STRATEGIC ADMINISTRATION MODEL OF HIGHER EDUCATION FOR REGIONAL ECONOMIC GROWTH IN ZHEJIANG PROVINCE

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Abstract

Against the backdrop of high-quality economic transformation and higher education reform, strategic administration requires systematic and evidence-based examination. This study adopts an explanatory sequential mixed-methods design integrating quantitative and qualitative approaches. The objectives are to (1) assess the current level of strategic administration, (2) validate its structural dimensions using confirmatory factor analysis (CFA), and (3) construct an empirically grounded model supporting regional economic growth.

Quantitative data were collected through structured questionnaires administered to university administrators and faculty members, and analyzed using descriptive statistics and CFA. Qualitative data from semi-structured interviews were examined through content analysis to interpret quantitative findings and refine the model.

The findings reveal a relatively high level of strategic administration. CFA confirms a stable seven-dimension framework with satisfactory model fit indices. The integration of quantitative validation and qualitative interpretation results in a Strategic Administration Model consisting of seven interrelated dimensions: Strategic Leadership, Resource Allocation Efficiency, Research and Innovation Capability, University–Industry Collaboration Capability, Internationalization Strategy Development, Human Capital Development, and Knowledge Innovation and Transformation Capability. The model functions as an integrated governance system in which coordinated strategic mechanisms systematically enhance universities' contributions to sustainable regional economic development.

Keywords : Strategic Administration of Higher Education, Regional Economic Growth, Confirmatory Factor Analysis (CFA)

Background and significance of the problem

Higher education plays an increasingly strategic role in the global knowledge economy, where universities function not only as knowledge producers but also as institutional actors driving regional innovation and competitiveness. Across both advanced and emerging economies, governments have shifted from expansion-oriented higher education policies toward governance-centered and performance-based strategic management frameworks to enhance institutional effectiveness and regional impact, reflecting broader trends in strategic planning and performance improvement (Fumasoli and Hladchenko, 2023; George, et al., 2019). This global transformation highlights the necessity of aligning university governance mechanisms with broader economic development strategies and strengthening strategic alignment within institutions (Ghonim, et al., 2022).

Within China, the transition from rapid growth to high-quality development has further strengthened the strategic expectations placed on higher education institutions. National development priorities for 2024–2025 emphasize innovation capacity enhancement, digital economy expansion, industrial upgrading, and technological self-reliance. These policy shifts require universities to move

beyond traditional academic functions and adopt more integrated strategic administration models that support educational quality improvement and institutional effectiveness (Priyambodo and Hasanah, 2021). In addition, strengthening human capital development and organizational commitment has become essential for sustaining institutional performance and long-term competitiveness (Zumrah, et al., 2021).

Zhejiang Province represents a particularly significant case. As one of China's most economically dynamic provinces and a national demonstration zone for common prosperity, Zhejiang's 2024–2025 development agenda prioritizes strategic emerging industries, digital transformation, and innovation-driven growth. Provincial policy documents stress improving innovation efficiency and strengthening the contribution of higher education to regional competitiveness. However, despite Zhejiang's strong economic indicators, disparities remain in universities' strategic planning capacity, governance structures, leadership effectiveness, and resource integration mechanisms. These institutional differences may constrain the overall efficiency with which higher education contributes to sustained regional economic growth, particularly when strategic alignment and quality management practices are not systematically implemented (Ghonim, et al., 2022; Zaid, et al., 2020).

Although existing studies have examined the relationship between strategic planning and organizational performance, limited research has systematically investigated how internal strategic administration mechanisms within universities influence regional economic performance at the provincial policy and institutional levels (George, et al., 2019). Moreover, there is a lack of empirically validated models that integrate governance structure, strategic leadership, and innovation performance within a confirmatory analytical framework, especially in the context of higher education strategic management (Fumasoli and Hladchenko, 2023). This gap is particularly evident in province-level institutional studies in China. Therefore, this study aims to address this theoretical and practical gap by developing and validating a strategic administration model of higher education for regional economic growth in Zhejiang Province.

Research objectives

1. To study the level of strategic administration of higher education in Zhejiang Province.
2. To study confirmatory factor analysis of strategic administration of higher education for regional economic growth in Zhejiang Province.
3. To propose a model of strategic administration of higher education for regional economic growth in Zhejiang Province.

