Analysis of Factors Influencing Talent Cultivation for Graduates of Applied Universities in Beijing

Guo Qian, Zhao Xin Ran, Zhang Xu Ning, Gui Ru Ming, Hou Shu Yu, Zhang Qi

Beijing Wuzi University, Beijing, China

ABSTRACT

Currently, the issue of cultivating talents in the circulation industry is particularly prominent. At the national strategic level, macro policies guide the integration of application-oriented talent cultivation models in the circulation sector. Based on the practical demands for talent cultivation in the circulation industry, this study employs questionnaire surveys and Latent Dirichlet Allocation (LDA) topic modeling to delve into the characteristics of enterprises' talent demands and the optimization pathways for talent cultivation models in universities. The research results indicate that factors such as individual characteristics, enterprise size, satisfaction with practical courses, and the mentor system have significant impacts on respondents' satisfaction with university education. Specifically, gender and academic qualifications exert notable influences on educational quality, while large enterprises hold stricter demands for educational quality. Furthermore, satisfaction with practical courses positively correlates with evaluations of university education, and the implementation of the mentor system significantly enhances students' overall satisfaction with education. Accordingly, this paper proposes that universities should enhance the quality of professional teaching, strengthen collaboration with the industry, optimize curriculum structures, and implement the mentor system to enhance the social adaptability of education. Additionally, it is recommended to establish a feedback mechanism from enterprises and continuously monitor the job performance of graduates to achieve precise alignment between educational quality and enterprise demands.

KEYWORDS: *Circulation Industry; Talent Demand; LDA Text Mining; Ordered Logistic Model; Ordered Probit Model*

INTRODUCTION

Focusing on the issue of talent cultivation in the circulation industry, this paper elaborates on the background and significance of exploring the ecosystem for cultivating applied talents in the circulation field from the perspectives of both the circulation industry and the development of universities. Xiao Zhen (2023) [1]believes that a company's talent perspective, talent demand, talent planning, and talent strategy will directly influence the advancement of the Outstanding Engineers Cultivation Plan and the future assessment of the cultivation quality of outstanding engineers. Liu Yang, Han Xiaofeng, et al. (2019) [2] conducted a survey of 32 foundry enterprises nationwide through questionnaires, expert interviews, and symposiums, investigating aspects such as corporate background information, technical operational positions, and knowledge and competency requirements for vocational college graduates in these enterprises, followed by comprehensive statistical analysis. Zhang Chonghui, Zhang Le, et al. (2020) [3] collected microdata from 248 small and medium-sized cross-border e-commerce enterprises and analyzed the characteristics and influencing factors of talent demand by constructing a GLS model based on the Gamma distribution. Regarding university talent cultivation, scholars have mostly focused on innovations in talent cultivation modes, explorations of interdisciplinary education, and the alignment of talent cultivation with social needs. Tang Zhe (2022) [4]reflected on the impact of the

internet era on university talent cultivation and explored innovations in university talent cultivation modes based on this, believing that constructing a talent cultivation mode that meets the requirements of the times is the most crucial issue at present. Feng Yuan (2023) [5] suggests that universities can improve the school-enterprise cooperation mode, promoting the close integration of talent cultivation with information technology applications, and truly achieving precision, scientific, and systematic information-based education to support high-quality talent cultivation. Zhang Yao, Liang Guangchuan, et al. (2022) [6] explored the relevant work and implementation strategies of talent cultivation from the perspectives of academic report sharing, academic literacy training, and curriculum practical training. Guo Bin, Liu Yangnanwang (2023) [7] pointed out that there are issues such as a lack of communication in the current school-enterprise cooperation among applied local undergraduate universities. School-enterprise cooperation and local integration should serve as the engine for the development of local undergraduate universities under China's higher education reform.

In summary, this survey aims to deeply explore the current status and potential issues of corporate talent demand and university talent cultivation, further investigate the intrinsic connections between them, and provide strong support for improving the quality of talent cultivation and promoting close cooperation between universities and enterprises. Focusing on the perspectives of corporate talent demand and university talent cultivation, different questionnaires are designed for corporate management and university graduates, respectively. By conducting in-depth analysis and exploration of the survey data, this study aims to comprehensively understand the needs of both enterprises and graduates, further explore the practical problems currently faced by the connection between circulation industry enterprises and students, and discuss and propose corresponding suggestions.

