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A Comparative Review of the Professional Development of Novice and Experienced Chinese Language Teachers: Perspectives of Teaching Competence and Teaching Behavior

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Abstract

With the rapid expansion of international Chinese language education, the professional development of teachers has become a core concern in applied linguistics and teacher education. This paper conducts a comparative review of existing studies on novice and experienced Chinese language teachers from two complementary perspectives ─ teaching competence and teaching behavior. Drawing on representative empirical and theoretical research, it clarifies core concepts, compares stage-specific characteristics, and identifies gaps and emerging directions. Findings indicate that novice teachers often demonstrate innovation and enthusiasm yet lack systematic competence, whereas experienced teachers exhibit stable routines and adaptive expertise. To move beyond a descriptive juxtaposition, this review proposes a conceptual framework that links teaching competence to teaching behavior through teacher beliefs, emotions, and contextual constraints. Building on this framework, the paper translates the review into stage-sensitive, actionable recommendations for teacher preparation and in-service professional development.

Keywords: Novice Teachers; Experienced Teachers; International Chinese Language Education; Teaching Competence; Teaching Behavior

1. Introduction

Research on teacher development originated in educational psychology and, since the 1960s, has expanded steadily into education and applied linguistics. Alongside the rising number of international Chinese language teachers, a prominent line of inquiry has focused on improving teacher quality and supporting professional growth—especially the development of teachers at the novice and post-novice (experienced) stages. Teachers are lifelong learners. Across ongoing development, they should not only cultivate robust teaching competence grounded in inquiry but also enact teaching behaviors commensurate with that evolving competence. Empirical work on

teachers' linguistic-pedagogical competence and classroom behavior can deepen our understanding of novice teachers, inform conceptions and models of teacher education, and help novices become excellent classroom practitioners. Accordingly, this review examines previous studies from three angles—(a) conceptual clarification, (b) differences in teaching competence, and (c) differences in teaching behavior—with the aims of identifying stage-specific characteristics, offering references and directions for professional development, and supplying effective resources for the cultivation and training of teachers in International Chinese Language Education (ICLE).

2. Conceptual Clarifications

2.1. Novice and Experienced Teachers

Teacher professional development has been conceptualized from individual and collective perspectives. At the individual level, professional development has been defined as a systematic effort to change teachers' professional practice, beliefs, and understandings of the school and students—emphasizing the acquisition of individual capacity. At the collective level, professional development refers to the extent to which the occupational group of teachers meets professional standards—that is, the process of professionalization (Zhu & Zhou, 2007). From a sociological standpoint, development also entails becoming a member of the teaching profession and effectively fulfilling one's role, with concomitant changes in cognition, emotion, and behavior. Contemporary understandings, therefore, attend to both outcomes (possessing the competence required to perform teaching functions) and process (teachers' teaching behaviors).

There is no consensus on how many stages teacher development comprises. As early as the 1970s, James (1975) proposed three types of education: personal education, initial training, and lifelong education. Fessler (1992) advanced a non-linear model integrating social orientation into eight phases: pre-service preparation, induction, competence building, enthusiasm and growth, career frustration, stabilization and stagnation, career decline, and exit. Steffy (2012) proposed a career-cycle model comprising five stages—expert career, withdrawal career, renewal career, renewal life stage, and exit—arguing this model more fully and realistically describes teacher development. In Chinese scholarship, the Encyclopedia of International Education (ed. Hu Sen, 1990) distinguishes pre-service, initial employment, and in-service stages. Luo & Liao (2002), taking the professional development of the teacher group as premise and professional maturity as criterion, divide development into adaptation, development, maturity, and sustained development. Fu (2003) proposes five stages—adaptation, exploration, establishment, maturity, and serenity. Synthesizing domestic and international studies, Luo (2006) suggests a three-stage scheme—adaptation/exploration, professional growth, and professional maturity—on the grounds that teacher development is dynamic and stage boundaries are fuzzy.

