Industry-Based Congruence Of Undergraduate Colleges And Universities In Weifang, China

Qin Zhaoguang

Shandong Vocational College of Science and Technology, Weifang 261053, China

Abstract: This study investigates the alignment between undergraduate programs in Weifang City and the requirements of the industry, along with key competencies valued by employers. Utilizing a quantitative descriptive research design, data was collected from 370 participants, including faculty members, industry professionals, administrative staff, employers, students, and alumni.

The findings reveal a positive perception of current undergraduate programs, highlighting their relevance, practical skills development, engagement of faculty with the industry, and fruitful collaborations with various sectors. Employers exhibited moderate consideration for technical proficiency, soft skills, industry-relevant experience, and professional attitude when hiring graduates. Higher education institutions displayed moderate efforts in enhancing industry-based congruence, particularly in curriculum adaptation, practical learning opportunities, and career services. Various factors, including industry input, labor market analysis, collaboration with professional associations, and economic strategies, were found to moderately influence the alignment between education and industry needs.

Despite the positive aspects, the study identified gaps and challenges, such as curriculum disparities and limited collaboration, emphasizing the need for strategic interventions. Policy recommendations were proposed to enhance alignment, including fostering strong university-industry collaborations, mandating internships, faculty development, and promoting student-industry awareness.

In conclusion, this study provides valuable insights for educational institutions, industry partners, policymakers, students, and future researchers, aiming to improve the congruence between undergraduate education and industry requirements in Weifang City and beyond.

Keywords: Industry-Based Congruence; Undergraduate Education; Weifang City, China; Key Competencies; Curriculum Alignment

1 THE PROBLEM AND ITS BACKGROUND
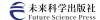
1.1 Introduction

The higher education landscape in Weifang is rapidly changing to satisfy the demands of an increasingly competitive job market. As industries continue to expand and diversify, there is an urgent need to evaluate the compatibility between undergraduate programs and the needs of the local industry. This study seeks to address the current gaps and challenges in undergraduate education in the city of Weifang, focusing on the congruence between programs and industry requirements, as well as the essential competencies and skills sought by employers.

The importance of aligning higher education with industry needs cannot be overstated. In today's dynamic and globalized economy, graduates are expected to possess the necessary skills and competencies that are directly applicable to the workplace. Employers seek candidates who can seamlessly integrate into their organizations and contribute effectively from day one. However, studies have shown that there is often a discrepancy between the skills taught in undergraduate programs and the actual requirements of the job market (Gbollie & David, 2014; Vlachopoulos & Makri, 2017).

Weifang City, like many other locales, must ensure that its higher education institutions produce graduates who are well-prepared for the workforce. By examining the current undergraduate programs and courses offered by these institutions, this study seeks to shed light on the curriculum's compatibility with the needs of local industries. The findings will provide valuable insights into the areas in which enhancements can be made to increase the employability of graduates and bridge the divide between academia and industry.

Ghollie & David (2014) and Vlachopoulos & Makri (2017) highlight the importance of examining the alignment between undergraduate education and industry needs and emphasize the need for empirical research to bridge the existing gaps. By building upon these prior studies and focusing specifically on Weifang City, this research seeks to contribute to the existing knowledge base and provide actionable insights for the local higher education institutions, industry stakeholders, and policymakers.

The research paradigm based on the Input-Process-Output (IPO) model provides a comprehensive framework for understanding and analyzing the research process in the context of industry-based congruence in undergraduate education in Weifang City. The IPO model consists of three main components: input, process, and output.

The input component of the research paradigm encompasses various elements related to undergraduate education in Weifang City. This includes an examination of the current undergraduate programs and courses offered by higher education institutions. The study will analyze program offerings to assess their relevance to industry needs. Additionally, the input component will investigate the practical skills development provided by these programs and the extent of engagement between faculty and industry, including collaborations and partnerships.

The input component also contains the level of key competencies and skills that employers in Weifang City consider crucial when hiring graduates. This includes assessing technical proficiency, soft skills, interpersonal abilities, industry-relevant experience, and professional attitude and work ethic.

The input component also includes the strategies and initiatives implemented by higher education institutions in Weifang City to enhance industry-based congruence in undergraduate education. This involves examining various aspects such as industry collaboration and partnerships, curriculum review and revision, practical learning opportunities, and professional development and career services. These initiatives are aimed at aligning the educational offerings with the needs and expectations of the industry.

