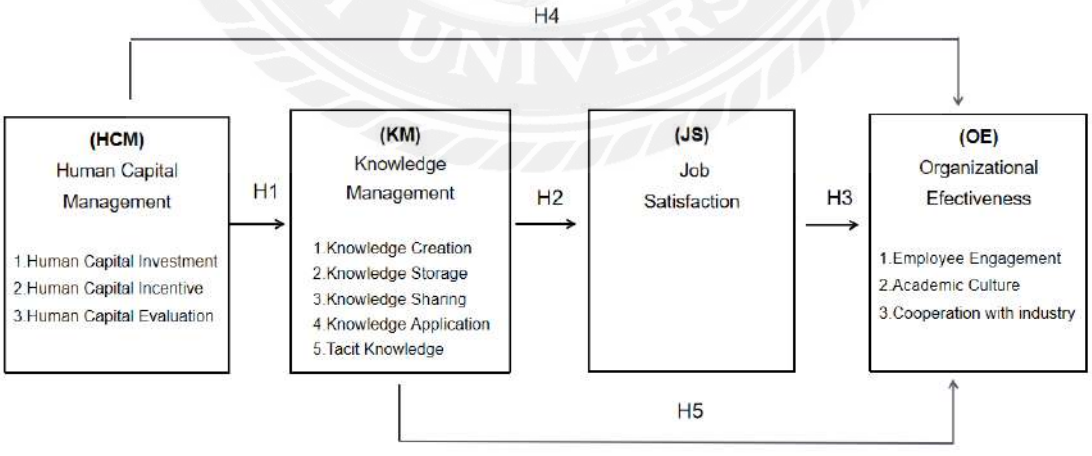
Interview time:

Part I: Basic information

1. University name:_____
2. Interviewee's name:_____
3. Gender: ☐ 1) male ☐ 2) female
4. Age:_____
5. Education Degree:_____
6. Years of working in the university:_____
7. Professional title:_____
8. Monthly income:_____
9. Current position:_____

Part I I: Interview question

1. What is your opinion on the organizational effectiveness of private universities? What are the current problems and challenges?
2. What are your solutions to these problems and challenges? What is it exactly?
3. Please propose three specific plans to improve the effectiveness of the organization.
4. Do you think this model is valid? If not, why not? What do you suggest?



This is the end of the interview.

Thank you again for your great support!

Results of the IOC score of the questionnaire

No	Question	Expert/Professor Score					IOC Score
		Professor Liang Xiaofeng	Professor Peter Qin	Professor Zhang Kun	Professor Tong Jin	Professor Ding Yang	
1	Your university has developed an effective recruitment strategy to attract good talent	1	1	1	1	1	1
2	Your university offers practical short - and long-term training that is conducive to career development	1	0	1	1	1	0.8
3	Your university provides sufficient research funding and resources to support academic innovation and research development	1	1	1	1	1	1
4	Your university provides regular medical check-ups or mental health services or other measures to protect your physical and mental health	0	1	1	1	1	0.8
5	The pay you get matches your ability to do the job	1	1	1	1	1	1
6	Your university offers benefits that make you more productive	1	1	1	0	1	0.8
7	Your university's promotion and reward system motivates you to work harder	1	1	1	1	1	1
8	Your university advancement opportunities are fair and transparent	1	1	0	1	1	0.8
9	Your university regularly assesses the skills of its employees	1	0	1	0	1	0.6
10	Your university's performance evaluation criteria are clear	1	1	1	0	1	0.8
11	The results of your university performance review are fair and consistent with your job situation	1	1	0	1	1	0.8
12	The results of your performance review can help you advance in your career	1	1	1	0	1	0.8
13	Your university often organizes academic seminars, symposia and other exchange activities	1	1	1	0	1	0.8