Microblog Text Mining Based on the LDA Method

With the rapid development of the Internet and artificial intelligence, more and more people have begun to focus on the issue of "employment." This article obtains relevant data from the Weibo platform and performs data cleaning, word segmentation, word frequency statistics, word cloud generation, LDA topic model analysis, and visualization operations on these data to reveal the hotspots of concern for these topics among Weibo users.

A. Text Data Preprocessing

Relevant blog posts and comments related to the keywords "student employment" and "corporate demand for talent" were crawled on the Weibo platform, resulting in a total of 1,736 comments related to "student employment" and 707 comments related to "corporate demand for talent." Duplicate and abnormal data were eliminated, leaving a total of 999 valid data entries. The HIT (Harbin Institute of Technology) stopword list was used to remove duplicates and exclude invalid fields, and the text was subjected to word segmentation.

B. Topic Analysis Based on the LDA Model

The LDA (Latent Dirichlet Allocation) model is a probabilistic generative model used for topic modeling, commonly used to discover hidden topic structures in text data. In the field of natural language processing, the LDA model is widely applied in tasks such as text mining, information retrieval, and recommendation systems. Feature words were selected to convert text data into phrases, and the TF-IDF algorithm was used to weight the key feature words. Through the perplexity algorithm of Micro Word Cloud, it was found that the rate of decrease in perplexity slowed significantly when the number of topics was set to 3. Therefore, three topics were selected for analysis in this paper.

Users have a high degree of attention towards the topics of "what kind of talent do enterprises need" and "how can students find employment in the current environment." In terms of corporate demand, enterprises tend to recruit talent with "management," "team," and "business"-related capabilities, while students focus more on "career guidance" and "professional direction" when selecting employment opportunities. In terms of talent recruitment, enterprises need to attract younger people to join. To increase the employment rate of graduates, it is necessary to comprehensively consider the influencing factors of supply and demand. Therefore, this paper will delve into the correlation between the talent demand of circulation enterprises and the graduates of application-oriented universities.

Analysis of the Basic Situation of the Survey

Questionnaire surveys were conducted separately among the managers of relevant enterprises in the circulation industry and the graduates of applied universities in Beijing. The basic situation is as follows.

A. Enterprise Survey

A total of 209 valid questionnaires were collected from management personnel of enterprises related to the circulation industry. From the sample distribution, the sample structure of important characteristics is relatively close to the overall structure, indicating that the samples of this survey basically conform to the actual situation.

Overall, there is a trend of insufficient demand for circulation talents in the market. Nearly half of the respondents believe that the demand is "low" or "very low," and there is no difference in demand for circulation industry talents across industries and company sizes. In terms of new employee training, enterprise managers consider training related to positions and workflows to be the most important, accounting for 42.6%, followed by corporate history and culture at 32.5%. The emphasis on training related to positions and workflows may be because understanding the workflow helps new employees clarify their responsibilities and collaboration with other departments, thereby working more efficiently.

In terms of talent cultivation and recruitment in the circulation industry, enterprises score low on handling issues such as intense competition and recruitment pressure, with an average score of 2.96. Among them,28.7% are dissatisfied, 23.4% are neutral, and 40.7% are satisfied. Enterprises should further improve recruitment satisfaction by optimizing recruitment processes, enhancing the quality of recruitment personnel, strengthening internal communication, and improving benefits, providing a strong talent guarantee for enterprise development. Nearly half of the respondents believe that resource sharing, experience exchange, and cooperative innovation within the industry can promote cooperation and development between enterprises and circulation industry talents.

B. School Survey

A total of 674 valid student questionnaires were collected, and the sample structure of important characteristics is relatively close to the overall structure, indicating that the samples of this survey basically conform to the actual situation.