Following Luo Xiaojie and Hu Sen, this review adopts a three-stage framework: pre-service, novice (early-career), and experienced (post-novice). The latter two stages have drawn the most research attention. Novice teachers generally include those with little or no experience, including student teachers who have engaged in practicum teaching. Yu & Liao (1999) set the novice period

at one to two years; Pan Xianquan regards it as zero to four years of service. In ICLE, definitions range from less than one year (Zhang, 2012; Ma, 2013; Xu, 2013) and one to two years (Liu, 2009) to within five years (Liu, 2012). Clearly, there is no consensus on the temporal boundary of the novice stage; the transition from novice to experienced is gradual, marked by progressive enrichment of knowledge structures, iterative renewal of teaching competence, and increasing fluency in teaching routines (Wang, 2015). Some scholars (Zhong, 2012) further divide experienced teachers into exploration (around year 10), maturity (around year 15), and expertise (around year 20), each with distinct challenges, needs, and competencies. Selection criteria vary: more than five years (Wang, 2014) or seven years (Cheng, 2007). Wang (2015) recommends aligning with established frameworks such as Katz's periods (survival, consolidation, renewal, maturity) and local standards (expert evaluation, peer nomination, student achievement, years of service).

2.2. Differences in Teaching Competence Between Novice and Experienced Teachers

Teaching competence is a composite construct comprising the ability to design and organize instruction; to mobilize and exploit teaching resources (e.g., emergent non-planned events, multimedia, the medium of instruction); to manage classrooms; and to enact cognition and non-verbal behaviors (e.g., beliefs and emotions). The following four domains are discussed in turn.

2.2.1. Instructional Design and Organization

Li (2017) distinguishes operational instructional design from technical instructional design, with the latter subdivided into lecture, conversation, demonstration, field visit, experiment, practice, discussion, guided reading, and practicum assignment. Novice and experienced teachers share commonalities (e.g., lecture, practice, practicum assignments), yet novices employ relatively more demonstrations, visits, and conversations—approaches less used by experienced teachers. In terms of innovative methods, novices often exceed experienced teachers; by contrast, experienced teachers emphasize skill training and explication, devote more attention to exercises and answer analysis, and are more effective at fostering learner autonomy during instruction.

Regarding organizational formats, pre-service teachers more often lead in with the text, whereas experienced teachers tend to begin with the topic. Both groups lecture to the whole class, but experienced teachers place greater emphasis on small-group work and peer learning, deploying a richer repertoire of organizational forms.

2.2.2. Ability to Utilize Teaching Resources

Teaching resources include materials and conditions that support instructional effectiveness—textbooks, films, images, courseware—as well as human resources, teaching aids, and infrastructure. More broadly, resources encompass all elements mobilized during instruction—people, objects, and information that support and serve teaching (Wu, 2015). The ability to utilize resources chiefly involves leveraging emergent, non-planned events, using multimedia, and using a support language as medium of instruction.

(1) Use of multimedia. Zhang (2017), drawing on classroom observations of four mainstream media, found that both novice and experienced teachers use the chalkboard. Novices, however, rely more on new media such as computers, televisions, and projectors; experienced teachers are less reliant on new media, privileging traditional chalkboard writing supplemented by multimedia. Research is scarce on how multimedia is synchronized with talk—e.g., whether slides proceed in lockstep with or lag behind explanation.

(2) Handling non-planned events. Such events appear accidental, random, and unpredictable with respect to timing, agents, and forms. In practice, novices and experienced teachers diverge in handling and stance. Chen (2012) reports that novices often feel caught off guard and struggle to respond, and, once class ends, tend to ignore the episode. Yet non-planned events remain within the ambit of classroom factors and are, to a degree, anticipatable, as they can arise from teachers' instructional designs or actions. Experienced teachers respond positively (Zhang, 2012) and treat such events as teachable resources for situated interaction. After addressing a question or challenge, they quickly guide the lesson back to the planned trajectory, whereas novices often expend more time than anticipated and may fail to re-establish the initial plan, risking the lesson as a whole (Wu & Shi, 2011).

(3) Use of the medium of instruction. In target-language classrooms, cultivating proficiency requires a supportive linguistic environment. Chinese language teachers may judiciously use a support language to scaffold comprehension. Based on observations at the Confucius Institute in Barcelona, Lei(2017) found that experienced teachers overall use the support language less frequently, conducting most discourse in the target language but with high quality. Interviews with four experienced teachers indicated advocacy for maximizing target-language use while tolerating support language for lexical/grammatical explanations and classroom management. Novices reported a greater need for support language in non-immersion settings but stressed appropriate frequency. Liu (2016) observed that novices, in accommodating comprehension, tend to overuse complex support language and sometimes use it inaccurately. Ma (2017) further noted that experienced teachers' use of a support language surpasses novices in effectiveness and modeling.

