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Educational Effectiveness of Using Big Data Based and Its Evaluation with Cluster Analysis and Qualification Framework in Financial Services and Management †

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Abstract: We evaluated and predicted the quality of financial services and professional management using cluster analysis. Using K-prototype clustering analysis and TF-IDF word frequency methods, the differences in different evaluations of job positions and vocational skill requirements of college graduates were analyzed. The graduates with better school curricula and higher rationality tended to have more knowledge-based skills. Professional knowledge learning ability, theoretical knowledge level, project execution ability, and organizational coordination ability were important in learning skill requirements. The ability to analyze data and conduct research and development is important in the development of digital finance technology. It is necessary to build a professional foundation, teach workplace skills, keep up with recent technology, and optimize the standards to improve educational effectiveness in educating financial services and management.

Keywords: qualification framework; professional standards; cluster analysis; professional skills; demand forecast

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1. Introduction

Qualifications frameworks are important research in vocational education. The framework consolidates various learning outcomes according to the requirements of knowledge, skills, and abilities, and integrates them into a qualification system [1]. The framework is necessary to evaluate learning outcomes and the levels, thereby supporting learners to obtain different qualifications through formal and informal education [2]. Clear, assessable, and measurable indicators need to be set at each level of the qualification framework to authenticate academic qualifications between countries.

Based on the fifth edition of the Global Catalogue of National and Regional Qualifications Framework, Since the 1980s, more than 160 countries and regions have established national qualification framework systems. The global exchange of education and human resources has increasingly highlighted the importance of the qualification framework [3]. China is still in the preparation and research stage of building a qualification framework. The urgency of building a qualification framework in China is presently observed.

The qualification framework is constructed by integrating vocational and general education. The newly revised Vocational Education Law of the People's Republic of China in 2022 clearly states that "vocational education and general education are mutually integrated". Vocational and general education are different in type but without any hierarchical

differences. The core of vocational integration is possible with the equivalent requirements, which is also the difficulty in integrating vocational education. Constrained by traditional educational concepts, removing the discrimination of vocational education is important to promote such integration and establish a qualification framework. The concept of learning units and credits is introduced into the qualification framework to determine students' abilities and levels based on qualification levels, rather than simply dividing them into undergraduate and vocational degrees in various countries. Then, equivalent exchange between general and vocational education is enabled [4].

In building the qualification framework, promoting nationwide learning and lifelong education is important. Due to the traditional concept of "emphasizing educational background over vocational skills", the development of technical and skilled talents is often limited in the absence of a unified qualification framework, making it difficult to fully unleash their potential and construct a society where all people learn. The qualification framework allows learners to learn the knowledge, skills, and abilities with independent learning outcomes. Such learning outcomes include three different types of learning outcomes: formal learning outcomes with measurable standards, informal learning outcomes, and non-formal learning outcomes [5]. These are not obtained by unified learning in schools in traditional education. Through the mutual recognition of learning outcomes, the educational level is confirmed. Based on the classification of the qualification framework, the comparability and transferability of learning outcomes are ensured and universal standards for each level in the qualification framework are established [6]. The qualification levels and standards of the national qualification framework are determined based on the knowledge, skills, and abilities acquired by learners and effectively promote their participation in learning [7]. This ensures the quality of education at all levels and types and enables learning channels to develop a learning roadmap for further education and development.

Research on educational effectiveness has focused on the construction of the student evaluation system and the assessment of the effectiveness of school-enterprise cooperation. Huang et al. proposed a framework of skill evaluation methods [8]. The effectiveness of school-enterprise cooperation in vocational education refers to timely co-existence and its effectiveness [9]. Xu et al. proposed a computer-supported formative evaluation system that effectively improves the effectiveness of skills training in vocational education [10]. Many studies were conducted for the primary and secondary level schools but lacked practicality. Few scholars conducted empirical tests on whether and how to assess the effectiveness of skill training of students in vocational education. Cluster analysis is mainly used in research on market segmentation, behavioral analysis, and other fields.

In this study, we applied cluster analysis to assess the effectiveness of the talent training program for the mastery of students' skills.

2. Standards of Qualification Framework

A qualification framework is constructed based on the mutual recognition of learning outcomes and academic qualifications. Professional standards are defined through the refinement and embodiment of the qualification framework. Scientific and reasonable professional standards are used to compare and evaluate learning outcomes in different types of education and integrate vocational and general education to improve the overall quality of human resources. In the construction of professional standards, the qualification framework provides a unified authoritative standard for evaluating learning outcomes and quality [11].