Conceptual Framework

The conceptual framework of this study is grounded in strategic management theory and regional economic development theory. It posits that the strategic administration of higher education institutions plays a pivotal role in promoting regional economic growth through a multidimensional capability system. At the core of the framework is Strategic Leadership (SL), which serves as the primary driving force shaping institutional direction and resource coordination.

Strategic Leadership influences Resource Allocation Efficiency (RAE) directly and indirectly through several key organizational capabilities, including Research and Innovation Capability (RIC), University-Industry Collaboration Capability (UIC), Internationalization Strategy Development (ISD), Human Capital Development (HCD), and Knowledge Innovation and Transformation Capability (KIC). These capabilities function as strategic mechanisms that enhance universities' ability to align internal resources with external economic demands.

Resource Allocation Efficiency acts as a central mediating variable, reflecting the extent to which universities optimize human, financial, and technological resources to achieve strategic objectives. Through the coordinated development of these capabilities, higher education institutions strengthen their contribution to innovation systems, industrial upgrading, and regional economic growth. The framework therefore integrates leadership, organizational capability, and performance dimensions into a comprehensive strategic administration model.

Research Methodology

Population and Sample

The population of this study consisted of administrators and faculty members from higher education institutions in Zhejiang Province. As of 2024, the total population was 122,500 individuals, including 35,700 administrators and 86,800 faculty members across 109 regular higher education institutions.

The sample size was determined based on the sampling table developed by Krejcie and Morgan (1970), which provides guidelines for determining appropriate sample sizes for large populations. According to this method, a minimum sample size of approximately 384 is sufficient for a population exceeding 100,000. To enhance statistical robustness for confirmatory factor analysis (CFA), this study collected data from 816 respondents. The sample consisted of 236 administrators and 580 faculty members. The number of distributed and returned questionnaires was 816, yielding a complete dataset for analysis. Stratified sampling was applied to ensure proportional representation of administrators and faculty members.

Variables

This study includes one independent variable and multiple related organizational capability constructs examined within a confirmatory measurement framework. Strategic Leadership (SL) is treated as the core construct influencing institutional strategic processes. Resource Allocation Efficiency (RAE), Research and Innovation Capability (RIC), University–Industry Collaboration Capability (UIC), Internationalization Strategy Development (ISD), Human Capital Development (HCD), and Knowledge Innovation and Transformation Capability (KIC) represent key organizational dimensions. Regional Economic Growth is conceptualized as the outcome construct reflecting the external impact of higher education strategic administration. These variables collectively form the theoretical measurement model tested through CFA.

Research Instruments and Validity Assessment

A structured questionnaire was developed based on strategic management and higher education development theories. The instrument included measurement items corresponding to each construct in the conceptual framework. All items were measured using a five-point Likert scale ranging from strongly disagree to strongly agree.

Construct validity was examined using Confirmatory Factor Analysis (CFA) with AMOS. Model fit was evaluated using multiple indices, including chi-square/degree of freedom ratio (χ^2/df), Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA). The measurement model demonstrated acceptable fit according to established criteria ($\chi^2/df < 3.00$, CFI and TLI > 0.90, RMSEA < 0.08), indicating satisfactory structural validity.

Reliability was assessed using Cronbach's alpha coefficients. All constructs exceeded the recommended threshold of 0.70, demonstrating strong internal consistency.

Data Collection

Data were collected through questionnaire distribution to administrators and faculty members across higher education institutions in Zhejiang Province. Participation was voluntary and confidentiality was ensured. All 816 questionnaires were returned and deemed valid for analysis.

Data Analysis

Quantitative data were analyzed using SPSS and AMOS software. Confirmatory Factor Analysis (CFA) was employed to validate the measurement model and examine construct reliability and structural validity. No additional statistical techniques were applied beyond CFA.

Research Result

1. Results of Demographic data of the Respondents

A total of 816 valid responses were included in the analysis. Male respondents accounted for 52.1%, and female respondents accounted for 47.9%. The majority of respondents (93.63%) were aged between 20 and 54 years, indicating that the sample primarily consisted of active academic and administrative personnel. The demographic structure demonstrates adequate representation of the target population, supporting Objective 1, which examines the level of strategic administration in Zhejiang Province.

