

THE ROLE OF LOCAL GOVERNMENT PLAY IN DEEPENING
THE INTEGRATION OF INDUSTRY AND EDUCATION IN
LIAONING VOCATIONAL UNIVERSITY OF
TECHNOLOGY BASED ON THE
TRIPLE HELIX THEORY



MASTER OF PUBLIC ADMINISTRATION IN PUBLIC ADMINISTRATION
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A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PUBLIC
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ACADEMIC ADMINISTRATION AND DEVELOPMENT MAEJO UNIVERSITY
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TRIPLE HELIX THEORY

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OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PUBLIC ADMINISTRATION
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ชื่อเรื่อง	บทบาทของรัฐบาลท้องถิ่นในการบูรณาการอุตสาหกรรมและการศึกษาในมหาวิทยาลัยเทคโนโลยีเหลิยวหนิง ตามทฤษฎีทริปเปิลเฮลิคซ์
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บทคัดย่อ

การวิจัยนี้มีจุดมุ่งหมายเพื่อวัตถุประสงค์ 3 ประการดังนี้ 1) เพื่อศึกษาบทบาทในปัจจุบันของรัฐบาลท้องถิ่นในการบูรณาการอุตสาหกรรมและการศึกษาอย่างลึกซึ้งยิ่งในมหาวิทยาลัยเทคโนโลยีอาชีวศึกษาเหลิยวหนิง 2) เพื่อวิเคราะห์วิธีการทฤษฎีความร่วมมือสามประสาน และ 3) เพื่อเสนอแนะบทบาทที่รัฐบาลมณฑลเหลิยวหนิง ควรมีส่วนร่วมในการบูรณาการอุตสาหกรรมและการศึกษาในมหาวิทยาลัยแห่งนี้มีความลึกซึ้งยิ่งขึ้น ทำการเก็บข้อมูลโดยใช้แบบสอบถามเชิงปริมาณ และวิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา ใช้ทฤษฎีความร่วมมือสามประสาน เป็นทฤษฎีหลัก และทฤษฎีการจัดการการมีส่วนร่วมของลูกค้ำ ทฤษฎีการบริหารจัดการภาครัฐแนวใหม่ เป็นทฤษฎีรอง

ผลการศึกษามีดังนี้ 1) มากกว่าครึ่งหนึ่ง (ร้อยละ 50) ของประชากรกลุ่มตัวอย่างรายงานว่ารัฐบาลมณฑลเหลิยวหนิง มีบทบาทหลายแง่มุมในการบูรณาการอุตสาหกรรมและการศึกษาให้ลึกซึ้งยิ่งขึ้น 2) ทฤษฎีทฤษฎีความร่วมมือสามประสาน สร้างบทบาทของรัฐบาลมณฑลเหลิยวหนิงในบทบาทดังต่อไปนี้ 2.1) ร้อยละ 78.1 ของผู้ตอบแบบสอบถามในโรงเรียน และ ร้อยละ 61.21 ขององค์กรที่ตอบแบบสอบถามมีทัศนคติเชิงบวกว่าทฤษฎีนี้มีบทบาทสำคัญในการใกล้เคียงความสัมพันธ์ระหว่างสถาบันการศึกษา 2.2) ทัศนคติเชิงบวกของผู้ตอบแบบสอบถาม ระดับองค์กร ร้อยละ 60.1 และผู้ตอบแบบสอบถามในโรงเรียนมีมากกว่า ร้อยละ 83.9 มั่นใจว่านโยบายจะตอบสนองต่อความต้องการของสถาบันการศึกษา และ 2.3) ร้อยละ 70 ของผู้ตอบแบบสอบถามในโรงเรียน และร้อยละ 60 ขององค์กรผู้ตอบแบบสอบถาม มีทัศนคติเชิงบวกต่อการทำหน้าที่ของรัฐบาลนี้ และยังขยายไปถึงการสร้างสิ่งแวดล้อมที่นำไปสู่การบูรณาการอุตสาหกรรมและการศึกษา และ 3) ร้อยละ 83.1 ของผู้ตอบแบบสอบถามในโรงเรียน และร้อยละ 69 ขององค์กรที่ตอบแบบสอบถาม คิดว่าบทบาทสำคัญที่สุดที่รัฐบาลมณฑลเหลิยวหนิงควรแสดงถึงการเป็นผู้ให้บริการ รวมทั้งผู้ตอบแบบสอบถามบางรายที่

เชื่อว่าบทบาทของผู้กำกับดูแลและผู้ประสานงานก็มีความสำคัญเช่นกัน

สุดท้ายงานวิจัยนี้เสนอว่าควรมีการทบทวนและเพิ่มบทบาทของผู้ให้บริการ หน่วยงานกำกับดูแล และผู้ประสานงาน

คำสำคัญ : การบูรณาการอุตสาหกรรมและการศึกษาให้ลึกซึ้งยิ่งขึ้น, ทฤษฎีความร่วมมือสามประสาน, มหาวิทยาลัยเทคโนโลยีอาชีวศึกษาเหลียวหนิง, รัฐบาลเหลียวหนิง



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ABSTRACT

The research aims to the following 3 objectives: 1) To investigate the current role that the local government played in deepening the integration of industry and education in Liaoning Vocational University of Technology; 2) To analyze the way the triple helix creates the role of government. 3) To suggest the role that the Liaoning Provincial Government should play in deepening the integration of industry and education in Liaoning Vocational University of Technology. This study will be conducted in Liaoning Province. It adopts a quantitative design, for data collection questionnaire is a main source and reinforcement focus groups. Also, descriptive statistics is a data analysis. Moreover, the Triple Helix Theory as the main theory, and Customer Orientation in NPM, Limited Government Theory, and New Public Governance as the supporting theory.

The result of this research is: 1) In more than 50%, the Liaoning Provincial Government plays a multifaceted role in deepening the integration of industry and education. 2) The triple helix theory creates the role played by the government in the following ways: 2.1) 78.1% of school respondents, and 61.21% of enterprises respondents positive attitude that it plays an important role in mediating the relationship between educational institutions. 2.2) The positive attitude of enterprise respondents was more than 60.1%, and that of school respondents was even more

than 83.9%, they think that ensure its policies are responsive to the needs of educational institutions. 2.3) More than 70% of the school respondents and more than 60% of the enterprises respondents had a positive attitude, they think that the function of government extends to creating an environment conducive to the integration of industry and education, and 3) 83.1% School respondents and 69% enterprise respondents think that the most crucial role that the Liaoning government should play is that of a service provider, also some respondents who believe that the role of supervisor and co-ordinator is also important.

Finally, this research suggests that the role of service provider, regulator, and coordinator, and add or reshape roles.

Keywords : Deepening the Integration of Industry and Education, Triple Helix Theory, Liaoning Vocational University of Technology, Liaoning Government



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CHAPTER 1

INTRODUCTION

Background of the study

In the current new situation, The integration of industry and education is an essential requirement and the necessary way for the development of vocational education, and the optimization of the path of integration of industry and education in vocational education is of great significance to the development of vocational education. (Wang et al., 2023: 112-115). The concept of "integration of industry and education" does not exist in western developed countries, but the theory of "school-enterprise cooperation" has rich academic and practical research in the same source. It is generally believed that this theory originated from the Morell Act in 1862 and its concept first appeared at the University of Cincinnati in the early 20th century. (Qian, 2018: 4-6)

With the full development of vocational education in the West, countries have achieved excellent results in the implementation of school-enterprise cooperation and industry-university-research cooperation, among which Germany's "dual system" is the most typical. The so-called "dual" system is a model of vocational training in which enterprises and vocational schools work together, with the practical training being carried out in the training enterprises (or in inter-enterprise training centers) and the systematic theoretical instruction provided by the vocational schools. The training regulations describe the specific requirements for each training occupation in detail to ensure the same training standards in the Länder. (Liu, 2023: 98-100)

The German government has adopted laws and regulations to regulate and restrict specific vocational education practices, which is a key element in the successful implementation of the dual system. The German Federal Vocational Education Act makes school-enterprise cooperation a basic requirement for the development of "dual" vocational education and stipulates that education and

economic, labor, and industrial organizations should jointly consult on the formulation of vocational education laws and standards, and be jointly responsible for planning, decision-making and organizing the implementation of such work. (Liu and Zhang, 2020: 16-42). It also makes specific provisions for the responsibilities, obligations, and modus operandi of each party.

In 2013, the UK government made significant changes to apprenticeships, emphasizing the role of employers. The government revised the content of the "British apprenticeship standards" in 2013-2015. (Skill Funding Agency et al., 2013), and in 2015 it published English Apprenticeships: Our 2020 Vision [EB/OL], and after a series of reform measures led by the government, a complete modern apprenticeship talent training framework system has been established. (source online)

With the development of the economy and society, the Chinese government has also deeply recognized the importance of the integration of industry and education and school-enterprise cooperation in vocational education. In May 2014, the state issued the document "Decision of the State Council on Accelerating the Development of Modern Vocational Education" and compiled the "Construction Plan of Modern Vocational Education System (2014-2020)", (source online) which marked the formal establishment of China's modern On 19 December 2017, the General Office of the State Council issued the document "Several Opinions on Deepening the Integration of Industry and Education" , the first time a policy document on deepening the integration of industry and education was issued at the national level. (source online) The new Law of the People's Republic of China on Vocational Education has been in force since May 1, 2022, which explicitly includes "integration of industry and education" and "school-enterprise cooperation" in the legislation. (General Office of the State Council (PRC), 2017; State Council of the PRC, 2014; The People's Government of Liaoning Province, 2022).

To further deepen the implementation of the integration of industry and education, the General Office of the Liaoning Provincial Government published the document "Implementation Opinions of the General Office of the Liaoning Provincial Government on Deepening the Integration of Industry and Education". In August 2018,

proposing the following construction goals: "Deepening the integration of industry and education, coalescing development synergies, collaborating with schools and enterprises to educate people, and stimulating innovative vitality. With revitalization development as the guide and industrial demand as the traction, we strive to take about 10 years to form a development pattern in which the province's education resources, talent cultivation, and scientific and technological achievements are organically integrated with Liaoning industry in general, the talent cultivation model of school-enterprise cooperation is fully promoted, the overall balance between talent supply and industrial demand is achieved, and the ability of the province's secondary and higher education schools to serve regional economic and social development is significantly enhanced. " Since the release of the document, Liaoning Province has introduced a number of related policies and also launched a series of measures. (General Office of the People's Government of Liaoning Province, 2018).

In view of the above national and Liaoning provincial policies have been introduced one after another, how does the Liaoning provincial government promote the development of the integration of industry and education, and school-enterprise cooperation in the province, and what mechanism is used to guarantee the smooth operation of the cooperation, what measures have been implemented to help achieve a win-win situation between schools and enterprises and cultivate more high-level and high-quality talents, and in the process of deepening local industry-education integration, what roles do the three parties involved, namely the government, enterprises, and schools, assume respectively, especially in the integration of industry and education, schools and enterprises often do not have a clear understanding of the role played by local governments. These are the main issues to be explored in our study and are of great concern to the provincial higher education institutions.

Research question

1. What current role does the Liaoning provincial government play in deepening the integration of industry and education in Liaoning Vocational University of Technology?
2. How does the triple helix theory create the role of local government?
3. What role should the Liaoning Provincial Government play in deepening the integration of industry and education in Liaoning Vocational University of Technology?

Research objective

The objectives of this study are:

1. To investigate the current role that the local government played in deepening the integration of industry and education in Liaoning Vocational University of Technology;
2. To analyze the way the triple helix creates the role of government.
3. To suggest the role that the Liaoning Provincial Government should play in deepening the integration of industry and education in Liaoning Vocational University of Technology.

Scope and limitation

This research involves the three parties involved in deepening the integration of industry and education in Liaoning Province. Because it is impossible to conduct research and obtain data from the local government, the scope of this research is limited to the Liaoning Vocational University of Technology and some enterprises that cooperate with the school. The research will conduct research to the faculty of the school, as well as the managers of the enterprises that cooperate with it.

Definition

1. Integration of industry and education

At the macro level, "integration of industry and education" refers to the integration of industry (industries and enterprises) and education (mainly school education), mainly involving the coordination of industrial development and educational development; at the micro level, "integration of industry and education" refers to the integration of production and teaching, mainly involving the interface between the production process and the teaching process. At the micro level, the "integration of industry and education" refers to the integration of production and teaching, mainly involving the docking of the production process with the teaching process. (Yang, 2014a: 8-10)

2. Local government

Local governments, as opposed to the central government, are an integral part of the central government of a united country. (Sang, 1994)

In the reform of China's higher education management system, provincial governments have a broader influence on the development of local universities. The local government discussed in this study is the local government of Liaoning Province.

3. Higher vocational education

Higher vocational education refers to the category of higher education that undertakes the tasks of vocational higher education and aims at cultivating technical senior specialized talents. (Chen, 2011). In my research, Vocational University of Technology was chosen as the subject of the study. Liaoning Vocational University of Technology is the first vocational undergraduate university in Liaoning Province approved by the Ministry of Education, located in Jinzhou City. The university was founded in April 2003 and was renamed Liaoning Polytechnic Vocational University in June 2020 with the approval of the Ministry of Education. In 2020, the Ministry of

Education approved the school's scale of operation to 12,000 students. (Ministry of Education (PRC), 2022)

3. Liaoning Vocational University Of Technology

Liaoning Vocational University of Technology was founded in 2003, formerly known as Liaoning Polytechnic Vocational College. In December 2019, the Ministry of Education (MOE) approved its promotion to a vocational undergraduate university, and in June 2020, the MOE approved the change of its current name.

Research benefit

The study is expected to benefit the Liaoning Provincial Government in three aspects in the development of the integration of industry and education.

First, it is to integrate the Triple Helix Theory into the practical application of the integration of industry and education with Chinese characteristics;

Second, obtaining the ways that create government role-play through research has a certain reference value;

Third, clarify the role of the Liaoning provincial government in industry-education integration and help it to reshape its role even better.

CHAPTER 2

LITERATURE REVIEW

Introduction

All the research questions this research ask should be answered on the theoretical basis of previous research, and three theories will be used in this study to support answering our research questions, including one central theory and three auxiliary theories. At the same time, the research will elaborate on the related studies of these three theories separately and taste to find the variable factors and draw the conceptual framework. The three theories of this research are as follows:

1. Triple Helix Theory
2. Customer Orientation in NPM
3. Limited Government Theory
4. New Public Governance
5. Related research
6. Conceptual framework

Triple Helix Theory

As industries have become increasingly dependent on academic research to generate marketable innovations and economic growth, the role of government has changed. (Etzkowitz, 1993: 326-360). In the 1990s, Henry Etzkowitz of the State University of New York in the United States and Loet Leydesdorff of the University of Aumsterdam in the Netherlands put forward the triple helix theory in the context of the knowledge economy, linking universities, industries and government departments, treating the three parties as equally important organizations, breaking the organizational boundaries and boundaries of authority between each other, penetrating into each other, substituting and intermingling, and forming a spiraling trend of innovative activities. This new demand for innovation gave rise to the triple

helix theory, in which universities and other knowledge-producing organizations play an important role, while local, regional and national governments play a prominent role in formulating industrial policy. (Leydesdorff and Etzkowitz, 1996: 279-286)

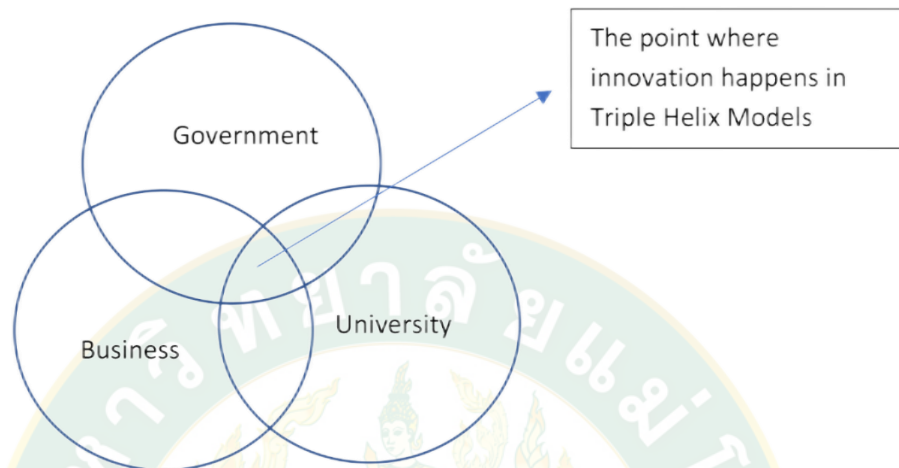


Figure 1 Triple Helix Theory
(Leydesdorff and Etzkowitz, 1996: 279-286)

From Figure 1, it can be seen that the three main elements assume equally important roles.

Over the past decade, the triple helix model has been adapted for different situations. Carayannis, E. G. innovated the quadruple helix model, which regards technology, market, government, and society as key factors to achieve regional development as the goal. (Carayannis and Campbell, 2019: 1009-1019).

The study of the quadruple helix model puts forward new ideas to solve the problems of natural environment and social environment from the perspective of stakeholders, establishes the dominant position of universities from the transformation of multiple roles of universities in the new era, affirms the contribution of universities to culture and economy, analyses the dilemmas of cooperation in the triple helix and the existence of the quadruple helix, and forms the model of the quadruple helix innovation ecosystem, namely "university-industry-government-civil society" (Huang and Wang, 2018: 69-75)

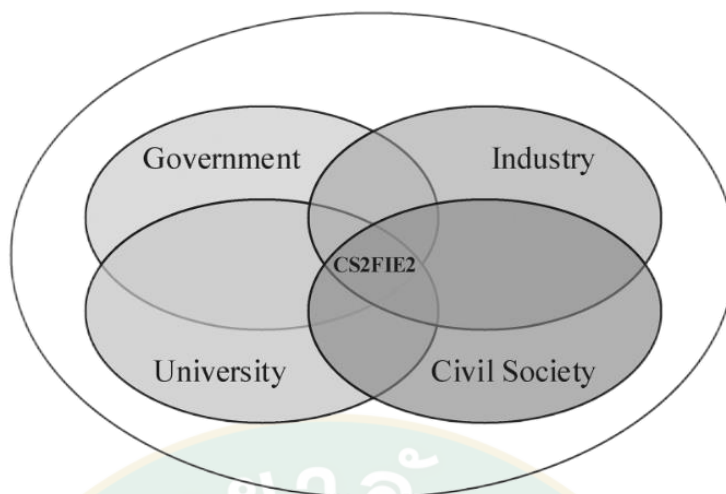


Figure 2 Quadruple Helix Theory
(Carayannis et al., 2012)

From the Figure 2, the quadruple helix model incorporates civil society to varying degrees, (Carayannis et al., 2012: 1-12) and at the same time, there are ecological innovation, (Yang, 2012: 143-157) green sustainable resources et. (Gouvea et al., 2013: 221-230).

The pentahelix model is a collaboration between five parties or actors, namely Academic, Business, Community, Government, and Media (ABCGM) (Lindmark et al., 2009: pp. 24).



Figure 3 Penta Helix Theory
(Agus Subagyo, 2021)

The Pentahelix model is an important force and a new guide to innovation. From Figure 3, its five dimensions work together to influence the model. This promotes knowledge collaboration and innovation systems that lead to more sustainable development.

Nonetheless, the triple helix continues to be an area in which many scholars in academia have linked the literature on regional development and the triple helix model, particularly for the study of how regional economic development is built on innovation and research activities. (Todeva and Danson, 2016: 5-11). In 2018, Cai and Etzkowitz (2020) reviewed the history, present, and future of the triple helix model in his article "The triple helix model: past, present, and Future". He noted that the triple helix is cyclical, complex, and heterogeneous and that the future should focus on innovative, social, and cultural factors. (Cai and Etzkowitz, 2020: 189-226)

At present, the research on triple helix theory is mainly divided into three directions: one is to study the innovation mechanism based on the basic connotation, organisational structure and subject relationship of the triple helix theory; the other is to analyse the triple helix structure of knowledge management in innovative cities from the perspectives of social network and regional economy; and the third is to conduct a comparative study on the measurement of the triple helix innovation mode of the industry-university-research institutes. (Liu and Chen, 2020: 33-42) And Some studies link the evolution of the triple helix interactions of innovation organizations with government policies and explore the relationship between their influences. (Park and Stek, 2022: 43-53).

It is noteworthy that Leydesdorff, as the core of the study, created the Triple Helix Algorithm based on the information entropy theory, optimized the measurement model, improved the redundant indicators to ensure better adaptation and stability of the measurement model, and evaluated the "university-industry-government" triple helix innovation model and its evolution trend in the world, this could be a new topic for future research. (Huo, 2023: 1-10).

After the concept of triple helix innovation was put forward, it also aroused great repercussions in the field of science and technology in countries all over the world. Wang Chengjun is a representative figure in promoting the development of

triple helix theory in China. In the article "Progress of Triple Helix Research and Its Model Structure" in Issue 8, 2011, Wang Chengjun did a research review and progress evaluation on domestic innovation triple helix, and in his book "Social Entrepreneurship - Research on Endowed Universities Based on the Quadruple Helix" in 2016, he recognised that in recent years, there have been a number of like-minded people and outstanding researchers in China, such as Zhou Chunyan, Li Peifeng, Cai Xiang, and many other peers, who have made great progress, breakthroughs, and achieved a lot of results and gains in different directions and sub-fields. (Wang et al., 2020: 3-8)

By combing through the existing literature, it is found that some scholars have analyzed the non-linear interaction patterns of institutional sectors such as government, industry, and universities based on the triple helix research framework. (Zhang et al., 2018: 20-28). Some scholars have also reviewed the research on the triple helix innovation theory in China and reorganized the development of the triple helix theory in China. (Sun, 2020: 143-146+150)

It follows that, developed economies have sound forms of social organization, reasonable institutional arrangements, and a strong scientific research base, which to a certain extent guarantees the smooth progress of the innovation process, but with the continuous advancement of innovation activities, whether the existing forms of organization, functional division of labor, and the institutional base in the triple helix model meet the requirements of the innovation process is also an important direction of today's scholars' research.

Especially after the Chinese government put forward the concept of "integration of industry and education", the triple helix has also become the most used theory to explain the subjective relationship between government, enterprises, and schools when studying the topic of deepening the integration of industry and education, and its triple helix model can support our study to adopt an integrative mindset to find out the current situation of the influence of the government of Liaoning Province on the deepening of the integration of industry and education in the vocational colleges and universities in Liaoning Province.

At the same time, Triple Helix Theory is also an important theory to study the construction of an innovation system, including the cultivation of innovative talents in universities, which focuses on the interactive role of cooperation among government, universities, and industries to promote scientific and technological innovation and socio-economic development, and provides a theoretical basis for us to study the ways of innovation behavior of government departments as one of the main subjects in the helix relationship. Therefore, we regard the triple helix theory as the main theory of this research paper, which is used to answer the three research questions of this thesis, especially the second research question.

Customer Orientation in NPM

New public management is a public management theory put forward in the late 1980s. Hood, a leading British administrative scholar, put forward the core idea of the New Public Management theory that the public sector can improve management efficiency and transparency by mimicking the market mechanism, emphasizing performance and efficiency, and focusing on innovation and change. (Hood, 1991). In his book *New Public Management*, he puts forward the following ideas and lays the groundwork for subsequent research. 1. A new concept of management: defines new public management as an approach to management that is opposed to traditional public administration. He emphasized the importance of market orientation, efficiency, and organizational reforms, and advocated the introduction of corporate management principles and methods to enhance the effectiveness and efficiency of the public sector; 2. Analysis of market-oriented reforms: market-oriented reforms are an important part of the NPM; 3. Performance management and evaluation: emphasized the importance of performance management and evaluation in the NPM; 4. Transparency and accountability in the public sector: focused on the importance of transparency and accountability in the public sector. (Hood, 1992).

New public management tries to learn from the concepts and methods of corporate management and apply the market economy method to the public service field, aiming to optimize the efficiency, transparency and performance of government agencies to meet the needs of the public. "New public management is a theory that introduces a market economy model into the public sector. It emphasizes that the public sector should imitate the business model of private enterprises to improve efficiency and operational effectiveness, including emphasizing performance-oriented, market competition, customer-oriented and management innovation management." (Ferlie et al., 2007)

Zhao (2017) reviews the development history of the New Public Management theory and analyzes its current challenges, such as the definition of the government's role and the inadequacy of performance evaluation. The study concludes that the new public management theory needs to focus on public values and public interests while adhering to the market principle and promoting the improvement of government credibility and the enhancement of government capacity. (Zhao, 2017: 16-22). Yan (2021) suggests that government management should introduce a competitive market model and allow as many social organizations to participate in government management and improve government efficiency. (Yan, 2021: 7-9).

The "customer orientation" mentioned is the core component of "new public management". Christensen and Bower (1996 cite in Slater and Narver, 1998) distinguish between two forms of 'customer orientation' that are frequently confused. The first, a customer-led philosophy, is primarily concerned with satisfying customers' expressed needs, and is typically short term in focus and reactive in nature. The second, a market-oriented philosophy, goes beyond satisfying expressed needs to understanding and satisfying customers' latent needs and, thus, is longer term in focus and proactive in nature. Based on theory and substantial evidence, the advice to become market-oriented appears sound regardless of the market conditions a business faces. (Slater and Narver, 1998: 1001-1006). But, in research and practice, the concept of customer orientation is often used as a synonym for market orientation (Brady and Cronin, 2001: 34-49).