Although the qualification framework system urgently needs improvement, the professional standards have been formulated. The established professional standards must be compared with those of different countries. The "international language" is impor-

tant in the professional standards to coincide with and meet the requirements of global standards. For example, the UK ENIC International Professional Standards award a certificate to a qualified school through three years of evaluation. The highest level of the standard is the Level 5 level of the UK Qualifications Framework (RQF) and the European Qualifications Framework (EQF) (the highest internationally recognized level for higher vocational education). In the evaluation of international professional standards, the British and European Qualification Framework Level 5 standards are used in terms of admission requirements, length of study, structure, content, teaching mode, learning outcomes, assessment, and related results [12]. The logic of the international qualification framework and the development of professional standards are required in their constructions. In this study, we integrated the professional standards of the Shandong Institute of Commerce and Technology, Jinan, China with the international professional standards. The strengths and weaknesses, and accumulated experience in exploring professional construction paths are integrated into Sino-foreign integration, industry education integration, and science education integration.

However, international professional standards are used to determine the skill requirements that students must master in the qualification frameworks. The skill requirements must be met in professional standards utilizing big data and algorithms due to the development of modern technology. The required skills and requirements for talent cultivation are defined by professional standards.

3. Professional Skill Demand

3.1. Research Objects

Rapid digitalization and informationization bring opportunities and challenges in professional standard-setting and talent cultivation. Although the traditional skill demand analysis method has been used widely, it lacks accurately defining professional standards and effectively cultivating practical talents. Therefore, the integration of big data technology is a key to innovation and development.

The K-prototype cluster analysis method combines numerical and typological data. It is a hybrid extension of the K-mean algorithm and the K-mode algorithm to process numerical and text data, respectively. Quantitative and qualitative data containing numerical and categorical features are clustered [13] to analyze the data and define personalized talent skill demand dimensions. Compared with the traditional analysis method, the characteristics of the data are considered to improve the accuracy of the analysis. The traditional method tends to be one-size-fits-all which is difficult to reflect the demands of different types of talents. In this study, we conducted a questionnaire survey for the graduates of the Shandong Institute of Commerce and Technology to collect personal data, satisfaction and evaluation degrees of school education, and demand for vocational skills. The K-prototype clustering analysis method was used to identify individual differences, information on career development, and potential for the effective cultivation of talents and the customization of professional standards.

We also used the term frequency-inverse document frequency (TF-IDF) method to analyze the demand for vocational skills in each clustered category and identify the demand for vocational skills. As a common technique for information retrieval and text mining, TF-IDF is used to measure the importance of a word in a document [14]. Compared with traditional text analysis methods such as string matching and word frequency statistics, TF-IDF synthesizes word frequency and inverse document frequency in feature extraction to accurately capture key information and measure the importance of vocabulary in multi-dimensions. TF-IDF is interfered with by dummy words and avoids the one-sidedness of one-dimensional judgment. It reduces ambiguities caused by the multiple meanings of one

word for semantic comprehension. It does not rely on applicability and flexibility and does not depend on specific domain knowledge and rules. TF-IDF applies to all kinds of texts to flexibly adjust and expand them.

We integrated the previous research results and big data analysis results with the traditional standards to formulate professional standards and cultivate talents support them in the development of their skills.

3.2. Research Methods

3.2.1. K-Prototype Clustering Analysis

The $\mathbf{d}(\mathbf{X_i}, \mathbf{C_j})$ distance between the data point $\boldsymbol{X_i}$ and the cluster center $\boldsymbol{C_j}$ is calculated, where $\boldsymbol{X_i} = (\boldsymbol{x_{i1}}, \boldsymbol{x_{i2}}, , \boldsymbol{x_{in}})$ represents the feature vector of the data point and $\boldsymbol{C_j} = (\boldsymbol{c_{j1}}, \boldsymbol{c_{j2}}, ..., \boldsymbol{c_{jn}})$ represents the feature vector of the cluster center, the number of numerical features is $\boldsymbol{m}$, and the number of categorical features is $\boldsymbol{p}$. The distance between data points and cluster centers is expressed as