Also included in the input are the factors influencing the congruence between undergraduate education and industry needs. This includes gathering industry input and feedback, conducting labor market analysis, and exploring collaboration with professional associations. Additionally, the study will consider economic and regional development strategies that can impact the alignment between academia and industry.

In conclusion, the IPO model is a valuable research paradigm for comprehending and analyzing the study's numerous components. It enables a systematic examination of input factors, the process of aligning education and industry requirements, and the generation of valuable output in the form of policy recommendations for enhancing industry-based congruence in undergraduate education in Weifang City.

2 METHODS AND PROCEDURES

This chapter provides a comprehensive description of the research design, research locale, respondents, data collection procedures, data analysis techniques, and ethical considerations that are crucial to the study. By presenting a thorough description of the research design, research locale, respondents, data collection procedures, data analysis techniques, and ethical considerations, this chapter provides a clear and comprehensive overview of the key elements that need to be taken into account for the study.

2.1 Locale of the Study

Weifang City in Shandong Province, China, is a suitable location for conducting this proposed study due to its alignment with the research problem and objectives. There are several reasons why Weifang City is an ideal setting for examining undergraduate programs and courses, as well as exploring the relationship between higher education and industry needs.

Weifang City is a prominent economic and cultural center in the region, known for its diverse industries such as manufacturing, agriculture, and services. This economic diversity provides an excellent opportunity to investigate how well undergraduate programs align with industry demands. By focusing on Weifang City, the study can gain insights into the specific dynamics and challenges that exist in this local context.

Also, Weifang City is home to multiple universities and colleges, offering a wide range of undergraduate programs and courses. The presence of these institutions allows for a comprehensive examination of program offerings. Researchers can analyze the variety and depth of educational opportunities available to students. Moreover, the presence of multiple institutions enables an assessment of program relevance to the local industry, the development of practical skills, the engagement of faculty with industry, and collaborations between academia and the professional sector.

Additionally, Weifang City provides a rich employment landscape, offering diverse job opportunities across different industries. This makes it an excellent location for evaluating the key competencies and skills valued by employers. The study can shed light on the technical proficiency, soft skills, interpersonal abilities, industry-relevant experience, and professional attitudes and work ethic sought by local employers.

Lastly, by examining the gaps and challenges in achieving industry-based congruence in undergraduate education, the study can provide context-specific insights. This localized understanding can serve as a basis for formulating policy recommendations to bridge identified gaps and enhance industry-based congruence not only in Weifang City but also in the broader Chinese educational landscape.

2.2 Sample and Sampling Design

In this research study, the sampling method that will be employed is purposive sampling. Purposive sampling involves selecting participants who have specific characteristics or possess the knowledge and experience relevant to the research topic. Given the nature of the study, the respondents will be individuals directly involved in the higher education institutions of Weifang City, with expertise and experience in cultural heritage preservation and promotion.

The sample size for this research study will depend on the specific objectives, resources, and feasibility of data collection. As the study aims to gather comprehensive data and insights from various perspectives, it is crucial to include an adequate number of respondents to ensure the representation of different roles and positions within the higher education institutions.

The determination of the sample size will involve a balance between obtaining sufficient information-rich responses and managing the practical constraints of data collection, such as time, resources, and access to respondents. It is important to consider the diversity and heterogeneity of the participants to capture a wide range of perspectives and ensure the validity and reliability of the findings.

In selecting the sample, efforts will be made to include a diverse range of faculty members, administrative staff, industry professionals, employers, and students from different higher education institutions and disciplines in Weifang City. This diversity will provide a comprehensive understanding of the current state of cultural heritage integration and allow for meaningful comparisons and analysis across different stakeholder groups.

Through the utilization of purposive sampling, this research study will effectively gather valuable information from individuals

who possess the necessary knowledge and experience within Weifang City's higher education institutions. By ensuring an appropriate and diverse sample size, the study aims to obtain insightful perspectives from these participants. These insights will be instrumental in identifying the strengths, areas that require improvement, and potential recommendations for enhancing the integration of cultural heritage into the curriculum, thus ensuring its sustainable conservation.

2.3 Data Analysis Techniques

To describe the current undergraduate programs and courses offered by higher education institutions in Weifang City, the data gathered regarding program offerings can be analyzed using document analysis. Document analysis is a research method that involves the systematic examination and interpretation of various types of documents, such as official program documents, course syllabi, program catalogs, and institutional reports. By conducting document analysis, researchers can gain valuable insights into the structure, content, and characteristics of the undergraduate programs and courses offered by higher education institutions in Weifang City. The analysis involves reviewing and categorizing the information contained within the documents to identify patterns, trends, and areas of interest related to the research objectives.

