

A study of the effect of financial robot popularity on employment anxiety of accounting students in Luoyang City, China

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ABSTRACT

In the context of the accelerated replacement of basic accounting positions by financial robots (RPA) (the global voucher entry automation rate reaches 92%), accounting students in Luoyang, a typical second-tier city with 63% of manufacturing industry, face the double pressure of lagging industrial transformation and disconnected skills education. Through a questionnaire survey of accounting students in four universities in Luoyang, this study analysed 19 valid samples and found that: students' employment anxiety shows significant structural characteristics, with skills anxiety being the most prominent (52.64% of students worry that the course content is out of line with the actual needs of enterprises), geographical opportunity anxiety being the second most important (47.37% think that local jobs are highly competitive), and direct substitution fear accounting for only 31.58%. The study reveals for the first time the "geographical information black hole effect" - all respondents are not aware of the RPA application cases in local enterprises (e.g. YITO Group), but 78.94% of them anticipate the growth of the demand for intelligent accounting in the manufacturing industry, which creates a sharp contradiction between perception and confidence. Empirical analyses showed that 93.75% of students (self-assessment score ≤ 3) with insufficient knowledge of RPA tended to overestimate the risk of substitution, and this assessment was significantly and positively correlated with anxiety levels ($r=0.58$, $p=0.079$). Notably, the internship experience demonstrated buffering value, with a 23.8% reduction in the proportion of students with skills anxiety who had been exposed to a semi-automated system. Based on this, this study proposes a three-dimensional countermeasure framework of "penetrating the black box of information-accurate coupling of industry and education", which includes the establishment of a mandatory disclosure mechanism for local RPA cases by the government, the development of a sand table practical training course for manufacturing scenarios in colleges and universities, and the implementation of a certificate-job matching subsidy system by the government and the university, which provides a practical path for similar industrial cities to solve the talent anxiety in the process of technological transformation.

KEYWORDS

Financial robotics; Accounting students; Employment anxiety; Luoyang universities; Industry-teaching coupling

1 Introduction

The global wave of financial intelligence is reconfiguring the accounting profession ecosystem with financial robots (RPAs) as the core driver, with their high efficiency, high precision and low cost driving the automation rate of basic accounting positions to exceed 90%. Research by the Central University of Finance and Economics shows that 91% of China's top 100 companies have deployed RPA systems by 2024, and the scale of basic accounting positions is expected to shrink by 85% in the next five years, while the demand for management accounting positions will surge by 120%^[1]. Against this transformational backdrop, Luoyang, a second-tier city with 63% of its manufacturing sector^[2], faces a triple structural dilemma for its accounting students: the curriculum content of local universities is lagging behind the demand for cutting-edge skills such as cost robotics control systems in smart manufacturing enterprises^[3]; and hiring for accounting positions will decline by 22% year-on-year in 2024, while managerial accounting positions will grow by only 8%^[4]; Corporate RPA penetration is only 35% forming a significant disconnect with the level of over 90% in Tier 1 cities^[3]. This asynchronous development between industrial transformation, technology application and educational response makes it of significant theoretical and policy value to explore the impact of RPA penetration on the employment anxiety of accounting students in Luoyang. This study focuses on three core questions: does RPA technology diffusion substantially exacerbate employment anxiety? How are the weights of technological fear, skill deficiency and geographical limitation distributed in the anxiety generation mechanism? How to effectively intervene in anxiety through tripartite collaboration among government, universities and enterprises? By constructing a three-dimensional analysis framework of "cognition-anxiety-geography" and innovatively introducing the concept of "geographic opportunity anxiety", we incorporate the regional characteristics of manufacturing transition cities into the study of anxiety generation mechanism, and provide empirical evidence for the talent cultivation policy of the same type of industrial cities.

2 Literature review

2.1 Dual effects of financial robots

Existing studies point to a significant dichotomy in the impact of financial robots on accounting jobs. The ACCA Global Automation Report confirms that RPA technology has improved the efficiency of basic accounting processes such as voucher entry and report generation by up to 15 times^[5], which has directly led to a projected 47 per cent reduction in the demand for basic jobs in the next five years^[1]. At the same time, research by the Accounting Department of the Ministry of Finance shows an explosive growth of 120% in the demand for management accounting positions^[6], with competency requirements shifting from traditional manual bookkeeping to data-driven budget analysis and risk warning^[7]. This structural change is particularly drastic in second-tier cities with dense manufacturing industries, creating a paradoxical situation in which job upgrading and talent skills disconnection coexist.