$$\mathrm{d}(\mathrm{X_i}, \mathrm{C_j}) = \sum_{\mathrm{k=1}}^{\mathrm{m}} \mathrm{d_{num}}\left(\mathrm{x_{ik}}, \mathrm{c_{jk}}\right) + \sum_{\mathrm{l=1}}^{\mathrm{p}} \mathrm{d_{cat}}\left(\mathrm{x_{il}}, \mathrm{c_{jl}}\right) \tag{1}$$

where $\mathrm{d_{num}}\left(\mathrm{x_{ik}}, \mathrm{c_{jk}}\right)$ is the distance metric for numerical $\mathrm{d_{cat}}\left(\mathrm{x_{il}}, \mathrm{c_{jl}}\right)$ features, and is the distance metric for categorical features.

For numerical features, Euclidean distance is used as

$$\mathrm{d_{num}}\left(\mathrm{x_{ik}}, \mathrm{c_{jk}}\right) = \sqrt{\left(\mathrm{x_{ik}} - \mathrm{c_{jk}}\right)^2} \tag{2}$$

For categorical features, a simple matching distance is used as

$$\mathrm{d_{cat}}\left(\mathrm{x_{il}}, \mathrm{c_{jl}}\right) = \begin{cases} 0, \mathrm{x_{il}} = \mathrm{c_{jl}} \\ 1, \mathrm{x_{il}} \neq \mathrm{c_{jl}} \end{cases} \tag{3}$$

The cluster center C_j is updated for numerical features as follows.

$$C_{jk} = \frac{\sum_{i=1}^{N} u_{ij} x_{ik}}{\sum_{i=1}^{N} u_{ij}} \tag{4}$$

where N is the number of data points and u_{ij} is the C_j membership degree of x_i cluster for data points.

For categorical features,

$$C_{jl} = \underset{c \epsilon \{c_1, c_1, ..., c_M\}}{argmax} \sum_{i=1}^{N} u_{ij} \delta(x_{il}, c) \tag{5}$$

where $c_1, c_1, ..., c_M$ is the set of values for categorical features, $\delta(x_{il}, c) = \begin{cases} 0, \mathrm{x_{il}} = \mathrm{c_{jl}} \\ 1, \mathrm{x_{il}} \neq \mathrm{c_{jl}} \end{cases}$.

The objective function is calculated as

$$\mathrm{J} = \sum_{\mathrm{j=1}}^{\mathrm{K}} \sum_{\mathrm{i=1}}^{\mathrm{N}} u_{ij} \mathrm{d}(\mathrm{X_i}, \mathrm{C_j}) \tag{6}$$

where K is the number of clusters. The cluster centers and membership degrees are updated iteratively until the objective function converges.

The Silhouette coefficient is used to evaluate the quality of clustering results [15]. For each data point i, $s(i)$ is calculated as its contour coefficient using the following equation.

$$s(i) = \frac{b(i) - a(i)}{max\{a(i), b(i)\}} \tag{7}$$

where is $b(i)$ the average distance from $a(i)$ and the minimum value of the average distance between data points in other clusters.

The range of contour coefficient values is $[-1, 1]$. When $s(i)$ approaches 1, the clustering effect becomes better. When $s(i)$ approaches 0, the clustering effect is unclear; When $s(i)$ approaches -1, the data point is assigned to the wrong cluster.

3.2.2. TF-IDF Word Frequency—Reverse Document Frequency

TF refers to the number of times a word appears in a document (Equation (8)).

$$TF(t, d) = \frac{n_{t,d}}{\sum_{t' \epsilon d} n_{t',d}} \tag{8}$$

where $n_{t,d}$ is the number of times the word appears *in* the document, and $\sum_{t' \epsilon d} n_{t',d}$ is the number of times all words in the document.

IDF is used to measure the general importance of a word in the entire document collection.

$$IDF(t) = \log \frac{N}{n_t} \tag{9}$$

where N is the total number of documents and n_t is the number of documents containing words.

The value of TF-IDF is equal to TF multiplied by IDF.

$$TF - IDF(t, d) = TF(t, d) \times IDF(t) \tag{10}$$

3.3. Data Description

A survey questionnaire was distributed to the graduates of 2023 and 2024 majoring in Financial Services and Management. The basic information of graduates (graduation institution, gender, and others), employment status (on-the-job status, employer situation, position, etc.), evaluation of school education (whether satisfied with school teaching work, whether the school's teaching curriculum is reasonable, whether the professional knowledge learned during school is sufficient), and demand for vocational skills (which skills are considered most important for job competence) were surveyed using the questionnaire. The number of valid questionnaires collected was 142 (Table 1).