2. Results of descriptive analysis

Descriptive statistics were computed to examine distributional characteristics prior to CFA. The mean values of Strategic Leadership (SL), Resource Allocation Efficiency (RAE), Research and Innovation Capability (RIC), University–Industry Collaboration Capability (UIC), Internationalization Strategy Development (ISD), Human Capital Development (HCD), and Knowledge Innovation and Transformation Capability (KIC) ranged from 3.92 to 4.08, indicating a generally high perceived level of strategic administration (Objective 1).

Standard deviations ranged from 0.58 to 0.64, suggesting moderate variability. Skewness values ranged from −0.41 to −0.60, and kurtosis values were within ±2.00. Since skewness and kurtosis values fell within the acceptable threshold (|skewness| < 2; |kurtosis| < 7), the assumption of normality was satisfied, supporting the application of CFA.

Table 1 Indicator descriptive analysis

Variable	Skewness	Kurtosis	M	S.D.	Interpret
SL	-0.60	-0.07	4.04	0.62	**High**
RAE	-0.44	-0.24	3.96	0.63	**High**
RIC	-0.58	-0.13	4.05	0.60	**High**
UIC	-0.41	-0.39	3.92	0.63	**High**
ISD	-0.50	-0.27	3.97	0.64	**High**
HCD	-0.51	-0.35	4.08	0.58	**High**
KIC	-0.60	-0.06	3.96	0.63	**High**

3. Results of correlation analysis

Pearson correlation analysis revealed statistically significant positive relationships among SL, RAE, RIC, UIC, ISD, HCD, and KIC ($p < .01$). Correlation coefficients ranged from moderate to strong

(r = 0.62–0.84), indicating meaningful associations among the constructs. The statistically significant correlations provide preliminary empirical support for the conceptual framework and justify further confirmatory factor analysis to test the structural relationships proposed in Objective 2.

4. Results of reliability analysis

Internal consistency reliability was assessed using Cronbach's alpha. All constructs demonstrated high reliability, with alpha coefficients ranging from 0.918 to 0.929, exceeding the recommended threshold of 0.70. This indicates strong internal consistency among measurement items. Convergent validity was evaluated through CFA factor loadings. All standardized factor loadings exceeded 0.70 and were statistically significant ($p < .001$), indicating satisfactory convergent validity and supporting the measurement structure of the proposed model (Objective 2).

5. Results of KMO and Bartlett's Test

The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was 0.966, exceeding the recommended minimum value of 0.70, indicating excellent sampling adequacy. Bartlett's Test of Sphericity was statistically significant (χ^2, $p < .001$), rejecting the null hypothesis of an identity matrix. These results confirm that the dataset is suitable for factor analysis and supports the structural validation process required to achieve Objective 2 and Objective 3.

6. Results of CFA

6.1 SL results of SAHE

Strategic Leadership (SL) consists of three components: Strategic Planning Capability (SPC), Change Promotion Capability (CPC), and Team Cohesion (TC). The factor loadings for each component are 0.77 for SPC, 0.78 for CPC, and 0.89 for TC. The model yields a chi-square value of 119.706 with 87 degrees of freedom and a p-value of 0.012. The chi-square/degree of freedom ratio is 1.376 (< 3), with the relative chi-square also equal to 1.376 (< 3). The goodness-of-fit indices indicate satisfactory model fit: GFI = 0.981 (> 0.95), AGFI = 0.973 (> 0.95), TLI = 0.994 (> 0.95), and CFI = 0.995 (> 0.95). In addition, RMR is 0.016 (< 0.08) and RMSEA is 0.021 (< 0.07). All indices meet the recommended thresholds, indicating a strong correspondence between the model and the measurement scale and an overall superior model fit (see Figure 1).