The core of the concept of "customer orientation" is the pursuit of customer satisfaction in the name of customer respect, thereby gaining maximum support from customers for the survival and development of the organization. It should be said that the pursuit of "customer satisfaction" is the direct goal of government departments and is the vocation of government organizations. (Chen, 2010: 55-57)

Focuses on the efficiency and economy of the public sector as well as the introduction of a market-oriented model, speaks to the realization of systemic changes, performance budgeting, and other management tools to improve the level of government management, and emphasizes the management model of marketization and competition, as well as the user-oriented model of public service. It is mainly used to assist in answering the 1st research question of this paper.

Limited Government Theory

The theory of limited government can be traced back to the British thinker John Locke in the 17th century. His book "On Government" argues that the government should be authorized by the people to exercise power, and the government should also be limited to only undertake the most basic duties, that is, to protect the basic rights and freedoms of the people. (Locke, 1690). Since then, the theory of limited government has become an important part of liberalism and classical liberalism.

In the 18th century, Scottish economist, philosopher and writer Adam Smith put forward the core idea of economics - free market economy, advocating that the government should ensure the formulation of market rules, maintain social order and provide public services, and should not intervene excessively in the market. (Smith, 1776)

The famous 20th century economist and Nobel laureate in economics, Friedman and Friedman (1980), advocated that the government should avoid excessive intervention in the market, and that the government should only undertake limited functions, such as protecting the life, property and liberty of citizens, and provide services and programs related to basic science, technology,

education and public facilities, while other affairs should be left to the free operation of the market. (Friedman and Friedman, 1980)

Relevant literature on the theory of limited government at home and abroad in recent years also informs our study. Bernstein (2005) in his book *The Capitalist Manifesto: The Historic, Economic, and Philosophic Case for Laissez-Faire* presents the importance of the idea of limited government in a free market economy and explores individual freedom, self-responsibility, and moral values (Bernstein, 2005)

2020 book, *Tomorrow, the World: The Birth of U.S. Global Supremacy*, its author, Wertheim (2020) through an analysis of U.S. history and foreign policy, proposes a nontraditional theory of limited government, which argues that the U.S., through the creation of the international system, has achieved the goal of limiting its actions. The above literature represents the latest advances and trends in the study of limited government in their respective fields.

Emphasising the limited nature of government and the constraints on its power, it is believed that the government should intervene less in social affairs to achieve the maximum freedom of government responsibilities and duties and to support the free development of individuals, communities and markets. In our study, under the management model thinking in terms of the New Public Management theory, the Liaoning Provincial Government should be clearly guided by the limited government theory to strengthen the government's role in serving the market, to reduce intervention in the market, to maximise market vitality, and to promote the optimal allocation of public resources. The theory is primarily used to assist in answering the 3rd research question of this paper.

New Public Governance

The New Public Governance Theory is a model of political behavior that stresses "governance" based on the changes in the social environment and the reversal of value orientation in the 21st century. (Han and Shan, 2015: 44-49) has been widely discussed around the world since it was proposed by British academic Stephen Osborne in 2006 (Osborne, 2006: 377-387) points out that NPM is actually

just a transitional stage in the evolution from PA to NPG, with the PA stage from the late 19th century to the late 1970s and early 1980s, followed by the NPM stage that lasted until the early 21st century, after which there was a third shift, the NPG stage.

According to him, the theory of new public governance consists of the objective existence of the level of technology, the capital base, and the actors in the private sector, the public sector, and the third sector as the provider of external benefits, and the public service system constituted by the users of public services, the family, the local community, to better carry out the provision of public services, to create as much as possible the social effect of the theory of public management. (Osborne, 2009)

Since 2010, with the continuous deepening of the research on new public governance, Enhancing collaborative innovation in the public sector explains the special conditions and growing demand for public innovation and shows how public innovation can be strengthened through multi-party cooperation, explores how collaborative innovation can be fostered in the public sector, and highlights the importance of collaborative and networked governance. (Sørensen and Torfing, 2011: 842-868). According to Gu (2012: 8-14), "new public governance" relies on institutional and network theory and needs to take into account the interests of various stakeholders in the policy network and their policy demands.

Governance network theory: past, present and future, co-authored by Erik-Hans Klijn and Joop F. Koppenjan, reviews past, present and future developments in governance network theory, including New Public Governance. (Klijn and Koppenjan, 2012: 587-606)

Osborne et al. (2012: 135-158) point out from the perspective of "service-led logic" that the new public governance must understand public services as services, and that "service-led logic" is the concept of public service provision, and that public service is a system that is service-led rather than product-led, and that it is necessary to avoid the fatal defects contained in the theory of public management that is product-led.

It can be seen that the New Public Governance Theory is our addition to the idea of product-led based on the New Public Management Theory. In this study, it does not deny the customer-orientated theory of New Public Management, and will further assist the Triple Helix Theory in its research with regard to the concept of public services as a citizen-led system that emphasises collaborative internal and external governance.

Related research

1. Triple Helix Theory Research

Etzkowitz and Leydesdorff (2000: 109-123) applied the triple helix theory to the research on regional innovation and found that the interactive relationship among universities, industries and governments is affected by the historical industry background and regional innovation environment. Liu and White (2001: 1091-1114) used this theory to do localization research, and a correlation was found between the role of local governments and the level of regional economic development according to the differences in innovation systems in different regions of China.

Etzkowitz (2003: 293-337) discussed the innovative role of the triple helix again, analyzed the role of each subject in the triple helix, and believed that the government can promote the relationship between universities and industries by formulating related policies to promote technology transfer and commercialization. Cooperation, relevant policies can include providing tax relief for universities and enterprises to establish R&D centers jointly, and giving priority to the purchase of university R&D results in government procurement. Eun et al. (2006: 1329-1346) investigated the interaction between Chinese universities and enterprises under the triple helix theory, and found that with the support of policies, schools will actively participate in industrial activities.

Carayannis and Campbell (2009: 201-234) used this model to study the university-industry-government relationship models in different countries and regions, and proposed a variety of relationship models. For example, the East Asian model has an obvious dominant position of the government. Li (2011: 36) studied the

dynamic evolution of university patent technology transfer institutions in the United States under the triple helix model. It is found that under the triple helix model, the participants form a close relationship of interaction and self-reflexivity to promote the in-depth development of innovation activities, but the in-depth development of the triple helix relationship cannot be separated from the promotion of university patent technology transfer institutions.

Saad and Zawdie (2011) used this theory to explore the challenges faced by developing countries in implementing the triple helix model. The research found that government policies and measures play a key role. The government should formulate relevant policy measures, such as providing venture capital, establishing science and technology parks, developing Technology transfer and commercialization training, etc. Chen (2014: 64-69) used the triple helix theory in the study of the university entrepreneurship education ecosystem, and through the study, he found that emphasis should be placed on the optimal allocation of government policy guidance, industrial platform support, and university teaching resources in the innovation and entrepreneurship education ecosystem to realize the benign interaction and helical support of the trinity of universities, industries, and governments, and continuously promote the overall function.

Alos, Based on the "Triple Helix Model", Wang (2014: 50-54) studied the issue of government, school and enterprise cooperation in Shaanxi Province, and he proposed that the government needs to improve its policies and legal system, which means that the government has to better assume the role of a regulator.

Yang (2014a: 117-119) studied the roles of institutions, enterprises, and government in the integration of industry and education based on the triple spiral theoretical framework. And concluded that any one of them in the spiral plays two roles outside the calendar at the same time in addition to assuming its role. This conclusion proves the deepening of the internal functions of the three players in the regional innovation system, and the partnership of intermingling and mutual interaction. Hillman et al. (2015: 501-519) examine the responses of state universities of different sizes to government performance-based funding policies. University size is found to affect its coping strategies.

Ranga and Etzkowitz (2013: 237-262) used the PEST model to analyze the theory, and obtained the influence of macro-environmental factors such as politics, economy, society and technology on the triple helix in the regional innovation system. Zhang et al. (2015: 28-31) studied the regional collaborative innovation mechanism of industry-university research based on the triple helix theory, and concluded that universities need to respond to the needs of society and the market, sometimes adjusting the disciplinary structure and cultivation methods, while enterprises should optimise and integrate the organisational structure, internal and external resources of enterprises through institutional innovation to adapt to market changes.

Alos, Jiang (2016: 1-10) used the triple helix theory to study the transformation and development of local general undergraduate colleges. In the study, he concluded that the important role of the government is to stand based on the respective interests of the university and the market, to reconcile the contradictions with each other with macro-strategic thinking, and to guide and motivate the two sides to establish an interactive cooperative relationship, and at the same time, he believed that the government plays a third-party role as a mediator and a facilitator between the university and the market, i.e., it creates a favorable external environment through the laws, regulations, and institutional arrangements for the cooperation between the university and the market. He also believes that the government is a third-party mediator and facilitator between universities and the market, i.e. creating a favorable external environment for university-market cooperation through legal regulations and institutional arrangements.

Wang and Luo (2016: 1075-1082) applied the triple helix theory to the analysis of the interaction between location, industry type and the vertical spatial correlation of industries linking the two in Shanghai, China, in order to illustrate that the government should follow the economic law in the process of industrial policy as well as urban spatial planning, and promote the evolution of the spatial pattern of the whole industry more actively. Li et al. (2020: 508-530) examined the impact of the triple helix system of university-industry-enterprise-government cooperation

on regional entrepreneurship in China. The study pointed out that the role of tripartite co-operation and networking is more prominent in developing regions, while complementary synergy is more effective in developed regions, i.e., the role of the triple helix is adapted to changes in different environments.

Also, Lerman et al. (2021) apply the triple helix theory to the topic of promoting renewable energy, arguing that policymakers can engage the private sector and political actors in collaborative activities to promote energy policy achievements for their impacts to be disseminated and that policymakers can better define their policy approaches to achieving municipal energy goals by engaging the interactive means of formal or informal dialogues or interviews.

Through previous studies, we find that the triple helix theory plays an important role in promoting the study of practical innovation. This model gives full play to the strengths and resources of all parties, boosting the development of the industry and the cultivation of talents. The authors believe that the innovation process requires cooperation from the government, enterprises, and universities, and these three forces promote each other to form a virtuous cycle. Meanwhile, the theory also plays an important role in the integration of industry and education. In the integration of industry and education, the government should act as a guide and facilitator and can stimulate and guide collaborative innovation between enterprises and universities by formulating policies and providing funding, while also strengthening the protection of intellectual property rights through regulations and administrative means to facilitate the landing and industrialization of technologies. Enterprises can also provide feedback to the university on their own market needs and industry trends, helping the university to better orient its research and solve practical problems, thereby improving the level of research and the rate of conversion of results. By working closely with the government and enterprises, the university can translate research results into practical applications and promote the protection of intellectual property rights and the industrialization process. Through the above elaboration, we can find that the concept of innovation system proposed by the triple helix theory is closely related to the specific initiatives of local governments in promoting the integration of industry and education, which can help

promote innovation in government behavior, accelerate scientific and technological progress and industrial development through close cooperation between the government, enterprises, and universities, improve the comprehensive strength and international competitiveness of the country, and also provide a feasible model of innovation control for local governments.

At the same time, the authors argue that the triple helix theory, while a useful framework for understanding and promoting collaborative innovation between universities, industry, and government. However, in practice, it has some limitations. For example, the triple helix theory emphasizes the interaction and cooperation among the three subjects, but the cooperation relationship, in reality, may be very complicated. This has not been covered much in previous studies. There may be barriers between the interests, goals, and cultural differences between universities, industries, and governments that make cooperation difficult, so the theory should emphasize equal cooperation among the three parties.

To summarize, after relevant research on the theory of the triple helix, we believe that the triple helix model shows great driving force and development potential in the integration of industry and education. Guided by the theory, in the cooperation among schools, enterprises, and governments, environmental factors play a fundamental role, local government policies are an important driving force in the triple helix, and the interactivity of the three parties is the core of the triple helix. Together, they promote the development of industry-education integration and realize the virtuous circle of talent cultivation and industrial development. This model provides strong support for the transformation and upgrading of the regional economy and makes positive contributions to talent cultivation and social progress. This also identifies the important position of the triple helix theory in this study, which is the main theory used in this study.

2. Customer Orientation in NPM Research

Bovaird and Loeffler (2013: 15) used the theoretical study to explore harnessing user and community co-production of public outcomes. The authors of the study found that that the movement towards co-production can be

conceptualized as a shift from ‘public services for the public’ towards ‘public services by the public’, within the framework of a public sector which continues to represent the public interest, not simply the interests of ‘consumers’ of public services. Hammerschmid et al. (2019: 399-418) used this theory in the research of New Public Management reforms in Europe. The authors found that treating service users as customers and flexible employment are positively related to improvements on all four dimensions of performance.

Also, Zampetakis and Moustakis (2007: 19-38) applies the theory to empirically assess the entrepreneurial behavior of frontline employees in the Greek public sector. The results of the study present a definition of public entrepreneurs as people working in public sector environments who can create a dynamic work environment in the workplace and implement a range of activities and practices aimed at providing quality services to citizens through the organization's strategic vision and change orientation. The client-orientated nature of service to citizens was emphasized. Pinheiro and Stensaker (2014: 497-516) examine how NPM affects university entrepreneurship and operating models. The study points out that the concept of new public management prompts universities to adopt market-oriented operations, and the government can guide the role orientation of universities through policies.

In summary, we can conclude that the theory of new public management holds that the social responsibility of government is to provide services to customers according to their needs, that government services are customer- or market-oriented, and that only a customer-driven government can satisfy diversified social needs and promote the improvement of the quality of government services. Thus, NPM theory changes the relationship between government and society in traditional public administration, where government is no longer a closed bureaucracy above society, but rather a responsible entrepreneur, with citizens as customers.

Combined with our research, the government plays a key role as the main manager and decision maker of the public sector in the process of deepening the integration of industry and education. Customer orientation in deepening the integration of industry and education emphasizes the role of the government as the

public sector, and the government should play the roles of policy maker, resource allocator and regulator and evaluator. By actively guiding and supporting the development of the integration of industry and education, the government can promote the optimization of public services, enhance customer satisfaction, and promote sustainable economic and social development.

3. Limited Government Theory Research

Foss (2016: 288) Uses limited government theory research to explore the importance of limited government in economic and social development, found the factors that influence limited government theory on public policy and governance, and makes some practical recommendations. Yu (2018: 1-8) uses the theory to study the practice of public administration in China, and the study concludes how important governance theory is in reconstructing the ideological system of China's democratic politics, finding an institutional platform for good governance, and transforming public policies in both theory and practice.

Also, Acs et al. (2009: 15-30) use the theory of limited government to study the knowledge spillover of entrepreneurship. The study believes that the government should not directly participate in economic activities, but should promote knowledge dissemination and entrepreneurship. Yin et al. (2022: 105045) used the theory to study institutional supply, market cultivation, and the development of marine strategic emerging industries. Through the study, it was concluded that the strategic emerging marine industries need a higher degree of marketization.

The kinds of literature above represent the latest progress and development trend of limited government research in their respective fields, which provide us with a better understanding of limited government theory, and at the same time support the view that local governments play a service role in deepening the process of industry-education integration as well as implementing limited behaviors in this thesis. We can think that in the study of local government behavior, the limited government theory can provide ideas and guidance to help local governments better plan and implement economic policies to promote the development of the local

economy. The limited government theory encourages the government to optimize the regulation and management of public services and to let the market operate on its own to improve administrative efficiency under the premise of guaranteeing the quality of basic public services.

The limited government theory advocates that the government should pay more attention to the basic public services and social public interests based on guaranteeing individual freedom and market freedom and enhancing the government's sense of public responsibility. In conclusion, the limited government theory can provide important ideas and guidance in the study of local government behavior, enhance the management and service capacity of local governments, strengthen the government's sense of public responsibility, and promote the development of the local economy and society.

4. New Public Governance

Iacovino et al. (2017: 61-82) used the theory of New Public Governance (NPG) in their study of public management approaches in Tuscany, which argued that the NPM could not be said to have been superseded, but on the contrary, that it had been integrated and improved by new public governance principles. Mutiarin et al. (2019: 346-362) used the New Public Governance Theory to examine the application of ICT in human resource management and they concluded that in today's technology-driven world, it is important to consider improving the ICT skills of human assets in organisations in order to improve the responsiveness and efficiency of the public service.

Hou and Wen (2020: 118-121) apply the New Public Governance theory to the study of the feasibility of applying OKR to public sector performance management, and they believe that under the New Public Governance paradigm, applying the OKR working method to public sector performance management is of some significance in breaking the current performance management dilemma.

Lin (2021: 61-75) uses the New Public Governance theory in the international experience of school governance model and its revelation, and gets the conclusion that "only by promoting the relationship between interest-driven and professional-

driven from antagonism to homogeneity, can we reach the long term 'governance' of the school".

Xie and Ye (2023: 148-150) used the New Public Governance Theory to study the industry shaping in rural governance, they analysed the process of industry shaping in rural governance with the help of the theoretical tools of the New Public Governance Theory, with the help of the case of Beiwu Village, by analysing the roles played by all the main bodies in the whole process of practice, they got the real-life revelation that party members penetrate into the masses to achieve the longitudinal evolution of the governance scheme, the government connects with the enterprises to achieve the full mobilisation of the social resources, and the society participates in the governance to realise the widening of the public services in a rich way.

It can be seen that the New Public Governance theory is a complementary and developmental approach to the traditional public management model, emphasizing the participatory, networked, and collaborative nature of the public decision-making process. The above studies have used the New Public Governance Theory for policy evaluation or related areas. These studies provide some insights into understanding the application and impact of the New Public Governance Theory and demonstrate the application of the New Public Governance Theory in different areas, provide some empirical studies and insights for policy evaluation and public management, further emphasize the importance that the New Public Governance Theory has for improving public services and governance processes, and provide some practical examples and recommendations.

A synthesis of previous studies shows that in the study of the impact of local government behaviour on deepening the integration of industry and education based on the triple helix theory, the government's role positioning and innovative government behaviour are the two key elements for the deepening of the integration of industry and education in higher vocational colleges and universities. In China, the integration of industry and education is a gradual and progressive process, and the term "integration" is now more focused on "you have me and I have you". It is a combination of academic research and teaching process, to achieve a win-win situation for talent training, application of research results, and industrial

development in many aspects. Summing up the previous studies, we have come to the following conclusions:

First, local governments have an important role in influencing the integration of industry and education, and the role played by the government will play a role in the deepening of the integration of industry and education in terms of policy leadership, organization and coordination, and platform construction.

Second, the triple helix theory proposes a synergy between higher education, industry, and government, which indicates that local governments must play an important and correct role to participate in the integration of education and industry under the influence of environmental factors, policies, and interactive factors to promote closer links between education and industry and to facilitate exchanges and cooperation.

Thirdly, the customer orientation in the New Public Management theory has a positive effect on the role of local governments in deepening the integration of industry and education, such as by focusing on the needs and expectations of the public, improving the quality of public services, optimizing the formulation and implementation of policies, and strengthening public participation and democratic decision-making, local governments can better meet the needs of the public, improve the performance and transparency of the government, and establish a good relationship between the government and public interaction and cooperative relationship.

Of course, through the study of the previous literature, we also found some problems. Firstly, some literature is too theoretical and lacks empirical research, focusing on how to understand the deepening of the integration of higher vocational institutions with industry and education, while lacking in-depth discussion on the problems and difficulties encountered in actual implementation; secondly, too much attention is paid to the background of local governments and the formulation of policies, while lacking detailed research on the specific behaviors and practices of local governments; thirdly, the research method is single. Some of the current papers mainly use questionnaires and interviews to collect information, and the methods used to analyze data lack diversity and in-depth qualitative data analysis methods;

fourthly, the limitations of government behavior are not explored in depth. Some papers are limited to exploring the general scope of the government's system and functions, and the specific behavior and role of the government in the integration of local industry and education still need to be explored in depth.

Therefore, in our research, we need to strengthen empirical research and gain a deeper understanding of the specific problems and difficulties faced in the practical implementation of the integration of industry and education, while paying more attention to the specific behaviors and practices of local governments in the integration of industry and education, as well as the impact and effectiveness of these behaviors, and most importantly, the research results should be balanced between practice and theory, so that the research results can be transformed into plans and action plans for the promotion of the integration of industry and education in local areas, and promote The research results should be translated into plans and action plans to promote the integration of industry-education between government, enterprises and higher vocational institutions in a more in-depth, healthy and sustainable way.

Research framework

In this thesis, the Triple Helix is used as the main theory, and Customer Orientation In NPM and Limited Government Theory as the supporting theories to find out the factors affecting the final research purpose based on the previous research and to answer the third question posed in this study in turn. The conceptual framework is drawn as follows:

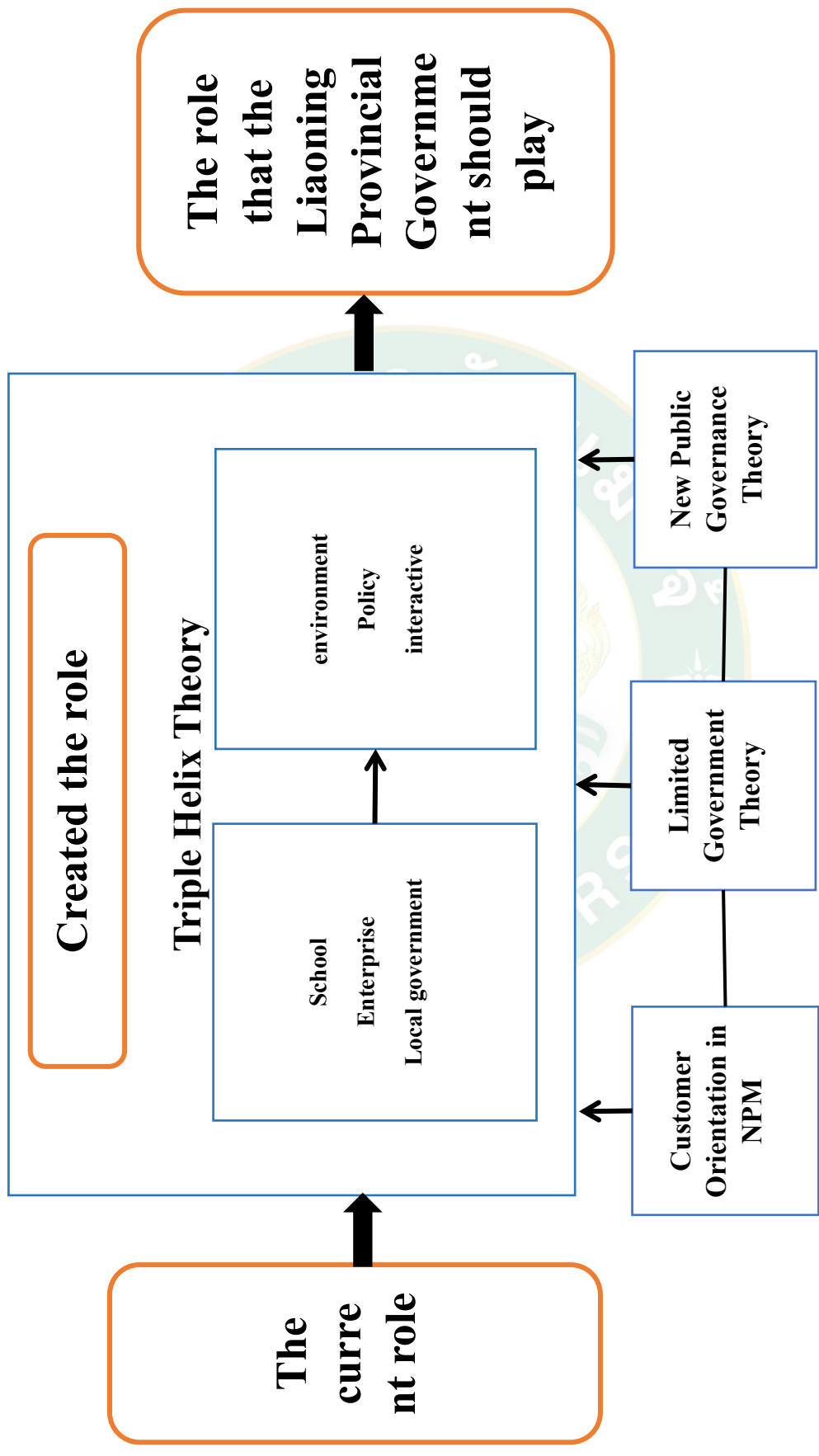


Figure 4 Research framework

CHAPTER 3

RESEARCH METHODOLOGY

This chapter explains the main quantitative research methodology used in this study and its philosophical background. This chapter also provides relevant information about the research site and describes the sources of the data and how it was collected. Finally, this chapter looks at the methods used to analyze the data and explains the data testing.

1. Location of study
2. Research method
3. Data sources
4. Data collection
5. Data Analysis
6. Data Verification

Location of study

1. Liaoning Province Basic Information

This study will be conducted in Liaoning Province. Liaoning is located in the southernmost part of northeastern China, with a land area of 146,900 square kilometers, a sea area of 41,300 square kilometers, a mainland coastline of 2,110 kilometers, and a permanent population of 41.97 million at the end of 2022. Liaoning has obvious location advantages, bordering Jilin Province in the northeast, neighboring Inner Mongolia Autonomous Region in the northwest, which is an important corridor connecting North China and Northeast China, adjoining Hebei Province in the southwest, bordering the Democratic People's Republic of Korea by the Yalu River in the southeast, and bordering the Bohai Sea and the Yellow Sea in the south. Liaoning Province has 14 prefecture-level cities, namely Shenyang, Dalian, Anshan, Fushun, Benxi, Dandong, Jinzhou, Yingkou, Fuxin, Liaoyang, Panjin, Tieling, Chaoyang and Huludao, and Shenyang, the capital of the province.