The respondents showed a high evaluation of school education, with most responses of "very satisfied", "reasonable", and "completely sufficient". Only a small number of the respondents exposed their negative attitudes toward school education. For "Are you satisfied with the teaching work in the school", 58.87% of the respondents thought "very satisfied", 40.43% of the respondents thought "satisfied", and only 0.71% of the respondents chose "dissatisfied".

For "whether you are satisfied with the school's teaching work", "very satisfied" was understood as high satisfaction, "satisfied" was understood as moderate satisfaction, and "dissatisfied" was understood as low satisfaction; Similarly, for the question of "Do you think the school's teaching curriculum is reasonable?", "reasonable" was understood as the respondents showed a high level of recognition of the school's curriculum, "basically reasonable" was understood as a moderate level of recognition, and "very unreasonable" was understood as a negative attitude. Regarding 'Do you think the professional knowledge

you have learned during your school years is sufficient?' 'Fully sufficient' was understood as a high evaluation of the practicality of the school curriculum, 'basically sufficient' was understood as a moderate evaluation of the practicality of the school curriculum, 'basically sufficient, requiring continuous learning in work' was understood as believing that the timeliness and practicality of the school curriculum need to be improved, and 'insufficient' was understood as a low evaluation.

Table 1. Frequency analysis results.

Name	Item	Frequency	Percentage (%)	Cumulative Percentage (%)
Are you satisfied with the teaching work at the school	Dissatisfied	1	0.71	0.71
	Satisfied	57	40.43	41.13
	Very satisfied	83	58.87	100.00
Do you think the school's teaching curriculum is reasonable	Unreasonable	1	0.71	0.71
	Reasonable	119	84.40	85.11
	Basically reasonable	13	9.22	94.33
	Very unreasonable	8	5.67	100.00
Do you think the professional knowledge learned during school is sufficient	Not enough	4	2.84	2.84
	Basically sufficient	40	28.37	31.21
	Basic enough, continuous learning is required in work	48	34.04	65.25
	Completely sufficient	49	34.75	100.00
Total		141	100.0	100.0

The knowledge-related demand (professional knowledge learning ability/theoretical knowledge level/foreign language application and international communication skill, etc.), practical ability-related demand (organizational and coordination ability/data analysis skill/collaboration ability/public relations ability, etc.), and psychological resilience-related demand (responsibility/environmental adaptability/flexibility/professional ethics and loyalty, etc.) were included in the analysis of this study.

3.4. Data Preprocessing

Data were pre-processed for data cleaning, missing value replacement, and data standardization. The data was split into numerical and categorical attributes for K-prototype clustering analysis.

4. Results and Discussions

4.1. Vocational Skills Needs Without Clustering

First, the demands for vocational skills of the respondents were identified by simply counting the number of responses (Table 2).

Table 2. Overview of vocational skills needs distribution without clustering.

Occurrences (x)	Vocational Skill Demands
$x \geq 70$	Professional knowledge learning ability/project execution capability/organization and coordination ability/theoretical knowledge level/collaboration ability/language and writing expression ability/data analysis ability/innovative R&D ability
$70 > x \geq 30$	Learning ability/responsibility/environmental adaptability/flexibility/professional ethics and loyalty/public relations ability/time management ability
$x < 30$	Potential leadership skill/resistance to temptation/foreign language application and international communication skill

4.2. K-Prototype Clustering Analysis Results

Based on the respondents' evaluations of school education, the K-prototype clustering analysis method was used to cluster the preprocessed data, resulting in three clustering categories (Table 3).

Table 3. Summary of basic information of cluster categories.

Cluster Category	Frequency	Percentage (%)
Cluster_1	53	37.59%
Cluster_2	48	34.04%
Cluster_3	40	28.37%
Total	141	100%

The cross-analysis results are shown in Table 4.

Table 4. Cross (chi-square) analysis results.