No	Question	Expert/Professor Score					IOC Score
		Professor Liang Xiaofeng	Professor Peter Qin	Professor Zhang Kun	Professor Tong Jin	Professor Ding Yang	
14	Your university's research facilities, laboratories and more contribute to academic research and innovation	1	0	1	1	1	0.8
15	Your university often organizes school-business partnerships or social service projects	0	1	1	1	0	0.6
16	You often publish your research results in the form of papers, reports, etc.	1	1	1	1	1	1
17	Your university's knowledge storage systems (libraries, digital repositories, etc.) are easy to access and use	1	1	1	0	1	0.8
18	Your university's knowledge storage system can meet your academic research needs	1	1	1	1	1	1
19	Your university's knowledge storage system supports academic collaboration and resource sharing	1	1	1	1	0	0.8
20	Your university's knowledge storage system has upgrading functions.	1	1	0	1	1	0.8
21	Your university encourages knowledge sharing	1	0	0	1	1	0.6
22	You are willing to share necessary knowledge with colleagues	1	1	1	1	1	1
23	Knowledge sharing have improved your academic level	1	0	1	1	1	0.8
24	Knowledge sharing facilitates teamwork	1	1	1	1	1	1
25	You have participated in knowledge application projects organized by the university, such as innovation projects, industrial cooperation, etc.	1	1	1	0	1	0.8
26	Knowledge application is helpful to your work performance	0	1	1	1	1	0.8

No	Question	Expert/Professor Score					IOC Score
		Professor Liang Xiaofeng	Professor Peter Qin	Professor Zhang Kun	Professor Tong Jin	Professor Ding Yang	
27	Your university knowledge application provides a full cooperation platform such as industry-university-research cooperation	1	1	1	1	1	1
28	Your university's incentives can effectively promote the application of knowledge	1	1	0	1	1	0.8
29	You understand that tacit knowledge refers to personal experience, intuition, insight, values, skills, and ways of thinking that are difficult to transmit in a standardized way	1	1	1	1	1	1
30	You believe that the sharing and dissemination of tacit knowledge, such as experiences and skills in academic research, contributes to enhancing the academic culture of the university	1	1	1	1	1	1
31	Your university has sufficient channels and platforms to facilitate the transfer of tacit knowledge	1	1	0	0	1	0.6
32	The creation of tacit knowledge (such as research methods and insights) helps universities strengthen their collaboration with industry	0	1	1	1	1	0.8
33	You are satisfied with your current salary package.	1	1	1	1	1	1
34	You are satisfied with the work environment, hardware conditions provided by your university.	1	1	1	1	1	1
35	You are satisfied with your university's performance evaluation and promotion mechanism.	1	1	1	1	1	1
36	You are satisfied with the academic exchange and industry-university-research cooperation conditions provided by the university.	0	1	1	1	1	0.8

No	Question	Expert/Professor Score					IOC Score
		Professor Liang Xiaofeng	Professor Peter Qin	Professor Zhang Kun	Professor Tong Jin	Professor Ding Yang	
37	In your work, you feel fully committed and actively involved in completing your work tasks.	1	0	1	1	1	0.8
38	You are willing to stay in your current job for a long time and contribute to the development of the University.	1	1	1	1	1	1
39	You share the overall goals and vision of the University and are willing to go the extra mile to contribute to it.	1	0	1	1	1	0.8
40	Your university provides adequate support and resources to help you with your work assignments	1	1	0	1	0	0.6
41	Your university offers ample opportunities to promote academic exchange and collaboration among faculty	1	1	1	0	1	0.8
42	The academic atmosphere within your university encourages innovation and exploration	1	0	1	1	1	0.8
43	Your university gives appropriate recognition and rewards for academic achievements (e.g. research papers, project results)	1	1	1	1	1	1
44	You are free to choose your research topic and publish your research results	1	1	0	1	0	0.6
45	Your university encourages and actively supports collaborative projects within industry.	1	0	1	0	1	0.6
46	Collaboration with industry effectively enhances the university's research output and innovation capabilities.	1	1	1	1	1	1
47	Industry collaboration can successfully translate academic knowledge into industry-applicable outcomes	1	1	0	1	1	0.8

No	Question	Expert/Professor Score					IOC Score
		Professor Liang Xiaofeng	Professor Peter Qin	Professor Zhang Kun	Professor Tong Jin	Professor Ding Yang	
48	Industry collaboration enhances your university's reputation and influence in society	1	0	1	1	1	0.8

(Professor Liang Xiaofeng)

(Professor Peter Qin)

(Professor Zhang Kun)

(Professor Tong Jin)

(Professor Ding Yang)

Focus Group Interview on Human Capital Management Model and Organizational Effectiveness in Chinese Private Universities

8 experts who participated in the focus group:

