EFFECTIVE CURRICULUM ADMINISTRATION MODEL FOR ENHANCING VOCATIONAL ADMINISTRATION IN APPLIED UNIVERSITIES IN YUNNAN PROVINCE[*]

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Abstract

This research article aims to: 1) To study the level of curriculum administration at the Applied Universities in Yunnan Province; 2) To study the factors influencing the effectiveness of curriculum administration at the Applied Universities in Yunnan Province; 3) To propose the development of an effective curriculum administration model for Applied Universities in Yunnan Province.

The research results found that:

1) A sequential mixed-methods design was employed, integrating qualitative insights from expert interviews with quantitative survey data from 550 administrators, teachers, and curriculum experts across 10 universities. Data analysis involved descriptive statistics, Exploratory Factor Analysis (EFA), and

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Structural Equation Modeling (SEM) using Confirmatory Factor Analysis (CFA) for model validation.

2) The current level of curriculum administration is moderately high (M=3.67) but exhibits a significant "perception-implementation gap" among stakeholders. Six core latent factors were validated as key drivers: Industry-Synergy Capability, Strategic Resource Orchestration, Teacher Development Support, Data-Informed Evaluation & Improvement, Stakeholder Engagement Cohesion, and Curriculum Adaptability & Innovation. The final structural model explains 75% of the variance in effectiveness (R²=0.75), with Industry-Synergy Capability (β=0.35) being the most influential.

3) This research contributes an empirically grounded, context-specific "capability ecosystem" framework. It moves beyond linear management models by proposing a dynamic model tailored to Yunnan's unique industrial, ethnic, and cross-border characteristics, offering both theoretical advancement and a practical roadmap for curriculum reform.

Keywords: Curriculum administration, Vocational administration, Applied universities, Yunnan Province

Introduction

In the context of China's educational reform and vocational training enhancement, applied universities play a critical role in cultivating skilled professionals(Fernando et al., 2023; Fatimah et al., 2024). Effective curriculum administration is essential for aligning educational outcomes with industry demands, improving student employability, and supporting regional economic development (Ikhlas, 2020; Ulya, 2020). However, many applied universities in Yunnan Province face challenges in curriculum design, resource allocation, and stakeholder collaboration (Fatimah et al., 2024).

To address these gaps, this study is guided by the following specific research objectives designed to systematically develop and validate a context-sensitive curriculum administration model for Yunnan's applied universities (as detailed in Section 2). This approach aims to bridge the theoretical and practical divide in vocational administration.

Therefore, enhancing vocational administration—the system responsible for aligning education with career outcomes— requires foundational improvements in curriculum administration, which governs the design, delivery, and evaluation of learning. This study posits that effective curriculum administration is the critical lever for achieving superior vocational outcomes. However, generic models often neglect regional specificities. By developing and validating a context-sensitive model, this research addresses the core operational mechanism for improving vocational training quality, graduate employability, and institutional responsiveness in Yunnan's applied universities.

To bridge this theoretical and practical divide, this study pursues three specific objectives, detailed in the following section.

Objectives

This study pursues the following three specific objectives:

1. To study the level of curriculum administration at the Applied Universities in Yunnan province.

2. To study the factors influencing the effectiveness of curriculum administration at the Applied Universities in Yunnan province.

3 .To propose a development of a curriculum administration model for Applied Universities in Yunnan province.

Literature Review

This section synthesizes key literature to establish the theoretical foundation for developing an effective curriculum administration model tailored to Yunnan's applied universities. It examines core concepts, contextual challenges, and evaluative dimensions.

1. Core Concepts and Theoretical Foundations

Curriculum administration involves the systematic management of educational program planning, implementation, supervision, and evaluation, serving as the core mechanism for achieving learning objectives (Fernando et al., 2023). Its effectiveness is measured by efficient resource allocation, optimized teaching processes, and enhanced student vocational competency (Fatimah et al., 2024). Foundational frameworks include the CIPP (Context, Input, Process, Product) model for comprehensive evaluation (Stufflebeam, 1967; Zhang et al., 2011), Total Quality Management (TQM) principles for continuous improvement (Kaur, 2014), and Systems Theory, which views institutions as interconnected systems (Bertalanffy , 1968).