辽宁 LIAO NING



Figure 5 Map of Liaoning Province

2. Liaoning Vocational University of Technology Status

The university is located in Binhai New District, a national economic and technological development zone in Jinzhou City, Liaoning Province, covering an area of 941.59 acres, with a building area of 333,800 square meters, 573 full-time teachers, 10,228 full-time students (including 962 students enrolled in the expansion of higher vocational education), and 9 second-level colleges, including electromechanical, automotive, architectural, information, all-media, logistics, finance and economics, tourism and nursing, offering 11 four-year vocational colleges and 11 four-year vocational schools. It has set up 9 secondary colleges, 11 four-year vocational undergraduate majors, and 31 higher vocational specialties.

3. Enterprises cooperated with Liaoning Vocational University of Technology Status

As of September 2022, source: Liaoning Vocational University of Technology has a total of 92 cooperative enterprises. These enterprises cover 7 provinces in China, including 56 in Liaoning Province and 36 in other provinces. The industries of these enterprises include manufacturing, construction, transportation, information technology services, wholesale and retail, culture and entertainment, etc. They cover 42 specialized and undergraduate majors at the university. Among them, the proportion of enterprises above scale is 52%. (Liaoning Vocational University of Technology, 2022)

Research method

Philosophy of research is a philosophical inquiry into the nature, purpose, and methods of research. It explores questions such as the essential properties of research, how knowledge is obtained, and how phenomena are explained.

In this study, the authors will use quantitative research methods based on positivism, mainly using questionnaires to obtain primary data, assisted by the use of documentary methods to collect secondary data and synthesize the phenomenon of the study, which imposes strict requirements for rigor, objectivity, and value-neutrality of the study. Quantitative research usually takes the form of data, anticipates theories through deductive methods, and then evaluates or validates models, hypotheses, or theories anticipated before the study through the collection of information and evidence, as is the case in this study. The steps are as follows:

Step 1: The literature method was used to collect secondary data from related studies, which was used to assist the design of the questionnaire to obtain the data related to the integration of industry and education from the Liaoning Provincial Government, which will be used to assist the questionnaire to achieve the 1st research objective.

Step 2: The questionnaire method was used to collect primary data from the other two subjects of the triple helix, schools, and enterprises, which will be used to achieve the three research objectives of this study.

The method is described as follows:

1. Documentary method

The documentary method is a method commonly used in academic research to review existing books, journal articles, reports, and other literature to gain knowledge and research findings in the relevant field. In this study, the literature method will be used to collect relevant secondary data to assist the objective data from the questionnaire focusing on reaching the 1st research objective.

2. Questionnaire Survey

The questionnaire method is a method commonly used to collect data in social science research by distributing and collecting questionnaires to obtain the opinions, views, and behaviors of the subjects of the study. The purpose of this method is to understand social phenomena, research topics, or population characteristics for statistical analysis and inference. In this study, data were collected and analyzed mainly through questionnaires, which were used to achieve three research objectives.

Data sources

The data source comes from the research of information. The source of the number source is divided into two parts:

The research will obtain from questionnaires to ask the faculty and managers;

The research will on information from books, and the website of the Liaoning Provincial Government from 2014 to 2022.

Data collection

1. Primary data collection - questionnaires

In this study, to suggest the role that the government of Liaoning Province should play, the authors will use a questionnaire to obtain the relevant data. We need to carry out research work on schools and enterprises through the two main subjects in the integration of industry and education other than the government, respectively. The steps of designing the school questionnaire and enterprise questionnaire are as follows.

Step 1: Conducting focus group interviews

The first part: Organize two groups, each consisting of five participants—one group from the academic sector and one from the enterprise sector. The aim was to delve into the distinct perspectives of each sector on the integration of industry and education.

The second part: Carefully selected to represent a diverse range of experiences and roles within their respective sectors. The school group included academic staff and administrators involved in curriculum development and industry partnerships, while the enterprise group comprised professionals who engage with educational institutions as part of workforce development and training initiatives.

The third part: Each focus group session lasted for 45 minutes and was structured to encourage open discussion and facilitate an exchange of ideas. A semi-structured guide was used.

The fourth part: The sessions were audio-recorded to ensure accurate capture of the data for subsequent transcription and analysis.

The fifth part: The focus group discussions were transcribed verbatim, and thematic analysis was conducted to identify commonalities and differences in the perspectives of the two groups.

Step 2: Sample selection

1. Sample of The school: the authors will conduct the research among 573 faculty members of Liaoning Vocational University of Technology. Taro Yamane method will be used to calculate the sample size and ultimately 240 faculty

members will be randomly selected to be given the survey; (Liaoning Vocational University of Technology, 2022)

The sample size calculation formula is as follows:

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

n = sample size)

N=Total population

e =standard error=0.05

(Yamane, 1969)

2. Sample of enterprises: A sample of 92 firms with which the school is engaged in cooperation was taken and the Taro Yamane method was also used to calculate the sample size finally, the questionnaire was randomly selected to be distributed to 80 firm managers. (Liaoning Vocational University of Technology, 2022)

Step 3: Step Design the form and main content of the questionnaire. The questionnaire is structured and will use multiple-choice questions as well as a Likert scale. A Likert scale is a scale used to measure people's views, attitudes, or opinions about a particular viewpoint, and consists of a series of statements or questions, usually rated on a five-point scale ranging from "Strongly Agree" to "Strongly Disagree" or from "Highly Satisfied" to "Highly Dissatisfied". (Batterton and Hale, 2017: 32-39). Participants select the appropriate option for each statement based on their own opinion. The design of this step consisted of four parts.

The first part is the demographics and other variables. For example, the school questionnaire includes information such as gender, age, and salary, and the enterprise questionnaire includes information such as the location of the enterprise and the industry it belongs to. etc. The form of multiple-choice questions was used;

The second part is the current role. The second part is the status quo of playing the role. This part will design the questionnaire around three indicator factors: schools, enterprises, and government, respectively, and three secondary

indicators will be involved, namely, the environment, policy, and interaction of the integration of industry and education. The form of Likert scales was used;

The third part is the triple helix theory create the role of local government. This part, like the second part, revolves around three Indicator factors, and also involves three secondary indicators of environment, policy, and interaction. The form of Likert scales was used;

The fourth part part is the role of local government should play to help achieve the ultimate goal of this study. The form of Likert scales was used;

Step 4: Collect the questionnaire

2. Secondary data collection - documentary method

In this study, secondary data were collected using the documentary method, which was used to collect data on the policies, measures, platforms, and announcements made by the Liaoning Provincial Government to carry out the integration of industry and education. The authors collected data on the website of the Ministry of Education of China, the website of the Liaoning Provincial Government, and the website of Liaoning Provincial Education, respectively. The timeframe defined as development policies, government statistics, and program documents between 2014-2022 were used as documentation for the study.

Data analysis

In this study, the authors will use SPSS to analyze the data. SPSS, as a professional statistical analysis software, has rich functions and a wide range of applications. In this study, descriptive analysis will be used to describe and summarize the data indicators with Basic statistical scales, including the following common values:

1. Mean: it is the sum of all observations divided by the number of observations, which is used to indicate the approximate average of the data;
2. Median: it is the observation that is in the middle of the data when it is sorted by size.

3. Mode: is the observation that occurs most frequently in the data set.

The mean and median are used to describe the central tendency of the data, and the mode is used to describe the distribution pattern of the data.

Data validation

Using the calculation function of SPSS, when using Cronbach's α coefficient for the internal reliability test, the α coefficient greater than or equal to 0.7 indicates that the internal reliability is good, and the use of measurement tools is acceptable. Alpha coefficients below 0.7 may warrant further examination for improvements, and optimization may be required.



CHAPTER 4

RESEARCH RESULTS

Introduction

This chapter will analyze the acquisition of data using a mixed research methodology, where focus groups provide qualitative insights into stakeholders' subjective experiences and opinions, and questionnaires provide a quantitative measure of views within the wider population.

This chapter aims to answer the questions:

1. What current role does the Liaoning provincial government play in deepening the integration of industry and education in Liaoning Vocational University of Technology?
2. How does the triple helix theory create the role of local government?
3. What role should the Liaoning Provincial Government play in deepening the integration of industry and education in Liaoning Vocational University of Technology?

Based on the sample size calculation, 240 school questionnaires should have been collected, and 255 questionnaires were received. The questionnaires were tested on each of the three scales according to the three dimensions of the reliability test. Where E stands for environment dimension, P stands for policy dimension, and I stands for interactivity dimension. The same is true for other reliability tests, A stands for all indicators that do not belong to the three dimensions as follow.

Table 1 Reliability Test Scale 1 from the school

	Item Number	Cronbach's Alpha
Scale 1 - E	4	0.954
Scale 1 - P	6	0.964
Scale 1 - I	3	0.890

Scale 1 - E, which consists of 4 items and has a Cronbach's Alpha of 0.954, indicating a very high level of reliability. The second subset, 'Scale 1 - P', is comprised of 6 items and boasts a Cronbach's Alpha of 0.979, showcasing an excellent level of reliability. The third subset, 'Scale 1 - I', contains 3 items with a Cronbach's Alpha of 0.890, suggesting a high reliability score.

Table 2 Reliability Test Scale 2 from the school

	Item Number	Cronbach's Alpha
Scale 2 - E	6	0.937
Scale 2 - P	4	0.946
Scale 2 - I	3	0.889

For Scale 2, the 'Scale 2 - E' subset contains 6 items and has a Cronbach's Alpha of 0.937, which is indicative of a very high reliability level. The 'Scale 2 - P' subset, with 4 items, holds a Cronbach's Alpha of 0.946, signifying a very high level of reliability. The 'Scale 2 - I' subset is made up of 3 items and has a Cronbach's Alpha of 0.889, showcasing high reliability.

Table 3 Reliability Test Scale 3 from the school

	Item Number	Cronbach's Alpha
Scale 3 - A	3	0.897
Scale 3 - E	2	0.960
Scale 3 - P	2	0.847
Scale 3 - I	2	0.763

The 'Scale 3 - A' subset, which consists of 3 items, has a Cronbach's Alpha value of 0.897, indicating high reliability. The 'Scale 3 - E' subset comprises 2 items with a Cronbach's Alpha of 0.960, suggesting a very high reliability level. The 'Scale 3 - P' subset, which also has 2 items, has a Cronbach's Alpha value of 0.847, which is indicative of a good reliability level. Finally, the 'Scale 3 - I' subset consists of 2 items and has a Cronbach's Alpha of 0.763, suggesting acceptable reliability.

According to questionnaire, the part 1 is demographic from the school, it has 9 questions and the result shown following to tables 4-12, that is the statistics of demographic variables. There are 13 questions in part 2, the result shown following to tables 13-27, it analyzes the current role played by the government of Liaoning province in the school, corresponding to the school scale 1. The part 3 have 13 questions and the results shown following to tables 28 -42, it analyzes the triple helix theory creates the role of government in three dimensions, which corresponds to school scale 2. The part 4 have 9 questions and the results shown following to tables 43 -53, it analyzes the role should the Liaoning Provincial Government play in deepening the integration of industry and education in the school, corresponding to the school scale 3.

The part 5 is demographic has 9 questions and the result shown following to tables 57-65, that is the statistics of demographic variables. There are 13 questions in part 6, the result shown following to tables 66-80, it analyzes the current role played by the government of Liaoning province in the school, corresponding to the enterprise scale 1. The part 7 have 13 questions and the results shown following to

tables 81 -95, it analyzes the triple helix theory creates the role of government in three dimensions, which corresponds to the enterprise scale 2. The part 8 have 9 questions and the results shown following to tables 96 -106, it analyzes the role should the Liaoning Provincial Government play in deepening the integration of industry and education in the school, corresponding to the enterprise scale 3.

Demographic (From the school questionnaire)

Table 4 Gender

No.	Gender	Frequency	percent
1	Male	106	41.6
2	Female	148	58.0
3	NA	1	0.4
Total		255	100%

The gender distribution of the samples shows that out of the total, 41.6% are male (106 samples), 58.0% are female (148 samples), and 0.4% did not specify their gender (1 sample).

Table 5 Age

No.	Age	Frequency	percent
1	Under 25 years old	6	2.4
2	25-40 years old	133	52.2
3	40-60 years old	66	25.9
4	Over 60 years old	50	19.6
Total		255	100%

In terms of age, 2.4% are under 25 years old (6 samples), 52.2% fall in the age range of 25-40 years (133 samples), 25.9% are between 40-60 years old (66 samples), and 19.6% are over 60 years old (50 samples).

Table 6 Income

No.	Income	Frequency	percent
1	Below 3000 RMB	16	6.3
2	3000 – 5000 RMB	84	32.9
3	5000 – 8000 RMB	95	37.3
4	More than 8000 RMB	60	23.5
Total		255	100%

Note: (1) RMB is the legal tender of the People's Republic of China and 1 RMB is 0.14 USD

Income-wise, 6.3% of the samples earn below 3000 RMB (16 samples), 32.9% earn between 3000-5000 RMB (84 samples), 37.3% earn between 5000-8000 RMB (95 samples), and 23.5% earn more than 8000 RMB (60 samples).

Table 7 Marriage

No.	Item	Frequency	percent
1	Married	187	73.3
2	Unmarried	62	24.3
3	N/A	6	2.4
Total		255	100%

Marital status distribution indicates that 73.3% are married (187 samples), 24.3% are unmarried (62 samples), and 2.4% did not specify their marital status (6 samples).

Table 8 Years

No.	Item	Frequency	percent
1	3 years or less	76	29.8
2	3 – 10 years	78	30.6
3	10 -15 years	33	12.9
4	Over 15 years	68	26.7
Total		255	100%

In terms of years of association or experience, 29.8% have been involved for 3 years or less (76 samples), 30.6% have been involved for 3-10 years (78 samples), 12.9% for 10-15 years (33 samples), and 26.7% for over 15 years (68 samples).

Table 9 Job

No.	Item	Frequency	percent
1	Teacher	166	65.1
2	Counsellor	21	8.2
3	Administration staff	53	20.8
4	Management	15	5.9
Total		255	100%

Professionally, 65.1% are teachers (166 samples), 8.2% are counsellors (21 samples), 20.8% work in administration (53 samples), and 5.9% are in management roles (15 samples).

Table 10 Relevance

No.	Item	Frequency	percent
1	Directly related	82	32.2
2	Indirectly contact	93	36.5
3	Related contact	32	12.5
4	Irrelevant	48	18.8
Total		255	100%

When asked about the relevance of their job or association to the topic of interest, 32.2% stated it's directly related (82 samples), 36.5% have indirect contact (93 samples), 12.5% have related contact (32 samples), and 18.8% find it irrelevant (48 samples).

Table 11 Experience

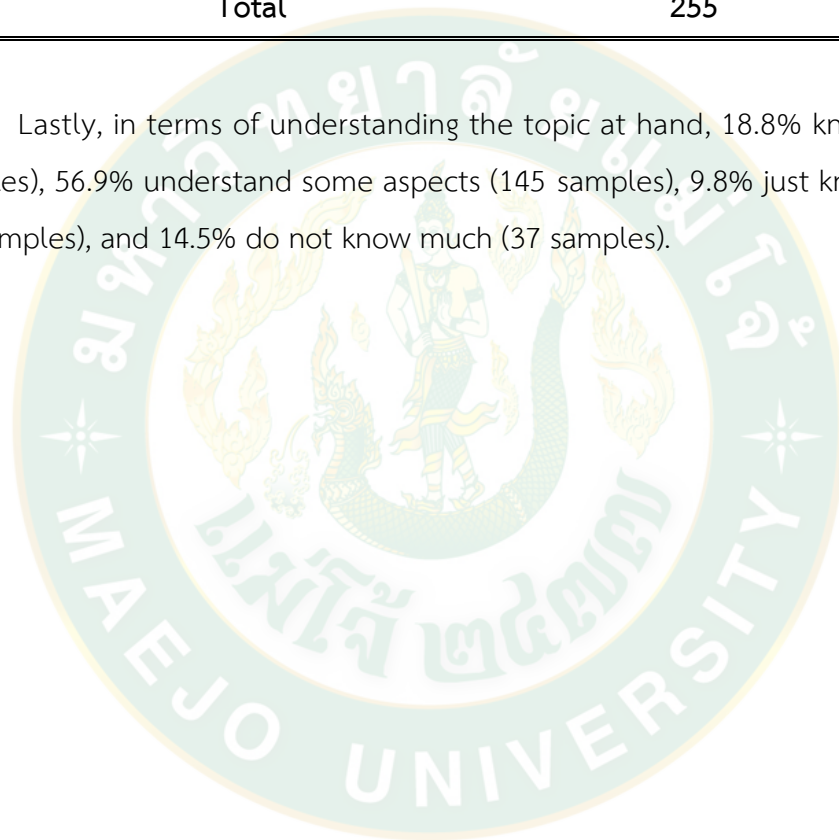
No.	Item	Frequency	percent
1	1 year or less	104	40.8
2	1 - 5 years	89	34.9
3	5 – 10 years	31	12.2
4	Over 10 years	31	12.2
Total		255	100%

Regarding experience in their current field, 40.8% have 1 year or less of experience (104 samples), 34.9% have between 1-5 years (89 samples), 12.2% have between 5-10 years (31 samples), and 12.2% have over 10 years (31 samples).

Table 12 Understanding

No.	Item	Frequency	percent
1	Know well	48	18.8
2	Understand some	145	56.9
	Just know	25	9.8
4	Do not know much	37	14.5
Total		255	100%

Lastly, in terms of understanding the topic at hand, 18.8% know it well (48 samples), 56.9% understand some aspects (145 samples), 9.8% just know the basics (25 samples), and 14.5% do not know much (37 samples).



Descriptive statistics (From the school questionnaire)

In part 2, the current role played by the Liaoning provincial government is analyzed from the perspective of the school in terms of the three dimensions of environment, policy, and interactivity involved in schools, enterprises, and government, respectively. The scale was divided into 5 levels, very satisfied, satisfied, average, dissatisfied, and very dissatisfied, with scores of 5, 4, 3, 2 and 1. therefore, the results show as following table.

Table 13 The school has a complete operating mechanism for the integration of industry and education

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	1	.4
3	Neutral	32	12.5
4	Agree	65	25.5
5	Strongly agree	156	61.2
Total		255	100%

The responses indicate a strong consensus that the school has an effective mechanism for integrating industry and education. A significant majority of 61.2% strongly agree, accompanied by 25.5% who agree. This overwhelming positive response (86.7% combined) suggests a high level of satisfaction with the school's approach. Only a minimal number (0.8% combined) disagree, while 12.5% remain neutral, indicating some uncertainty or lack of information among these respondents.

Table 14 The industry education integration policy issued by the Liaoning Provincial Government meets the needs of the school

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	1	.4
3	Neutral	29	11.4
4	Agree	71	27.8
5	Strongly agree	153	60.0
Total		255	100%

A majority perceives the provincial government's policies as meeting the school's needs. 60% strongly agree, and 27.8% agree, totaling 87.8% positive responses. This indicates that the policies are well-received and considered effective. Only 0.8% disagree, and 11.4% are neutral, suggesting that there is little opposition, but some respondents are either unsure or indifferent.

Table 15 Local policies or measures in Liaoning Province can effectively promote the school to deepen the integration of industry and education

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	1	.4
3	Neutral	39	15.3
4	Agree	66	25.9
5	Strongly agree	148	58.0
Total		255	100%

A significant portion of respondents, 58% strongly agree, and 25.9% agree (83.9% combined) that local policies are effective in promoting deeper integration. This suggests a strong endorsement of the local government's efforts. The neutral responses are somewhat higher here at 15.3%, indicating a greater degree of uncertainty or ambivalence among respondents.

Table 16 The school actively participates in industrial activities organized by the government or enterprises

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	1	.4
3	Neutral	15	5.9
4	Agree	63	24.7
5	Strongly agree	175	68.6
Total		255	100%

The data here shows an overwhelming positive response with 68.6% strongly agreeing and 24.7% agreeing, totaling 93.3%. This indicates a widespread perception that the school is very active in participating in industrial activities, reflecting a proactive stance in industry engagement. Only 0.8% disagree, and a small portion (5.9%) are neutral.

Table 17 The enterprise has a complete mechanism for the integration of industry and education

No.	Level	Frequency	Percent
1	Strongly disagree	2	.8
2	Disagree	7	2.7
3	Neutral	41	16.1
4	Agree	68	26.7
5	Strongly agree	137	53.7
Total		255	100%

Over half of the respondents (53.7%) strongly agree, and 26.7% agree that enterprises have a complete mechanism for integration, indicating a positive perception of the enterprise sector's role. However, there's a slightly higher level of disagreement and neutrality here (3.5% and 16.1%, respectively), suggesting some reservations about the effectiveness of enterprise mechanisms.

Table 18 The industry-education integration policy issued by the Liaoning Provincial Government meets the needs of the enterprises

No.	Level	Frequency	Percent
1	Strongly disagree	2	.8
2	Disagree	4	1.6
3	Neutral	37	14.5
4	Agree	68	26.7
5	Strongly agree	144	56.5
Total		255	100%

A majority (56.5% strongly agree, 26.7% agree) feel that the provincial government's policies meet the needs of enterprises, showing a positive reception among the enterprise community. Neutral responses are at 14.5%, which is relatively high, indicating some uncertainty or lack of awareness about these policies' impact on enterprises.

Table 19 Local policies or measures in Liaoning Province can effectively promote industrial development

No.	Level	Frequency	Percent
1	Strongly disagree	2	.8
2	Disagree	6	2.4
3	Neutral	40	15.7
4	Agree	62	24.3
5	Strongly agree	145	56.9
Total		255	100%

A combined 81.2% either strongly agree (56.9%) or agree (24.3%) that local policies are effective in promoting industrial development. This suggests confidence in the local government's ability to foster industrial growth. However, a noteworthy 15.7% are neutral, indicating some respondents are undecided or indifferent.

Table 20 Enterprises actively participate in industrial activities organized by the government

No.	Level	Frequency	Percent
1	Strongly disagree	2	.8
2	Disagree	4	1.6
3	Neutral	51	20.0
4	Agree	59	23.1
5	Strongly agree	139	54.5
Total		255	100%

The responses indicate a strong perception of active enterprise participation, with 54.5% strongly agreeing and 23.1% agreeing. This reflects positively on the collaborative nature of industry-government interactions. However, 20% are neutral, indicating a considerable portion of respondents are either unsure or less positive about this active participation.

Table 21 The political, economic and technological environment for deepening the integration of industry and education in Liaoning Province is relatively stable

No.	Level	Frequency	Percent
1	Strongly disagree	2	.8
2	Disagree	1	.4
3	Neutral	41	16.1
4	Agree	70	27.5
5	Strongly agree	141	55.3
Total		255	100%

Most respondents view the environment as stable for integration, with 55.3% strongly agreeing and 27.5% agreeing. However, 16.1% being neutral suggests some respondents are unsure about the stability of the environment.

Table 22 The regional innovation environment of Liaoning Province is suitable for the integration of industry and education

No.	Level	Frequency	Percent
1	Strongly disagree	2	.8
2	Disagree	1	.4
3	Neutral	54	21.2
4	Agree	58	22.7
5	Strongly agree	140	54.9
Total		255	100%

The majority view (54.9% strongly agree, 22.7% agree) is that the regional environment is conducive to integration. However, the relatively high neutral response (21.2%) suggests that some respondents are either less informed or less convinced about the suitability of the regional innovation environment.

Table 23 The Liaoning provincial government adopts relevant policies or measures to guide schools and enterprises to carry out collaborative innovation in the integration of industry and education

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	3	1.2
3	Neutral	38	14.9
4	Agree	68	26.7
5	Strongly agree	145	56.9
Total		255	100%

Most respondents feel positively about the government's role in guiding collaborative innovation, with 56.9% strongly agreeing and 26.7% agreeing. A moderate 14.9% are neutral, indicating some degree of reservation or lack of information.

Table 24 The Liaoning Provincial Government regards schools and enterprises as customers and takes the initiative to establish a service network connecting universities, enterprises and the government

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	11	4.3
3	Neutral	66	25.9
4	Agree	90	35.3
5	Strongly agree	87	34.1
Total		255	100%

The majority of respondents believe that the government has been proactive in establishing a network of services, with 34.1% strongly agreeing and 35.3% agreeing, with a larger proportion agreeing with the view that it has been proactive than strongly agreeing. A neutral response of 25.9% suggests that a significant proportion are either unsure or less convinced of this proactive stance.

Table 25 Local governments actively participate in industrial activities organized by enterprises

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	1	.4
3	Neutral	44	17.3
4	Agree	70	27.5
5	Strongly agree	139	54.5
Total		255	100%

The majority of respondents believe that local governments are able to actively participate in the industrial activities of companies, with 54.5% strongly agreeing and 27.5% agreeing. The 17.3% neutral responses suggest that a significant minority are either unsure or less convinced of this proactive stance.

During Focus Groups:

The focus group dialogue with school representatives, closely related to the three dimensions of the questionnaire, revealed a nuanced understanding of the integration of industry and education.

Table 26 Connection of Focus Group Transcripts with Scale 1 from the school

Scale 1 Item	Transcript Excerpt (Direct or Indirect)	Connection Detail
1. Complete operating mechanism	Dr. Wang: "We're innovation hubs, training grounds..."	Directly speaks to the need for a comprehensive operating mechanism in schools.
2. Policies meeting school needs	Prof. Yang: "We're constantly seeking feedback..."	Reflects the need for policies that meet evolving industry demands.
3. Effective local policies	Dr. Chen: "Proactive in forming partnerships..."	Highlights the importance of local policies in fostering productive school-industry collaborations.
4. School participation in industrial activities	Mr. Jia: "Utilize the vast network of our alumni..."	Shows active school participation in industry-related activities through alumni networks.

Table 25 (Cont.)