To provide a description of the current undergraduate programs and courses offered by higher education institutions in Weifang City, key aspects such as relevance, practical skills development, industry-engaged faculty, and collaborations with industry will be examined using descriptive statistics, specifically the mean. This scale will provide a verbal interpretation of the mean range for evaluating the current undergraduate programs and courses offered by higher education institutions in Weifang City in terms of relevance, practical skills development, faculty engagement with industry, and industry collaborations. Indicating the extent to which each aspect is present in the programs and courses, the verbal interpretations help categorize the dimensions into varying levels.

3 RESULTS AND DISCUSSION

This chapter presents the study's results and discussions based on the gathered data. It provides a comprehensive analysis, highlighting significant findings and their implications.

3.1 Current Undergraduate Programs and Courses Offered by Higher Education Institutions in Weifang City

3.1.1 Relevance

Table 9 provides the mean scores and verbal descriptions for various indicators related to the relevance of the current undergraduate technical programs offered by higher education institutions in Weifang City.

Table 9

Current Undergraduate Programs and Courses Offered by Higher Education Institutions in Weifang City in terms of Relevance

Indicators	Mean	Verbal Description
1.The current undergraduate technical program offered by higher education institutions in Weifang City are relevant to the needs of the industry.	3.16	Agree/Good
2.The current undergraduate technical program offered by higher education institutions in Weifang City align with the changing demands and trends in the industry.	3.19	Agree/Good
3.The current undergraduate technical offered by higher education institutions in Weifang City adequately address the knowledge and skill requirements of the industry.	3.14	Agree/Good
4.The current undergraduate technical program offered by higher education institutions in Weifang City have a practical and real-world relevance.	3.19	Agree/Good
5.The current undergraduate technical program offered by higher education institutions in Weifang City are up-to-date and responsive to industry needs.	3.22	Agree/Good
Grand Mean	3.18	Agree/Good
Legend: 3.25-4.00 – Strongly Agree/ Excellent; 2.5-3.24 – Agree /Good; 1.75-2.49 – Disagree /Fair; 1.00-1.74 – Strongly Disagree/Poor		

The results indicate that, on average, respondents agree that the current undergraduate technical programs offered by higher education institutions in Weifang City are relevant to the needs of the industry (Mean: 3.16). Similarly, the programs were perceived to align with the changing demands and trends in the industry (Mean: 3.19). Respondents also agreed that the programs adequately address the knowledge and skill requirements of the industry (Mean: 3.14), possess practical and real-world relevance (Mean: 3.19), and are up-to-date and responsive to industry needs (Mean: 3.22). The grand mean of 3.18 falls within the "Good" range based on the provided verbal descriptions.

These interpretations suggest a positive overall perception of the relevance of undergraduate technical programs in Weifang City. The means consistently indicate an agreement that the programs align well with industry needs, trends, and practical demands. This is encouraging as it signifies that the undergraduate technical programs are perceived to be designed and delivered with consideration of industry requirements, which is vital for producing job-ready graduates.

In the related literature, numerous studies support these interpretations. Research by Wohlfart et al. (2022) emphasized the importance of aligning higher education with industry needs, indicating that industry-relevant programs are crucial for preparing graduates to meet the demands of the workforce. Similarly, Sitlington and Coetzer (2015) highlighted the necessity of involving industry professionals in curriculum development to ensure programs are aligned with practical requirements. Laurie et al. (2016) emphasized the impact of technological advancements on industry demands, reinforcing the need for programs to stay up-to-date, a characteristic reflected in the interpretations. These studies collectively substantiate the positive perceptions observed in the means regarding the relevance and alignment of the undergraduate technical programs with industry needs.

The interpretations of the means and grand mean suggest that the current undergraduate technical programs in Weifang

City are perceived positively in terms of relevance to the industry. This is supported by a range of related literature, reinforcing the significance of industry alignment in undergraduate education for producing competent and job-ready graduates.

3.1.2 Practical Skills Development

Table 10 provides the mean scores and verbal descriptions for various indicators related to practical skills development in the current undergraduate technical programs offered by higher education institutions in Weifang City.