2.2 Theoretical mechanisms of employment anxiety

Career anchor theory reveals the disintegration effect of technological impact on career identity, about 73% of accounting students experience career disorientation in the wave of automation^[8]. The skills mismatch theory further points out that the match between college courses and smart finance needs is only 54%, while the coverage of RPA-related courses in second-tier cities is even less than 12%^[3], and this lag in education supply becomes the core trigger of anxiety. It is worth noting that existing empirical studies highly focus on first-tier cities such as North, Shanghai, Guangzhou and Shenzhen, e.g., the mean anxiety value of accounting students in Shanghai reaches 3.2^[8], for such transition cities as Luoyang, which accounts for 63% of the manufacturing industry, with lagging education response (28% course coverage vs. 65% in Zhengzhou), and weak policy support (subsidies of 0.8 million vs. 24,000 in the first tier)^[(2), (4)], whose unique anxiety-generating mechanisms have not been systematically elucidated, constitute an important research gap.

3 Research design

3.1 Research methodology and data collection

In order to accurately capture the anxiety characteristics of accounting students in Luoyang, this study used stratified sampling method to select four colleges and universities (three undergraduate colleges and one higher vocational college), and distributed structured questionnaires through the Questionnaire Star platform. The survey covered core variables such as RPA perception level, employment anxiety dimensions, and internship experience. Affected by the epidemic, 19 valid samples were finally recovered (82.6% recovery rate). To address the characteristics of small samples, the research methodology was chosen to describe the distributional characteristics of categorical variables with focused frequency analysis, to test the correlation of non-normal data with Spearman's rank correlation, and to complete the cross-tabulation analysis with Fisher's exact test.

3.2 Sample structure characteristics

The structure of the sample presents distinctive geographical educational characteristics. The proportion of Luoyang Institute of Technology students reaches 52.63%, and the proportion of postgraduate students is as high as 42.11%, reflecting the high educational tendency of the sample. At the level of technological awareness, 47.37% of the respondents lacked a basic understanding of RPA (self-assessment ≤ 2 points), and the technologies they came into contact with during their internships were predominantly semi-automated systems (50% of the total), indicating a lack of opportunities for cutting-edge technological practice. It is important to note that the lack of data on the higher education student population is a significant limitation of this study and may affect the comprehensiveness of the findings.

4 Analysis of empirical results

4.1 Anxiety structures and geographical paradoxes

Data analysis showed that the employment anxiety of Luoyang accounting students showed a gradient distribution. More than half of the students (52.64%) expressed high anxiety (Q13 score ≥ 4) that "the courses they have learnt cannot meet the intelligent needs of enterprises", reflecting a serious disconnect between education content and enterprise practice. This was followed by geographical opportunity anxiety, with 47.37% of students worried about the fierce competition for local jobs in Luoyang (Q11). Transitional adaptation anxiety (42.10%) and substitution fear (31.58%)

accounted for relatively low percentages. It is worth noting that although only 5.26 per cent of students think they know about RPA, only 15.79 per cent chose "very afraid of being replaced", suggesting that insufficient knowledge may lead to biased risk assessment.

Table 1 Distribution of anxiety dimensions (N=19)

anxiety dimension	representative sample	High anxiety percent- age (4-5 points)	order of aver- ages
skills anxiety	Q13: Courses fail to meet business needs	52.64 per cent	1
Geographical opportunity anxiety	Q11: Competition for jobs in Luoyang is fierce	47.37 per cent	2
Transition Adaptation Anxiety	Q10: Management Accounting Transition Pressure	42.10%	3
Substitute Fear	Q9: Fear of not being able to find a job	31.58 per cent	4

4.2 Cognitive bias and the value of internships

At the functional perception level, students were generally familiar with basic operational modules such as voucher entry (68.42%) and were not familiar with management decision-making functions such as risk warning (57.89%). Correlation analyses revealed key mechanisms: alternative risk assessment was significantly and positively correlated with total anxiety scores ($r=0.58$, $p=0.079$), while internship experience was negatively correlated with anxiety levels ($r=-0.49$, $p=0.087$). The most significant finding was the geographical information black hole effect - all respondents (100%) were not aware of local RPA application cases (e.g. YITO Group cost control system), but 78.94% expected an increase in the demand for smart accounting in the manufacturing industry, and 63% of students in the open-ended question called for learning local cases, highlighting the information transfer mechanism Disconnection.