Scale 1 Item	Transcript Excerpt (Direct or Indirect)	Connection Detail
5. Complete mechanism for enterprises	Indirect: References to joint ventures and collaborations	The school's engagement with enterprises implies the need for a comprehensive enterprise integration mechanism.
6. Enterprise needs met by policies	Dr. Wang: "Launched several joint ventures with local enterprises..."	Suggests that current policies are addressing some enterprise needs.
7. Local policies promoting industrial development	Indirect: Emphasis on research centers and practical training	Implies that local policies support industrial development through academic collaboration.
8. Enterprise participation in activities	Ms. Lee: "Organizing internships and career fairs..."	Demonstrates enterprise engagement in school activities, a crucial part of the integration process.
9. Stable environment for integration	Dr. Wang: "Part of a broader ecosystem..."	Points to the necessity of a stable, supportive environment for effective integration.

The discussions underscored the necessity of a robust operational mechanism within schools, as reflected in the university's dynamic role as an innovation hub, a sentiment echoed across the board by participants like Dr. Wang and Prof. Yang. This operational mechanism is reinforced by the need for government policies that resonate with the evolving needs of schools, a point where the participants' views converge with the expectations outlined in the first scale. Moreover, the active participation of schools in industrial activities, advocated by Mr. Jia through the alumni network, signifies a proactive engagement that is crucial for the depth of integration.

Descriptive analysis:

Table 27 Descriptive analysis Scale 1 from school

No.	Definition	Mean	Standard deviation	Opinion
1	The school has a complete operating mechanism for the integration of industry and education.	4.47	0.76	Strongly agree
2	The industry education integration policy issued by the Liaoning Provincial Government meets the needs of the school.	4.47	0.74	Strongly agree
3	Local policies or measures in Liaoning Province can effectively promote the school to deepen the integration of industry and education.	4.41	0.79	Strongly agree
4	The school actively participates in industrial activities organized by the government or enterprises.	4.61	0.65	Strongly agree
5	The enterprise has a complete mechanism for the integration of industry and education.	4.3	0.89	Strongly agree
6	The industry-education integration policy issued by the Liaoning Provincial Government meets the needs of the enterprises.	4.36	0.84	Strongly agree
7	Local policies or measures in Liaoning Province can effectively promote industrial development.	4.34	0.88	Strongly agree
8	Enterprises actively participate in industrial activities organized by the government.	4.29	0.89	Strongly agree
9	The political, economic and technological environment for deepening the integration of industry and education in Liaoning Province is relatively stable.	4.36	0.82	Strongly agree

Table 27 (Cont.)

No.	Definition	Mean	Standard deviation	Opinion
10	The regional innovation environment of Liaoning Province is suitable for the integration of industry and education.	4.31	0.87	Strongly agree
11	The Liaoning provincial government adopts relevant policies or measures to guide schools and enterprises to carry out collaborative innovation in the integration of industry and education.	4.38	0.81	Strongly agree
12	The Liaoning Provincial Government regards schools and enterprises as customers and takes the initiative to establish a service network connecting universities, enterprises and the government.	3.98	0.90	Agree
13	Local governments actively participate in industrial activities organized by enterprises.	4.35	0.80	Strongly agree

From table 27, the information on the current role played by the Liaoning Provincial Government was interviewed and found to strongly agree with the overall expectations, with an overall average feedback score of 4.36. It is perceived that the school has a complete operating mechanism for the integration of industry and education, with a mean score of 4.47. The policy on industry-education integration issued by the Liaoning Provincial Government is seen to effectively meet the needs of the school, reflected by a mean of 4.47. Local policies in Liaoning are believed to effectively promote deepened integration of industry and education in schools, with a mean of 4.41.

Schools are actively engaged in industrial activities organized by government or enterprises, indicated by a mean of 4.61. Enterprises are perceived to have a complete mechanism for the integration of industry and education, with a mean score of 4.30. The Liaoning Provincial Government's policy on industry-education

integration meets the needs of the enterprises, with a mean of 4.36. Local policies in Liaoning are viewed as being effective in promoting industrial development, reflected by a mean score of 4.34. Enterprises are proactive in participating in industrial activities organized by the government, as indicated by a mean of 4.29. The environment in Liaoning, encompassing political, economic, and technological facets, for deepening the integration of industry and education, is considered stable with a mean score of 4.36.

The regional innovation environment of Liaoning is deemed suitable for the integration of industry and education, showcased by a mean score of 4.31. The Liaoning provincial government is perceived to guide schools and enterprises in collaborative innovation in the integration of industry and education through relevant policies or measures, as evidenced by a mean score of 4.38. The Liaoning Provincial Government is seen to prioritize schools and enterprises as customers, actively establishing a service network connecting all entities, reflected by a mean of 4.32. Local governments in Liaoning are actively engaged in industrial activities organized by enterprises, as indicated by a mean score of 3.98.

Therefore, the current role that the Liaoning provincial government played in deepening the integration of industry and education in Liaoning Vocational University of Technology is a multi-faceted role, this is expressed in terms of policy development and organization of cooperation activities, as well as the creation of a stable environment.

In part 3, the triple helix theory create the role of local government is analyzed from the perspective of the school in terms of the three dimensions of environment, policy, and interactivity involved in schools, enterprises, and government, respectively. The scale was divided into 5 levels, very satisfied, satisfied, average, dissatisfied, and very dissatisfied, with scores of 5, 4, 3, 2 and 1. therefore, the results show as following table.

Table 28 The school is a small and medium-sized university, and relies more on the use of relationship coordination to carry out the integration of industry and education

No.	Level	Frequency	Percent
1	Strongly disagree	5	2.0
2	Disagree	5	2.0
3	Neutral	32	12.5
4	Agree	84	32.9
5	Strongly agree	129	50.6
Total		255	100%

A total of 83.5% of respondents (50.6% strongly agree and 32.9% agree) believe that the school, being small to medium-sized, relies on relationship coordination to integrate industry and education. Only 4% disagree with this assessment. A significant number remain neutral (12.5%), which could imply a lack of direct experience or knowledge regarding the school's coordination methods.

Table 29 The school's professional setting matches the regional industrial structure and industrial needs

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	0	.0
3	Neutral	2.01	8.2
4	Agree	77	30.2
5	Strongly agree	156	61.2
Total		255	100%

The overwhelming majority of 91.4% (61.2% strongly agree and 30.2% agree) reflects a perception that the school's professional offerings align well with the local industrial structure and needs. Only 0.4% disagree, and a relatively small percentage are neutral (8.2%), indicating broad consensus on this point.

Table 30 The school can get financial support, tax incentives, government procurement and other policy support related to the integration of industry and education

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	6	2.4
3	Neutral	47	18.4
4	Agree	72	28.2
5	Strongly agree	129	50.6
Total		255	100%

A combined 78.8% of respondents (50.6% strongly agree and 28.2% agree) perceive that the school receives adequate policy support in the form of financial aid, tax incentives, and government procurement. Disagreement is minimal (2.8%), while 18.4% are neutral, suggesting some respondents are uncertain about the extent of policy support.

Table 31 The school needs the government to build an interactive platform for the integration of industry and education

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	2	.8
3	Neutral	17	6.7
4	Agree	57	22.4
5	Strongly agree	178	69.8
Total		255	100%

A large majority (69.8% strongly agree and 22.4% agree) believe that there is a need for government-built interactive platforms for integration. This strong endorsement (92.2% combined) indicates a perceived gap that such platforms could fill. Very few disagree (1.2%), and a small number are neutral (6.7%), which suggests that there is a general consensus on this need.

Table 32 The industrial structure of Liaoning Province is reasonable

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	4	1.6
3	Neutral	46	18.0
4	Agree	78	30.6
5	Strongly agree	126	49.4
Total		255	100%

Nearly 80% (49.4% strongly agree and 30.6% agree) of respondents view the industrial structure of Liaoning Province as reasonable, suggesting general satisfaction with the current industrial setup. Disagreement is low (2%), and the neutral stance is

taken by 18%, indicating that while most are content, some respondents may lack a definitive opinion on the structure's reasonableness.

Table 33 Most enterprises and their industries in Liaoning Province are developing well

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	6	2.4
3	Neutral	65	25.5
4	Agree	60	23.5
5	Strongly agree	123	48.2
Total		255	100%

A total of 71.7% (48.2% strongly agree and 23.5% agree) believe that enterprises and industries in the province are prospering. There's a higher rate of neutrality here (25.5%), which may reflect a more varied perception of enterprise development, with a few disagreeing (2.8%).

Table 34 Enterprises can get financial support, tax incentives, government procurement and other policy support related to the integration of industry and education

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	8	3.1
3	Neutral	62	24.3
4	Agree	59	23.1
5	Strongly agree	125	49.0
Total		255	100%

A significant majority (49% strongly agree and 23.1% agree) perceive that enterprises receive adequate policy support for integration. The neutral responses are quite high (24.3%), suggesting varying levels of awareness or impact of these policies on enterprises, with a small percentage in disagreement (3.5%).

Table 35 Enterprises need the government to build an interactive platform for the integration of industry and education

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	2	.8
3	Neutral	29	11.4
4	Agree	72	28.2
5	Strongly agree	151	59.2
Total		255	100%

The majority (59.2% strongly agree and 28.2% agree) support the need for government-built interactive platforms for industry and education integration, indicating a perceived need for such infrastructure. There's a fair amount of neutrality (11.4%), possibly reflecting some respondents' lack of familiarity with the specifics of such platforms.

Table 36 The Liaoning Provincial Government has a strong scope of administrative power and policy autonomy

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	2	.8
3	Neutral	41	16.1
4	Agree	74	29.0
5	Strongly agree	137	53.7
Total		255	100%

The data shows that 53.7% strongly agree and 29% agree that the provincial government has significant administrative power and autonomy in policy-making, suggesting a perception of robust governance. A moderate 16.1% are neutral, which could indicate a lack of detailed knowledge about government scope among these respondents.

Table 37 The Liaoning provincial government has the financial foundation to support the integration of industry and education

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	4	1.6
3	Neutral	51	20.0
4	Agree	67	26.3
5	Strongly agree	132	51.8
Total		255	100%

A majority (78.1% combined) perceive the government as financially capable of supporting integration, with 51.8% strongly agreeing and 26.3% agreeing. The neutral responses (20%) indicate that a significant minority may be unsure about the government's financial capabilities in this regard.

Table 38 Local governments formulate specific measures based on central policies

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	3	1.2
3	Neutral	39	15.3
4	Agree	70	27.5
5	Strongly agree	142	55.7
Total		255	100%

Most respondents agree (83.2% combined) that local governments create specific measures aligned with central policies (55.7% strongly agree, 27.5% agree), suggesting that local adaptation of central policies is well-received.

Table 39 The Liaoning Provincial Government can introduce innovative localized integration of industry and education policies

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	4	1.6
3	Neutral	45	17.6
4	Agree	70	27.5
5	Strongly agree	135	52.9
Total		255	100%

A substantial majority (80.4% combined) either strongly agree (52.9%) or agree (27.5%) that the government is capable of introducing innovative local policies, pointing to a positive perception of the government's policy innovation.

Table 40 The Liaoning provincial government can provide funds to build a platform for the integration and interaction of industry and education

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	3	1.2
3	Neutral	52	20.4
4	Agree	70	27.5
5	Strongly agree	129	50.6
Total		255	100%

The data shows strong confidence in the government's funding capabilities, with 50.6% strongly agreeing and 27.5% agreeing. The 20.4% neutral response rate suggests some respondents are either undecided or lack sufficient information to form an opinion.

During Focus Groups

Table 41 Connection of Focus Group Transcripts with Scale 2 from the school

Scale 2 Item	Transcript Excerpt (Direct or Indirect)	Connection Detail
1. Complete operating mechanism	Dr. Wang: "We're innovation hubs, training grounds..."	Directly speaks to the need for a comprehensive operating mechanism in schools.
2. Policies meeting school needs	Prof. Yang: "We're constantly seeking feedback..."	Reflects the need for policies that meet evolving industry demands.
3. Effective local policies	Dr. Chen: "Proactive in forming partnerships..."	Highlights the importance of local policies in fostering productive school-industry collaborations.
4. School participation in industrial activities	Mr. Jia: "Utilize the vast network of our alumni..."	Shows active school participation in industry-related activities through alumni networks.

Transitioning to school scale 2, the focus group illuminated the particular needs of small and medium-sized universities. The reliance on relationship coordination for the integration of industry and education, highlighted by the

school's engagement with its alumni, speaks to the school's professional setting aligning with regional industrial needs. This alignment is essential for securing financial and policy support, which participants identified as critical for fostering innovation. The notion of the school needing government-built interactive platforms resonates with the group's aspirations for structured collaboration, where government support extends beyond traditional frameworks to innovate localized policies and funding mechanisms that facilitate integration and interaction. As Dr. Wang said, "Policy development should be a collaborative effort. The government needs to involve both educational institutions and enterprises in policy dialogues, ensuring the resulting policies are relevant and beneficial for all parties."

Descriptive analysis:

Table 42 Descriptive analysis Scale 2 from the school

No.	Definition	Mean	Standard deviation	Opinion
1	The school is a small and medium-sized university, and relies more on the use of relationship coordination to carry out the integration of industry and education.	4.28	0.90	Strongly agree
2	The school's professional setting matches the regional industrial structure and industrial needs.	4.52	0.68	Strongly agree
3	The school can get financial support, tax incentives, government procurement and other policy support related to the integration of industry and education.	4.26	0.87	Strongly agree
4	The school needs the government to build an interactive platform for the integration of industry and education.	4.60	0.68	Strongly agree

Table 42 (Cont.)

No.	Definition	Mean	Standard deviation	Opinion
5	The industrial structure of Liaoning Province is reasonable.	4.27	0.84	Strongly agree
6	Most enterprises and their industries in Liaoning Province are developing well.	4.17	0.92	Agree
7	Enterprises can get financial support, tax incentives, government procurement and other policy support related to the integration of industry and education.	4.17	0.93	Agree
8	Enterprises need the government to build an interactive platform for the integration of industry and education.	4.45	0.76	Strongly agree
9	The Liaoning Provincial Government has a strong scope of administrative power and policy autonomy	4.35	0.80	Very high
10	The Liaoning provincial government has the financial foundation to support the integration of industry and education.	4.27	0.86	Strongly agree
11	11. Local governments formulate specific measures based on central policies.	4.37	0.81	Strongly agree
12	The Liaoning Provincial Government can introduce innovative localized integration of industry and education policies.	4.31	0.84	Strongly agree
13	The Liaoning provincial government can provide funds to build a platform for the integration and interaction of industry and education.	4.27	0.85	Strongly agree
	Overview	4.33	0.83	Strongly agree

From table 41, the information accessed on the Triple Helix creates the Role of Government found strongly agree with the overall expectations, with an overall average feedback score of 4.33. It is perceived that small and medium-sized universities in the province rely more on relationship coordination for the integration of industry and education, with a mean score of 4.28.

The professional setup of the school aligns well with the regional industrial structure and its needs, evident from a mean score of 4.52. Schools in the province can avail financial support, tax benefits, and other government incentives related to industry-education integration, with a mean score of 4.26.

The need for the government to establish an interactive platform for the integration of industry and education for schools is acknowledged with a mean of 4.60. The industrial structure in Liaoning Province is deemed reasonable, as indicated by a mean of 4.27. The positive development of most enterprises and their associated industries in the province is recognized with a mean score of 4.17. Enterprises are seen to benefit from financial incentives, tax reliefs, and other policy supports tied to industry-education integration, reflected by a mean of 4.17. The sentiment that enterprises need the government to build an interactive platform for industry and education integration is strong, with a mean of 4.45.

The provincial government of Liaoning is believed to possess a broad scope of administrative power and policy autonomy, as indicated by a mean score of 4.35. The province's government is seen to have the financial foundation to back the integration of industry and education, with a mean of 4.27. Local governments are known to develop specific measures rooted in central policies, with a mean score of 4.37. The ability of the provincial government to bring forth innovative, localized policies for industry and education integration is acknowledged with a mean score of 4.31. The provincial government's capacity to allocate funds for building a platform that bridges industry and education is perceived positively, evidenced by a mean score of 4.27.

Therefore, from the perspective of the school, the triple helix theory creates the role played by the government in the following ways: 1. The government is actively investing in the infrastructure that fosters innovation and cooperation; 2. The

government has a financial base and is willing to provide some incentives; 3. government plays an important role in mediating the relationship between educational institutions and industrial stations, while at the same time being willing to create frameworks that are conducive to interaction.

In part 4, from the perspective of the school, analyzes the role that the Liaoning Provincial Government should play in deepening the integration of industry and education from a multidimensional perspective. The scale was divided into 5 levels, very satisfied, satisfied, average, dissatisfied, and very dissatisfied, with scores of 5, 4, 3, 2 and 1. therefore, the results show as following table.

Table 43 The Liaoning provincial government should have a positive attitude towards deepening the integration of industry and education in the school

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	1	.4
3	Neutral	30	11.8
4	Agree	56	22.0
5	Strongly agree	167	65.5
Total		255	100%

A commanding majority of 87.5% (65.5% strongly agree, 22.0% agree) believe that the provincial government should be positive about deepening industry and education integration. This suggests a strong expectation for governmental support in this endeavor. Only a negligible 0.8% disagree, and 11.8% remain neutral, possibly indicating a slight hesitation or lack of opinion on the government's attitude.

Table 44 In the process of deepening the integration of industry and education in the school, rather than taking full responsibility or adopting intervention methods, the approach that the Liaoning provincial Government should take is to use market mechanisms

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	3	1.2
3	Neutral	32	12.5
4	Agree	61	23.9
5	Strongly agree	158	62.0
Total		255	100%

The data shows that 85.9% (62.0% strongly agree, 23.9% agree) support the idea of leveraging market mechanisms over direct governmental intervention or full responsibility. This reflects a preference for a more liberal, market-driven approach to integration. A small 1.6% disagree, and 12.5% are neutral.

Table 45 The Liaoning Provincial Government needs to create a good industrial structure and regional environment for the school to deepen the integration of industry and education

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	1	.4
3	Neutral	32	12.5
4	Agree	56	22.0
5	Strongly agree	165	64.7
Total		255	100%

A substantial majority, 86.7% (64.7% strongly agree, 22.0% agree), feel the government should contribute to a conducive industrial and regional environment. This indicates a consensus on the importance of government role in shaping the structural context for integration. Only 0.8% disagree, while 12.5% are neutral.

Table 46 To deepen the integration of industry and education, schools, enterprises, and governments must all have complete organizations and mechanisms

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	1	.4
3	Neutral	27	10.6
4	Agree	60	23.5
5	Strongly agree	166	65.1
Total		255	100%

An overwhelming 88.6% (65.1% strongly agree, 23.5% agree) agree that comprehensive organizations and mechanisms are required across all entities, highlighting a belief in the need for structured and systematic approaches to integration. The disagreement is minimal (0.8%), and 10.6% remain neutral.

Table 47 The most important thing in formulating local industry-education integration policies is to meet the actual needs of schools and enterprises, rather than to promote industrial development

No.	Level	Frequency	Percent
1	Strongly disagree	4	1.6
2	Disagree	7	2.7
3	Neutral	31	12.2
4	Agree	63	24.7
5	Strongly agree	150	58.8
Total		255	100%

Most respondents, 83.5% (58.8% strongly agree, 24.7% agree), believe that policies should primarily address the needs of schools and enterprises, rather than focusing solely on promoting industrial development. There is a small disagreement of 4.3%, and 12.2% are neutral, possibly indicating some difference in priorities or lack of information.

Table 48 The local policy on integration of industry and education formulated by Liaoning Province should be innovative, but it must be consistent with the centralized policy

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	0	.0
3	Neutral	25	9.8
4	Agree	63	24.7
5	Strongly agree	166	65.1
Total		255	100%

A dominant 89.8% (65.1% strongly agree, 24.7% agree) endorse the need for innovative yet consistent policies, implying a desire for local adaptation within a national framework. No one disagrees, and 9.8% are neutral.

Table 49 The most effective interactive measures taken by the Liaoning Provincial Government for the integration of industry and education are building online platforms rather than organizing offline activities

No.	Level	Frequency	Percent
1	Strongly disagree	5	2.0
2	Disagree	7	2.7
3	Neutral	42	16.5
4	Agree	57	22.4
5	Strongly agree	144	56.5
Total		255	100%

A majority of 78.9% (56.5% strongly agree, 22.4% agree) feel that online platforms are more effective than offline activities, suggesting a belief in the power of digital solutions for integration efforts. Some respondents disagree (4.7%), and a notable portion (16.5%) remain neutral, indicating a mix of opinions on the best approach to interaction.

Table 50 In order to effectively deepen the integration of industry and education and promote interactions between subjects, the Liaoning Provincial Government should provide financial and tax support to schools and enterprises instead of setting performance assessment indicators

No.	Level	Frequency	Percent
1	Strongly disagree	1	.4
2	Disagree	0	.0
3	Neutral	32	12.5
4	Agree	67	26.3
5	Strongly agree	155	60.8
Total		255	100%

Most, 87.1% (60.8% strongly agree, 26.3% agree), support the idea of financial and tax incentives over performance metrics, indicating a preference for tangible support measures to benchmarks. There is no disagreement, and 12.5% are neutral.

Table 51 The most important role that Liaoning Provincial Government should play in deepening the integration of industry and education is that of a service provide, rather than a guide, supervisor or manager

No.	Level	Frequency	Percent
1	Strongly disagree	2	.8
2	Disagree	5	2.0
3	Neutral	36	14.1
4	Agree	58	22.7
5	Strongly agree	154	60.4
Total		255	100%

It indicates that the majority of respondents (60.4%) strongly believe the Liaoning Provincial Government should act as a service provider in fostering the integration of industry and education. 22.7% agree, while a small percentage (2.8%) disagree. 14.1% are neutral, suggesting some uncertainty about the government's role.

During Focus Groups

Table 52 Connection of Focus Group Transcripts with Scale 3 from the school

Scale 3 Item	Transcript Excerpt (Direct or Indirect)	Connection Detail
1. Positive government attitude	Dr. Wang: "Creating a synergy where academic research solves real-world industry problems..."	Advocates for a government attitude that supports and enhances the integration process.
2. Market mechanisms for integration	Ms. Lee: "Creating adaptable graduates..."	Suggests a preference for market-driven approaches to education that cater to industry needs.
3. Good industrial structure and environment	Prof. Yang: "Embedding industry-led projects within our courses..."	Reflects the need for an industrial environment conducive to practical, project-based learning.
4. Complete organizations and mechanisms	Dr. Chen: "Updating our courses to include the latest industry practices..."	Indicates the need for structured mechanisms within schools to keep pace with industry changes.
5. Policies meeting actual needs	Mr. Jia: "Alumni... can offer internships..."	Highlights the role of policies in facilitating practical experiences that meet the actual needs of students and industries.

Table 52 (Cont.)

Scale 3 Item	Transcript Excerpt (Direct or Indirect)	Connection Detail
6. Consistency with centralized policy	Dr. Wang: "Push for more consistency across all departments..."	Emphasizes the importance of aligning local integration efforts with broader, centralized policies.
7. Online platforms over offline activities	Indirect: Discussions on digital platforms and remote internships	While not directly stated, the emphasis on digital engagement suggests a preference for online platforms.
8. Financial and tax support over assessment indicators	Indirect: References to funding needs for research and collaboration	Implies a preference for financial and tax support to foster integration over mere performance assessments.
9. Role of government as service provider	Dr. Chen: "Supportive infrastructure from the school..."	Points to the government's role in providing the necessary infrastructure and resources for integration.

The school representatives' discussions reflect a consensus on the importance of government serving as a service provider rather than merely a regulator, suggesting a shift towards market mechanisms that allow for a more organic and sustainable approach to integration. A supportive industrial structure and

environment, as discussed by Dr. Chen, are seen as imperative for the school to deepen integration efforts.

Descriptive analysis:

Table 53 Descriptive analysis Scale 3 from the school

No.	Definition	Mean	Standard deviation	Opinion
1	The Liaoning provincial government should have a positive attitude towards deepening the integration of industry and education in the school.	4.52	0.75	Strongly agree
2	In the process of deepening the integration of industry and education in the school, rather than taking full responsibility or adopting intervention methods, the approach that the Liaoning provincial Government should take is to use market mechanisms.	4.46	0.79	Strongly agree
3	The Liaoning Provincial Government needs to create a good industrial structure and regional environment for the school to deepen the integration of industry and education.	4.50	0.76	Strongly agree
4	To deepen the integration of industry and education, schools, enterprises, and governments must all have complete organizations and mechanisms.	4.53	0.73	Strongly agree
5	The most important thing in formulating local industry-education integration policies is to meet the actual needs of schools and enterprises, rather than to promote industrial development.	4.36	0.91	Strongly agree

Table 53 (Cont.)

No.	Definition	Mean	Standard deviation	Opinion
6	The local policy on integration of industry and education formulated by Liaoning Province should be innovative, but it must be consistent with the centralized policy.	4.54	0.70	Strongly agree
7	The most effective interactive measures taken by the Liaoning Provincial Government for the integration of industry and education are building online platforms rather than organizing offline activities.	4.29	0.97	Strongly agree
8	In order to effectively deepen the integration of industry and education and promote interactions between subjects, the Liaoning Provincial Government should provide financial and tax support to schools and enterprises instead of setting performance assessment indicators.	4.47	0.74	Strongly agree
9	The most important role that Liaoning Provincial Government should play in deepening the integration of industry and education is that of a service provide, rather than a guide, supervisor or manager.	4.40	0.86	Strongly agree
Overview		4.45	0.80	Strongly agree

From table 53, information on the role local government should play was accessed and found to strongly agree with the overall expectation, with an overall average feedback score of 4.45. Respondents believe that the Liaoning provincial government should hold a positive stance towards the deepening integration of industry and education in schools. This is reflected by a mean score of 4.52. The consensus is that, rather than assuming total responsibility or employing

interventionist strategies, the Liaoning provincial government should employ market mechanisms in the process of advancing industry-education integration in schools. This is indicated by a mean score of 4.46.