The survey found that online recruitment platforms and talent markets are the two major channels for graduates to find jobs. More than half of the job positions require a bachelor's degree. The overall satisfaction level of the respondents with their current jobs is 3.58, with 57.30% of the respondents being very satisfied or relatively satisfied with their current work situation. Satisfaction with current work serves as a comprehensive measure of respondents' career development opportunities, job content, and challenges, as well as their ability to transition from campus to society. By investigating respondents' satisfaction with their current work, it is beneficial to explore the work practice patterns of graduates from different schools.

Analysis of Factors Influencing Enterprises' Satisfaction with School-based Talent Cultivation

The choice of respondents regarding their overall satisfaction with the education provided by their employees' alma maters depends both on their own basic characteristics and on their actual performance at work. This section analyzes the influencing factors of respondents' satisfaction with the overall education provided by schools by establishing an Ordered Logistic Regression model.

A. Establishment of the Ordered Logistic Model

The multi-ordered selection behavior represented by the question "How do you evaluate the teaching quality of your employees' specialized courses at their alma maters?" is denoted as the dependent variable. Specifically, when the response is "very poor," Y is assigned a value of 1; "poor," Y = 2; "average," Y = 3; "good," Y = 4; and "very good," Y = 5. To explore relevant influencing factors, we selected variables including A2 (company size), A3 (gender difference in number), A4 (proportion of interns becoming regular employees), C3-C5 (whether software learning needs to be strengthened), C6 (perceived necessity of increasing professional practice courses at schools), and personal information for variable screening.

The significant variables in the model are A2, C4, C6, D1, and D3. The intercept coefficients of the four obtained models are -4.477, -3.336, -1.039, and -0.208, respectively.

B. Analysis of Results

Personal characteristics, including the respondents' gender and education level, significantly influence their evaluation of the teaching quality of school courses. Compared to women, men are more likely to believe that the teaching quality of schools does not meet their requirements. Additionally, individuals with lower education levels are more likely to express satisfaction with the teaching standards of schools compared to those with master's degrees or higher. The size of the enterprise also significantly affects satisfaction with the teaching quality of school courses. Larger enterprises tend to have higher expectations for the teaching standards of schools. Meanwhile, satisfaction with the practical course setup also has

a significant impact on this. Respondents who believe that professional software teaching needs to be strengthened tend to evaluate the teaching situation of schools more negatively. Conversely, the higher the respondents' satisfaction with internship, practical training courses, project practice, and professional skills training, the more they perceive the teaching ability of schools to be strong.

Analysis of Factors Influencing Students' Satisfaction with School-based Cultivation

The choice of respondents regarding their overall satisfaction with the cultivation provided by their alma maters depends both on their own basic characteristics and on their subjective feelings towards the application of knowledge in practical work.

A. Introduction to the Model

The Ordered Probit model originates in the field of economics and, similar to the common Ordered Logit model, is a frequently used model for analyzing and predicting ordered discrete data. Compared to the traditional Ordered Logit model, the Ordered Probit model can relax the IIA (Irrelevant Alternatives) assumption. The general form of the Ordered Probit model is: $Y^* = X_i\beta^T - \varepsilon_i$ Then, the probability of each possible value of Y can be calculated using the following formula:

$$\begin{cases} Prob(Y = 0|X) = Prob(Y^* \leq \alpha_1|X) = Prob(X\beta^T + \varepsilon_i \leq \alpha_1|X_i = \Phi(\alpha_1 - X\beta^T) \\ Prob(Y = 1|X) = Prob(\alpha_1 < Y^* \leq \alpha_2|X) = \Phi(\alpha_2 - X\beta^T) - \Phi(\alpha_1 - X\beta^T) \\ Prob(Y = 2|X) = Prob(\alpha_2 < Y^* \leq \alpha_3|X) = \Phi(\alpha_3 - X\beta^T) - \Phi(\alpha_2 - X\beta^T) \\ \cdots\cdots \\ Prob(Y = J|X) = Prob(Y^* > \alpha_J|X) = 1 - \Phi(\alpha_J - X\beta^T) \end{cases}$$