No	Expert	Position	Introduction
1	Human Resources Management Expert: Professor Li	Professor of School of Management, Qingdao City University	He has been engaged in teaching and research in the field of human resource management for a long time. He has profound academic attainments in human capital management and employee incentive mechanisms. He has published many related academic works and provided human resource management consulting services to many companies.
2	Higher education policy analysis expert: Researcher Wang	Researcher at the Institute of Higher Education Policy, Shaanxi Academy of Educational Sciences	He has focused on higher education policy research for many years and has been deeply involved in the formulation and evaluation of many provincial higher education policies. He has conducted in-depth research on the policy orientation of teachers' participation in school management and the policy requirements of organizational governance structures.
3	Organizational Psychologist: Dr. Zhang	at Beijing Normal University , PhD in Psychology	Focusing on organizational behavior research, we provide employee psychological status assessment and intervention programs for many large companies, and have achieved fruitful research results in job satisfaction, employee engagement, etc.
4	Technology and knowledge management expert: Engineer Chen	Head of Knowledge Management Technology R&D, Accelerated Imagination Education Technology Co., Ltd.	He has led the development of a number of knowledge management systems, is familiar with cutting-edge digital knowledge technologies, and has extensive experience in the application of technologies to promote knowledge sharing and collaboration within the industry.
5	Industry and academic cooperation expert: Director Zhao	Director of Xi'an Peihua College Maker Center	He has been committed to promoting cooperation between industry and universities for a long time, and has successfully facilitated a number of industry-university-research cooperation projects. He has a deep understanding of industry cooperation models and the flow mechanism of knowledge between universities and industry.
6	Education quality assessment expert: Professor Liu	Deputy Director of Education Assessment Committee	He has presided over a number of higher education quality assessment projects, developed a series of education quality assessment standards, and has rich experience in assessing how to improve the teaching quality and organizational effectiveness of universities.

No	Expert	Position	Introduction
7	Educational information planning expert: Dr. Zhao	Educational informatization strategic planning expert	He has been responsible for the information construction planning projects of many universities, has forward-looking research on the development trend of educational information technology and its application in university teaching and management, and can provide professional planning suggestions for the digital transformation of universities.
8	Change Management Expert: Consultant Sun	Change Management Consultant at Shuoxin Management Consulting	Providing organizational change management consulting services to many universities and enterprises. We have rich practical experience in dealing with issues such as personnel resistance and process adjustment during organizational change. We can provide professional advice on change management issues that universities may face when implementing research results.

Moderator (Du Ping): Hello, experts! Thank you very much for taking the time to participate in this focus group interview on the human capital management model and organizational effectiveness of private universities in China. Let's talk freely about this topic today and share our experiences and ideas.

First of all, I would like to ask you about your views on the effectiveness of private university organizations and what problems and challenges you are currently facing in your work?

Professor Li, an expert in human resources management

In private universities, achieving organizational effectiveness faces many challenges. From the perspective of human resource management, teachers' career development plans are unclear and the promotion system is not transparent enough, which makes it difficult for teachers to determine their own development direction. At the same time, training opportunities are unevenly distributed, and some teachers are unable to obtain opportunities to improve their professional skills. This not only affects the personal growth of teachers, but also has a negative impact on the school's teaching quality and organizational effectiveness. Moreover, the incentive mechanism is imperfect, and the

forms of material rewards and spiritual rewards are single, making it difficult to fully mobilize teachers' work enthusiasm and creativity.

Researcher Wang, an expert in higher education policy analysis

In terms of organizational governance, private universities have a mismatch between human resource policies and school development strategies. Some policies lack scientific justification during the formulation process, leading to difficulties in implementation. In addition, teachers have limited channels to participate in school management and lack a say in key matters such as policy formulation and resource allocation, making it difficult for school decisions to fully consider the actual needs of front-line teachers, affecting teachers' work enthusiasm and the development vitality of the school.

Dr. Zhang, an organizational psychologist

From the perspective of teachers' behavior and psychology, unreasonable workload and unclear performance expectations bring great pressure to teachers. Excessive workload makes it difficult for teachers to balance work and life, which reduces job satisfaction. At the same time, vague performance standards make teachers unclear about the direction of their efforts, affecting their work enthusiasm and dedication, which in turn has an adverse impact on organizational effectiveness.

Technology and knowledge management expert, Ir. Chen

At present, private universities have prominent problems in technology and knowledge management. The inefficiency of knowledge sharing and the poor information flow between departments make it difficult to effectively integrate and utilize teaching and scientific research resources. The outdated knowledge storage system and the difficulty in retrieving and obtaining information have seriously restricted the dissemination and application of knowledge and are not conducive to the improvement of organizational effectiveness.