Vocational administration focuses on managing career development and training resources to align educational outputs with labor market demands, requiring strong industry-education collaboration and robust outcome evaluation (Finch, 1991; Yang & Dong, 2024). Applied universities, particularly Universities of Applied Sciences (UASs), are pivotal in this alignment, emphasizing practical skills and industry integration to support regional development, though they often face challenges like curriculum rigidity and insufficient industry feedback (Liu, 2023).

2. Contextual Specificities of Yunnan Province

Yunnan presents a unique context characterized by ethnic diversity, a strategic cross-border position, and specific pillar industries (e.g., tourism, green mining). Research indicates a persistent mismatch between curriculum offerings and these local industrial needs, coupled with inadequate integration of ethnic

cultural resources and cross-border competencies into programs (Li et al., 2024; Luo, 2024). This gap highlights the necessity for a curriculum administration model that is explicitly tailored to these regional industrial, ethnic, and cross-border characteristics.

3. Key Dimensions of Effective Curriculum Administration

Drawing from the CIPP framework and related literature, effective curriculum administration can be analyzed through interconnected dimensions:

Planning: Effectiveness requires alignment with industry needs, student goals, and educational outcomes, utilizing models like Backward Design (Wiggins & McTighe, 2005) and incorporating stakeholder input.

Implementation: Success hinges on moving beyond traditional lectures to adopt interactive, project-based, and industry-infused teaching methods that foster practical skills.

Evaluation & Results: This involves systematic assessment of learning outcomes and competency development, employing both formative and summative methods (Spady, 1994).

Benefit Evaluation: Extends beyond learning to assess broader economic and social impacts, such as graduate employment rates and contribution to regional development.

Continuous Improvement: Requires embedded mechanisms for cyclical refinement based on data and feedback, supported by frameworks like PDCA.

Stakeholder Engagement: Systematic involvement of all parties (students, teachers, industry, community) is crucial for relevance and credibility.

Resource Utilization: Concerns the efficient and strategic allocation of financial, human, and digital resources to support curriculum goals.

4. Conceptual Framework Synthesis

This study integrates these dimensions into a comprehensive conceptual framework. Anchored in the CIPP model and augmented by TQM and stakeholder theory, the framework posits eight core variables: Background Adaptability

(Context), Curriculum Planning (Input), Implementation (Process), Results and Benefit Evaluation (Product), Continuous Improvement, Stakeholder Evaluation, and Resource Utilization. This integrated structure is designed to holistically diagnose and enhance curriculum administration, directly addressing the identified challenges within Yunnan's applied universities.

Methodology

1. Research Design and Sample

This study employed a mixed-methods sequential design to develop and validate an effective curriculum administration model for applied universities in Yunnan Province. The research was conducted in two phases: a quantitative survey followed by qualitative interviews. The target population consisted of 7,239 administrators and teachers from applied universities in Yunnan. A total of 755 questionnaires were distributed to a stratified random sample of administrators and teachers. After data cleaning, 550 valid responses were retained for analysis, comprising 162 administrators, 376 teachers, and 12 curriculum experts who were later purposively interviewed. This valid sample maintains representation across the target institutions.

2. Measurement Development

A structured questionnaire was developed based on a comprehensive literature review and interviews with five preliminary experts. The instrument consisted of two parts: (1) demographic information, and (2) a 5-point Likert scale (1 = lowest level, 5 = highest level) assessing curriculum administration across eight dimensions: Background Adaptability, Curriculum Planning, Curriculum Implementation, Curriculum Results, Benefit Evaluation, Continuous Improvement, Stakeholder Evaluation, and Resource Utilization. Content validity was established through an Index of Item-Objective Congruence (IOC) review by

nine experts, and reliability was confirmed via a pilot test (Cronbach's alpha > 0.7).