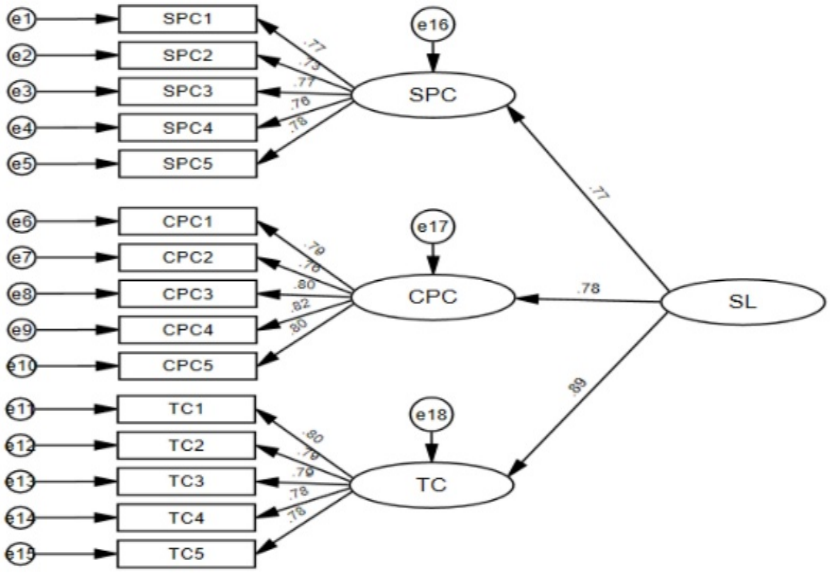


Figure 1 Second-order CFA results of Strategic Leadership (SL)

6.2 RAE results of SAHE

Resource Allocation Efficiency (RAE) comprises three components: Financial Utilization Efficiency (FUE), Rational Allocation of Personnel (RAP), and Equipment Utilization Rate (EUR). The standardized factor loadings for these components are 0.79 for FUE, 0.79 for RAP, and 0.79 for EUR. The model yields a chi-square value of 96.891 with 87 degrees of freedom, and a p-value of 0.220. The chi-square/degree of freedom ratio is 1.114 (< 3), with a relative chi-square value of 1.114 (< 3). The goodness-of-fit indices indicate satisfactory model fit: GFI = 0.984 (> 0.95), AGFI = 0.978 (> 0.95), TLI = 0.998 (> 0.95), CFI = 0.999 (> 0.95), RMR = 0.015 (< 0.08), and RMSEA = 0.012 (< 0.07). All indices meet the recommended thresholds, indicating a higher level of congruence between the model and the measurement scale and a superior overall model fit (see Figure 2).

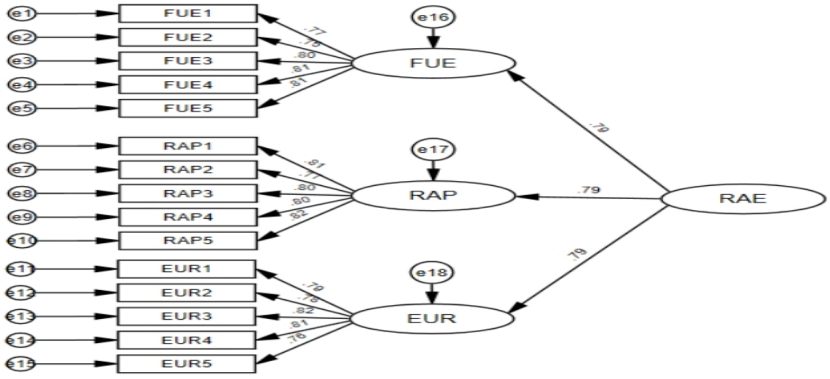


Figure 2 Second-order CFA results of Resource Allocation Efficiency (RAE)

6.3 RIC results of SAHE

RIC consists of three components: RPN, PAN, and ICTR. The factor loadings for each component are 0.85 for RPN, 0.74 for PAN, and 0.75 for ICTR. The chi-square value of the model is 92.165, with 87 degrees of freedom and a p-value of 0.332. The chi-square/degree of freedom ratio is 1.059 (< 3), and the relative chi-square value is also 1.059 (< 3). The goodness-of-fit index (GFI) is 0.985 (> 0.95), the adjusted goodness-of-fit index (AGFI) is 0.980 (> 0.95), the Tucker–Lewis index (TLI) is 0.999 (> 0.95), and the comparative fit index (CFI) is 0.999 (> 0.95). The root mean square residual (RMR) is 0.014 (< 0.08), and the root mean square error of approximation (RMSEA) is 0.009 (< 0.07). All indices meet the recommended criteria, indicating a high degree of consistency between the model and the measurement scale and an overall superior model fit (see Figure 3).