Table 10

Current Undergraduate Programs and Courses Offered by Higher Education Institutions in Weifang City in terms of Practical Skills Development

Indicators	Mean	Verbal Description
1.The current undergraduate technical program offered by higher education institutions in Weifang City provide opportunities for practical skills development.	3.17	Agree/Good
2.The current undergraduate technical program offered by higher education institutions in Weifang City focus on hands-on learning experiences	3.18	Agree/Good
3.The current undergraduate technical program offered by higher education institutions in Weifang City effectively integrate theoretical knowledge with practical application.	3.14	Agree/Good
4.The current undergraduate technical program offered by higher education institutions in Weifang City equip students with the necessary practical skills for their future careers.	3.16	Agree/Good
5.The current undergraduate technical program offered by higher education institutions in Weifang City foster the development of problem-solving and critical thinking skills through practical exercises.	3.21	Agree/Good
Grand Mean	3.17	Agree/Good
Legend: 3.25-4.00 – Strongly Agree/Excellent; 2.5-3.24 – Agree / Good; 1.75-2.49 – Disagree /Fair; 1.00-1.74 – Strongly Disagree/ Poor		

The mean scores in Table 10, representing the perspectives of respondents on practical skills development in undergraduate technical programs in Weifang City, demonstrate a positive consensus regarding the effectiveness of these programs in preparing students for the demands of the industry.

The mean score of 3.17 indicating agreement regarding opportunities for practical skills development underscores that the technical programs in Weifang City provide environments where students can translate theoretical knowledge into real-world applications. Practical skills are considered crucial in today's job market, and this mean score suggests that the programs are succeeding in aligning their offerings with this expectation.

The mean score of 3.18 reflecting agreement regarding the emphasis on hands-on learning experiences is significant. Hands-on experiences are fundamental in technical education as they allow students to grasp complex concepts through practical applications. This mean score indicates that the programs are designed to prioritize experiential learning, aligning with best practices in technical education.

Additionally, the mean score of 3.14 indicating agreement regarding the integration of theoretical knowledge with practical application is vital. This alignment is essential for producing graduates who not only possess theoretical understanding but also can apply it effectively in real-world scenarios, meeting industry requirements.

The mean score of 3.16 reflecting agreement that the technical programs adequately equip students with practical skills further affirms the effectiveness of these programs in preparing students for their future careers. It indicates that students feel confident in their abilities to apply their acquired skills in a professional setting, which is a key outcome for any educational program.

The mean score of 3.21 signifying strong agreement regarding the development of problem-solving and critical thinking skills through practical exercises is pivotal. These skills are highly valued in the industry, and the mean score suggests that the programs in Weifang City are successful in fostering an environment that encourages analytical thinking and innovative problem-solving approaches.

The overall mean score falls in the range of "Good," implying that, on average, the respondents perceive the undergraduate technical programs in Weifang City as effective in practical skills development.

The mean scores in Table 10 collectively highlight that the undergraduate technical programs in Weifang City are effective in offering practical skill development, emphasizing hands-on learning, integrating theoretical knowledge with practical applications, equipping students with necessary practical skills, and fostering the development of problem-solving and critical thinking skills. These attributes are critical in producing industry-ready graduates capable of navigating and thriving in the complex professional landscape.

This interpretation is well-supported by existing literature. Research by Gonzales et al. (2016) emphasizes the importance of practical skills development, hands-on learning, and the integration of theoretical and practical knowledge for aligning educational programs with industry needs. Furthermore, Bradley et al. (2021) stress the significance of equipping students with practical skills for their future careers and fostering problem-solving and critical thinking abilities, affirming the importance of these aspects identified in the study.

3.1.3 Industry-Engaged Faculty

Table 11 presents the mean scores and verbal descriptions for indicators related to industry-engaged faculty in undergraduate technical programs within higher education institutions in Weifang City.

Table 11

Current Undergraduate Programs and Courses Offered by Higher Education Institutions in Weifang City in terms of Industry-Engaged Faculty

Indicators	Mean	Verbal Description
1.The current undergraduate technical program offered by higher education institutions in Weifang City have faculty members who actively engage with the industry.	3.14	Agree/Good
2.The faculty members teaching in the current undergraduate technical program in Weifang City have practical industry experience.	3.15	Agree/Good
3.The faculty members teaching in the current undergraduate technical program in Weifang City bring industry-relevant examples and case studies into the classroom.	3.18	Agree/Good
4.The faculty members teaching in the current undergraduate technical program in Weifang City maintain strong connections with professionals and experts in the industry.	3.19	Agree/Good
5.The faculty members teaching in the current undergraduate technical program in Weifang City maintain strong connections with professionals and experts in the industry.	3.17	Agree/Good
Grand Mean	3.16	Agree/Good
Legend: 3.25-4.00 – Strongly Agree/Excellent; 2.5-3.24 – Agree / Good; 1.75-2.49 – Disagree /Fair; 1.00-1.74 – Strongly Disagree/ Poor		

The grand mean of 3.16, categorized as 'Good' or 'Agree', indicates a generally favorable perception among respondents regarding the level of engagement and industry relevance of the faculty members in these programs.