Director Zhao, an expert in industry and academic cooperation

The cooperation between private universities and the industry is not deep enough and there are many problems. On the one hand, the school's professional settings are out of touch with industry needs, and the students trained cannot meet the actual needs of the market, resulting in insufficient employment competitiveness of students. On the other hand, there is a lack of long-term mechanisms for industry-university-research cooperation, and the form of cooperation is relatively loose, making it difficult to achieve efficient flow of knowledge, technology and talents, which limits the transformation of school scientific research results and the improvement of social influence.

Professor Liu, an expert in education quality assessment

In terms of education quality assessment, private universities have an imperfect teaching quality assurance system. The teaching process is not strictly monitored, and problems in teaching cannot be discovered and corrected in a timely manner. The teaching effect evaluation method is single and overly dependent on test scores. It cannot comprehensively and objectively evaluate the teaching quality of teachers and the learning outcomes of students, which is not conducive to improving teaching quality and achieving organizational effectiveness.

Dr. Zhao, an expert in educational information planning

There are deficiencies in the construction of educational informatization in private universities. The construction of informatization infrastructure lags behind, the network speed is slow, and the teaching platform functions are imperfect, which affects the efficiency of online teaching and management. At the same time, the informatization literacy of teachers and administrators is uneven, and their ability to apply informatization tools is insufficient. They cannot give full play to the advantages of informatization technology in teaching and management, which restricts the modernization of schools.

Change Management Expert Consultant Sun

When facing change, private universities face the problem of teachers’ resistance to change. The implementation of new policies and new initiatives is often questioned and

resisted by teachers, which is mainly due to poor communication during the change process and low understanding and acceptance of change by teachers. In addition, the lack of effective change management strategies makes it difficult to smoothly promote change, affecting the development of the school and the improvement of organizational effectiveness.

Host (Du Ping): Thank you all the experts for sharing. What specific solutions do you have for these problems and challenges?

Professor Li, an expert in human resources management

It is necessary to establish a sound teacher career development system, clarify promotion standards and processes, and ensure fairness and justice. Formulate a systematic training plan and provide targeted training courses according to the different needs and development stages of teachers. Optimize the incentive mechanism and enrich the incentive forms. In addition to material rewards, increase spiritual rewards and career development opportunities, such as establishing teaching excellence awards, scientific research innovation awards, and providing domestic and foreign training opportunities, so as to fully mobilize the work enthusiasm of teachers.

Researcher Wang, an expert in higher education policy analysis

Schools should strengthen the coordination between human resource policies and development strategies, conduct sufficient research when formulating policies, and ensure that policies are in line with the actual situation and development needs of the school. Broaden the channels for teachers to participate in school management, and establish a mechanism for teacher representatives to participate in decision-making, such as teacher representative conferences and teaching committees, so that teachers have more say in policy formulation, resource allocation, etc., and improve teachers' sense of participation and identity.

Dr. Zhang, an organizational psychologist

Reasonably adjust teachers' workload, clarify performance goals and evaluation standards, and reduce teachers' work pressure. Pay attention to teachers' mental health and provide psychological support services, such as psychological counseling, mental health lectures, etc. Create a positive working atmosphere, enhance teachers' sense of belonging and team cohesion, and improve teachers' job satisfaction and dedication.

Technology and knowledge management expert, Ir. Chen

Increase investment in knowledge management systems and introduce advanced technologies, such as artificial intelligence-driven knowledge management systems and cloud-based collaboration tools, to improve knowledge sharing and storage efficiency. Provide technical training for teachers and students to enhance their ability to use knowledge management tools and promote the effective dissemination and application of knowledge.

Director Zhao, an expert in industry and academic cooperation

Strengthen in-depth cooperation with the industry, adjust professional settings and course content according to industry needs, and invite industry experts to participate in the formulation of teaching and talent training programs. Establish a long-term mechanism for industry-university-research cooperation, set up a special cooperation agency responsible for connecting with enterprises, promoting the transformation of scientific research results, providing students with more practical opportunities, and achieving mutual benefit and win-win results between schools and enterprises.

Professor Liu, an expert in education quality assessment

Build a comprehensive teaching quality assurance system, strengthen the monitoring of the teaching process, and adopt diversified monitoring methods, such as teaching supervision observation, peer evaluation, student evaluation, etc. Improve the teaching effect evaluation method, comprehensively consider students' learning process, practical ability, innovative thinking and other factors, comprehensively and objectively

evaluate the teaching quality, and provide timely feedback and improve teaching based on the evaluation results.