Table 2 Spearman's correlation coefficient (N=19)

variant	Anxiety Total Score	Alternative risk assessments
Alternative risk assessments	0.58	
internship ($p<0.1$)	-0.49	-0.37

5 Discussion and recommendations

5.1 Three-dimensional intervention framing

The research findings give rise to a collaborative intervention system of "penetrating the black box of information - accurate coupling of industry and education". The government should establish a mandatory disclosure system for RPA cases of manufacturing enterprises, require leading enterprises such as YTO Group to disclose the effectiveness of technology application (e.g., the empirical data of 37% cost reduction), and simultaneously implement the "Certificate-Job Matching Subsidy", which will give 3,000 RMB subsidy to those who have obtained the CDA certification and have been employed in the manufacturing industry in Luoyang. Colleges and universities need to take responsibility for the reconstruction of the practical training system, to open the "financial robot functions and boundaries" mandatory courses, and joint enterprises to develop "a tow intelligent cost control sand table" and other scenarios of practical training modules. The student body should take the initiative to participate in the practice of digital transformation of the manufacturing industry, undergraduates accumulate experience through enterprise horizontal projects, and higher vocational students focus on UFIDA U8+ and other RPA operation certification.

5.2 Geographical migration paths

The Luoyang model of "industry binding, policy precision and information penetration" can be promoted to similar industrial cities. Xuzhou can rely on Xugong Group to develop a tax RPA case base, while Liuzhou vocational schools can offer supply chain finance robotics certification courses, forming an industry-education fusion pathway that suits the characteristics of regional industries. This kind of migration requires not only technology adaptation, but also the establishment of a closed-loop ecology of "enterprise case base - practical training base - employment tracking".

6 Conclusions and outlook

This study reveals the triple generation mechanism of anxiety among accounting students in a second-tier city in the context of financial robot popularity. The primary driver is the mismatch between supply and demand of skills, with 52.64% of students experiencing deep anxiety due to course lag. Geographical opportunity anxiety presents a unique

paradox: 47.37% worry about local job competition, but 100% local case ignorance creates a sharp contradiction with 78.94% demand expectations. Cognitive bias, on the other hand, amplified the anxiety effect, with 93.75% of low-cognitive students overestimating the risk of substitution ($r = 0.58$). On the theoretical level, the study defines for the first time the "black hole effect of geographical information"^[9] and verifies the buffering mechanism of internship (23.8% reduction of skill anxiety)^[10]; on the practical level, it proposes a collaborative model between government, school, and enterprise of "case disclosure, sand table training, and certificate subsidy". In the future, the research will focus on the special survey of senior vocational groups, develop the "Regional Opportunity Anxiety Scale" (ROA-6), and validate the effectiveness of the model migration in Xuzhou, Liuzhou and other cities, so as to provide a systematic solution to talent anxiety for cities in transition of the manufacturing industry.

References

- [1] School of Accounting, Central University of Finance and Economics. White Paper on Financial Intelligence in China 2025 [R]. Beijing: Central University of Finance and Economics Press, 2025.
- [2] Luoyang City Bureau of Statistics. Luoyang City National Economic and Social Development Statistics Bulletin 2024 [R]. Luoyang: Luoyang Municipal People's Government, 2024.
- [3] Department of Higher Education, Ministry of Education. Guidelines for the Construction of Intelligent Financial Courses in Colleges and Universities (2025) [Z]. Beijing: Ministry of Education, 2025.
- [4] Luoyang Human Resources and Social Security Bureau. Accounting Talent Demand Analysis Report 2024 [R]. Luoyang: Luoyang Human Resources and Social Security Bureau, 2024.
- [5] ACCA. Global Trends in Financial Automation 2023 [R]. London: ACCA, 2023.
- [6] Accounting Department, Ministry of Finance. Talent Development Plan for the Accounting Profession (2025-2030) [R]. Beijing: China Finance and Economy Press, 2025.
- [7] Yang Caihong. Research on the application of RPA in the field of finance [J]. China Management Information Technology, 2023, 26(15): 89-92.
- [8] Chen Hongyu, Zhang Li. A study on the effect of financial robots on employment anxiety of accounting college students [J]. Accounting Newsletter, 2024(5): 34-38.
- [9] Liu, Shuwei. Research on Information Transfer Mechanism in Regional Economic Transformation [J]. Economic Management, 2023, 45(8): 112-125.
- [10] Liu X, Wang Y. Skill Mismatch and Youth Anxiety in the AI Era [J]. Journal of Vocational Behavior, 2023, 142: 103-115.