There's a strong belief that the provincial government should cultivate a conducive industrial structure and regional milieu for schools to enhance the integration of industry and education, as suggested by a mean of 4.50. A central tenet is that for the successful deepening of industry-education integration, schools, enterprises, and governments all need to have comprehensive organizations and systems in place. This perspective garners a mean score of 4.53. The priority in drafting local policies for industry-education integration should be to cater to the genuine requirements of schools and enterprises rather than merely advancing industrial progression, as reflected by a mean of 4.36.

The local industry-education integration policy curated by Liaoning Province should be pioneering, but it must align with centralized policies. This is affirmed with a mean score of 4.54.

For the provincial government, the most impactful interactive initiatives for industry-education integration entail establishing online platforms over organizing offline events, as indicated by a mean of 4.29. To truly enhance industry-education integration and boost interactions among stakeholders, the government should offer financial and tax incentives to schools and enterprises instead of imposing performance assessment metrics. This sentiment holds a mean score of 4.47. The most pivotal role the Liaoning provincial government should assume in the integration process is that of a service provider, over being a guide, overseer, or administrator. This perspective is backed by a mean score of 4.40.

A total of 51 valid suggestions were collected from 255 questionnaires in open-ended question 45 and are categorized and described below:

1. More respondents favored a more assertive role for the government as a regulatory and supervisory entity;
2. As a key link in the industry-industry relationship, the government should be a good coordinator and strengthen its organizational and coordination efforts;

3. Emphasized that the government is a platform builder and needs to provide sustained support to vocational institutions and create opportunities for collaboration between educational institutions and industry participants.

Therefore, the most crucial role that the Liaoning government should play is that of a service provider, a view supported by 83.1%, while 79 %t of respondents believe that the government should provide an online interaction platform for schools and businesses, and 87.1 % of respondents want the government to provide financial and tax support. There is also a significant proportion of respondents who believe that the role of supervisor and co-ordinator is also important, as evidenced by the responses to the open-ended question, where some respondents hoped that the government should co-ordinate the relationship between that school and the enterprise.

Based on the sample size calculation, 80 enterprise questionnaires should have been collected, and 113 questionnaires were received.

Table 54 Reliability Test Scale 1 from enterprises

	Item Number	Cronbach's Alpha
Scale 1 - E	4	0.946
Scale 1 - P	6	0.969
Scale 1 - I	3	0.929

For Scale 1, three sub-scales were evaluated. The first sub-scale, Scale 1 - E, which consisted of 4 items, achieved a Cronbach's Alpha value of 0.946, indicating high internal consistency. Similarly, the Scale 1 - P, made up of 6 items, recorded an impressive reliability coefficient of 0.949-0.969. Lastly, the Scale 1 - I, which encompassed 3 items, showed a reliability score of 0.929.

Table 55 Reliability Test Scale 2 from enterprises

	Item Number	Cronbach's Alpha
Scale 2 - E	6	0.973
Scale 2 - P	4	0.967
Scale 2 - I	3	0.939

For Scale 2, it was divided into three sub-scales. The Scale 2 - E, comprising 6 items, reported a very high internal consistency with a Cronbach's Alpha of 0.973. The Scale 2 - P, with 4 items, also demonstrated strong reliability with a coefficient of 0.967. Meanwhile, the Scale 2 - I, having 3 items, secured a reliability measure of 0.939.

Table 56 Reliability Test Scale 3 from enterprises

	Item Number	Cronbach's Alpha
Scale 3 - A	3	0.968
Scale 3 - E	2	0.970
Scale 3 - P	2	0.920
Scale 3 - I	2	0.889

For Scale 3, four sub-scales were tested. Scale 3 - A, which contained 3 items, marked a Cronbach's Alpha of 0.968. Scale 3 - E, with 2 items, scored an almost perfect reliability measure of 0.970. The Scale 3 - P, which also consisted of 2 items, presented a coefficient of 0.920, indicating commendable reliability. However, the Scale 3 - I, despite having 2 items like the former, reported a slightly lower Cronbach's Alpha of 0.889, which, while still indicative of acceptable reliability, was the lowest among the tested scales.

Demographic (From the enterprise questionnaire)

Table 57 Gender

No.	Gender	Frequency	Percent
1	Male	97	85.8
2	Female	16	14.2
Total		113	100%

Among the participants in the survey, the majority were male, with a significant 85.8% (97 individuals) representation, compared to a much smaller female representation of 14.2% (16 individuals).

Table 58 Age

No.	Age	Frequency	Percent
1	Under 25 years old	11	9.7
2	25-40 years old	65	57.5
3	40-60 years old	37	32.7
4	over 60 years old	0	0
Total		113	100%

In terms of age groups, those between 25-40 years were the most predominant, accounting for 57.5% (65 individuals). This was followed by those aged 40-60 years, who made up 32.7% (37 individuals), and the youngest group, under 25 years, constituted 9.7% (11 individuals).

Table 59 Income

No.	Income	Frequency	Percent
1	Below 3000 RMB	43	38.1
2	3000 – 5000 RMB	30	26.5
3	5000 – 8000 RMB	21	18.6
4	More than 8000 RMB	19	16.8
Total		113	100%

Note: (2) RMB is the legal tender of the People's Republic of China and 1 RMB is 0.14 USD

From an income perspective, the largest group, 38.1% (43 individuals), earned below 3000 RMB monthly. The other participants' earnings were spread as follows: 26.5% (30 individuals) between 3000-5000 RMB, 18.6% (21 individuals) between 5000-8000 RMB, and 16.8% (19 individuals) earning more than 8000 RMB.

Table 60 Marriage

No.	Item	Frequency	Percent
1	Married	75	66.4
2	Unmarried	36	31.9
3	N/A	2	1.8
Total		113	100%

Examining marital status, most of the participants, 66.4% (75 individuals), were married, while 31.9% (36 individuals) were unmarried, and a negligible 1.8% (2 individuals) chose not to specify.

Table 61 Location

No.	Item	Frequency	Percent
1	Liaoning	98	86.7
2	Beijing	7	6.2
3	Shanghai	2	1.8
4	Zhejiang	2	1.8
5	Others	47	3.5
Total		113	100%

A vast majority, 86.7% (98 individuals), hailed from Liaoning, but there were also participants from Beijing (6.2% or 7 individuals), Shanghai, Zhejiang (both at 1.8% or 2 individuals each), and other various locations making up 3.5% (4 individuals).

Table 62 Industry

No.	Item	Frequency	Percent
1	Manufacturing	7	6.2
2	Construction industry	2	1.8
3	Wholesale and retail trade	61	54.0
4	Accommodation and Catering industry	17	15.0
5	Information transmission, software, and information technology service industry	1	0.9
6	Real estate	1	0.9
7	Scientific research and technical service industry	6	5.3
8	Culture, sports and entertainment	18	15.9
Total		113	100%

The survey revealed diverse professional backgrounds: the largest chunk, 54.0% (61 individuals), worked in the wholesale and retail trade, followed by those in the accommodation and catering industry at 15% (17 individuals). Culture, sports, and entertainment drew 15.9% (18 individuals).

Table 63 Scale of the enterprise

No.	Item	Frequency	Percent
1	Microenterprise	5	4.4
2	Small enterprise	16	14.2
3	Medium-sized enterprise	38	33.6
4	Large enterprise	54	47.8
Total		113	100%

The scale of enterprises they were affiliated with varied: 47.8% (54 individuals) were from large enterprises, 33.6% (38 individuals) from medium-sized, 14.2% (16 individuals) from small, and 4.4% (5 individuals) from microenterprises.

Table 64 Experience

No.	Item	Frequency	Percent
1	3 years or less	19	16.8
2	3 – 10 years	42	37.2
3	10 – 15 years	33	29.2
4	Over 15 years	19	16.8
Total		113	100%

The spread of experience was quite even: 37.2% (42 individuals) had 3-10 years of experience, 29.2% (33 individuals) had 10-15 years, 16.8% (19 individuals) had either 3 years or less or more than 15 years of experience.

Table 65 Understanding

No.	Item	Frequency	Percent
1	Know well	13	11.5
2	Understand some	47	41.6
3	Just know	9	8.0
4	Do not know much	44	38.0
Total		113	100%

Finally, regarding their understanding of the subject, while 11.5% (13 individuals) claimed to know it well, a significant 38.0% (44 individuals) said they didn't know much about it.

Descriptive statistics (From the enterprise questionnaire)

In part 6, the current role played by the Liaoning provincial government is analyzed from the perspective of the enterprise in terms of the three dimensions of environment, policy, and interactivity involved in schools, enterprises, and government, respectively. The scale was divided into 5 levels, very satisfied, satisfied, average, dissatisfied, and very dissatisfied, with scores of 5, 4, 3, 2 and 1. Therefore, the results show as following table.

Table 66 The school has a complete operating mechanism for the integration of industry and education

No.	Item	Frequency	Percent
1	Strongly disagree	6	5.3
2	Disagree	3	2.7
3	Neutral	39	34.5
4	Agree	22	19.5
5	Strongly agree	43	38.1
Total		113	100%

The responses suggest a moderate level of confidence with a combined 57.6% agreeing or strongly agreeing that the school has a complete operating mechanism for integration. However, a substantial portion of respondents (34.5%) are neutral, indicating that a significant number of participants might not have a strong opinion or enough information on the matter. The disagreement is relatively low (8%), indicating that there aren't strong negative sentiments about the school's operating mechanism.

Table 67 The industry education integration policy issued by the Liaoning Provincial Government meets the needs of the school

No.	Item	Frequency	Percent
1	Strongly disagree	7	6.2
2	Disagree	4	3.5
3	Neutral	31	27.4
4	Agree	26	23.0
5	Strongly agree	45	39.8
Total		113	100%

A combined 62.8% of respondents agree or strongly agree that the provincial government's policy meets the school's needs, reflecting a positive view of the policy's effectiveness. The neutral stance is substantial (27.4%), while those who disagree or strongly disagree make up a smaller percentage (9.7%), suggesting that while the policy is generally well-received, there is room for improvement or better communication to those who are undecided or disagree.

Table 68 Local policies or measures in Liaoning Province can effectively promote the school to deepen the integration of industry and education

No.	Item	Frequency	Percent
1	Strongly disagree	7	6.2
2	Disagree	2	1.8
3	Neutral	35	31.0
4	Agree	25	22.1
5	Strongly agree	44	38.9
Total		113	100%

The majority (61% combined agree and strongly agree) believe that local policies are effective in promoting integration. However, the large neutral response (31%) may suggest a lack of direct experience with these policies or a wait-and-see attitude toward their effectiveness. A small percentage disagree (8%), indicating minimal outright opposition to the effectiveness of these policies.

Table 69 The school actively participates in industrial activities organized by the government or enterprises

No.	Item	Frequency	Percent
1	Strongly disagree	5	4.4
2	Disagree	3	2.7
3	Neutral	29	25.7
4	Agree	29	25.7
5	Strongly agree	47	41.6
Total		113	100%

With 67.3% agreeing or strongly agreeing, there's a sentiment that the school is actively participating in industrial activities. However, a quarter of respondents (25.7%) remain neutral, which might reflect some respondents' lack of knowledge of specific activities or a perception that the school's participation could be more visible or impactful.

Table 70 The enterprise has a complete mechanism for the integration of industry and education

No.	Item	Frequency	Percent
1	Strongly disagree	4	3.5
2	Disagree	4	3.5
3	Neutral	30	26.5
4	Agree	28	24.8
5	Strongly agree	47	41.6
Total		113	100%

The results show a significant leaning towards the agreement that enterprises have complete mechanisms for integration, with a combined total of 66.7% for 'Agree' (30 respondents, 26.5%) and 'Strongly Agree' (42 respondents, 37.2%). However, a notable proportion of 31.9% (36 respondents) remained 'Neutral', indicating that a significant number of participants might be either unaware of the mechanisms or have limited experience with their operation. The disagreement (combining 'Disagree' and 'Strongly Disagree') accounts for only 4.4%, reflecting a low level of strong negative opinions towards this subject.

Table 71 The industry-education integration policy issued by the Liaoning Provincial Government meets the needs of the enterprises

No.	Item	Frequency	Percent
1	Strongly disagree	6	5.3
2	Disagree	1	.9
3	Neutral	33	29.2
4	Agree	34	30.1
5	Strongly agree	39	34.5
Total		113	100%

A majority (64.6%) feel that the industry-education integration policies meet enterprise needs, which points to a positive view of provincial policy alignment with enterprise requirements. Still, the neutral response is relatively high, possibly indicating a lack of awareness about these policies among some enterprises.

Table 72 Local policies or measures in Liaoning Province can effectively promote industrial development

No.	Item	Frequency	Percent
1	Strongly disagree	5	4.4
2	Disagree	3	2.7
3	Neutral	34	30.1
4	Agree	31	27.4
5	Strongly agree	40	35.4
Total		113	100%

Most respondents (62.8%) agree that local policies effectively promote industrial development, but the neutral stance (30.1%) may point towards a lack of direct impact or awareness of these policies' effectiveness among some stakeholders.

Table 73 Enterprises actively participate in industrial activities organized by the government

No.	Item	Frequency	Percent
1	Strongly disagree	4	3.5
2	Disagree	3	2.7
3	Neutral	26	23.0
4	Agree	34	30.1
5	Strongly agree	46	40.7
Total		113	100%

The response is generally positive (70.8% agreement) towards enterprise participation in government-organized industrial activities. The remaining neutrality could be due to some enterprises not participating or not perceiving benefits from such activities.

Table 74 The political, economic and technological environment for deepening the integration of industry and education in Liaoning Province is relatively stable

No.	Item	Frequency	Percent
1	Strongly disagree	4	3.5
2	Disagree	4	3.5
3	Neutral	30	26.5
4	Agree	32	28.3
5	Strongly agree	43	38.1
Total		113	100%

A majority (66.4% agreement) feel that the political, economic, and technological environment in Liaoning Province is stable enough for deepening the integration of industry and education, which is essential for long-term planning and

investment. However, the neutrality (26.5%) may suggest some respondents have reservations about the environment's stability.

Table 75 The regional innovation environment of Liaoning Province is suitable for the integration of industry and education

No.	Item	Frequency	Percent
1	Strongly disagree	4	3.5
2	Disagree	4	3.5
3	Neutral	29	25.7
4	Agree	38	33.6
5	Strongly agree	38	33.6
Total		113	100%

Respondents seem to perceive the regional innovation environment as suitable for the integration of industry and education (67.2% agreement). The neutral response (25.7%) might reflect a recognition of existing challenges or unevenness in the innovation landscape.

Table 76 The Liaoning provincial government adopts relevant policies or measures to guide schools and enterprises to carry out collaborative innovation in the integration of industry and education

No.	Item	Frequency	Percent
1	Disagree	4	3.5
2	Neutral	32	28.3
3	Agree	30	26.5
4	Strongly agree	43	38.1
Total		113	100%

The majority (64.6% agreement) believe that the Liaoning provincial government adopts relevant policies for collaborative innovation, indicating a favorable view of government efforts. The neutrality (28.3%) could be interpreted as some stakeholders awaiting further outcomes or being less directly affected by such policies.

Table 77 The Liaoning Provincial Government regards schools and enterprises as customers and takes the initiative to establish a service network connecting universities, enterprises and the government

No.	Item	Frequency	Percent
1	Strongly disagree	4	3.5
2	Disagree	4	3.5
3	Neutral	37	32.7
4	Agree	32	28.3
5	Strongly agree	36	31.9
Total		113	100%

There's a strong belief (60.2% agreement) that the government regards schools and enterprises as customers and is proactive in establishing a service network, which is indicative of a customer-oriented approach to policy and service provision. The Neutral responses (32.7) indicate that there is still a significant proportion of respondents who cannot recognize this view.

Table 78 Local governments actively participate in industrial activities organized by enterprises

No.	Item	Frequency	Percent
1	Strongly disagree	4	3.5
2	Disagree	1	.9
3	Neutral	36	31.9
4	Agree	30	26.5
5	Strongly agree	42	37.2
Total		113	100%

Table 78 indicates a significant endorsement of local governments' active participation in industrial activities organized by enterprises, with a combined 63.7% of respondents agreeing (26.5%) or strongly agreeing (37.2%) with this sentiment. The neutral response rate stands at 31.9%, which may suggest that a substantial portion of the population is either undecided or lacks sufficient information to form a definitive opinion on the effectiveness of local government participation. Disagreement with the statement is minimal, totaling only 4.4%, which includes both those who disagree (0.9%) and strongly disagree (3.5%). This low rate of dissent suggests that there is minimal opposition to the idea that local governments are actively and effectively involved in industrial activities with enterprises.

During Focus Groups:

The focus group dialogue with enterprise representatives, closely related to the three dimensions of the questionnaire, revealed a nuanced understanding of the integration of industry and education, too.

Table 79 Connection of Focus Group Transcripts with Scale 1 from the enterprise

Scale 1 Item	Transcript Excerpt (Direct or Indirect)	Connection Detail
1. Complete operating mechanism	Ms. Zhu: "Schools are incubators of talent..."	Schools as talent incubators suggest a need for mechanisms that facilitate the transition of students into industry roles.
2. Policies meeting school needs	Mr. Lee: "There's a gap between academic knowledge and practical application."	The gap indicates the need for government policies to promote curricula that bridge academic and industry practices.
3. Effective local policies	Mr. Ma: "Collaboration with universities is crucial for innovation."	Collaboration points to the effectiveness of policies in fostering joint ventures and research.
4. School participation in industrial activities	Mr. Su: "Vocational training is key in construction."	Vocational training highlights the active role of schools in aligning with industry needs.
5. Complete mechanism for enterprises	Indirect: Discussions on collaboration and practical training	Although not directly mentioned, the emphasis on collaboration implies a need for complete mechanisms on the enterprise side.
6. Enterprise needs met by policies	Ms. Tang: "Government needs to ensure that their policies are enabling schools and enterprises to come together..."	The need for enabling policies reflects the necessity for government actions to meet the diverse needs of enterprises.
7. Local policies promoting industrial development	Indirect: Discussions on innovation and collaboration	The group's dialogue on fostering innovation indirectly suggests the impact of local policies on industrial development.

Table 79 (Cont.)

Scale 1 Item	Transcript Excerpt (Direct or Indirect)	Connection Detail
8. Enterprise participation in activities	Ms. Zhu: "Internships are invaluable..."	The mention of internships signifies enterprise participation and the need for policies that support such initiatives.
9. Stable environment for integration	Ms. Tang: "Local governments have to look ahead..."	Looking ahead implies a call for stability in policies that govern the integration of industry and education.
Scale 1 Item	Transcript Excerpt (Direct or Indirect)	Connection Detail
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3. Effective local policies	Mr. Ma: "Collaboration with universities is crucial for innovation."	Collaboration points to the effectiveness of policies in fostering joint ventures and research.
4. School participation in industrial activities	Mr. Su: "Vocational training is key in construction."	Vocational training highlights the active role of schools in aligning with industry needs.
5. Complete mechanism for enterprises	Indirect: Discussions on collaboration and practical training	Although not directly mentioned, the emphasis on collaboration implies a need for complete mechanisms on the enterprise side.

Table 79 (Cont.)

Scale 1 Item	Transcript Excerpt (Direct or Indirect)	Connection Detail
6. Enterprise needs met by policies	Ms. Tang: "Government needs to ensure that their policies are enabling schools and enterprises to come together..."	The need for enabling policies reflects the necessity for government actions to meet the diverse needs of enterprises.
7. Local policies promoting industrial development	Indirect: Discussions on innovation and collaboration	The group's dialogue on fostering innovation indirectly suggests the impact of local policies on industrial development.
8. Enterprise participation in activities	Ms. Zhu: "Internships are invaluable..."	The mention of internships signifies enterprise participation and the need for policies that support such initiatives.
9. Stable environment for integration	Ms. Tang: "Local governments have to look ahead..."	Looking ahead implies a call for stability in policies that govern the integration of industry and education.

The enterprise focus group provided a multifaceted view of the current role of schools and the pivotal role of government policies in fostering the integration of industry and education. Ms. Zhu, leading a tech startup, captured the essence of enterprise scale 1 by emphasizing the need for schools to serve as real-world talent incubators, a sentiment resonating with the scale's focus on effective operating mechanisms for both schools and enterprises. Mr. Lee from manufacturing highlighted a common challenge noted in the scale: the gap between academic learning and practical application, indicating a need for policies that better meet the school's needs for practical training.

Mr. Ma's biotech perspective underscored the importance of collaborative research, a point directly related to Scale 1, which emphasizes the need for local policies that promote deeper integration of industry and education. Ms. Tang's and Mr. Su's insights touched on vocational training and the government's role in ensuring policy alignment with the practical skills demanded by industries such as green energy and construction, which aligns with Scale 1's points on the government's role in facilitating industry participation and creating a stable integration environment.

Descriptive analysis

Table 80 Descriptive analysis Scale 1 from enterprise

No.	Definition	Mean	Standard deviation	Opinion
1	The school has a complete operating mechanism for the integration of industry and education.	3.82	1.14	Agree
2	The industry education integration policy issued by the Liaoning Provincial Government meets the needs of the school.	3.87	1.17	Agree
3	Local policies or measures in Liaoning Province can effectively promote the school to deepen the integration of industry and education.	3.86	1.15	Agree
4	The school actively participates in industrial activities organized by the government or enterprises.	3.97	1.09	Agree
5	The enterprise has a complete mechanism for the integration of industry and education.	3.97	1.07	Agree
6	The industry-education integration policy issued by the Liaoning Provincial Government meets the needs of the enterprises.	3.88	1.07	Agree
7	Local policies or measures in Liaoning Province can effectively promote industrial development.	3.87	1.07	Agree

Table 80 (Cont.)

No.	Definition	Mean	Standard deviation	Opinion
8	Enterprises actively participate in industrial activities organized by the government.	4.02	1.04	Agree
9	The political, economic and technological environment for deepening the integration of industry and education in Liaoning Province is relatively stable.	3.94	1.06	Agree
10	The regional innovation environment of Liaoning Province is suitable for the integration of industry and education.	3.90	1.03	Strongly agree
11	The Liaoning provincial government adopts relevant policies or measures to guide schools and enterprises to carry out collaborative innovation in the integration of industry and education.	3.92	1.06	Strongly agree
12	The Liaoning Provincial Government regards schools and enterprises as customers and takes the initiative to establish a service network connecting universities, enterprises and the government.	3.81	1.04	Agree
13	Local governments actively participate in industrial activities organized by enterprises.	3.93	1.02	Strongly agree
	Overview	3.90	1.08	Agree

From table 79, the information on the current role played by the Liaoning Provincial Government was interviewed and found to agree with the overall expectations, with an overall average feedback score of 3.90. On average, respondents agree that the school possesses a robust operating mechanism for integrating industry and education, with a mean of 3.82. The industry education policy set by the Liaoning Provincial Government appears to be in line with the

school's requirements, earning an average score of 3.87. Local strategies in Liaoning are perceived to foster deeper industry and education integration effectively, given the mean rating of 3.86.

Schools seem to be enthusiastic participants in industry-focused activities initiated by the government or corporations, with an average rating of 3.97. Enterprises appear to have a solid foundation for industry-education integration, reflected in the mean score of 3.97. The Liaoning Provincial Government's industry-education policy seems to cater to enterprise needs, as indicated by a mean rating of 3.88. Local initiatives in Liaoning are believed to positively influence industrial growth, receiving an average score of 3.87.

Enterprises appear proactive in joining industry-centric programs led by the government, reflected in the mean of 4.02. Liaoning's political, economic, and technological landscape seems conducive to deeper industry-education integration, with an average rating of 3.94. The province's innovative environment is deemed suitable for industry and education integration, securing a mean score of 3.81. The Liaoning government seems effective in guiding collaborative innovation between schools and enterprises, with an average rating of 3.92. The government appears to view schools and enterprises as valuable partners, actively establishing connecting service networks, reflected in the mean score of 3.90. Local governments in Liaoning are seen as active collaborators in industry projects spearheaded by corporations, securing an average rating of 3.93.

Therefore, the current role that the Liaoning provincial government play is multi-faceted, characterized by policy alignment with educational and enterprise needs, fostering a supportive environment for innovation, active engagement in collaborative projects.

In part 7, the triple helix theory create the role of local government is analyzed from the perspective of the enterprise in terms of the three dimensions of environment, policy, and interactivity involved in schools, enterprises, and government, respectively. The scale was divided into 5 levels, very satisfied, satisfied, average, dissatisfied, and very dissatisfied, with scores of 5, 4, 3, 2 and 1. Therefore, the results show as following table.

Table 81 The school is a small and medium-sized university, and relies more on the use of relationship coordination to carry out the integration of industry and education

No.	Item	Frequency	Percent
1	Strongly disagree	4	3.5
2	Disagree	2	1.8
3	Neutral	37	32.7
4	Agree	28	24.8
5	Strongly agree	42	37.2
Total		113	100%

The school, being a small to medium-sized university, appears to rely considerably on the use of relationship coordination to facilitate the integration of industry and education. This is supported by the data, which shows that 62% (24.8% agree and 37.2% strongly agree) of respondents affirm the effectiveness of the school's mechanism in integrating industry and education. On the other hand, a substantial proportion of respondents, 32.7%, remain neutral, suggesting either an ambivalence or lack of sufficient information to form a strong opinion on this matter. Only a minority of 5.3% (3.5% strongly disagree and 1.8% disagree) express disagreement with the school's approach.