3. Data Collection and Analysis

Quantitative data were collected through both online and on-site surveys. Qualitative data were gathered via semi-structured interviews with nine experts, recorded and transcribed for analysis. Quantitative data were analyzed using descriptive statistics (mean, standard deviation) and Confirmatory Factor Analysis (CFA) to validate the measurement model and examine structural relationships. Qualitative data were analyzed thematically to provide contextual insights and support quantitative findings. The integration of both data sources allowed for a comprehensive understanding of the factors influencing curriculum administration effectiveness.

4. Analytical Strategy for Model Development

The analysis progressed from theory to a validated structural model. Initially, the eight theoretical dimensions (B, P, I, R, B, C, S, R) derived from the CIPP-based framework guided the survey design. Exploratory Factor Analysis (EFA) was then applied to this data to distill the underlying, empirically coherent latent constructs from the numerous observed variables. This data-driven process yielded the six-factor structure (F1-F6), which represents a more parsimonious and potent set of core capabilities. Finally, Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) were used to rigorously test and validate the measurement model and the structural relationships posited among these six factors and the overall effectiveness outcome.

This empirical condensation from eight theoretical dimensions to six latent factors indicates that certain conceptual distinctions in the literature may manifest as intertwined capabilities in practice, while other distinct capabilities emerge as paramount. The resultant six-factor structure thus represents a more parsimonious and empirically grounded refinement of the initial theoretical framework.

Results

This study investigated the current state, influencing factors, and a potential model for effective curriculum administration in applied universities in Yunnan Province. A mixed-methods approach was employed, combining questionnaire surveys (N=550 valid responses from administrators, teachers, and curriculum experts across 10 universities) and in-depth expert interviews (N=12). Data analysis utilized descriptive statistics, inferential analysis, Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and content analysis.

1. Demographic Profile of Respondents

The sample comprised 162 administrators, 376 teachers, and 12 curriculum experts. Administrators possessed extensive management experience (85.2% with >10 years) and diverse disciplinary backgrounds (Engineering: 38.9%, Management: 28.4%, Education: 18.5%). Teachers were predominantly Associate Professors (31.6%) and Lecturers (48.9%), with 94.7% holding a Master's degree or higher and 42.6% identified as "Dual-Qualified." All curriculum experts held doctoral degrees and had over 20 years of research and advisory experience.

2. Current Level of Curriculum Administration

The overall perceived effectiveness of curriculum administration was at a moderately high level (Total Mean=3.67, SD=0.81 on a 5-point Likert scale). Significant strengths were observed in structural alignment with national standards (Q1, M=4.25), utilization of digital platforms (Q7, M=4.10), adequacy of basic facilities (Q21, M=4.00), and clarity of learning outcomes (Q105, M=3.90). However, notable weaknesses were identified in systematic industry integration (e.g., Q2, M=3.40), data-driven evaluation and improvement cycles (e.g., Q17, M=3.20), adoption of innovative teaching methods (Q9, M=3.45), and flexibility of credit systems (Q87, M=3.45). ANOVA revealed a significant perception gap among stakeholder groups (F=8.37, p<0.01), with administrators reporting the highest composite score (M=4.05) and teachers the lowest (M=3.65).

3. Key Influencing Factors Identified

Factor analysis (KMO=0.921) revealed and validated a six-factor structure explaining 68.42% of the total variance. Confirmatory Factor Analysis confirmed excellent model fit (x^2/df= 2. 157, CFI= 0. 943, TLI= 0. 931, RMSEA= 0. 058, SRMR= 0. 041). The six core latent factors influencing effectiveness, with strong reliability and validity (CR: 0.85-0.92; AVE: 0.52-0.65), are:

Industry Synergy Capability (F1): Proactive, structural collaboration with industry for curriculum co-creation.

Strategic Resource Orchestration (F2) : Intelligent allocation and integration of financial, facility, and digital resources.

Teacher Development Support (F3): Systematic support for enhancing teachers' industry skills and pedagogical innovation.