Question	Resposne	Cluster_Kprototype_			Total	χ^2	*p*
		Cluster_1	Cluster_2	Cluster_3			
Do you think the school's teaching curriculum is reasonable	Unreasonable	0 (0.00)	1 (2.08)	0 (0.00)	1 (0.71)	15.495	0.017 *
	Reasonable	43 (81.13)	39 (81.25)	37 (92.50)	119 (84.40)		
	Basically reasonable	3 (5.66)	8 (16.67)	2 (5.00)	13 (9.22)		
	Very unreasonable	7 (13.21)	0 (0.00)	1 (2.50)	8 (5.67)		
total		53	48	40	141		
Are you satisfied with the teaching work at the school	Dissatisfied	0 (0.00)	1 (2.08)	0 (0.00)	1 (0.71)	18.985	0.001 **
	Satisfied	11 (20.75)	21 (43.75)	25 (62.50)	57 (40.43)		
	Very satisfied	42 (79.25)	26 (54.17)	15 (37.50)	83 (58.87)		
total		53	48	40	141		
Do you think the professional knowledge learned during school is sufficient	Not enough	4 (7.55)	0 (0.00)	0 (0.00)	4 (2.84)	282.000	0.000 **
	Basically sufficient	0 (0.00)	0 (0.00)	40 (100.00)	40 (28.37)		
	Basically enough, continuous learning is required in work	0 (0.00)	48 (100.00)	0 (0.00)	48 (34.04)		
	Completely sufficient	49 (92.45)	0 (0.00)	0 (0.00)	49 (34.75)		
total		53	48	40	141		

* $p < 0.05$ ** $p < 0.01$.

The clusters showed significant differences ($p < 0.05$) for all items, indicating the characteristics of the three groups in the research items were significantly different. The average contour coefficient was calculated to be 0.516, indicating that there were significant differences between different clusters (Figures 1–3).

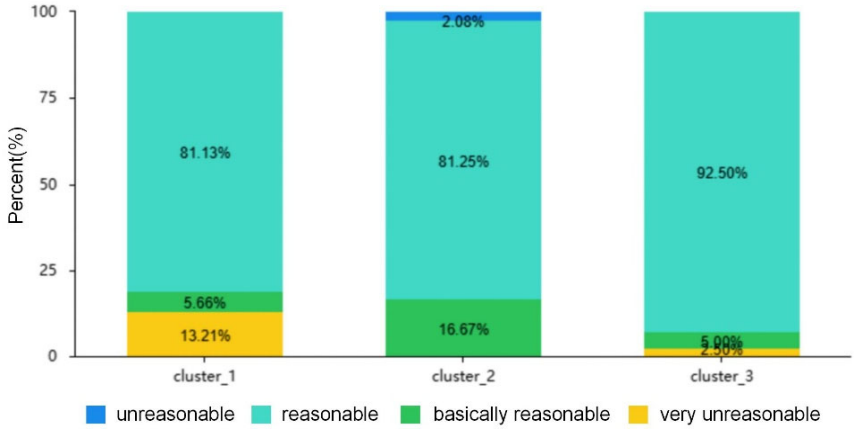


Figure 1. Evaluation of rationality of school teaching curriculum setting.

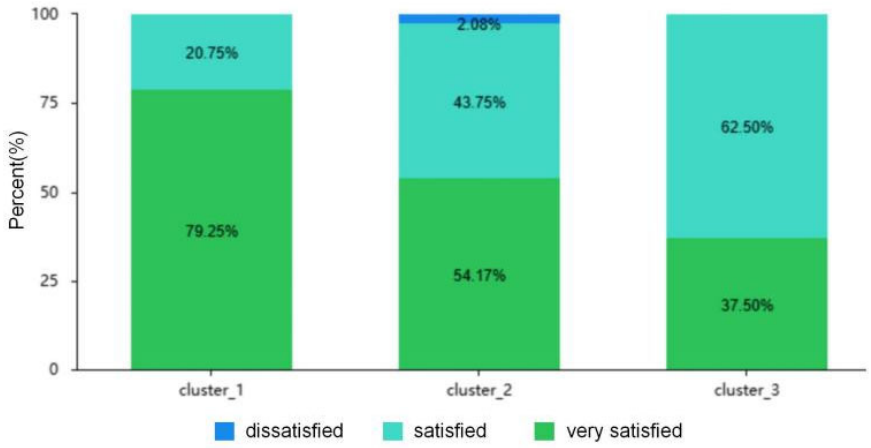


Figure 2. Satisfaction with school teaching work.