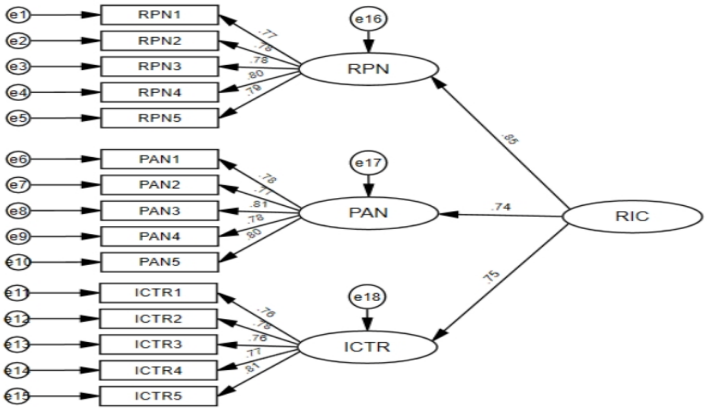


Figure 3 Second-order CFA results of Research and Innovation Capability (RIC)

6.4 UIC results of SAHE

University-Industry Collaboration Capability (UIC) comprises three components: Number of Collaborative Projects (CNP), Technology Transfer Revenue (TTR), and Joint Student Program Ratio (JSPR). The factor loadings are 0.88 for CNP, 0.73 for TTR, and 0.77 for JSPR. The model yields a chi-square value of 143.329 with 87 degrees of freedom and a p-value of 0.000. The chi-square/degree-of-freedom ratio is 1.649 (< 3), and the relative chi-square is 1.649 (< 3). The goodness-of-fit indices are as follows: GFI = 0.977 (> 0.95), AGFI = 0.968 (> 0.95), TLI = 0.990 (> 0.95), CFI = 0.992 (> 0.95), RMR = 0.017 (< 0.08), and RMSEA = 0.028 (< 0.07). All indices meet the recommended criteria, indicating a high degree of correspondence between the model and the measurement scale and an overall superior model fit (see Figure 4).

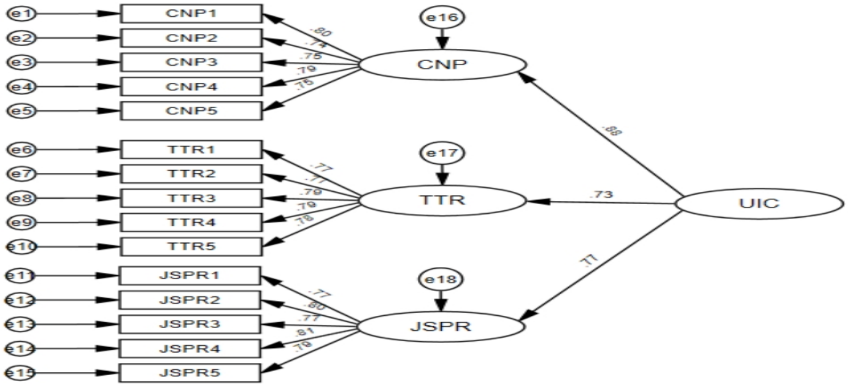


Figure 4 Second-order CFA results of University-Industry Collaboration Capability (UIC)

6.5 ISD results of SAHE

ISD comprises three components: ICPN, ISP, and OEAN. The standardized factor loadings are 0.87 for ICPN, 0.75 for ISP, and 0.80 for OEAN. The model yields a chi-square value of 112.577 with 87 degrees of freedom and a p-value of 0.034. The chi-square/degree of freedom ratio is 1.294 (< 3), and the relative chi-square is also 1.294 (< 3). The goodness-of-fit indices meet the recommended thresholds: GFI = 0.983 (> 0.95), AGFI = 0.976 (> 0.95), TLI = 0.996 (> 0.95), CFI = 0.996 (> 0.95), RMR = 0.014 (< 0.08), and RMSEA = 0.019 (< 0.07). All indices satisfy the criteria, indicating a high level of congruence between the model and the measurement scale and an overall superior model fit (see Figure 5).