Data-Informed Evaluation & Improvement (F4): Closed-loop system using multi-source data for iterative curriculum refinement.

Stakeholder Engagement Cohesion (F5): Institutionalized participation mechanisms for key stakeholders.

Curriculum Adaptability & Innovation (F6): Agility in updating content and structure in response to market and technological shifts.

4. The Proposed and Validated Curriculum Administration Model

A structural model integrating the six factors was developed and tested using SEM. The final model demonstrated excellent fit (x^2/df=2.203, CFI=0.949, TLI=0.938, RMSEA=0.054, SRMR=0.038) and explained 75.0% (R^2 =0.75) of the variance in Curriculum Administration Effectiveness. All six factors had significant direct effects (p<0. 001), with Industry Synergy Capability (F1) showing the strongest path coefficient (β =0.35). Expert validation through content analysis strongly supported the model's comprehensiveness (91.7% agreement), logical structure (100% agreement), and practical relevance (83.3% agreement). The model positions F1 and F2 as foundational enablers, F3 and F6 as key mediating

process factors, and F4 and F5 as essential feedback and governance mechanisms.

Discussion

This discussion interprets the empirical findings through the lens of existing theoretical frameworks, elucidating points of convergence and divergence. By doing so, it articulates the specific contributions of this study to refining the conceptual understanding of curriculum administration within the distinctive context of applied higher education.

Theoretically, this 'capability ecosystem' model serves as a nexus between several established frameworks. It operationalizes the systems thinking of Bertalanffy (1968) by specifying the key interacting subsystems (F1-F6). It answers the call of the CIPP model for greater attention to the Process and Product dimensions by identifying the concrete capabilities (e.g., F4, F5) that determine their quality. Finally, it moves dynamic capabilities theory from the abstract business strategy realm into the concrete operational context of higher education administration. This synthesis and contextualization constitute the primary theoretical advancement of this study.

The results of research objective 1 found that the perceived effectiveness of curriculum administration across applied universities in Yunnan Province is at a moderately high level overall, yet it is significantly undercut by a pronounced "perception-implementation gap" among different stakeholder groups, particularly between administrators and teachers. This gap suggests a potential "decoupling" between institutional formal structures, which demonstrate compliance with national mandates, and the technical core of instructional activities. This phenomenon, noted in institutional theory, occurs when external pressures lead to symbolic adoption of policies without deep implementation into daily practice, explaining the disparity between administrative perceptions

and teaching realities. This aligns with the concepts, theories, and research of the CIPP evaluation model, which distinguishes between the often well-managed Input and Context dimensions and the more challenging Process and Product dimensions (Stufflebeam, 1967; Zhang et al., 2011). Furthermore, it resonates with Systems Theory critiques highlighting how subsystems (e.g., administration vs. instruction) can operate under divergent logics, creating inefficiencies within the organizational whole (Bertalanffy, 1968).

The results of research objective 2 found that six interdependent latent factors form the core drivers of effective curriculum administration: Industry-Synergy Capability, Strategic Resource Orchestration, Teacher Development Support, Data-Informed Evaluation & Improvement, Stakeholder Engagement Cohesion, and Curriculum Adaptability & Innovation. This is because effective administration in a vocational context transcends linear task management; it requires a dynamic set of organizational capabilities that interact synergistically to convert resources into relevant educational outcomes. This finding resonates with and extends the dynamic capabilities theory, which evolves from the resource-based view. It posits that in changing environments, sustained advantage requires not just valuable resources, but the organizational capacity to integrate, reconfigure, and renew them—a notion directly reflected in the six interdependent factors identified, such as Strategic Resource Orchestration (F2) and Curriculum Adaptability & Innovation (F6). It also extends Total Quality Management principles (Kaur, 2014) by specifying the precise capability domains—such as data-informed feedback loops (F4) and stakeholder cohesion (F5)—necessary for continuous improvement in higher education settings.