From a non-verbal communication perspective, Liu (2012) compared novice and experienced teachers and found both employ non-verbal means to interact, but novices' command is significantly weaker. In nodding, gesture, and speech rate, experienced teachers demonstrate greater communicativeness, appropriateness, supportiveness, and encouragement, while maintaining an authentic classroom pace. Correspondingly, their students exhibit more proactive participation, classrooms are livelier, and reliance on a support language is lower than in novices' classes. Judicious use of a support language can help beginners grasp content more effectively, but its use should follow principles of suitability, necessity, and moderation. In ICLE, the support language need not be confined to learners' L1; any language comprehensible to learners may serve; if no single language is widely understood, the target language may be optimal.

2.2.3. Classroom Management

Good & Carter V. (1973) characterize classroom management as a set of teacher actions fostering collaborative participation, productive order, response to problem behaviors, and active learning. Glasser (1998) views management as advance organizational and procedural strategies shaping the classroom into an effective learning environment. Despite definitional differences, two commonalities emerge: (1) management is a process of co-participation between teachers and students; and (2) its purpose is to establish an effective environment, sustain interaction, and promote classroom growth.

Chen (2017) found that many novice problems stem from failing to set ground rules in the first lesson, leaving behavior unconstrained; weak coherence in activity design fosters loss of control. Yao (2014), analyzing novices' logs and classroom recordings in China and abroad, reported that, domestically, issues arise from poor activity organization, suboptimal questioning, and limited competence; abroad, from overly difficult content and ineffective explanations. Novices are more susceptible to student moods and, unlike experienced teachers, less able to recalibrate relations to revive a sluggish atmosphere. Thus, competence in content planning and activity organization constitutes the primary management differential.

Regarding pacing, Zhang (2016) reports that novices' timing issues have subjective and objective facets: loose sequencing, lack of pre-class allocation, susceptibility to tangents, and difficulties addressing problematic students—sometimes resulting in no feedback or direct confrontation. Compared with experienced teachers' deft control of pacing, novices need more strategies for management.

2.2.4. Cognitive Capacity

With the advent of concepts such as pedagogical content and practical knowledge, "teacher cognition" has come to the fore. Borg (2006) argues that cognition research seeks to understand who teachers are; what they know; what they believe; how they learn to teach; how their personal pedagogical theories and representations of disciplinary knowledge form; and the improvisational skills teachers bring to problem solving. We should attend to teachers' self-development and inquiry and revisit four questions: Who am I? What am I doing? How do I/should I construct selfhood? How will I achieve self-development? Understanding the teaching self—beliefs and emotions—both manifests teaching competence and shapes teaching behavior and learning outcomes (Wu, 2015).

Teaching is not the straightforward application of acquired knowledge and skills but a complex, cognition-driven process influenced by multiple factors. Relative to novices, experienced teachers better tailor instruction to situational contingencies and more effectively regulate their behavior to meet contextual demands.

Research on teaching beliefs—an important facet of cognition—remains nascent. Content domains include beliefs about the essence, value, goals, process, and methods of teaching, and beliefs about teachers, students, knowledge, assessment, and self-development (Guo et al., 2004). Quantitative work includes Ding (2013) on experienced teachers' views of classroom activities (valuing communicative tasks alongside traditional techniques); Ji & Liu (2012) on novice beliefs

about grammar teaching (accepting communicative principles while acknowledging traditional grammar's value); and Jiang & Hao (2011) using stimulated recall to compare practical knowledge (finding that novices referenced intercultural, learner, and language-teaching knowledge less frequently). Qualitative studies include Sun (2008), a longitudinal case of an immigrant Chinese teacher's beliefs and practices, showing shaping effects of environment and personal experience. More recent work (e.g., Ji, 2010) indicates novice beliefs evolve through phases—disruption, partial loss, and re-acquisition with refinement. Overall, existing work targets narrow belief dimensions and small samples; comparative studies on novices vs. experienced teachers are limited, and case studies lack generalizability; further comparative work is warranted.