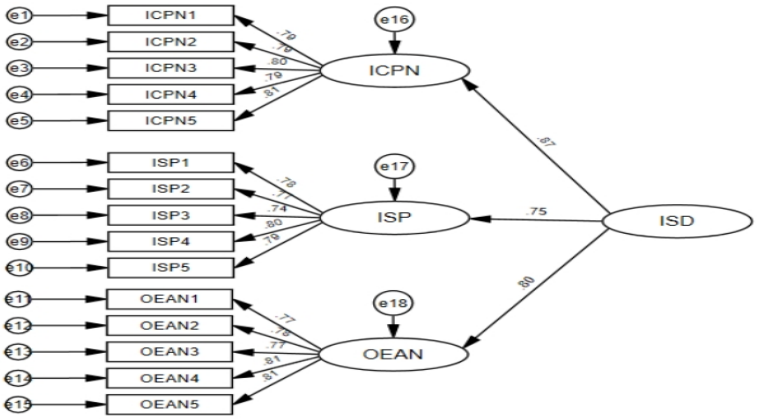


Figure 5 Second-order CFA results of Internationalization Strategy Development (ISD)

6.6 HCD results of SAHE

Human Capital Development (HCD) comprises three components: Teacher Education Structure (TES), Talent Training Investment (TTI), and Promotion Rate Ratio (PRR). The standardized factor loadings are 0.88 for TES, 0.76 for TTI, and 0.72 for PRR. The chi-square value of the model is 120.436 with 87 degrees of freedom, and the p-value is 0.010. The chi-square/degree of freedom ratio is 1.384 (< 3), and the relative chi-square value is also 1.384 (< 3). The goodness-of-fit indices indicate a satisfactory model fit, with GFI = 0.981 (> 0.95), AGFI = 0.973 (> 0.95), TLI = 0.994 (> 0.95), CFI = 0.995 (> 0.95), RMR = 0.015 (< 0.08), and RMSEA = 0.010 (< 0.07). All indices meet the recommended thresholds, indicating a higher degree of congruence between the model and the measurement scale as well as an overall superior model fit (see Figure 6).

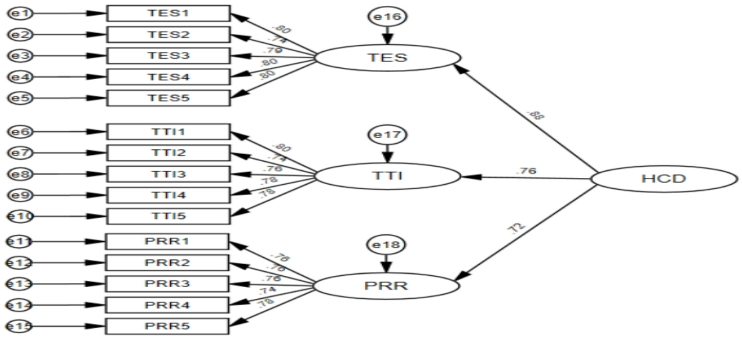


Figure 6 Second-order CFA results of Human Capital Development (HCD)

6.7 KIC results of SAHE

Knowledge Innovation and Transformation Capability (KIC) consists of three components: Number of Technology Transfer Projects (TTPN), Innovation Achievement Rate (IAR), and Innovative Product Sales (IPS). The standardized factor loadings for each component are 0.84 for TTPN, 0.77 for IAR, and 0.73 for IPS, respectively. The chi-square value of the model is 111.486 with 87 degrees of freedom, and the p-value is 0.040. The chi-square/degree of freedom ratio is 1.281, which is below the recommended threshold of 3. The relative chi-square value is also 1.281 (< 3). In addition, the goodness-of-fit index (GFI) is 0.982 (> 0.95), the adjusted goodness-of-fit index (AGFI) is 0.975 (> 0.95), the Tucker–Lewis index (TLI) is 0.996 (> 0.95), and the comparative fit index (CFI) is 0.996 (> 0.95). The root mean square residual (RMR) is 0.016 (< 0.08), and the root mean square error of approximation (RMSEA) is 0.019 (< 0.07). All fit indices meet the recommended criteria, indicating a high degree of consistency between the model and the measurement scale as well as an overall superior model fit (see Figure 7).

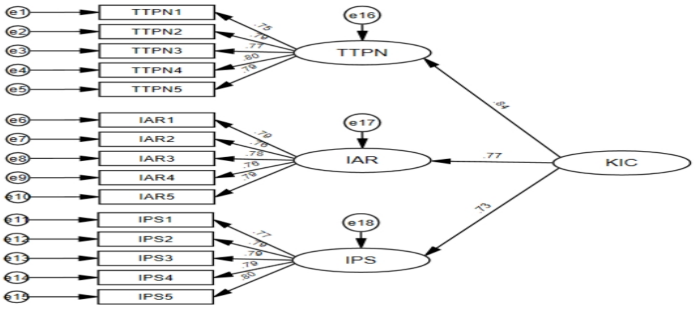


Figure 7 Second-order CFA results of Knowledge Innovation and Transformation Capability (KIC)