Table 82 The school's professional setting matches the regional industrial structure and industrial needs

No.	Item	Frequency	Percent
1	Strongly disagree	3	2.7
2	Disagree	6	5.3
3	Neutral	35	31.0
4	Agree	28	24.8
5	Strongly agree	41	36.3
Total		113	100%

The data indicates that 61.1% (24.8% agree and 36.3% strongly agree) of respondents believe the school's professional setting aligns with the regional industrial structure and industrial needs, reflecting a predominantly positive perception. Conversely, a significant proportion of 31.0% of respondents remain neutral, indicating potential indecisiveness or lack of clear consensus regarding the school's alignment with industry requirements. Meanwhile, a combined 8% (2.7% strongly disagree and 5.3% disagree) do not see the school's professional setting as matching the regional industrial needs, highlighting areas where the school's alignment with industry could potentially be improved.

Table 83 The school can get financial support, tax incentives, government procurement and other policy support related to the integration of industry and education

No.	Item	Frequency	Percent
1	Strongly disagree	3	2.7
2	Disagree	3	2.7
3	Neutral	39	34.5
4	Agree	30	26.5
5	Strongly agree	38	33.6
Total		113	100%

The survey results show that 60.1% of respondents (26.5% agree and 33.6% strongly agree) acknowledge that the school receives financial support, tax incentives, government procurement, and other policy supports related to the integration of industry and education, indicating a majority perception of adequate policy backing. However, a considerable number of respondents, 34.5%, hold a neutral stance, implying either an uncertainty about or a lack of evident impact of these policies. A small segment, accounting for 5.4% (2.7% disagree and 2.7% strongly disagree), does not perceive the school as receiving substantial policy

support, which suggests areas where policy effectiveness or awareness could be enhanced.

Table 84 The school needs the government to build an interactive platform for the integration of industry and education

No.	Item	Frequency	Percent
1	Strongly disagree	3	2.7
2	Disagree	5	4.4
3	Neutral	29	25.7
4	Agree	31	27.4
5	Strongly agree	45	39.8
Total		113	100%

The data indicates that a significant majority of 67.2% (27.4% agree and 39.8% strongly agree) believe there is a need for the government to build an interactive platform to facilitate the integration of industry and education. This reflects a general agreement on the importance of such a platform for the school's activities in this area. Meanwhile, 25.7% of respondents remain neutral, suggesting either a lack of decisive opinion or insufficient information on the matter. The 7.1% who disagree or strongly disagree may reflect a minority viewpoint that either questions the necessity or efficacy of government involvement in the creation of an interactive platform for industry-education integration.

Table 85 The industrial structure of Liaoning Province is reasonable

No.	Item	Frequency	Percent
1	Strongly disagree	4	3.5
2	Disagree	3	2.7
3	Neutral	39	34.5
4	Agree	31	27.4
5	Strongly agree	36	31.9
Total		113	100%

The data presents a positive view towards the reasonableness of Liaoning Province's industrial structure, with a majority of 59.3% (27.4% agree and 31.9% strongly agree) affirming its sensibility. Nevertheless, a significant proportion of respondents, 34.5%, are neutral, pointing to a potential ambivalence or lack of awareness about the structure's effectiveness. Meanwhile, a small fraction of 6.2% (2.7% disagree and 3.5% strongly disagree) hold a negative perception, suggesting that there are some reservations or criticisms regarding the current industrial structure in Liaoning Province.

Table 86 Most enterprises and their industries in Liaoning Province are developing well

No.	Item	Frequency	Percent
1	Strongly disagree	5	4.4
2	Disagree	4	3.5
3	Neutral	43	38.1
4	Agree	25	22.1
5	Strongly agree	36	31.9
Total		113	100%

Most respondents (54.0% combined agree and strongly agree) feel that the integration policy serves the enterprises well, but nearly a third (38.1%) are neutral, highlighting that some may be unsure about the policy's effectiveness for enterprises.

Table 87 Enterprises can get financial support, tax incentives, government procurement and other policy support related to the integration of industry and education

No.	Item	Frequency	Percent
1	Strongly disagree	4	3.5
2	Disagree	4	3.5
3	Neutral	43	38.1
4	Agree	25	22.1
5	Strongly agree	37	32.7
Total		113	100%

There's a general agreement (54.8% combined agree and strongly agree) that local policies are effective in promoting development, but 38.1% neutral suggests that the effectiveness of these policies is not universally observed or acknowledged.

Table 88 Interprises need the government to build an interactive platform for the integration of industry and education

No.	Item	Frequency	Percent
1	Strongly disagree	4	3.5
2	Disagree	1	.9
3	Neutral	31	27.4
4	Agree	30	26.5
5	Strongly agree	47	41.6
Total		113	100%

With 68.1% combined agreeing, it reflects a positive view on enterprise participation. However, a noticeable 27.4% neutral response might imply some enterprises are less involved or aware of these activities.

Table 89 The Liaoning Provincial Government has a strong scope of administrative power and policy autonomy

No.	Item	Frequency	Percent
1	Strongly disagree	4	3.5
2	Disagree	3	2.7
3	Neutral	38	33.6
4	Agree	30	26.5
5	Strongly agree	38	33.6
Total		113	100%

The majority (60.1% combined agree and strongly agree) perceive stability, essential for integration efforts. Yet, the neutral responses indicate that there's a group of respondents who may not fully perceive this stability or may not be directly affected by the integration efforts.

Table 90 The Liaoning provincial government has the financial foundation to support the integration of industry and education

No.	Item	Frequency	Percent
1	Strongly disagree	5	4.4
2	Disagree	4	3.5
3	Neutral	38	33.6
4	Agree	26	23.0
5	Strongly agree	40	35.4
Total		113	100%

The results indicate that a majority of respondents, 58.4% (23.0% agree and 35.4% strongly agree), perceive the Liaoning provincial government as having a solid financial foundation to support the integration of industry and education. However, a significant 33.6% of respondents are neutral on this matter, suggesting either uncertainty or a lack of information about the government's financial capacity for such integration. On the other hand, a minority of 7.9% (3.5% disagree and 4.4% strongly disagree) express disagreement, indicating some skepticism or reservations about the government's financial ability in this regard.

Table 91 Local governments formulate specific measure based on central policies

No.	Item	Frequency	Percent
1	Strongly disagree	4	3.5
2	Disagree	3	2.7
3	Neutral	35	31.0
4	Agree	31	27.4
5	Strongly agree	40	35.4
Total		113	100%

The majority of respondents (62.8% combined for agree and strongly agree) are in favor of the statement, suggesting they recognize and appreciate the local government's effort to align with central policies when formulating specific measures. A considerable number of respondents remain neutral (31%), which could imply uncertainty about the effectiveness or awareness of these measures, while only a small fraction (6.2% combined) directly disagree, indicating a minimal level of dissent towards the local government's alignment with central directives.

Table 92 The Liaoning Provincial Government can introduce innovative localized integration of industry and education policies

No.	Item	Frequency	Percent
1	Strongly disagree	4	3.5
2	Disagree	3	2.7
3	Neutral	37	32.7
4	Agree	33	29.2
5	Strongly agree	36	31.9
Total		113	100%

Responses suggest that respondents have confidence in the provincial government's ability to innovate with localized policies for the integration of industry and education, with a total of 61.1% in agreement. However, a significant proportion (32.7%) of respondents are neutral, indicating some hesitation or lack of definitive opinion on the government's innovative capabilities. Disagreement is again quite low at 6.2%, reflecting only a small degree of skepticism.

Table 93 The Liaoning provincial government can provide funds to build a platform for the integration and interaction of industry and education

No.	Item	Frequency	Percent
1	Strongly disagree	4	3.5
2	Disagree	5	4.4
3	Neutral	35	31.0
4	Agree	33	29.2
5	Strongly agree	36	31.9
Total		113	100%

A combined majority of 61.1% (agree and strongly agree) support the idea that the provincial government has the capacity to fund platforms facilitating the integration and interaction between industry and education. The neutral stance is notable, with 31.0% of respondents not committing to either side, which could suggest a need for more information or evidence of such funding capabilities. The combined disagreement rate of 7.9% is relatively modest, indicating that while there are some doubts about the government's financial commitment, they are not overwhelmingly shared by most respondents.

During Focus Groups:

Table 94 Connection of Focus Group Transcripts with Scale 2 from enterprises

Scale 2 Item	Transcript Excerpt (Direct or Indirect)	Connection Detail
1. Relationship coordination in SMEs	Ms. Zhu: "Schools need to tailor their curricula to meet industry needs more closely..."	The need for tailored curricula suggests smaller institutions require coordination with industry to ensure relevance.
2. Match of school setting with industrial needs	Mr. Lee: "Our firm believes in collaboration for innovation..."	Collaboration for innovation directly relates to aligning educational settings with industry needs.
3. Financial and policy support	Mr. Ma: "Small and medium-sized enterprises often get overlooked..."	SMEs being overlooked suggests the need for financial and policy support that is accessible to enterprises of all sizes.
4. Interactive platform needs	Mr. Su: "We need forward-thinking from all parties..."	The call for forward-thinking by all stakeholders indirectly suggests a need for interactive platforms to facilitate such dialogue.

Moving to enterprise scale 2, the participants' dialogue reflects the need for relationship coordination, particularly for small and medium-sized institutions like Ms. Zhu's startup, which can benefit from government-facilitated platforms for interaction. Mr. Lee's emphasis on aligning school offerings with industrial needs speaks to the scale's point on the match between the school's professional setting and regional industrial structure. Mr. Ma's call for support for SMEs in education-industry partnerships echoes the scale's focus on providing financial and policy support to various enterprises.

Descriptive analysis

Table 95 Descriptive analysis Scale 2 from the enterprise

No.	Definition	Mean	Standard deviation	Opinion
1	The school is a small and medium-sized university, and relies more on the use of relationship coordination to carry out the integration of industry and education.	3.9	1.04	Agree
2	The school's professional setting matches the regional industrial structure and industrial needs.	3.87	1.06	Agree
3	The school can get financial support, tax incentives, government procurement and other policy support related to the integration of industry and education.	3.86	1.01	Agree
4	The school needs the government to build an interactive platform for the integration of industry and education.	3.97	1.04	Agree
5	The industrial structure of Liaoning Province is reasonable.	3.81	1.03	Agree

Table 95 (Cont.)

No.	Definition	Mean	Standard deviation	Opinion
6	Most enterprises and their industries in Liaoning Province are developing well.	3.73	1.09	Agree
7	Enterprises can get financial support, tax incentives, government procurement and other policy support related to the integration of industry and education.	3.77	1.06	Agree
8	Enterprises need the government to build an interactive platform for the integration of industry and education.	4.02	1.03	Agree
9	The Liaoning Provincial Government has a strong scope of administrative power and policy autonomy.	3.84	1.04	Agree
10	The Liaoning provincial government has the financial foundation to support the integration of industry and education.	3.81	1.10	Agree
11	11. Local governments formulate specific measures based on central policies.	3.88	1.04	Agree
12	The Liaoning Provincial Government can introduce innovative localized integration of industry and education policies.	3.83	1.03	Agree
13	The Liaoning provincial government can provide funds to build a platform for the integration and interaction of industry and education.	3.81	1.05	Agree
Overview		3.85	1.05	Agree

From table 95, the information accessed on the Triple Helix creates the Role of Government found agree with the overall expectations, with an overall average feedback score of 3.85. On average, respondents believe that small and medium-sized universities, such as the school in question, heavily rely on relationship

coordination to implement industry and education integration. This sentiment is represented with a mean of 3.90. The alignment of the school's professional offerings with the regional industrial structure and needs has an average score of 3.87. It seems that schools can access financial aid, tax breaks, and other policy support linked to industry and education integration, as indicated by a mean of 3.86.

The need for governmental intervention in creating a platform for industry and education integration at schools is evident with a mean score of 3.97. Liaoning Province's industrial structure appears to be reasonable to the respondents, receiving an average score of 3.81. The prosperous growth of most enterprises and their respective industries in Liaoning is reflected with a mean of 3.73. Enterprises seem to have access to financial assistance, tax incentives, and other related policies, as indicated by an average rating of 3.77. The demand for a government-initiated interactive platform for industry and education integration among enterprises stands at a mean of 4.02.

The scope and autonomy of the Liaoning Provincial Government's policies appear to be strong, with an average score of 3.84. The financial capability of the Liaoning government to bolster industry and education integration stands at a mean of 3.81. Local governing bodies appear to adapt central policies into specific regional measures, receiving an average rating of 3.88. The capacity of the Liaoning government to innovate and introduce localized policies related to industry and education integration is reflected with a mean of 3.83. The willingness and ability of the Liaoning government to allocate funds towards platforms promoting industry and education interaction are represented by a mean of 3.81.

Therefore, from the perspective of enterprises, the triple helix theory creates the role played by the government in the following ways: 1. Local governments are expected to act as facilitators of linkages between education and industry; 2. Ensure that its policies are responsive to the needs of educational institutions and enterprises. 3. The function of government extends to creating an environment conducive to the integration of industry and education.

In part 8, from the perspective of enterprises, analyzes the role that the Liaoning Provincial Government should play in deepening the integration of industry and education from a multidimensional perspective. The scale was divided into 5 levels, very satisfied, satisfied, average, dissatisfied, and very dissatisfied, with scores of 5, 4, 3, 2 and 1. Therefore, the results show as following table.

Table 96 The Liaoning provincial government should have a positive attitude towards deepening the integration of industry and education in the school

No.	Item	Frequency	Percent
1	Strongly disagree	3	2.7
2	Disagree	3	2.7
3	Neutral	29	25.7
4	Agree	34	30.1
5	Strongly agree	44	38.9
Total		113	100%

Most respondents (68.9% combined agree and strongly agree) believe the Liaoning provincial government should have a positive attitude towards deepening industry and education integration. A small minority disagree (5.4%), while a quarter of the respondents are neutral, possibly indicating uncertainty or a wait-and-see attitude.

Table 97 In the process of deepening the integration of industry and education in the school, rather than taking full responsibility or adopting intervention methods, the approach that the Liaoning provincial Government should take is to use market mechanisms

No.	Item	Frequency	Percent
1	Strongly disagree	3	2.7
2	Disagree	2	1.8
3	Neutral	29	25.7
4	Agree	33	29.2
5	Strongly agree	46	40.7
Total		113	100%

A significant majority (70% combined) endorse the use of market mechanisms by the government in the integration process over direct intervention or full responsibility. A small minority disagree (4.5%), and about a quarter are neutral, suggesting some may not be convinced of the market's effectiveness alone or may require more information.

Table 98 The Liaoning Provincial Government needs to create a good industrial structure and regional environment for the school to deepen the integration of industry and education

No.	Item	Frequency	Percent
1	Strongly disagree	3	2.7
2	Disagree	3	2.7
3	Neutral	28	24.8
4	Agree	33	29.2
5	Strongly agree	46	40.7
Total		113	100%

Most respondents (69.9% combined) agree that the government needs to foster a good industrial structure and regional environment for deeper integration. Again, a small number disagree (5.4%), with the rest remaining neutral, indicating a cautious or undecided perspective on government's role in structural development.

Table 99 To deepen the integration of industry and education, schools, enterprises, and governments must all have complete organizations and mechanisms

No.	Item	Frequency	Percent
1	Strongly disagree	3	2.7
2	Disagree	3	2.7
3	Neutral	29	25.7
4	Agree	34	30.1
5	Strongly agree	44	38.9
Total		113	100%

The majority (69% combined) agree that complete organizations and mechanisms are required across schools, enterprises, and governments to deepen integration. A small proportion disagree (5.4%), and a quarter are neutral, which could reflect a diverse opinion on how such comprehensive systems should be developed or evaluated.

Table 100 The most important thing in formulating local industry-education integration policies is to meet the actual needs of schools and enterprises, rather than to promote industrial development

No.	Item	Frequency	Percent
1	Strongly disagree	4	3.5
2	Disagree	1	.9
3	Neutral	36	31.9
4	Agree	33	29.2
5	Strongly agree	39	34.5
Total		113	100%

A majority (63.7% combined) believe that meeting the actual needs of schools and enterprises is more important than promoting industrial development when formulating local policies. Very few disagree (4.4%), and a significant number are neutral, perhaps indicating some level of agreement with both objectives or a belief that the two goals are not mutually exclusive.

Table 101 The local policy on integration of industry and education formulated by Liaoning Province should be innovative, but it must be consistent with the centralized policy

No.	Item	Frequency	Percent
1	Strongly disagree	3	2.7
2	Disagree	2	1.8
3	Neutral	28	24.8
4	Agree	36	31.9
5	Strongly agree	44	38.9
Total		113	100%

A strong majority (70.8% combined) feel that local policy should be both innovative and consistent with centralized policy. Very few respondents disagree (4.5%), and about a quarter are neutral, perhaps signaling some uncertainty about how innovation and consistency can be balanced in policy-making.

Table 102 The most effective interactive measures taken by the Liaoning Provincial Government for the integration of industry and education are building online platforms rather than organizing offline activities

No.	Item	Frequency	Percent
1	Strongly disagree	3	2.7
2	Disagree	3	2.7
3	Neutral	38	33.6
4	Agree	33	29.2
5	Strongly agree	36	31.9
Total		113	100%

There's a majority (61.1% combined) preference for the government to focus on building online platforms over offline activities for effective integration interaction. A small number disagree (5.4%), and a third are neutral, possibly reflecting varying opinions on the effectiveness of online versus offline measures or a need for a hybrid approach.

Table 103 In order to effectively deepen the integration of industry and education and promote interactions between subjects, the Liaoning Provincial Government should provide financial and tax support to schools and enterprises instead of setting performance assessment indicators

No.	Item	Frequency	Percent
1	Strongly disagree	3	2.7
2	Disagree	2	1.8
3	Neutral	32	28.3
4	Agree	37	32.7
5	Strongly agree	39	34.5
Total		113	100%

The majority (67.2% combined) support the government providing financial and tax support to schools and enterprises as opposed to setting performance assessment indicators. Few disagree (4.5%), and the rest are neutral, potentially indicating a belief in the importance of financial incentives or a lack of consensus on the role of performance metrics.

Table 104 The most important role that Liaoning Provincial Government should play in deepening the integration of industry and education is that of a service provide, rather than a guide, supervisor or manager

No.	Item	Frequency	Percent
1	Strongly disagree	3	2.7
2	Disagree	2	1.8
3	Neutral	30	26.5
4	Agree	38	33.6
5	Strongly agree	40	35.4
Total		113	100%

A majority (69% combined) believe the government should primarily be a service provider in the process of deepening integration, not a guide, supervisor, or manager. Few disagree (4.5%), and a notable portion are neutral, which could suggest some are open to a more varied role for the government or require more clarity on what being a service provider entails.

During Focus Groups:

Table 105 Connection of Focus Group Transcripts with Scale 3 from enterprises

Scale 3 Item	Transcript Excerpt (Direct or Indirect)	Connection Detail
1. Positive government attitude	Ms. Zhu: "The government should incentivize curricula that are more aligned with real-world tech applications."	Incentivizing relevant curricula requires a government attitude that is supportive of integration needs.
2. Market mechanisms for integration	Mr. Lee: "Government policies should facilitate not just collaboration but also streamline the regulatory environment..."	The call for streamlined regulations indicates a preference for market mechanisms that enable easy collaboration.
3. Good industrial structure and environment	Ms. Tang: "Local governments have to look ahead..."	The need for future-proofing suggests a desire for a supportive industrial structure and environment.
4. Complete organizations and mechanisms	Indirect: Advocacy for structured collaboration and incentives	The discussion implies a need for comprehensive organizations and mechanisms to support ongoing integration.
5. Policies meeting actual needs	Mr. Ma: "The government should ensure that policies enable SMEs to benefit from and contribute to education-industry partnerships..."	The need for SMEs to benefit from partnerships implies policies should be grounded in the actual needs of industry and education.

Table 105 (Cont.)

Scale 3 Item	Transcript Excerpt (Direct or Indirect)	Connection Detail
6. Consistency with centralized policy	Indirect: The necessity for innovative but aligned local actions	While not explicitly stated, the need for policy innovation that remains consistent with broader strategies can be inferred.
7. Online platforms over offline activities	Indirect: Calls for agile and updated curricula	The emphasis on dynamic industry environments suggests a preference for the agility of online platforms.

The discussions also demonstrated a clear call for the government to use market mechanisms to facilitate integration, as outlined in Scale 3. The stakeholders highlighted the need for a positive government attitude towards these partnerships, with Ms. Zhu emphasizing the importance of tailoring educational programs to industry needs and Mr. Su advocating for flexible learning paths, reflecting the scale's points on complete organizations and mechanisms for integration.

The group also touched on the importance of innovative and consistent local policies that are aligned with centralized policies. This echoes Scale 3's focus on the need for government actions that are innovative but maintain consistency with broader strategies. Their advocacy for online platforms over offline activities and financial and tax support in place of performance assessment indicators further connects with Scale 3's emphasis on the government's role as a facilitator and service provider rather than a direct manager of the integration process.

Table 106 Descriptive analysis Scale 3 from the enterprise

No.	Definition	Mean	Standard deviation	Opinion
1	The Liaoning provincial government should have a positive attitude towards deepening the integration of industry and education in the school.	4.00	1.00	Agree
2	In the process of deepening the integration of industry and education in the school, rather than taking full responsibility or adopting intervention methods, the approach that the Liaoning provincial Government should take is to use market mechanisms.	4.04	0.99	Agree
3	The Liaoning Provincial Government needs to create a good industrial structure and regional environment for the school to deepen the integration of industry and education.	4.03	1.00	Agree
4	To deepen the integration of industry and education, schools, enterprises, and governments must all have complete organizations and mechanisms.	4.00	1.00	Agree
5	The most important thing in formulating local industry-education integration policies is to meet the actual needs of schools and enterprises, rather than to promote industrial development.	3.90	1.01	Agree
6	The local policy on integration of industry and education formulated by Liaoning Province should be innovative, but it must be consistent with the centralized policy.	4.03	0.98	Agree

Table 106 (Cont.)

No.	Definition	Mean	Standard deviation	Opinion
7	The most effective interactive measures taken by the Liaoning Provincial Government for the integration of industry and education are building online platforms rather than organizing offline activities.	3.85	0.99	Agree
8	In order to effectively deepen the integration of industry and education and promote interactions between subjects, the Liaoning Provincial Government should provide financial and tax support to schools and enterprises instead of setting performance assessment indicators.	3.95	0.97	Agree
9	The most important role that Liaoning Provincial Government should play in deepening the integration of industry and education is that of a service provide, rather than a guide, supervisor or manager.	3.97	0.97	Agree
Overview		3.97	0.99	Agree

From table 105, information on the role local government should play was accessed and found to agree with the overall expectation, with an overall average feedback score of 3.97. The general sentiment is that the Liaoning provincial government should view the integration of industry and education positively. The mean score is 4.00. When it comes to deepening the integration of industry and education, the majority believe that the Liaoning government should utilize market mechanisms instead of taking full responsibility or adopting intervention methods. This item scored an average of 4.04.

Respondents feel the Liaoning Provincial Government should provide a conducive industrial structure and regional environment for schools to enhance their industry and education integration. The item scored a mean of 4.03. There's a collective belief that all stakeholders, including schools, enterprises, and governments, should have well-established organizations and mechanisms for integration. This item has a mean and median of 4.00. Local policies for industry-education integration should primarily cater to the genuine requirements of schools and enterprises rather than merely pushing industrial development. This viewpoint scored an average of 3.90.

Local policies by Liaoning on industry and education integration should be innovative but align with centralized policies. This sentiment has a mean score of 4.03. The most impactful measures for integration by the Liaoning Provincial Government are believed to be online platforms rather than offline events. This item received a mean of 3.85. For effective integration and fostering interactions, financial and tax incentives from the Liaoning government are deemed more crucial than setting performance benchmarks. This viewpoint scored a mean of 3.95, a median of 4.00. The predominant role of the Liaoning Provincial Government should be as a service provider in the integration process, as opposed to a guide, supervisor, or manager. This item scored an average of 3.97.

A total of 14 valid suggestions were collected from 113 questionnaires in open-ended question 45 and are categorized and described below:

1. Several respondents suggested that the government should do a better job in its service role and provide continuous and possibly increased support to enterprises;
2. Some respondents called for the government to play the role of a good coordinator and continue to build the platform for industry-education integration.

Therefore, the most crucial role that the Liaoning government should play is that of a service provider, a view supported by 69%, while 61.1 % of respondents believe that the government should provide an online interaction platform for schools and businesses, and 67.2 % of respondents want the government to provide financial and tax support. There is also a significant proportion of respondents who

believe that the role of co-ordinator is also important, as evidenced by the responses to the open-ended question, where some respondents hoped that the government should co-ordinate the relationship between that school and the enterprise.

Conclusion

The current role of the Liaoning provincial government play is multi-faceted. this is expressed in terms of policy development and organization of cooperation activities, as well as the creation of a stable environment. The triple helix theory creates the role played by the government in the following ways: (1) Local governments are act as facilitators of linkages between education and industry, it plays an important role in mediating the relationship between educational institutions and industrial stations, while at the same time being willing to create frameworks that are conducive to interaction; (2) Ensure that its policies are responsive to the needs of educational institutions and enterprise, and the government has a financial base and is willing to provide some incentives; (3) The function of government extends to creating an environment conducive to the integration of industry and education, and the government is actively investing in the infrastructure that fosters innovation and cooperation. The most crucial role that the Liaoning government should play is that of a service provider. At the same time, the government should provide an online interactive platform for schools and enterprises, and hope that the government will provide financial and tax support. A significant proportion of the role of supervisor and co-ordinator is also important, and the government should co-ordinate the relationship between that school and the enterprise.