The results of research objective 3 found that a validated structural model, conceptualized as a "capability ecosystem," positions Industry-Synergy Capability as the most potent direct driver (β =0.35) and successfully integrates the six factors to explain a high proportion of variance in overall effectiveness (R

^{2} =0.75). This is because for applied universities, the imperative to serve regional industry is not merely an external benchmark but the central axis around which resource strategy, teacher development, and curriculum innovation must revolve. This model moves beyond generic frameworks by tailoring the capability set to Yunnan's specific industrial, ethnic, and cross-border context. This aligns with the concepts, theories, and research of integrated education-industry collaboration models (Yang & Dong, 2024) and backward design philosophy (Wiggins & McTighe, 2005), which prioritize end-goals (workforce competence) to inform all prior decisions. Thus, the proposed "capability ecosystem" model provides a direct response to the "decoupling" phenomenon identified in the first research objective. By framing administration as a network of simultaneous, reciprocal influences—with Industry-Synergy Capability as the central driver rather than a peripheral input—it offers a coherent framework for realigning institutional structures (Context/Input) with instructional processes and outcomes (Process/Product). This moves beyond merely diagnosing the gap towards prescribing a systemic, context-sensitive mechanism for its integration.

In summary, this study does not merely apply existing theories but synthesizes and adapts them to propose a more potent explanatory framework. The validated "capability ecosystem" model, with Industry-Synergy at its core and dynamic interactions among six factors, offers a contextualized and systemic lens for understanding and improving curriculum administration in applied universities, particularly in unique regional settings like Yunnan. This represents a step from generic prescription towards context-embedded theory.

Conclusion

This study successfully achieved its objectives of diagnosing the state, identifying key factors, and proposing a validated model for curriculum administration in Yunnan's applied universities. The primary theoretical contribution is the six-factor "capability ecosystem" model, which offers a

nuanced, systemic framework beyond linear process models. It identifies Industry-Synergy Capability as the most critical driver and highlights the distinct importance of Strategic Resource Orchestration and Data-Informed Evaluation.

Practically, the research provides a clear imperative for leaders: bridging the perception-implementation gap and transitioning from a compliant, input-focused system to a dynamic, outcome-oriented one. This transition depends on strategically nurturing the six interconnected capabilities. The proposed model thus serves as both an analytical tool and a strategic roadmap for enhancing curriculum administration and, by extension, the quality of vocational administration in the region.

Recommendation

To translate the validated "capability ecosystem" model into practice, targeted recommendations are structured around nurturing its six core factors and are proposed for key stakeholders.

For Policymakers:

Incentivize Deep Industry-Synergy (F1): Create "Curriculum Co-Creation Grants" and support formal "Dual-Appointment" schemes to move beyond ad-hoc partnerships.

Promote Data-Informed Accountability (F4): Integrate model-derived indicators (e.g., graduate employment quality, curriculum update speed) into institutional performance reviews and invest in shared regional graduate tracking data systems.

Enable Strategic Resource Orchestration (F2): Support resource-sharing consortia among universities and introduce more flexible, performance-based budgeting models.

For University Leaders (Strategic Action Framework):

A phased implementation roadmap is recommended, starting with diagnostic self-assessment using the model. A detailed strategic action plan is provided, translating each factor into concrete initiatives. For example:

F1: Appoint a senior officer for industry partnerships and establish an "Industry Curriculum Fellow" program.

F4: Hire a Learning Analytics officer and implement an annual "Curriculum Data Review Cycle."

F6: Create a "Fast-Track Approval" process for new modules on emerging topics and pilot competency-based micro-credentials.

For Front-line Educators & Departments:

Proactively develop "Living Case Studies" with industry partners (F1).

Employ Classroom Assessment Techniques for real-time instructional adjustment (F4).

Champion a "one-innovation-per-semester" approach to experiment with new pedagogical methods (F6).

For Researchers:

Future studies should focus on cross-contextual validation of the model, longitudinal impact studies tracing intervention effects on graduate outcomes, and investigating the integration of emerging challenges like AI and education for sustainable development into the framework.

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