B. Establishment of the Ordered Probit Model

Representing the multivariate ordered choice behavior of "How satisfied are you with the overall training provided by the school?" as the dependent variable, where Y* takes the value of 1 when "Very dissatisfied" is chosen, 2 when "Not very satisfied" is chosen, 3 when "Neutral" is chosen, 4 when "Fairly satisfied" is chosen, and 5 when "Very satisfied" is chosen. Based on this, the Ordered Probit model established is:

$$Y^* = \beta_0 + \beta_1 B1 + \beta_2 B31 + \beta_3 B32 + \beta_4 33 + \beta_5 B34 \\ + \beta_6 B41 + \beta_7 B43 + \beta_8 B44 + \beta_9 B52 + \beta_{10} B54 \\ + \beta_{11} gender + \beta_{12} Z2 + \beta_{13} Z3$$

In this paper, a backward stepwise elimination method is used to remove the insignificant independent variables from the initially established regression equation based on the probability values of the statistics from maximum likelihood estimation. After multiple rounds of screening, the insignificant variables are excluded, and the marginal values of the significant variables at Y*=1 and Y*=5 are calculated. The calculation results are shown in the following table.

TABLE I: Output Results of the Ordered Probit Model

Variable	Coefficient	P	Marginal Effect	
			Satisfaction Level =1	Satisfaction Level =5
B1	0.114	0.093*	-0.001（0.000）***	0.026（0.015）**
B31	0.068	0.031**	-0.015（0.032）**	0.017（0.032）**
B32	0.101	0.001***	-0.021（0.001）***	0.025（0.001）***
B33	0.0589	0.032**	-0.013（0.064）*	0.015（0.015）**
B41	0.090	0.029**	-0.019（0.000）***	-0.067（0.006）**
B43	0.042	0.031**	-0.010（0.000）***	-0.012（0.011））**
B44	0.060	0.026**	0.010（0.100）*	0.026（0.099）*
gender	-0.022	0.01***	-0.001(0.000)***	0.040（0.015）**
Z2	0.011	0.024**	-0.001（0.000）***	0.034（0.015）**
Z3	0.822	0.041**	-0.018（0.046）**	0.021（0.047）**

Note: ***, **, and * indicate rejection of the null hypothesis at significance levels of 1%, 5%, and 10% respectively. Standard errors are provided in parentheses.

C. Analysis of Results

The mentor system, the level of teaching in professional knowledge and skills, the alignment of course offerings and knowledge systems of the studied major with the industry, and satisfaction with practical teaching all significantly impact respondents' overall satisfaction with the school's training. Respondents with a mentor system are 2.60% more likely to choose "Very satisfied" with the overall training of the school compared to those without a mentor system. For every one-level increase in respondents' satisfaction with the level of teaching in professional knowledge and skills, the probability of choosing "Very satisfied" increases by 1.72%. Similarly, for every one-level increase in satisfaction with the alignment of course offerings, knowledge systems of the studied major

with the industry, the probability of choosing "Very satisfied" also increases by 2.60%.

Conclusion and Suggestions

Factors such as individual characteristics including gender and education level, enterprise size, satisfaction with practical course settings, and the mentor system significantly influence respondents' satisfaction with the teaching and overall training provided by the school. Larger enterprises have higher expectations for the teaching standards of the school. Satisfaction with practical course settings has a significant impact on evaluations of the school's teaching, while the presence of a mentor system significantly enhances respondents' satisfaction with the school's overall training.

Based on the research findings, it is recommended that schools improve teaching quality, particularly in professional knowledge and skills, to meet the expectations of enterprises for their employees. Schools should strengthen cooperation with the industry, optimize course settings to ensure alignment with industry demands, implement or improve the mentor system to enhance students' overall training satisfaction. Additionally, schools should consider the impact of gender and education level on satisfaction evaluations, implement differentiated teaching strategies, and establish a feedback mechanism from enterprises to continuously track the job performance and satisfaction of graduates. This will allow for timely adjustments to educational strategies and ensure that education quality aligns with enterprise needs.

Acknowledgments

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