CHAPTER 5

CONCLUSIONS, DISCUSSION, SUGGESTION

Introduction

At present, the multi-faceted role played by the Liaoning provincial government is not clear enough for schools and enterprises. According to the theory of the triple helix, each subject will inevitably show a spiraling posture in the process of intertwining with each other, and the government, as one of the important subjects, should make dynamic adjustments to its role based on the current environment and combine with the status quo of China's integration of industry and education to drive schools and enterprises to realize spiraling growth. enterprises to achieve spiral growth.

The study is expected to benefit the Liaoning Provincial Government in three aspects in the development of the integration of industry and education.

1. It is to integrate the Triple Helix Theory into the practical application of the integration of industry and education with Chinese characteristics;
2. Obtaining the ways that create government role-play through research has a certain reference value;
3. Helping the Liaoning Provincial Government to Re-create its Role in Deepening the integration of industry and education in higher vocational education.

There are three parts in this chapter; the first part presents the conclusions of this study based on the results of the data analyses in the previous chapter, the second part will focus on the comparative discussion of the conclusions, and the last part will make recommendations on the role that the Liaoning government should play by taking into account the three dimensions of the environment, policy, and interactivity.

Conclusion

Based on the findings of this study, the following conclusions were drawn:

1. The role played by the Liaoning provincial government in deepening the integration of industry and education in Liaoning Industrial and Technical Vocational University. At present, the Liaoning Provincial Government plays a multifaceted role in deepening the integration of industry and education. School and enterprise respondents were positive about this view. They agreed that the main roles played by the Liaoning Provincial Government at this stage are multifaceted.

In particular, in the response data from school respondents, The mean value of the answers to most questions exceeded 4.00, indicating an overall positive attitude. The data from the enterprises respondents show that the mean values for most of the relevant questions are below 4.00, suggesting that there is a proportion of negative attitudes amongst the enterprises respondents. Nonetheless, based on the data from School Scale 1 and enterprises Scale 1, the proportions of Strongly Agree and Agree are both over 50%, which suggests that the majority of respondents have a positive attitude towards this view.

2. The triple helix theory creates the role of local government. The triple helix theory creates the role played by the government in the following ways:

2.1 Local governments are act as facilitators of linkages between education and industry, it plays an important role in mediating the relationship between educational institutions and industrial stations, while at the same time being willing to create frameworks that are conducive to interaction. According to the survey, 78.1% of school respondents, and 61.21% of enterprises respondents believe that local government can provide funds to build a platform for the integration and interaction of industry and education, this corresponds to the dimension of interaction between the subjects of the triple helix theory.

2.2 Ensure that its policies are responsive to the needs of educational institutions and enterprise, and the government has a financial base and is willing to provide some incentives. When schools and enterprises answered the question related to obtaining policy support, the positive attitude of enterprise respondents

was more than 50%, and that of school respondents was even more than 70%, which suggests that the Liaoning Provincial Government's support for the integration of industry and education in schools from the policy dimension is being applied to the practice of the triple helix theory;

2.3 The function of government extends to creating an environment conducive to the integration of industry and education, and the government is actively investing in the infrastructure that fosters innovation and cooperation. According to the data, more than 60% of the school respondents had a positive attitude towards issues related to the micro-environment of schools and enterprises, and the industrial environment in the Liaoning province region, which is an overwhelming perception. More than 60% of the enterprises respondents also had a positive attitude towards issues related to the micro-environment of enterprises and the industrial environment. This indicates that the environmental dimension of each subject of the triple helix is also helping to shape the role of local governments.

3. The most crucial role that the Liaoning government should play is that of a service provider, a view supported from school respondents by 83.1%, a view supported from enterprise respondents by 69%. while 79 % of school respondents and 61.1 % of enterprise respondents believe that the government should provide an online interaction platform for schools and enterprises, and 87.1 % of school respondents and 67.2 % of enterprise respondents want the government to provide financial and tax support. There is also a significant proportion of respondents who believe that the role of supervisor and co-ordinator is also important, as evidenced by the responses to the open-ended question, where some respondents hoped that the government should co-ordinate the relationship between that school and the enterprise.

Discussion

Jiang (2016) used the triple helix theory to study the transformation and development of local general undergraduate colleges. He believed that the government plays a third-party role as a mediator and a facilitator between the university and the market. In the same way with the research result that the Liaoning Provincial Government is playing a multifaceted role. Therefore, it is in this researcher opinion, it is not entirely consistent with Jiang Ping's findings in that it encompasses intermediaries and facilitators, but also other roles such as regulators.

Chen (2014: 64-69) applied the triple helix theory in his research on the university entrepreneurship education ecosystem. Through the study, it was found that the focus of university entrepreneurship education ecosystem construction should be placed on government policy guidance, industrial platform support, and university teaching resources in the innovation and entrepreneurship education ecosystem, to realize the benign interaction and spiral support of the trinity of the university, industry, and government, and to continuously promote the overall function. In this research result that the way in which the triple helix creates the role of the government are: to strengthen the policy guidance and support of industrial platforms, as well as to create a favourable environment for the integration of industry and education.

Therefore, in this researcher opinion, this finding is more or less the same as the findings of Chen Shaoxiong's study, but in this research, creating an environment is a way of government Role-playing, which has nothing to do with teaching and learning resources in Chen Shaoxiong's study. This depends on the different themes of the study.

Based on the "Triple Helix Model", Wang Jinhui studied the issue of government, school and enterprise cooperation in Shaanxi Province, and he proposed that the government needs to improve its policies and legal system, which means that the government has to better assume the role of a regulator. In this research, in response to the third research question, it is concluded that the most crucial role that the Liaoning provincial government should play is that of a service

provider. At the same time, the roles of a supervisor and coordinator are also important. Therefore, this researcher do not fully agree with Wang Jinhui's viewpoint, and in this researcher opinion, this dynamic role shift should be more in line with the current situation in Liaoning Province.

Suggestion

According to the triple helix theory of school, enterprise, and government, combined with the dimensions of environment, policy, and interactivity, the following suggestions are proposed for the role that the Liaoning Provincial Government should play in Liaoning Polytechnic Vocational University:

1. Play the role of service provider, regulator, and coordinator. Clearly define the current position and serve the schools and industries.

- 1.1 Take the initiative to extend government functions to create an environment conducive to the integration of industry and education, which includes the creation of a suitable political, economic, and technological environment.

- 1.2 Taking advantage of financial autonomy to provide schools and industries with support that is not limited to monetary terms, such as financial incentives and tax breaks.

- 1.3 Create an interactive platform that combines online and offline, and apply digital interaction to improve communication efficiency. Also, build a strong innovation ecosystem and actively participate in promoting and nurturing the relationship between education and industry.

2. Increase the role of innovators, develop an in-depth understanding of the province's industrial and educational needs, and develop innovative localized policies. It also guides collaborative innovation between schools and enterprises to build a strong innovation ecosystem.

3. Reshape roles. The role of the government is not static, and dynamic adjustments are made promptly as the integration of schools, enterprises industry, and education evolves.

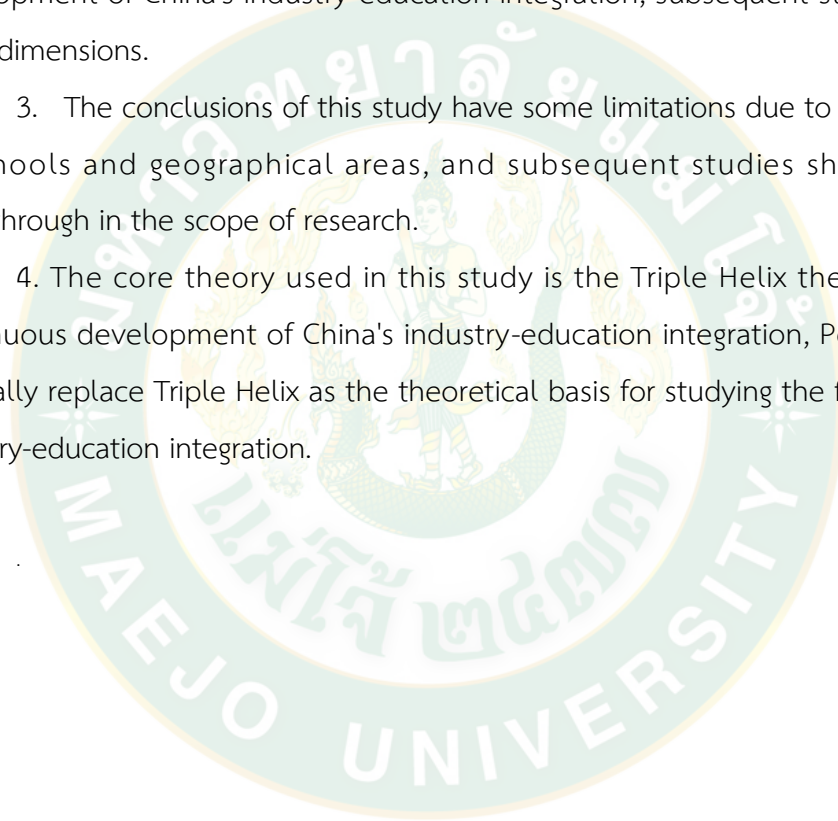
Recommendation for Further Study

1. This study fails to obtain the viewpoints or data from the Liaoning Provincial Government, and subsequent studies should build on the relationship with the local government.

2. This study only deals with the dimensions of environment, policy, and interactivity, and according to the relevant studies of the triple helix theory and the development of China's industry-education integration, subsequent studies can add more dimensions.

3. The conclusions of this study have some limitations due to the limitations of schools and geographical areas, and subsequent studies should make a breakthrough in the scope of research.

4. The core theory used in this study is the Triple Helix theory. With the continuous development of China's industry-education integration, Penta Helix can gradually replace Triple Helix as the theoretical basis for studying the field of China's industry-education integration.



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APPENDIXS



Appendix A

Questionnaire

QUESTIONNAIRE

English version of school questionnaire

The Role of Local Government Play in Deepening the Integration of Industry and Education in Liaoning Vocational University of Technology
Based on the Triple Helix Theory

Questionnaire

(School)

This is a questionnaire on the role of local governments in deepening the integration of industry and education in colleges and universities.

The results of this questionnaire are only used for academic research, and your personal information will be kept strictly confidential. Please answer the questions truthfully, as your answers can provide the scientific basis for this research.

This questionnaire consists of four parts. The first part collects general information. The second part focuses on the current role of local governments. The third part examines the triple helix theory create the role of the local government. The fourth part explores the role local governments should play.

Part I: General information. Please tick the corresponding brackets ✓

1. Gender

Male Female N/A

2. Age

under 25 years old 25-40 years old
 40-60 years old over 60 years old

3. How much salary do you gain?

Below RMB 3000 3000-5000 RMB
 5000-8000 RMB More than RMB 8,000

4. Marital status

Married Unmarried N/A

5. How many years have you been engaged in higher vocational education?

3 year or less 3year - 10 years

10 years - 15 years over 15 years

6. Which of the following types of jobs do you have at school?

teacher counselor

administration staff management

7. How is your work related to the integration of industry and education?(Explanation: If you are engaged in the integration of industry and education or have contact with cooperative enterprises, it is "directly related"; although you have not contacted with cooperative enterprises, but indirectly participated in the integration of industry and education through teaching, administrative work, etc., it is "indirectly related"; if you have not participated but have contact with the integration of industry and education, it is "related contact", and the rest are "irrelevant")

directly related indirectly related

related contact irrelevant

8. How many years have you been engaged in work related to the integration of industry and education? (If the answer to Q.5 is "not relevant", skip this question)

1 year or less 1 year - 5 years

5 years - 10 years over 10 years

9. Do you understand the integration of industry and education?

Know well understand some

just know do not know much

Part II: The current role. The questionnaire used the Likert scale.

There are 3 Indicators in this part, definition to 5 levels, Strongly agree, Agree, Neutral, Disagree, and Strongly disagree, with scores of 5, 4, 3, 2, and 1 respectively.

Please tick the corresponding brackets ✓

No.	Indicator		Definition	Level				
				5	4	3	2	1
10	school	environment	The school has a complete operating mechanism for the integration of industry and education					
11		policy	The industry-education integration policy issued by the Liaoning Provincial Government meets the needs of the school					
12			Local policies or measures in Liaoning Province can effectively promote the school to deepen the integration of industry and education					
13		interactive	The school actively participates in industrial activities organized by the government or enterprises					
14		environment	The enterprise has a complete mechanism for the integration of industry and education					
15	enterprise	policy	The industry-education integration policy issued by the Liaoning Provincial Government meets the needs of the enterprises					
16			Local policies or measures in Liaoning Province can effectively promote industrial development					
17		interactive	Enterprises actively participate in industrial activities organized by the government					

No.	Indicator		Definition	Level				
				5	4	3	2	1
18	Local government	environment	The political, economic and technological environment for deepening the integration of industry and education in Liaoning Province is relatively stable					
19			The regional innovation environment of Liaoning Province is suitable for the integration of industry and education					
20		policy	The Liaoning provincial government adopts relevant policies or measures to guide schools and enterprises to carry out collaborative innovation in the integration of industry and education					
21			The Liaoning Provincial Government regards schools and enterprises as customers and takes the initiative to establish a service network connecting universities, enterprises and the government					
22			interactive	Local governments actively participate in industrial activities organized by enterprises				

Part III: The triple helix theory create the role of the local government. The questionnaire used the Likert scale.

There are 3 Indicators in this part, definition to 5 levels, Strongly agree, Agree, Neutral, Disagree, and Strongly disagree, with scores of 5, 4, 3, 2, and 1 respectively. Please tick the corresponding brackets ✓

No.	Indicator		Definition	Level				
				5	4	3	2	1
23	school	environment	The school is a small and medium-sized university, and relies more on the use of relationship coordination to carry out the integration of industry and education					
24			The school's professional setting matches the regional industrial structure and industrial needs					
25		policy	The school can get financial support, tax incentives, government procurement and other policy support related to the integration of industry and education					
26		interactive	The school needs the government to build an interactive platform for the integration of industry and education					
27	enterprise	environment	The industrial structure of Liaoning Province is reasonable					
28			Most enterprises and their industries in Liaoning Province are developing well					
29		policy	Enterprises can get financial support, tax incentives, government procurement and other policy support related to the integration of industry and education					

No.	Indicator		Definition	Level				
				5	4	3	2	1
30	enterprise	interactive	Enterprises need the government to build an interactive platform for the integration of industry and education					
31	Local government	environment	The Liaoning Provincial Government has a strong scope of administrative power and policy autonomy					
32			The Liaoning provincial government has the financial foundation to support the integration of industry and education					
33		policy	Local governments formulate specific measures based on central policies					
34			The Liaoning Provincial Government can introduce innovative localized integration of industry and education policies					
35		interactive	The Liaoning provincial government can provide funds to build a platform for the integration and interaction of industry and education					

Part IV: The role local governments should play. The questionnaire used the Likert scale.

There are 3 Indicators in this part, definition to 5 levels, Strongly agree, Agree, Neutral, Disagree, and Strongly disagree, with scores of 5, 4, 3, 2, and 1 respectively.

Please tick the corresponding brackets ✓

No.	Definition	Level				
		5	4	3	2	1
36	The Liaoning provincial government should have a positive attitude towards deepening the integration of industry and education in the school					
37	In the process of deepening the integration of industry and education in the school, rather than taking full responsibility or adopting intervention methods, the approach that the Liaoning provincial Government should take is to use market mechanisms					
38	The Liaoning Provincial Government needs to create a good industrial structure and regional environment for the school to deepen the integration of industry and education					
39	To deepen the integration of industry and education, schools, enterprises, and governments must all have complete organizations and mechanisms					
40	The most important thing in formulating local industry-education integration policies is to meet the actual needs of schools and enterprises, rather than to promote industrial development					
41	The local policy on integration of industry and education formulated by Liaoning Province should be innovative, but it must be consistent with the centralized policy					
42	The most effective interactive measures taken by the Liaoning Provincial Government for the integration of industry and education are building online platforms rather than organizing offline activities					
43	In order to effectively deepen the integration of industry and education and promote interactions between subjects, the Liaoning Provincial Government should provide financial and tax support to schools and enterprises instead of setting performance assessment indicators					
44	The most important role that the Liaoning Provincial Government should play in deepening the integration of industry and education is that of a service provider, rather than a guide, supervisor or manager					

45. Do you have any other suggestions for the role of the Liaoning Provincial Government in deepening the integration of industry and education in the school?

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THANK YOU!



English version of enterprise questionnaire

The Role of Local Government Play in Deepening the Integration of Industry and Education in Liaoning Vocational University of Technology Based on the Triple Helix Theory

Questionnaire (Enterprise)

This is a questionnaire on the role of local governments in deepening the integration of industry and education in colleges and universities.

The results of this questionnaire are only used for academic research, and your personal information will be kept strictly confidential. Please answer the questions truthfully, as your answers can provide the scientific basis for this research.

This questionnaire consists of four parts. The first part collects general information. The second part focuses on the current role of local governments. The third part examines the triple helix theory create the role of the local government. The fourth part explores the role local governments should play.

Part I: General information. Please tick the corresponding brackets ✓

1. Gender

Male Female N/A

2. Age

under 25 years old 25-40 years old
 40-60 years old over 60 years old

3. How much salary do you gain?

Below RMB 3000 3000-5000 RMB
 5000-8000 RMB More than RMB 8,000

4. Marital status

Married Unmarried N/A

5. Where is your enterprise located?

Liaoning Beijing Shanghai

Jiangsu Zhejiang Others

6. What industry does your enterprise belong to?

manufacturing

construction industry

Wholesale and retail trade

Transportation, warehousing, and postal industry

Accommodation and Catering Industry

Information transmission, software, and information technology service

industry

real estate

Leasing and Business Services

Scientific research and technical service industry

educate

Culture, sports and entertainment

Other

7. What is the scale of your enterprise?

microenterprises small enterprise

medium-sized enterprise large enterprise

8. How many years have you worked in this industry?

3 year or less 3 year - 10 years

10 years - 15 years over 15 years

9. Do you understand the integration of industry and education?

Know well understand some

just know do not know much

Part II: The current role. The questionnaire used the Likert scale.

There are 3 Indicators in this part, definition to 5 levels, Very suitable, Suitable, Average, Unsuitable, and Very unsuitable, with scores of 5, 4, 3, 2, and 1 respectively. Please tick the corresponding brackets ✓

No.	Indicator		Definition	Level				
				5	4	3	2	1
10	school	environment	The school has a complete operating mechanism for the integration of industry and education					
11		policy	The industry-education integration policy issued by the Liaoning Provincial Government meets the needs of the school					
12			Local policies or measures in Liaoning Province can effectively promote the school to deepen the integration of industry and education					
13		interactive	The school actively participates in industrial activities organized by the government or enterprises					
14		environment	The enterprise has a complete mechanism for the integration of industry and education					
15	enterprise	policy	The industry-education integration policy issued by the Liaoning Provincial Government meets the needs of the enterprises					
16			Local policies or measures in Liaoning Province can effectively promote industrial development					

No.	Indicator		Definition	Level				
				5	4	3	2	1
17	enterprise	interactive	Enterprises actively participate in industrial activities organized by the government					
18	Local government	environment	The political, economic and technological environment for deepening the integration of industry and education in Liaoning Province is relatively stable					
19			The regional innovation environment of Liaoning Province is suitable for the integration of industry and education					
20		policy	The Liaoning provincial government adopts relevant policies or measures to guide schools and enterprises to carry out collaborative innovation in the integration of industry and education					
21			The Liaoning Provincial Government regards schools and enterprises as customers and takes the initiative to establish a service network connecting universities, enterprises and the government					
22		interactive	Local governments actively participate in industrial activities organized by enterprises					

Part III: The triple helix theory create the role of the local government. The questionnaire used the Likert scale.

There are 3 Indicators in this part, definition to 5 levels, Very suitable, Suitable, Average, Unsuitable, and Very unsuitable, with scores of 5, 4, 3, 2, and 1 respectively. Please tick the corresponding brackets ✓

No.	Indicator		Definition	Level				
				5	4	3	2	1
23	school	environment	The school is a small and medium-sized university, and relies more on the use of relationship coordination to carry out the integration of industry and education					
24			The school's professional setting matches the regional industrial structure and industrial needs					
25		policy	The school can get financial support, tax incentives, government procurement and other policy support related to the integration of industry and education					
26		interactive	The school needs the government to build an interactive platform for the integration of industry and education					
27	enterprise	environment	The industrial structure of Liaoning Province is reasonable					
28			Most enterprises and their industries in Liaoning Province are developing well					

No.	Indicator		Definition	Level				
				5	4	3	2	1
29		policy	Enterprises can get financial support, tax incentives, government procurement and other policy support related to the integration of industry and education					
30		interactive	Enterprises need the government to build an interactive platform for the integration of industry and education					
31	Local government	environment	The Liaoning Provincial Government has a strong scope of administrative power and policy autonomy					
32			The Liaoning provincial government has the financial foundation to support the integration of industry and education					
33		policy	Local governments formulate specific measures based on central policies					
34			The Liaoning Provincial Government can introduce innovative localized integration of industry and education policies					
35		interactive	The Liaoning provincial government can provide funds to build a platform for the integration and interaction of industry and education					

Part IV: The role local governments should play. The questionnaire used the Likert scale.

There are 3 Indicators in this part, definition to 5 levels, Very much agree, Agree, Average, disagree, and Very much disagree, with scores of 5, 4, 3, 2, and 1 respectively. Please tick the corresponding brackets ✓

No.	Definition	Level				
		5	4	3	2	1
36	The Liaoning provincial government should have a positive attitude towards deepening the integration of industry and education in the school					
37	In the process of deepening the integration of industry and education in the school, rather than taking full responsibility or adopting intervention methods, the approach that the Liaoning provincial Government should take is to use market mechanisms					
38	The Liaoning Provincial Government needs to create a good industrial structure and regional environment for the school to deepen the integration of industry and education					
39	To deepen the integration of industry and education, schools, enterprises, and governments must all have complete organizations and mechanisms					
40	The most important thing in formulating local industry-education integration policies is to meet the actual needs of schools and enterprises, rather than to promote industrial development					
41	The local policy on integration of industry and education formulated by Liaoning Province should be innovative, but it must be consistent with the centralized policy					
42	The most effective interactive measures taken by the Liaoning Provincial Government for the integration of industry and education are building online platforms rather than organizing offline activities					
43	In order to effectively deepen the integration of industry and education and promote interactions between subjects, the Liaoning Provincial Government should provide financial and tax support to schools and enterprises instead of setting performance assessment indicators					
44	The most important role that the Liaoning Provincial Government should play in deepening the integration of industry and education is that of a service provider, rather than a guide, supervisor or manager					

45. Do you have any other suggestions for the role of the Liaoning Provincial Government in deepening the integration of industry and education in the school?

.....

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THANK YOU!