Dr. Zhao, an expert in educational information planning

Formulate a scientific education informatization development plan, increase investment in informatization infrastructure, improve network speed, and improve the functions of teaching platforms. Carry out informatization training for teachers and administrators to improve their informatization literacy and application capabilities, encourage teachers to use informatization tools to innovate teaching methods, and promote changes in teaching models.

Change Management Expert Consultant Sun

Before promoting the reform, do a good job of communication and publicity to let teachers understand the purpose, significance and specific content of the reform, and improve teachers' understanding and acceptance of the reform. Formulate a reasonable reform strategy, adopt a step-by-step approach to promote the reform, and reduce resistance to the reform. Establish a reform management mechanism to promptly solve problems that arise during the reform process and ensure the smooth progress of the reform.

Moderator (Du Ping): Next, please ask the experts to propose 3 more specific plans on improving organizational effectiveness.

Professor Li, an expert in human resources management

First, establish a talent exchange mechanism to promote exchanges and cooperation between teachers in different universities and enterprises, and broaden teachers' horizons and ideas. Second, carry out teacher team building activities to enhance the collaboration and cohesion among teachers through team cooperation projects and academic exchange activities. Third, set up a teacher development fund to support teachers in carrying out teaching reforms, scientific research innovation and other activities, and provide financial guarantees for teachers' professional development.

Researcher Wang, an expert in higher education policy analysis

Strengthen communication and cooperation with government departments and industry associations to strive for more policy support and resource investment. Actively participate in the formulation and discussion of education policies to create a favorable policy environment for school development. Promote the international development of the school, carry out cooperation and exchanges with foreign universities, introduce advanced foreign education concepts and teaching methods, and enhance the international influence of the school.

Dr. Zhang, an organizational psychologist

Regularly conduct teacher job satisfaction surveys to timely understand teachers' needs and opinions and provide a basis for school management decisions. Establish a teacher career development mentor system to provide one-on-one guidance and assistance to young teachers and promote their growth. Establish a teacher innovation reward mechanism to encourage teachers to innovate in teaching methods, curriculum design, scientific research projects, etc., and reward teachers who have achieved innovative results.

Technology and knowledge management expert, Ir. Chen

Use big data technology to analyze teaching and management data and provide data support for school decision-making, such as optimizing curriculum settings and adjusting teaching resource allocation. Establish a digital library to integrate various academic resources and provide convenient literature retrieval and reading services for teachers and students. Develop intelligent teaching auxiliary tools, such as automatic homework correction systems and intelligent tutoring systems, to improve teaching efficiency and quality.

Director Zhao, an expert in industry and academic cooperation

We will build internship and training bases with enterprises to provide students with more practical opportunities and improve their practical ability and employment competitiveness. We will hold cutting-edge lectures and academic seminars, invite industry experts and scholars to share the latest research results and industry trends, and broaden

the horizons of teachers and students. We will encourage teachers to participate in enterprise projects, improve their practical ability and scientific research level, and promote the transformation of scientific research results.

Professor Liu, an expert in education quality assessment

Establish a big data analysis platform for teaching quality, collect, analyze and mine various data in the teaching process, and provide a scientific basis for teaching quality evaluation. Carry out the construction of teaching quality benchmark departments, set up excellent teaching models, and promote the improvement of teaching quality in the whole school. Strengthen the management of textbook construction, select high-quality textbooks, encourage teachers to write textbooks with school characteristics, and improve the applicability and pertinence of textbooks.

Dr. Zhao, an expert in educational information planning

Promote the construction of smart campuses and realize the intelligentization of campus management, such as intelligent attendance, intelligent security, and intelligent logistics management. Carry out online teaching quality evaluation to timely understand the online teaching effect and provide reference for teachers to improve online teaching. Establish an education big data center to integrate various data such as school teaching, management, and scientific research to provide data support for school management decisions.

Change Management Expert Consultant Sun

Formulate emergency plans for organizational change to deal with emergencies that may occur during the change process and ensure the normal operation of the school. Carry out change management training to improve the adaptability and management capabilities of teachers and administrators. Establish a change effect evaluation mechanism, regularly evaluate the effect of the change, and adjust the change strategy in a timely manner based on the evaluation results to ensure that the change achieves the expected goals.