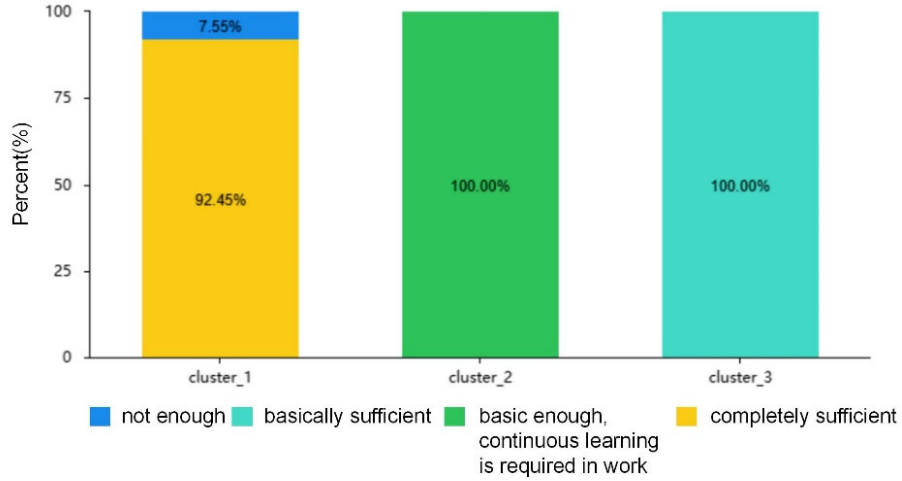


Figure 3. Evaluation of practicality of professional knowledge learned from school period.

Based on the above analysis results, the characteristics of the three groups are summarized in Table 5.

Table 5. Classification of cluster categories.

Cluster Category	Name	Features
Cluster_1	Group with relatively low evaluation of school education	Relatively low evaluation of the rationality of school curriculum design High satisfaction with school teaching work There is a serious polarization in the perception of whether school knowledge is sufficient
Cluster_2	Group with relatively intermediate evaluation of school education	The evaluation of the rationality of school curriculum design is relatively moderate Moderate satisfaction with school teaching work Believe that although the knowledge learned in school is basically sufficient, it still needs to be learned in the workplace
Cluster_3	Group with relatively high evaluation of school education	The evaluation of the rationality of school curriculum design is relatively highest High satisfaction with school teaching work Believe that the knowledge learned in school is basically sufficient for work

4.3. TF-IDF High-Frequency Words Extraction

TF-IDF analysis was performed on the texts related to vocational skill demand in each cluster which were sorted by word frequency (Table 6).

Table 6. Vocational skill demands of graduates from different clustering categories.

Cluster1			**Cluster2**			**Cluster3**		
Relatively Low Evaluation Group			**Relatively Intermediate Evaluation Group**			**Relatively High Evaluation Group**		
Segment Text by Words	Word Frequency	TF-IDF	Segment Text by Words	Word Frequency	TF-IDF	Segment Text by Words	Word Frequency	TF-IDF
professional knowledge learning ability	40	0.28	professional knowledge learning ability	39	0.27	project execution capability	30	0.28
theoretical knowledge level	38	0.29	language and writing expression ability	39	0.26	professional knowledge learning ability	29	0.28
organization and coordination ability	38	0.29	project execution capability	33	0.31	theoretical knowledge level	27	0.30
project execution capability	36	0.31	organization and coordination ability	33	0.31	organization and coordination ability	24	0.32
collaboration ability	34	0.32	collaboration ability	31	0.32	collaboration ability	23	0.33
innovative R&D capabilities	31	0.34	data analysis ability	28	0.34	innovative R&D capabilities	23	0.34
data analysis ability	31	0.34	responsibility	27	0.35	environmental adaptability	20	0.35
language and writing expression ability	27	0.35	learning ability	26	0.34	data analysis ability	18	0.39
learning ability	24	0.36	environmental adaptability	26	0.34	learning ability	16	0.39
responsibility	21	0.38	theoretical knowledge level	23	0.37	language and writing expression ability	16	0.39
public relations ability	19	0.40	flexibility	22	0.37	responsibility	15	0.40
time management ability	16	0.42	professional ethics and loyalty	18	0.42	professional knowledge learning ability	13	0.41
professional ethics and loyalty	16	0.42	innovative R&D capabilities	18	0.43	flexibility	12	0.43
environmental adaptability	16	0.41	public relations ability	14	0.45	time management ability	7	0.49
flexibility	15	0.43	time management ability	14	0.45	potential leadership skill	7	0.50
potential leadership skill	9	0.48	potential leadership skill	3	0.63	foreign language application and international communication skill	7	0.50
resistance to temptation	8	0.51	foreign language application and international communication skill	1	0.73	public relations ability	7	0.50
foreign language application and international communication skill	3	0.57	resistance to temptation	1	0.65	resistance to temptation	4	0.56