The mean score of 3.14 concerning faculty members actively engaging with the industry suggests that respondents agree that faculty within Weifang City's technical programs maintain some level of involvement with the industry. This indicates a positive alignment with the expectations of industry engagement for faculty, which is crucial for keeping the curriculum up-to-date and relevant.

The mean score of 3.15 regarding faculty possessing practical industry experience further supports the positive perception of industry engagement. Practical experience enhances the quality of education by providing real-world insights to students, making this agreement a positive reflection on the faculty's qualifications and potential to contribute effectively to students' education.

Moreover, the mean score of 3.18, indicating agreement that faculty members bring industry-relevant examples and case studies into the classroom, is significant. This emphasizes that faculty are integrating industry knowledge into their teaching, promoting a practical understanding of the subject matter which is essential for students' readiness for the industry.

The mean score of 3.19 for maintaining strong connections with professionals and experts in the industry underscores the importance of networking and collaboration. Faculty with strong industry connections can facilitate opportunities like internships, guest lectures, and collaborative projects, enriching students' learning experiences.

Additionally, the consistent mean score of 3.17 regarding maintaining strong connections with professionals and experts in the industry reinforces the previous point, affirming the faculty's proactive efforts in establishing and maintaining valuable industry connections for the benefit of their students.

The grand mean of 3.16 signifies that faculty engagement with the industry is perceived positively. The faculty's active engagement, practical industry experience, integration of industry-relevant examples, and strong industry connections all contribute to a favorable perception of industry engagement in the technical programs.

This interpretation is in line with existing literature Wohlfart et al. (2022) emphasize the importance of faculty engagement with the industry and maintaining strong connections with professionals, highlighting their significant impact on the quality and relevance of educational programs. Anderson and Sanga (2019) also stress the role of faculty with practical industry experience in enhancing the effectiveness and industry alignment of educational programs.

3.2 Level of Key Competencies and Skills That Employers in Weifang City Consider When Hiring Graduates Entering the Workforce

3.2.1 Technical Proficiency

Table 14 presents an analysis of the level of key competencies and skills that employers in Weifang City consider when hiring graduates, specifically focusing on technical proficiency.
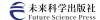
Table 14

Level of Key Competencies and Skills That Employers in Weifang City Consider When Hiring Graduates Entering the Workforce in terms of Technical Proficiency

Indicators	Mean	Verbal Description
1.Employers in Weifang City consider technical proficiency as a critical competency when hiring graduates.	3.17	Agree/ Moderate
2.Graduates with strong technical proficiency have a higher chance of being hired by employers in Weifang City.	3.12	Agree/ Moderate
3.Employers in Weifang City prioritize candidates who demonstrate excellent technical proficiency during the hiring process.	3.14	Agree/ Moderate
4.Technical proficiency is a key requirement for job positions in Weifang City's industries.	3.15	Agree/ Moderate
5.Graduates with a high level of technical proficiency are more likely to succeed in their careers in Weifang City.	3.09	Agree/ Moderate
Grand Mean	3.13	Agree/ Moderate
Legend: 3.25-4.00 – Strongly Agree/High; 2.5-3.24 – Agree / Moderate; 1.75-2.49 – Disagree /Low; 1.00-1.74 – Strongly Disagree/Very low		

The grand mean of 3.13 characterizes the overall perception as 'Moderate', indicating a moderate agreement among respondents regarding the importance of technical proficiency for employability.

The mean scores for the indicators suggest that employers in Weifang City place a considerable emphasis on technical proficiency when hiring graduates. The mean scores range from 3.09 to 3.17, affirming the agreement among respondents that technical proficiency is a critical competency that significantly influences hiring decisions in Weifang City.

The mean score of 3.13 indicates a moderate agreement regarding the importance of technical proficiency. While it is seen as crucial, the moderate mean suggests there may be other competencies and skills that employers also highly value during the hiring process.

3.2.2 Soft Skills and Interpersonal Abilities

Table 15 sheds light on the importance of soft skills and interpersonal abilities as perceived by employers in Weifang City.