6.8 Final Factor Model

The final factor model (see Figure 8) demonstrates an excellent fit with the empirical data, thereby validating the hypothesized structure of the Strategic Administration Model of Higher Education for Regional Economic Growth in Zhejiang Province (SAHE). The results indicate that Strategic Leadership (SL) consists of three components: Team Cohesion (TC), Change Promotion Capability (CPC), and Strategic Planning Capability (SPC), with factor loadings of 0.81 for TC, 0.75 for CPC, and 0.74 for SPC.Resource Allocation Efficiency (RAE) is composed of three components: Equipment Utilization Rate (EUR), Rational Allocation of Personnel (RAP), and Financial Utilization Efficiency (FUE), with factor loadings of 0.70, 0.72, and 0.74, respectively. Research and Innovation Capability (RIC) comprises Innovation Commercialization and Transformation Rate (ICTR), Patent Application Number (PAN), and Research Project Number (RPN), with factor loadings of 0.70, 0.70, and 0.79, respectively.University-Industry Collaboration Capability (UIC) consists of Joint Student Program Ratio (JSPR), Technology Transfer Revenue (TTR), and Number of Collaborative Projects (CNP), with factor loadings of 0.75, 0.71, and 0.77, respectively. Internationalization Strategy Development (ISD) includes Number of Overseas Exchange Activities (OEAN), Proportion of International Students (ISP), and Number of International Collaborative Projects (ICPN), with factor loadings of 0.79, 0.72, and 0.78, respectively.Human Capital Development (HCD) is composed of Promotion Rate Ratio (PRR), Talent Training Investment (TTI), and Teacher Education Structure (TES), with factor loadings of 0.75, 0.72, and 0.73, respectively. Knowledge Innovation and Transformation Capability (KIC) comprises Innovative Product Sales (IPS), Innovation Achievement Rate (IAR), and Number of Technology Transfer Projects (TTPN), with factor loadings of 0.74, 0.71, and 0.77, respectively.The second-order CFA results indicate a good model fit, with $\chi^2/df = 1.264$, p = 0.009, GFI = 0.974, AGFI = 0.967, TLI = 0.992, CFI = 0.993, RMR = 0.013, and RMSEA = 0.018. All indices meet the recommended thresholds, suggesting a high degree of consistency between the model and the measurement scales and an overall excellent model fit.

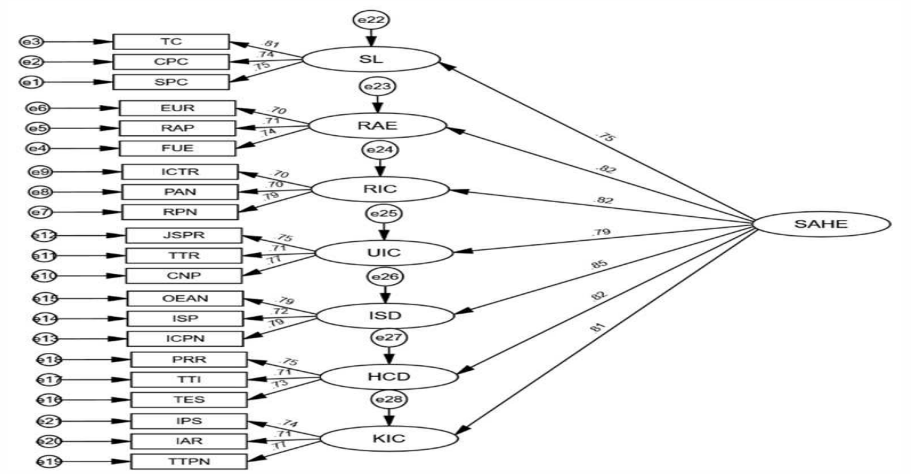


Figure 8 Second-order CFA results of SAHE

Discussions of research results

Objective 1: Level of Strategic Administration

The findings indicate that higher education institutions in Zhejiang Province demonstrate a relatively high level of strategic administration, particularly in leadership coordination and resource

allocation efficiency. This result supports the framework proposed by the OECD (2019), which emphasizes that effective governance structures and university–industry collaboration mechanisms are critical drivers of regional innovation systems. Similar to the global perspective, Zhejiang institutions show strong alignment between strategic leadership and regional economic priorities.