Moderator (Du Ping): Finally, I would like to ask you to share your views on the human capital management and organizational effectiveness model we have studied. Do you think this model is effective? If there are any shortcomings, what suggestions do you have?

Professor Li, an expert in human resources management

This model has certain value as a whole, as it focuses on the key connection between human capital management and organizational effectiveness. However, the dynamic changes in teachers' career development are not adequately reflected in the model. It is recommended to add considerations to the time dimension, track the changes in teachers' needs at different career stages, and the impact of these changes on organizational effectiveness, so as to make the model more dynamic and practical. At the same time, further refine the relevant indicators of the incentive mechanism and clarify the specific impact paths of different incentive methods on teachers' behavior and organizational effectiveness.

Researcher Wang, an expert in higher education policy analysis

The model is basically effective, but it is not in-depth enough in considering policy factors. Variables such as the policy-making process and policy implementation strength should be clearly included to analyze the impact of different policies on organizational governance and teacher behavior. In addition, the impact of dynamic policy adjustments on the model should be considered so that the model can adapt to the ever-changing policy environment and better guide school development.

Dr. Zhang, an organizational psychologist

The model is not comprehensive enough in terms of the measurement indicators of job satisfaction and employee engagement. In addition to some existing indicators, measurement dimensions such as perceived job stress and job burnout should be added to more comprehensively reflect the impact of teachers' psychological state on organizational effectiveness. At the same time, the role of factors such as organizational culture and team

atmosphere in the model should be strengthened, and the relationship between them and teacher behavior and organizational effectiveness should be clarified.

Technology and knowledge management expert, Ir. Chen

The model does not consider technology factors in detail. It is necessary to add indicators such as technology update speed, technology application cost and risk to more accurately evaluate the impact of technology on knowledge management and organizational effectiveness. In addition, attention should be paid to the interaction between technology and other factors, such as the relationship between technology application and the improvement of teachers' information literacy, to make the model more perfect.

Director Zhao, an expert in industry and academic cooperation

The industry and academic cooperation part of the model is relatively general. It is recommended to refine the cooperation model, such as industry-university-research cooperation, co-construction of laboratories, and teacher-enterprise on-the-job training, and set corresponding effect evaluation indicators for each model, such as the conversion rate of scientific research results and the employment matching rate of students, so as to more accurately measure the contribution of cooperation to organizational effectiveness.

Professor Liu, an expert in education quality assessment

The model does not fully reflect the feedback mechanism between education quality evaluation and organizational effectiveness. It should be clarified how the evaluation results are transformed into improvement measures, as well as the specific role and time nodes of these measures in improving organizational effectiveness. At the same time, the impact of subjective factors in the evaluation process on the model should be considered, and the evaluation indicators and methods should be optimized to improve the scientific nature of the model.

Dr. Zhao, an expert in educational information planning

In terms of the relationship between educational informatization and organizational effectiveness, the model lacks a measure of the depth and breadth of informatization application. It is recommended to increase indicators such as the frequency and depth of use of informatization tools by teachers and students, as well as innovative application cases, to more comprehensively evaluate the role of informatization construction on organizational effectiveness. In addition, attention should be paid to the differences in the informatization construction process of different schools to make the model more universal.

Change Management Expert Consultant Sun

The model is not comprehensive enough in analyzing the resistance factors in the process of organizational change. The sources and types of resistance to change and the degree of influence of different resistances on the advancement of change should be analyzed in detail. At the same time, the effectiveness evaluation indicators of change management strategies should be increased, such as the speed of change advancement and the degree of acceptance of teachers, so as to better formulate and adjust the change strategy, ensure the smooth implementation of the change, and improve the effectiveness of the organization.

Moderator (Du Ping): Thank you very much to all the experts for their wonderful sharing and in-depth discussions today, which have provided us with many valuable ideas and suggestions for our research. Today's interview ends here, thank you all again!

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Education

Bachelor's Degree

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Publishing Research :

Du, P., Panyasiri, C., & Nagamatsu, M. (2025). Human Capital Management and Organizational Effectiveness in China's Private Universities. *Journal of Educational Innovation and Research, 9*(4). (Oct-Dec 2025).

Du, P. (2021). Research on the construction path of journalism and communication faculty in applied undergraduate colleges under the background of media reform: A perspective based on the matching of demand and supply sides. *Education and Teaching, 2021*(09), 90-93.

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Du, P. (2016). The rationality of the public as the subject of media criticism and its application. *China Publishing, 2016*(05), 48-51.

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