Table 15

Level of Key Competencies and Skills That Employers in Weifang City Consider When Hiring Graduates Entering the Workforce in terms of Soft Skills and Interpersonal Abilities

Indicators	Mean	Verbal Description
1.Employers in Weifang City value graduates who possess strong soft skills and interpersonal abilities.	3.16	Agree/ Moderate
2.Soft skills and interpersonal abilities are essential for successful collaboration and teamwork in the workplace, according to employers in Weifang City.	3.13	Agree/ Moderate
3.Graduates with excellent communication and interpersonal skills are more likely to be hired by employers in Weifang City.	3.17	Agree/ Moderate
4.Employers in Weifang City consider strong problem-solving and critical thinking abilities as crucial soft skills in their hiring criteria.	3.13	Agree/ Moderate
5.Graduates who demonstrate adaptability and flexibility in their work approach are highly sought after by employers in Weifang City.	3.21	Agree/ Moderate
Grand Mean	3.16	Agree/ Moderate
Legend: 3.25-4.00 – Strongly Agree/High; 2.5-3.24 – Agree / Moderate; 1.75-2.49 – Disagree /Low; 1.00-1.74 – Strongly Disagree/Very low		

The mean scores indicate a general agreement among respondents regarding the significance of these competencies in the hiring process. Employers in Weifang City highly value graduates who possess strong soft skills and interpersonal abilities, indicating that technical skills alone are not sufficient; there is a significant emphasis on personal attributes and communication abilities.

Furthermore, the agreement regarding the importance of communication and interpersonal skills suggests that employers prioritize candidates who can effectively interact and collaborate with others in the workplace. This highlights the need for graduates to focus not only on their technical skills but also on developing excellent communication abilities to enhance their employability. Similarly, the recognition of problem-solving and critical thinking

abilities as crucial soft skills reinforces the demand for graduates who can analyze, innovate, and find effective solutions to complex challenges.

The high mean for graduates demonstrating adaptability and flexibility in their work approach aligns with the dynamic nature of the modern job market. Employers seek individuals who can quickly adapt to changes, be versatile in their roles, and effectively respond to evolving industry requirements. This underlines the necessity for graduates to showcase their ability to adapt and thrive in diverse work environments.

The grand mean of 3.16 categorized as 'moderate' indicates a collective acknowledgment of the importance of soft skills and interpersonal abilities but also suggests room for improvement. Institutions should emphasize the development of these competencies alongside technical knowledge to enhance graduates' overall employability and meet the industry's expectations.

3.2.3 Industry-Relevant Experience

The results depicted in Table 16 illuminate the significant importance of industry-relevant experience as perceived by employers in Weifang City.

Table 16

Level of Key Competencies and Skills That Employers in Weifang City Consider When Hiring Graduates Entering the Workforce in terms of Industry-Relevant Experience

Indicators	Mean	Verbal Description
1.Employers in Weifang City value graduates who have relevant industry experience.	3.22	Agree/ Moderate
2.Industry-relevant experience significantly increases the chances of being hired by employers in Weifang City.	3.21	Agree/ Moderate
3.Graduates with practical exposure to the industry are better equipped to handle job responsibilities, according to employers in Weifang City.	3.25	Strongly Agree/ High
4.Employers in Weifang City prioritize candidates who have demonstrated their ability to apply academic knowledge in real-world settings.	3.20	Agree/ Moderate
5.Industry internships and cooperative education programs are viewed positively by employers in Weifang City when assessing the competency of graduates.	3.22	Agree/ Moderate
Grand Mean	3.22	Agree/ Moderate
Legend: 3.25-4.00 – Strongly Agree/High; 2.5-3.24 – Agree / Moderate; 1.75-2.49 – Disagree /Low; 1.00-1.74 – Strongly Disagree/Very low		

The mean scores, ranging from 3.20 to 3.25, indicate a strong consensus among respondents regarding the critical role of practical exposure to the industry when evaluating potential hires. Employers highly value graduates who possess relevant industry experience, suggesting that academic knowledge alone may not suffice in meeting the expectations of the workforce.

Moreover, the emphasis on the ability to apply academic knowledge in real-world settings underlines the need for graduates to showcase their practical skills and competencies during the hiring process. This signifies that employers in Weifang City prioritize candidates who have demonstrated their capability to translate theoretical concepts into practical applications, reinforcing the importance of hands-on experience.

The grand mean of 3.22, categorized as 'moderate', highlights the collective agreement among respondents on the significance of industry-relevant experience. This suggests that while employers acknowledge the importance of academic qualifications, they equally value candidates with practical exposure to the industry, viewing them as better prepared to handle job responsibilities.