However, the Zhejiang context also reveals a distinctive feature: the integration of provincial development planning with university governance is more policy-driven than the decentralized models observed in many OECD countries. While OECD frameworks highlight institutional autonomy as a foundation for innovation, the Zhejiang model suggests that coordinated governmental steering can also generate strategic coherence. This finding extends the global theory by illustrating a hybrid governance model in emerging regional innovation systems.

Objective 2: Confirmatory Factor Structure of Strategic Administration

The confirmatory factor analysis validated strategic administration as a multidimensional construct composed of leadership, resource efficiency, and innovation-related capabilities. This empirical validation reinforces the argument presented by Benneworth, et al. (2017), published in Regional Studies, that universities act as strategic agents within regional innovation systems through institutional capacity and adaptive governance.

The CFA results provide structural evidence that these capabilities are not isolated dimensions but operate as an integrated system. This contributes theoretically by operationalizing and empirically validating the abstract concept of "strategic agency" in a measurable framework. Unlike many prior studies that rely on qualitative or descriptive analysis, this research confirms the internal coherence of strategic administration constructs within a structural equation modeling approach.

Objective 3: Proposed Strategic Administration Model

The proposed model demonstrates that strategic leadership indirectly influences regional economic growth through mediating mechanisms such as resource allocation efficiency and innovation capabilities. This supports global theories that universities contribute to economic development through knowledge spillovers and human capital formation (OECD, 2019).

Nevertheless, the Zhejiang case indicates a stronger mediating role of resource allocation efficiency compared with purely innovation-driven pathways. This suggests that in rapidly developing regional economies, managerial optimization may precede innovation expansion. The model therefore refines existing international frameworks by highlighting contextual variation in strategic impact pathways.

Theoretical and Practical Implications

This study contributes theoretically by integrating governance theory, strategic management, and regional innovation system perspectives into a unified CFA-validated model. By providing empirical structural confirmation within the Zhejiang provincial context, the findings extend the conceptual propositions advanced by the OECD (2019) and Benneworth, et al. (2017), demonstrating that strategic administration is not only a measurable multidimensional construct but also a structural mechanism linking higher education governance to regional economic outcomes.

From a practical perspective, the results suggest that policymakers should prioritize coordinated strategic leadership and resource allocation efficiency to enhance universities' contributions to regional innovation systems. Institutional administrators are encouraged to align internal strategic mechanisms with provincial development agendas while strengthening innovation and collaboration capacities to sustain long-term economic impact.

Recommendations

1. Recommendations for the application of research findings

Based on the validated measurement model obtained through confirmatory factor analysis, this study clarifies the structural relationships among Strategic Leadership, organizational capabilities, Resource Allocation Efficiency, and Regional Economic Growth. The findings are consistent with the first research objective, which examined the level of strategic administration in Zhejiang's higher education institutions, indicating that multidimensional strategic elements operate in a coordinated manner. In relation to the second objective, the CFA results confirm the structural validity of the proposed strategic administration framework, demonstrating that Strategic Leadership functions as a central driving force influencing capability development and resource efficiency. Therefore, at the institutional level, universities should strengthen leadership-oriented governance mechanisms and optimize internal resource allocation processes. With respect to the third objective, the proposed model provides a practical governance reference. Enhancing Research and Innovation Capability, University–Industry Collaboration Capability, and Internationalization Strategy Development, together with Human Capital Development and Knowledge Innovation and Transformation Capability, can improve universities' contributions to regional economic growth. At the policy level, strengthening strategic coordination mechanisms and innovation-support systems will further promote high-quality regional development.

2. Recommendations for the next research

Although the proposed model demonstrates satisfactory construct validity and structural consistency, further research is needed to expand its analytical scope. First, longitudinal data may be applied to examine the dynamic evolution of strategic administration mechanisms and their long-term effects on regional economic growth.

Second, comparative studies across different provinces or institutional types could test the generalizability and contextual adaptability of the model. Such research would help clarify whether variations in governance structure or institutional mission influence the strength of strategic administration mechanisms.

Finally, integrating digital governance indicators and cross-national comparative perspectives may enrich understanding of how higher education strategic administration operates under diverse policy and economic environments. These extensions would further strengthen theoretical development and practical applicability in the field of higher education strategic management.

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