问卷调查 学校

这是一份关于地方政府在深化高校产教融合方面的作用的调查问卷。

本问卷的结果仅用于学术研究，您的个人信息将被严格保密。请如实回答这些问题，因为您的回答可以为本研究提供科学依据。

该调查问卷由四个部分组成。第一部分收集一般信息。第二部分着重介绍了地方政府当前的作用。第三部分探讨了三螺旋理论，创造了地方政府的作用。第四部分探讨了地方政府应该发挥的作用。

第一部分：一般信息。请勾选相应的括号√

1.性别

男性 女性 不适用

2.年龄

25岁以下， 25-40岁

40-60岁， 60岁以上

3.你能挣多少薪水？

3000元 3000-5000元以下

5000-8000元人民币 8000元以上

4.婚姻状况

已婚 未婚 不适用

5.你从事高职教育已经有多少年了？

3年或以下， 3年-10年

10年-15年， 超过15年

6.你在学校有以下哪种类型的工作？

教师 导员

行政人员管理 领导

7. **你的工作与工业和教育的融合关系如何？**（说明：从事产教融合或与合作企业接触，为“直接相关”；未与合作企业接触，但通过教学、行政工作等间接参与产教融合，为“间接关联”；未参与但与产教融合接触，为“相关联系”，其余为“无关”）

直接相关的， 间接相关的

相关联系人， 无关

8. **你从事与产教融合相关的工作有多少年了？**（如果 Q.5 的答案“不相关”，请跳过这个问题）

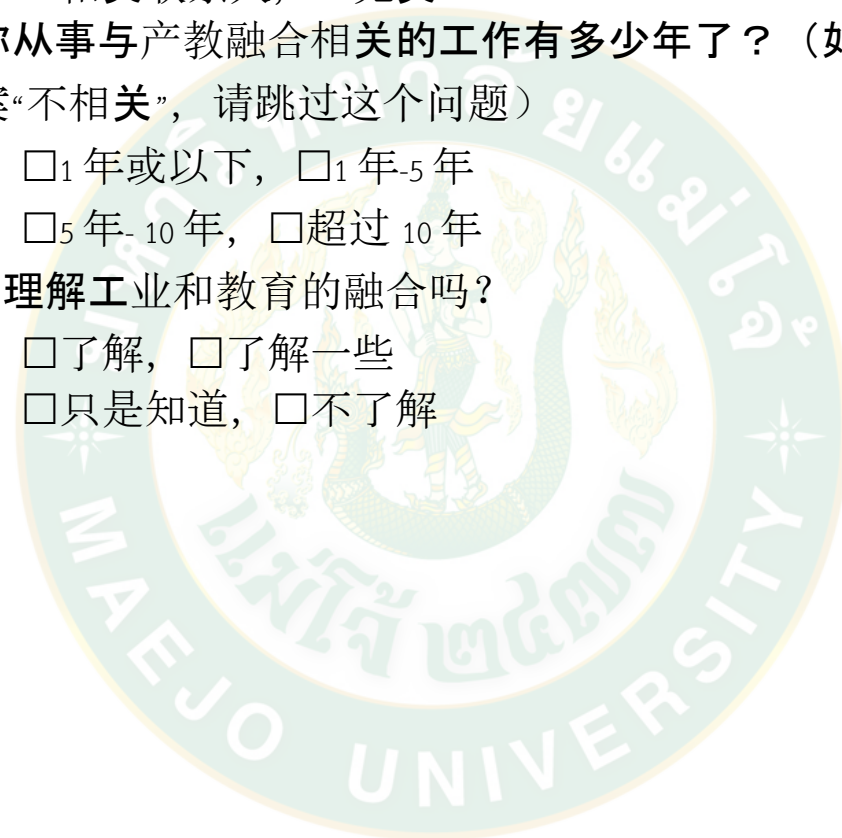
1年或以下， 1年-5年

5年-10年， 超过10年

9. **你理解工业和教育的融合吗？**

了解， 了解一些

只是知道， 不了解



第Ⅱ部分：当前的角色。调查问卷采用李克特量表

本部分有3个指标，定义为5个级别，非常同意、同意、平均、不同意、非常不同意，分别得分为5、4、3、2、1。请勾选相应的括号√

序号	指标		定义	水平				
				5	4	3	2	1
10	学校	环境	学校有完整的产教融合的 运行机制					
11		政策	辽宁省政府发布的产教融合政策满足了学校的需要					
12			辽宁省地方政策或措施可以有效促进学校深化工教育融合					
13		互相作用的	学校积极参与政府或企业组织的产业活动的					
14		环境	企业有完整的产教融合机制					
15	企业单位	政策	辽宁省政府出台的产教融合政策满足了企业的需求					
16			辽宁省的地方政策或措施可以有效地促进产业发展					
17		互相作用的	企业积极参与政府组织的产业活动					

序号	指标		定义	水平				
				5	4	3	2	1
18	地 方 政 府	环境	辽宁省深化产教融合的政治、经济、技术环境相对稳定					
19			辽宁省区域创新环境适合工教育融合					
20		政策	辽宁省政府采取相关政策或措施，指导学校和企业开展产教融合的协同创新					
21			辽宁省政府以学校和企业为客户，主动建立连接大学、企业和政府的服务网络					
22		互相作用的	地方政府积极参与企业组织的产业活动					

第Ⅲ部分：三螺旋理论创造了地方政府的角色。调查问卷采用李克特量表。

本部分有 3 个指标，定义为 5 个级别，非常同意、同意、平均、不同意、非常不同意，分别得分为 5、4、3、2、1。请勾选相应的括号√

序号	指标		定义	水平				
				5	4	3	2	1
23	学校	环境	学校是一所中小型大学，更加依靠 关系 协调来进行产业与教育的一体化					
24			学校的专业设置符合区域的产业结构和工业需求					
25		政策	学校可以获得财政支持、税收优惠、政府采购等与产教融合 有关 的政策支持					
26		互相作用的	学校需要政府建立一个产教融合的互动平台					
27	企业单位	环境	辽宁省的产业结构是合理的					
28			辽宁省大部分企业及其产业发展良好					
29		政策	企业可以获得与产教融合 相关 的财政支持、税收优惠、政府采购等政策支持					

序号	指标		定义	水平				
				5	4	3	2	1
30	企 业 单 位	互 相 作 用 的	企业需要政府建立一个产教融合的互动平台					
31	地 方 政 府	环 境	辽宁省政府具有很强的行政权力范围和政策自治权					
32			辽宁省政府有支持产教融合的财政基础					
33		政 策	地方政府根据中央政策制定具体措施					
34			辽宁省政府可以引入创新的产业与教育相结合的地方化一体化政策					
35		互 相 作 用 的	辽宁省政府可以提供资金，构建产教融合、互动的平台					

第Ⅳ部分：地方政府应该扮演的角色。调查问卷采用李克特量表。

本部分有 3 个指标，定义为 5 个级别，非常同意、同意、平均、不同意、非常不同意，分别得分为 5、4、3、2 和 1。请勾选相应的括号√

序号	定义	水平				
		5	4	3	2	1
36	辽宁省政府对深化产教融合持积极态度					
37	在深化产教融合的过程中，辽宁省政府应该采取的方法，与其承担全部责任或采取干预方法，不如运用市场机制					
38	辽宁省政府要为学校创造良好的产业结构和区域环境，深化产教融合					
39	要深化产教融合，学校、企业和政府都必须有完整的组织和机制					
40	制定地方产教融合政策，最重要的是满足学校和企业的实际需要，而不是促进产业发展					
41	辽宁省制定的地方产教融合政策要创新，但必须与集中政策相一致					
42	辽宁省政府为产教融合采取的最有效的互动措施是建立在线平台，而不是组织线下活动					
43	为有效深化产业与教育的融合，促进学科间的互动，辽宁省政府应为学校和企业提供财政和税收支持，而不是制定绩效考核指标					
44	在深化产教融合方面，辽宁省应发挥的最重要作用是服务提供者，而不是指导、主管或管理者					

45. 关于辽宁省政府在深化产教融合方面的作用，你还有其他建议吗？

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谢谢你！



Chinese version of enterprise questionnaire

地方政府在辽宁理工职业大学深化产教融合中扮演的角色 基于三螺旋理论

问卷调查 公司

这是一份关于地方政府在深化高校产教融合方面的作用的调查问卷。

本问卷的结果仅用于学术研究，您的个人信息将被严格保密。请如实回答这些问题，因为您的回答可以为本研究提供科学依据。

该调查问卷由四个部分组成。第一部分收集一般信息。第二部分着重介绍了地方政府当前的作用。第三部分探讨了三螺旋理论，创造了地方政府的作用。第四部分探讨了地方政府应该发挥的作用。

第一部分：一般信息。请勾选相应的括号√

1.性别

男性 女性

2.年龄

25岁以下， 25-40岁

40-60岁， 60岁以上

3.你能挣多少薪水？

3000元以下， 3000-5000元

5000-8000元， 8000元以上

4.婚姻状况

已婚 未婚 不**适且**

5. **你的企业设在哪里？**

辽宁 北京 上海

江苏 浙江 其他

6. **你的企业属于什么行业？**

制造业

建筑业

批发和零售贸易

交通**运输**、仓储和邮政行业

餐饮业

信息传输、软件和信息技术服务行业

不动产

租赁和商业服务

科研产业和技术服务业

教育

文化、体育和娱乐

其他的

7. **你的企业的规模是多少？**

微型企业， 小型企业

中型企业， 大型企业

8. **你在这个行业工作了多少年了？**

3年或以下， 3年-10年

10年-15年， 超过 15年

9. **你理解工业和教育的融合吗？**

了解， 了解一些

只是知道， 不了解

第Ⅱ部分：当前的角色。调查问卷采用李克特量表。

本部分有 3 个指标，定义为 5 个级别，非常同意、同意、平均、不同意、非常不同意，分别得分为 5、4、3、2、1。请勾选相应的括号√

序号	指标		定义	水平				
				5	4	3	2	1
10	学校	环境	学校有完整的产教融合的 运行机制					
11		政策	辽宁省政府发布的产教融合政策满足了学校的需要					
12			辽宁省地方政策或措施可以有效促进学校深化工教育融合					
13		互相作用的	学校积极参与政府或企业组织的产业活动的					
14		环境	企业有完整的产教融合机制					
15	企业单位	政策	辽宁省政府出台的产教融合政策满足了企业的需求					
16			辽宁省的地方政策或措施可以有效地促进产业发展					
17		互相作用的	企业积极参与政府组织的产业活动					

序号	指标		定义	水平				
				5	4	3	2	1
18	地 方 政 府	环境	辽宁省深化产教融合的政治、经济、技术环境相对稳定					
19			辽宁省区域创新环境适合工教育融合					
20		政策	辽宁省政府采取相关政策或措施，指导学校和企业开展产教融合的协同创新					
21			辽宁省政府以学校和企业为客户，主动建立连接大学、企业和政府的服务网络					
22		互相作用的	地方政府积极参与企业组织的产业活动					

第Ⅲ部分：三螺旋理论创造了地方政府的角色。调查问卷采用李克特量表。

本部分有 3 个指标，定义为 5 个级别，非常同意、同意、平均、不同意、非常不同意，分别得分为 5、4、3、2、1。请勾选相应的括号√

序号	指标		定义	水平				
				5	4	3	2	1
23	学校	环境	学校是一所中小型大学，更加依靠 关系 协调来进行产教融合					
24			学校的专业设置符合区域的产业结构和工业需求					
25		政策	学校可以获得财政支持、税收优惠、政府采购等与产教融合 有关 的政策支持					
26		互相作用的	学校需要政府建立一个产教融合的互动平台					
27	企业单位	环境	辽宁省的产业结构是合理的					
28			大部分企业 和他们的行业在辽宁省是发展中的好					
29		政策	企业可以获得与产教融合 相关 的财政支持、税收优惠、政府采购等政策支持					

序号	指标		定义	水平				
				5	4	3	2	1
30	企 业单 位	互相 作用的	企业需要政府建立一个产教融合的互动平台					
31	地 方政 府	环境	辽宁省政府具有很强的行政权力范围和政策自治权					
32			辽宁省政府有支持产教融合的财政基础					
33		政策	地方政府根据中央政策制定具体措施					
34			辽宁省政府可以引入创新的产业与教育相结合的地方化一体化政策					
35		互相 作用的	辽宁省政府可以提供资金，构建产业与教育融合、互动的平台					

第IV部分：地方政府应该扮演的角色。调查问卷采用李克特量表

本部分有 3 个指标，定义为 5 个级别，非常同意，同意，平均，不同意，非常不同意，分别得分为 5、4、3、2 和 1。请勾选相应的括号√

序号	定义	水平				
		5	4	3	2	1
36	辽宁省政府对深化产教融合持积极态度					
37	在深化产业与教育融合的过程中，辽宁省政府应该采取的方法，与其承担全部责任或采取干预方法，不如运用市场机制					
38	辽宁省政府要为学校创造良好的产业结构和区域环境，深化产教融合					
39	要深化产教融合，学校、企业和政府都必须有完整的组织和机制					
40	制定地方产教融合政策，最重要的是满足学校和企业的实际需要，而不是促进产业发展					
41	辽宁省制定的地方产教融合政策要创新，但必须与集中政策相一致					
42	辽宁省政府为产教融合采取的最有效的互动措施是建立在线平台，而不是组织线下活动					
43	为有效深化产业与教育的融合，促进学科间的互动，辽宁省政府应为学校和企业提供财政和税收支持，而不是制定绩效考核指标					
44	在深化产教融合方面，辽宁省应发挥的最重要作用是服务提供者，而不是指导、主管或管理者					

45.关于辽宁省政府在深化产教融合方面的作用，你还有其他建议吗？

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谢谢你！





Appendix B

Codebook

Codebook (School)

No.	Variable Name	Variable Label	Value No.	Value Label
1	Q1	Gender	1	Male
			2	Female
			3	N/A
2	Q2	Age	1	under 25 years old
			2	25-40 years old
			3	0-60 years old
			4	over 60 years old
3	Q3	Income	1	Below RMB 3000
			2	3000-5000 RMB
			3	5000-8000 RMB
			4	More than RMB 8,000
4	Q4	Marriage	1	Married
			2	Unmarried
			3	N/A
5	Q5	Years	1	3 year or less
			2	3year - 10 years
			3	10 years - 15 years
			4	over 15 years
6	Q6	Job	1	teacher
			2	counselor
			3	administration staff
			4	management
7	Q7	Relevance	1	directly related
			2	indirectly related
			3	related contact
			4	irrelevant
8	Q8	Experience	1	1 year or less
			2	1 year - 5 years
			3	5 years - 10 years
			4	over 10 years

No.	Variable Name	Variable Label	Value No.	Value Label
9	Q9	Understanding	1	Know well
			2	understand some
			3	just know
			4	do not know much
10	Q10	The school has a complete Operating mechanism for the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
11	Q11	The industry-education integration policy issued by the Liaoning Provincial Government meets the needs of the school	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
12	Q12	Local policies or measures in Liaoning Province can effectively promote the school to deepen the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
13	Q13	The school actively participates in industrial activities organized by the government or enterprises	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
14	Q14	The enterprise has a complete mechanism for the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree

No.	Variable Name	Variable Label	Value No.	Value Label
15	Q15	The industry-education integration policy issued by the Liaoning Provincial Government meets the needs of the enterprises	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
16	Q16	Local policies or measures in Liaoning Province can effectively promote industrial development	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
17	Q17	Enterprises actively participate in industrial activities organized by the government	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
18	Q18	The political, economic and technological environment for deepening the integration of industry and education in Liaoning Province is relatively stable	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
19	Q19	The regional innovation environment of Liaoning Province is suitable for the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
20	Q20	The Liaoning provincial government adopts relevant policies or measures to guide schools and enterprises to carry out collaborative innovation in the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree

No.	Variable Name	Variable Label	Value No.	Value Label
21	Q21	The Liaoning Provincial Government regards schools and enterprises as customers and takes the initiative to establish a service network connecting universities, enterprises and the government	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
22	Q22	Local governments actively participate in industrial activities organized by enterprises	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
23	Q23	The school is a small and medium-sized university, and relies more on the use of relationship coordination to carry out the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
24	Q24	The school's professional setting matches the regional industrial structure and industrial needs	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
25	Q25	The school can get financial support, tax incentives, government procurement and other policy support related to the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
26	Q26	The school needs the government to build an interactive platform for the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree

No.	Variable Name	Variable Label	Value No.	Value Label
27	Q27	The industrial structure of Liaoning Province is reasonable	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
28	Q28	Most enterprises and their industries in Liaoning Province are developing well	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
29	Q29	Enterprises can get financial support, tax incentives, government procurement and other policy support related to the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
30	Q30	Enterprises need the government to build an interactive platform for the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
31	Q31	The Liaoning Provincial Government has a strong scope of administrative power and policy autonomy	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
32	Q32	The Liaoning provincial government has the financial foundation to support the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree

No.	Variable Name	Variable Label	Value No.	Value Label
33	Q33	Local governments formulate specific measures based on central policies	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
34	Q34	The Liaoning Provincial Government can introduce innovative localized integration of industry and education policies	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
35	Q35	The Liaoning provincial government can provide funds to build a platform for the integration and interaction of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
36	Q36	The Liaoning provincial government should have a positive attitude towards deepening the integration of industry and education in the school	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
37	Q37	In the process of deepening the integration of industry and education in the school, rather than taking full responsibility or adopting intervention methods, the approach that the Liaoning provincial Government should take is to use market mechanisms	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
38	Q38	The Liaoning Provincial Government needs to create a good industrial structure and regional environment for the school to deepen the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree

No.	Variable Name	Variable Label	Value No.	Value Label
39	Q39	To deepen the integration of industry and education, schools, enterprises, and governments must all have complete organizations and mechanisms	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
40	Q40	The most important thing in formulating local industry-education integration policies is to meet the actual needs of schools and enterprises, rather than to promote industrial development	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
41	Q41	The local policy on integration of industry and education formulated by Liaoning Province should be innovative, but it must be consistent with the centralized policy	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
42	Q42	The most effective interactive measures taken by the Liaoning Provincial Government for the integration of industry and education are building online platforms rather than organizing offline activities	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
43	Q43	In order to effectively deepen the integration of industry and education and promote interactions between subjects, the Liaoning Provincial Government should provide financial and tax support to schools and enterprises instead of setting performance assessment indicators	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
44	Q44	The most important role that the Liaoning Provincial Government should play in deepening the integration of industry and education is that of a service provider, rather than a guide, supervisor or manager	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree

Codebook (Enterprise)

No.	Variable Name	Variable Label	Value No.	Value Label
1	Q1	Gender	1	Male
			2	Female
			3	N/A
2	Q2	Age	1	under 25 years old
			2	25-40 years old
			3	0-60 years old
			4	over 60 years old
3	Q3	Income	1	Below RMB 3000
			2	3000-5000 RMB
			3	5000-8000 RMB
			4	More than RMB 8,000
4	Q4	Marriage	1	Married
			2	Unmarried
			3	N/A
5	Q5	Location	1	Liaoning
			2	Beijing
			3	Shanghai
			4	Zhejiang
			5	Others
6	Q6	Industry	1	Manufacturing
			2	Construction industry
			3	Wholesale and retail trade
			4	Accommodation and Catering industry
			5	Information transmission, software, and information technology service industry
			6	Real estate
			7	Scientific research and technical service industry
			8	Culture, sports and entertainment

No.	Variable Name	Variable Label	Value No.	Value Label
7	Q7	Scale of the enterprise	1	Microenterprise
			2	Small enterprise
			3	Medium-sized enterprise
			4	Large enterprise
8	Q8	Experience	1	3 year or less
			2	3 year - 10 years
			3	10years - 15 years
			4	over 15 years
9	Q9	Understanding	1	Know well
			2	understand some
			3	just know
			4	do not know much
10	Q10	The school has a complete Operating mechanism for the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
11	Q11	The industry-education integration policy issued by the Liaoning Provincial Government meets the needs of the school	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
12	Q12	Local policies or measures in Liaoning Province can effectively promote the school to deepen the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
13	Q13	The school actively participates in industrial activities organized by the government or enterprises	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree

No.	Variable Name	Variable Label	Value No.	Value Label
14	Q14	The enterprise has a complete mechanism for the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
15	Q15	The industry-education integration policy issued by the Liaoning Provincial Government meets the needs of the enterprises	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
16	Q16	Local policies or measures in Liaoning Province can effectively promote industrial development	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
17	Q17	Enterprises actively participate in industrial activities organized by the government	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
18	Q18	The political, economic and technological environment for deepening the integration of industry and education in Liaoning Province is relatively stable	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
19	Q19	The regional innovation environment of Liaoning Province is suitable for the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree

No.	Variable Name	Variable Label	Value No.	Value Label
20	Q20	The Liaoning provincial government adopts relevant policies or measures to guide schools and enterprises to carry out collaborative innovation in the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
21	Q21	The Liaoning Provincial Government regards schools and enterprises as customers and takes the initiative to establish a service network connecting universities, enterprises and the government	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
22	Q22	Local governments actively participate in industrial activities organized by enterprises	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
23	Q23	The school is a small and medium-sized university, and relies more on the use of relationship coordination to carry out the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
24	Q24	The school's professional setting matches the regional industrial structure and industrial needs	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
25	Q25	The school can get financial support, tax incentives, government procurement and other policy support related to the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree

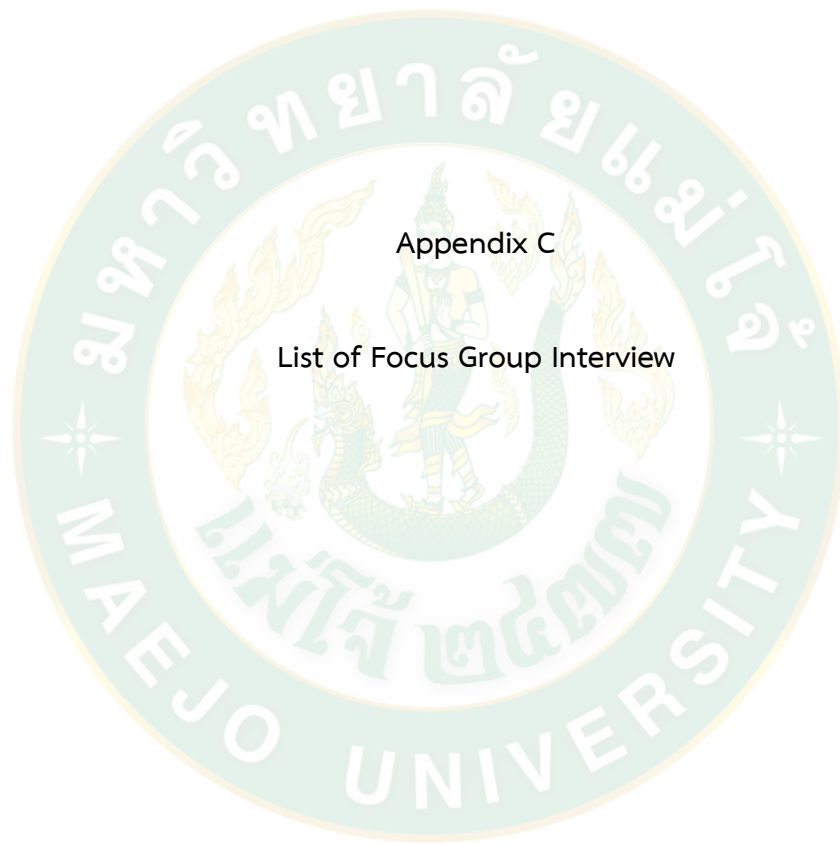
No.	Variable Name	Variable Label	Value No.	Value Label
26	Q26	The school needs the government to build an interactive platform for the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
27	Q27	The industrial structure of Liaoning Province is reasonable	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
28	Q28	Most enterprises and their industries in Liaoning Province are developing well	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
29	Q29	Enterprises can get financial support, tax incentives, government procurement and other policy support related to the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
30	Q30	Enterprises need the government to build an interactive platform for the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
31	Q31	The Liaoning Provincial Government has a strong scope of administrative power and policy autonomy	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree

No.	Variable Name	Variable Label	Value No.	Value Label
32	Q32	The Liaoning provincial government has the financial foundation to support the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
33	Q33	Local governments formulate specific measures based on central policies	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
34	Q34	The Liaoning Provincial Government can introduce innovative localized integration of industry and education policies	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
35	Q35	The Liaoning provincial government can provide funds to build a platform for the integration and interaction of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
36	Q36	The Liaoning provincial government should have a positive attitude towards deepening the integration of industry and education in the school	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
37	Q37	In the process of deepening the integration of industry and education in the school, rather than taking full responsibility or adopting intervention methods, the approach that the Liaoning provincial Government should take is to use market mechanisms	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree

No.	Variable Name	Variable Label	Value No.	Value Label
38	Q38	The Liaoning Provincial Government needs to create a good industrial structure and regional environment for the school to deepen the integration of industry and education	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
39	Q39	To deepen the integration of industry and education, schools, enterprises, and governments must all have complete organizations and mechanisms	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
40	Q40	The most important thing in formulating local industry-education integration policies is to meet the actual needs of schools and enterprises, rather than to promote industrial development	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
41	Q41	The local policy on integration of industry and education formulated by Liaoning Province should be innovative, but it must be consistent with the centralized policy	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
42	Q42	The most effective interactive measures taken by the Liaoning Provincial Government for the integration of industry and education are building online platforms rather than organizing offline activities	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree
43	Q43	In order to effectively deepen the integration of industry and education and promote interactions between subjects, the Liaoning Provincial Government should provide financial and tax support to schools and enterprises instead of setting performance assessment indicators	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree

No.	Variable Name	Variable Label	Value No.	Value Label
44	Q44	The most important role that the Liaoning Provincial Government should play in deepening the integration of industry and education is that of a service provider, rather than a guide, supervisor or manager	1	Strongly disagree
			2	Disagree
			3	Neutral
			4	Agree
			5	Strongly agree





Appendix C

List of Focus Group Interview

The interviewees were selected from different backgrounds of schools and enterprises. They were divided into two groups.

The school group interviewees were from Liaoning Vocational University of Technology workers as follows:

Interviewee 1: 60-year-old Chinese, am with over 25 years of experience in academia. She has been recognized for her leadership in educational reform and industry collaboration.

Interviewee 2: 58-year-old Chinese man who has spent two decades fostering innovation in Information education. His work with industry partners is well-regarded both within and outside the university.

Interviewee 3: 42-year-old Chinese woman. She brings a modern approach to career services, with a focus on inclusivity and tech-driven career opportunities for students.

Interviewee 4: 50-year-old Chinese man with a strong research portfolio. His collaborative projects often involve international partnerships, and he's a proponent of integrating global industry trends into local education.

Interviewee 5: 38-year-old Chinese man. He's an alumnus of the university himself and has a passion for building strong networks between alumni and current students.

This focus group interview was held on 25 November 2023 at Liaoning Vocational University of Technology.

The enterprise group interviewees were from company operators and managers from enterprises that cooperated with the school, as follow:

Interviewee 6: The CEO of a tech startup specializing in educational software. She has a keen interest in how government policies can support the growth of technology in education.

Interviewee 7: HR director at a large manufacturing firm that collaborates with universities for engineering talent. He is focused on talent development and the practical training of new engineers.

Interviewee 8: The R&D Manager at a forward-thinking logistics company, known for its innovative approach to supply chain management. He leads a dynamic team that works closely with academic research labs, aiming to integrate cutting-edge logistics technology and data-driven optimization techniques.

Interviewee 9: Business Development Executive at a dynamic media company, where she spearheads the burgeoning realm of live streaming sales. She specializes in leveraging cutting-edge streaming technology to revolutionize the way products are marketed and sold in real-time. With a sharp eye for strategic partnerships, Ms. Tang is adept at aligning interactive media content with consumer engagement strategies, all while ensuring the company's initiatives are at the forefront of the digital selling space. Her role also involves close collaboration with local government bodies to ensure compliance and maximize the potential of live selling platforms.

Interviewee 10: His construction business often works on government contracts and he relies on local educational institutions for skilled labor. He is interested in how government policies can ensure a skilled workforce and support vocational training.

This focus group interview was held on 25 November 2023 online.

CURRICULUM VITAE

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WORK EXPERIENCE 2006-2007 Meicheng Group
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2007-2016 Liaoning Polytechnic
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