3.3 Proposed policy recommendations to bridge the gaps and enhance the industry-based congruence of undergraduate education in China based on the results of the study

Based on the study's results and the identified gaps and challenges in achieving industry-based alignment in undergraduate education in Weifang City, several policy recommendations can be proposed to enhance the industry-based congruence of undergraduate education in China more broadly:

3.3.1 Foster Stronger University-Industry Collaborations

Encourage and incentivize higher education institutions to establish robust partnerships and collaborations with local industries. This could be achieved through tax incentives, grants, or other forms of financial support. These collaborations should involve regular consultations, joint research projects, and industry-led curriculum advisory boards to ensure that education programs align with industry needs.

3.3.2 Mandate Internships and Practical Experiences

Enforce a mandatory internship or practical experience component within undergraduate programs. Collaborate with industries to facilitate these experiences, ensuring students gain hands-on knowledge and skills essential for their future careers. Establish a system for accrediting and evaluating these internships to ensure their quality and relevance.

3.3.3 Continuous Curriculum Review and Adaptation

Implement a system where higher education institutions conduct regular reviews of their curricula, integrating feedback from both students and industries. Encourage a dynamic approach to curriculum design that readily adapts to emerging industry trends and technological advancements. Develop guidelines that mandate curriculum reviews every few years to maintain alignment with industry needs.

3.3.4 Enhanced Faculty Development Programs

Invest in comprehensive faculty development programs to equip educators with the latest industry knowledge and pedagogical techniques. Encourage participation in industry seminars, workshops, and sabbaticals to ensure faculty members are up-to-date with the latest industry practices and can impart relevant knowledge to students.

4 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter of this study presents a summary of the key findings, drawing meaningful conclusions based on the results, and providing valuable recommendations for various stakeholders.

4.1 Summary of Findings

The following are the summary of the key findings obtained from the study.

4.1.1 Current undergraduate programs and courses offered by higher education institutions in Weifang City

The study assessing current undergraduate programs and courses in Weifang City found positive perceptions across various dimensions. The mean scores indicated that respondents generally perceive the undergraduate programs as good, with an overall mean of 3.18, falling within the 'Good' category on the verbal description scale. Here's a summary of the key findings for each dimension:

Relevance : The undergraduate programs were perceived to be relevant, indicating that the curriculum aligns well with the requirements of the industry or academic standards, as reflected in the 'Good' verbal description.

Practical Skills Development : Respondents agreed that the programs facilitate the development of practical skills, highlighting a positive outlook on the emphasis placed on hands-on learning and application of knowledge.

Industry-Engaged Faculty : The perception that faculty members are engaged with the industry suggests that the academic staff actively participate in industry-related activities, fostering a positive relationship between academia and the professional sphere.

Collaborations with Industry: The high mean score in this dimension indicates that collaborations with the industry are perceived positively. This suggests active engagement and partnerships between higher education institutions and industry stakeholders for mutual benefits.

The study reveals a favorable perception of the current undergraduate programs in Weifang City, with a consistent 'Good' rating across key dimensions. These findings indicate a strong foundation for the undergraduate education system, emphasizing relevance, practical skills development, faculty engagement with the industry, and fruitful collaborations with various sectors.

4.1.2 Level of key competencies and skills that employers in Weifang City consider when hiring graduates entering the workforce

Technical Proficiency: Employers displayed a moderate inclination toward valuing technical proficiency, indicating that while it is considered, there may be room for improvement in emphasizing this skill set more strongly during hiring.

Soft Skills and Interpersonal Abilities : Employers moderately appreciated soft skills and interpersonal abilities, showcasing the significance of these skills in a candidate's employability, particularly in enhancing collaboration and teamwork in the workplace.

Industry-Relevant Experience : Respondents placed a notable emphasis on industry-relevant experience, highlighting its importance in hiring decisions. This suggests that practical exposure and hands-on knowledge are highly valued by employers.

Professional Attitude and Work Ethic: Employers moderately emphasized a professional attitude and work ethic, indicating the significance of qualities like punctuality, reliability, and a positive approach in the workplace.

The study indicates a moderate level of consideration for key competencies and skills by employers in Weifang City. While technical proficiency, soft skills, industry-relevant experience, and a professional attitude are all recognized, there might be opportunities to further underscore the importance of these skills in hiring decisions.