The graduates had the highest demand for knowledge-related skills, followed by practical ability-related skills. The top five high-frequency words included "professional knowledge learning ability", "theoretical knowledge level", "organization and coordination ability", "project execution capability", and "collaboration ability". In the group with relatively high evaluation, the graduates showed the highest demand for practical skills, followed by knowledge-related skills. The top five high-frequency words include: "project execution capability", "professional knowledge learning ability", "theoretical knowledge level", "organization and coordination ability", and "collaboration ability".

4.4. Discussions

The graduates showed different evaluations in school education. For vocational skills, they demanded job competence. Those who evaluated the school curriculum with low scores believed that knowledge-based skills were the most crucial for job competence. When the knowledge education system cannot meet the demands of graduates, they will ask for the demands even after graduation. Those who evaluated the school curriculum with high scores focused more on practical skills related to work, especially execution ability, after entering the workforce.

Regardless of the evaluation of school education, the "professional knowledge learning ability" and "theoretical knowledge level" in knowledge-related abilities, as well as the "project execution capability", "organization and coordination ability", and "collaboration ability" related to work progress and teamwork in practical skills are important. However, "foreign language application and international communication skill" and"resistance to temptation" scored less than them. "Data analysis ability" and "innovative R&D capabilities" were also important, which indirectly reflects the impact of the development of technology finance and digital finance on the skills of professionals in this field.

5. Conclusions

Course design must ensure that students can systematically master basic theories and skills. In a carefully designed curriculum system, students can understand cutting-edge knowledge and develop problem-solving skills through practical experience. A comprehensive knowledge system is required to obtain theoretical knowledge including interdisciplinary applications and economic principles with information technology to adapt to rapidly changing market demands. In addition, the integration of theory and practice is also demanded. Students must understand professional knowledge and practice problem-solving skills, meeting their demands for knowledge and skills for their future careers.

In increasingly fierce employment competition, students' adaptability and comprehensive qualities in the workplace must be cultivated. Execution ability, teamwork ability, and other soft skills are crucial in the workplace. Execution ability refers to the ability to transform plans into actions and effectively achieve goals. It requires students to have a high sense of responsibility and self-discipline to efficiently manage time and resources. Teamwork emphasizes the ability to effectively communicate and collaborate to solve problems in a diverse team, which requires students to learn to listen, respect others' opinions, and leverage their strengths in the team. To cultivate these abilities, schools must provide simulated workplace projects, team competitions, and other activities in the curriculum and extracurricular sections of professional standards, allowing students to experience teamwork in practice. At the same time, combined with career planning guidance, students need to clarify their positioning, improve self-management and teamwork abilities, and prepare for a smooth transition to the workplace.

With the rapid development of technology, financial technology has become important knowledge for the transformation of the financial industry. Therefore, the Department of Financial Services and Management must constantly update its course content and introduce courses related to the current development trend of technology finance, such as the Big Data Finance course to help students learn big data technology for financial market analysis and risk assessment. The blockchain finance course encourages students to explore the application of emerging technologies such as blockchain and artificial intelligence in financial product design and service optimization. The courses broaden students' horizons and enhance their understanding of the financial technology field. They stimulate innovative thinking and cultivate financial talents with foresight and practical abilities.

Through school-enterprise cooperation and by inviting industry experts to teach, theory and practice can be integrated, allowing students to keep up with industry trends and lay a solid theoretical and practical foundation for future career development.

For students for local employment, universities must adjust the proportion of foreign language learning in their curriculum to better serve the student's career planning and social development. The importance of foreign language learning must be emphasized and basic language communication skills must be mastered. In finance and economics, courses such as financial English and business communication must be offered to enable them to engage in more effective international communication and cooperation in their future work. At the same time, investment in non-essential foreign language courses can be reduced for more time and effort to be provided to improve their professional skills and understand the global market. Through school-enterprise cooperation, internships, and practical training, students can exercise their foreign language to meet the demand for talent in the job market and diversify personal career development. This adjustment reflects the concept of education serving social and economic development and allows students to plan practical career development paths.

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