4.1.3 Strategies and initiatives implemented by higher education institutions in Weifang City to enhance the industry-based congruence of undergraduate education

The study investigated the strategies and initiatives implemented by higher education institutions in Weifang City to enhance the industry-based alignment of undergraduate technical education. The overall findings, with an overall mean of 3.16 categorized as 'Moderate', suggest a moderate level of initiatives in aligning education with industry needs. Here's a summary of the key findings for each dimension:

Industry Collaboration and Partnerships (Mean: 3.09 - Moderate) Higher education institutions in Weifang City display a moderate level of engagement with industries through collaboration and partnerships. While this signifies an existing effort, there is room for improvement in strengthening these connections.

Curriculum Review and Revision (Mean: 3.19 - Moderate) Institutions show a moderate commitment to regularly reviewing and revising their curricula to align with industry needs. This indicates a proactive approach to adapting educational programs to the evolving demands of the industry.

Practical Learning Opportunities (Mean: 3.16 - Moderate): Higher education institutions provide moderate opportunities for practical learning, demonstrating a balance between theoretical knowledge and practical application, essential for industry alignment.

Professional Development and Career Services (Mean: 3.20 - Moderate): Institutions exhibit a moderate focus on professional development and career services for students, indicating a commitment to enhancing their employability and preparing them for the professional world.

The study reveals a moderate level of efforts by higher education institutions in Weifang City to align undergraduate technical education with industry needs. While there's a recognition of the importance of industry collaboration, curriculum review, practical learning, and career services, there's potential for enhancements and increased engagement to achieve a stronger alignment between education and industry requirements.

5 Conclusions

Based on the findings, the following conclusions are drawn:

Firstly,There is a positive perception across dimensions, indicating a strong foundation for the undergraduate education system in the region. The programs were seen as relevant, facilitating practical skills development, featuring industry-engaged faculty, and involving fruitful collaborations with the industry, all contributing to a 'Good' overall rating and affirming the alignment with industry needs and standards.

Secondly,Employers displayed a moderate inclination toward valuing technical proficiency, soft skills, industry-relevant experience, and a professional attitude, suggesting a balanced consideration of these crucial attributes in the hiring process.

Thirdly, Institutions display a moderate engagement in industry collaboration, curriculum adaptation, practical learning opportunities, and professional development, underscoring a balanced approach towards enhancing the congruence between education and the demands of the industry.

6 Recommendations

Based on the comprehensive findings of this study, tailored recommendations can be made to different stakeholders to maximize the impact and implementation of the study's results:

First of all, Higher Education Institutions may revise and adapt undergraduate curricula to align with the identified industry needs and competencies, emphasizing practical skills and relevant experiences.

second of all, Industry Partners may collaborate with educational institutions to offer internships and placements, providing students with real-world experiences that align with industry requirements.

third of all, Government and Policy Makers may create financial incentives for higher education institutions and industries that engage in meaningful collaborations, promoting a symbiotic relationship between the education sector and the industry.

References

[1] Anderson, W., & Sanga, J. J. (2019). Academia–industry partnerships for hospitality and tourism education in Tanzania. Journal of Hospitality & Tourism Education, 31(1), 34–48.

[2] Bradley, A., Quigley, M., & Bailey, K. (2021). How well are students engaging with the careers services at university? Studies in Higher Education, 46(4), 663–676.

[3] Gbollie, C., & David, M. (2014). Aligning expansion and quality in higher education: An imperative to Liberia's economic growth and development. Journal of Education and Practice, 5(12), 139–150.

[4] Gonzales, L., Potts, L., Hart-Davidson, B., & McLeod, M. (2016). Revising a content-management course for a content strategy world. IEEE Transactions on Professional Communication, 59(1), 56–67.

[5] Laurie, R., Nonoyama-Tarumi, Y., McKeown, R., & Hopkins, C. (2016). Contributions of education for sustainable development (ESD) to quality education: A synthesis of research. Journal of Education for Sustainable Development, 10(2), 226–242.

[6] Sitlington, H., & Coetzer, A. (2015). Using the Delphi technique to support curriculum development. Education + Training, 57(3), 306–321.

[7] Vlachopoulos, D. (2016). Assuring quality in e-learning course design: The roadmap. International Review of Research in Open and Distributed Learning, 17(6), 183–205.

[8] Vlachopoulos, D., & Makri, A. (2017). The effect of games and simulations on higher education: A systematic literature review.

International Journal of Educational Technology in Higher Education, 14(1), 1–33.

[9] Wohlfart, O., Adam, S., & Hovemann, G. (2022). Aligning competence-oriented qualifications in sport management higher education with industry requirements: An importance–performance analysis. Industry and Higher Education, 36(2), 163–176.