Teacher emotion is another crucial facet. Xu (2016), studying novices with less than one year of experience, identified factors—linguistic knowledge and skill, teaching competence, student heterogeneity, teaching conditions, and institutional pressure—that, mediated by classroom performance and teacher–student relations, affect outcomes, self-esteem, and self-efficacy, producing teaching anxiety; self-esteem plays a pivotal role. Yang (2015) likewise found novices' anxiety significantly higher than experienced teachers', undermining confidence but prompting greater attention to relationships. Gao (2017), surveying 41 novices, found that student evaluations, perceived effectiveness, and in-class questioning were principal anxiety sources. Comparative studies on anxiety and other affective constructs (e.g., burnout) remain scarce, as does prescriptive research on positive emotions.

2.3. Differences in Teaching Behavior Between Novice and Experienced Teachers

Research on teacher professional development focuses both on outcomes—acquiring the competence to fulfill teaching functions—and on the practical process of enactment—teaching behaviors. Teacher behavior refers to observable actions during instruction. Owing to inexperience, novices differ from experienced teachers in various behavioral respects. Documenting these differences can heighten novices' awareness of self-regulation and thereby optimize classroom teaching. Based on existing studies, we discuss four domains: questioning, classroom instructions, feedback, and teacher–student interaction.

2.3.1. Questioning

From classroom recordings, Guo (2013) identified a series of novice issues: unclear purposes, poor calibration of difficulty, lack of focus, and monotonous formats. Using coding and statistical analysis of collected materials, Zheng (2009) found that novices exceeded experienced teachers in total questioning time, frequency, and number, and they were more inclined to adopt display questions. Experienced teachers used a wider repertoire of strategies, favored referential questions, and exhibited lower rates of self-answering and unanswered questions, primarily deploying follow-up, deconstruction, and linking strategies, novices mainly repeated and pursued questions. Wang (2014) reported that novices asked twice as many questions as experienced teachers; they posed fewer cognitive (recognitional) questions and more response-eliciting questions. Within recognitional questions, novices heavily favored display types, whereas experienced teachers combined display and referential types. Experienced teachers distributed questions more evenly across students; novices tended to address the whole class. Novices also managed wait time less

effectively. Thus, despite greater quantity, novices' questions are less effective in type, strategy, and difficulty calibration; experienced teachers demonstrate superior orchestration and flexibility.

2.3.2. Classroom Instructions

Guo (2013) also reported problems with novice teachers' instructions and classroom language: unclear articulation, limited prosodic variation, non-standard directive language, and overly long explanations. Using classroom observation, Li (2012) found that experienced teachers used more imperative sentences, preferring direct, concise directive forms; novices used relatively complex declaratives and somewhat more interrogatives, reflecting a preference for polite tone and soliciting student input. Strategically, instructions were categorized as command-type, invitation-type, and guidance-type. Novices used more command- and guidance-type strategies than experienced teachers, who used more invitation-type strategies; moreover, novices exhibited more ineffective instructions.

2.3.3. Feedback

Teacher feedback refers to evaluative responses to students' language use in class (Yang, 2000). Following Carroll & Swain (1993), feedback can be divided into positive (acceptance) and negative (rejection) types. Shao (2011), based on classroom observations, found that novices' corrective-feedback rate exceeded that of experienced teachers, their feedback episodes were longer, and they favored recasts; compared with experienced teachers, they used more positive feedback, with limited use of metalanguage and elicitation (Zheng, 2009). In contrast, experienced teachers delivered higher rates of corrective feedback. Novices had difficulty discerning errors and were less familiar with common learner mistakes (Wang, 2014). Novices underused metalanguage cues and elicitation, whereas experienced teachers flexibly combined multiple methods, gave learners more opportunities to self-repair, and emphasized post-correction practice. Novices' greater concern for affect led to higher tolerance for error.

Ma (2017), in a study of 14 novices, found that while novices generally possessed feedback awareness, their feedback language tended to be monotonous, casual, overused, and lengthy without clear effect. They favored simple approval/praise and repetition, rarely employing follow-up, clarification requests, or guided prompts that effectively trigger interaction and learner output. Lyu (2007) reported that novices emphasized motivational strategies-positive feedback-which, combined with avoidance, raised error tolerance and could adversely affect learning; excessive positive feedback can foster lax attitudes. A few cases of criticism or even harshness were also observed (Ma, 2017).

2.3.4. Teacher–Student Interaction

Teacher–student interaction encompasses the cognitive influence teachers and students exert on each other through verbal and non-verbal behavior. It is the most fundamental interpersonal form in classroom teaching. Interaction includes both static structures and dynamic collaboration, timing, verbal and non-verbal behaviors (Liao, 2002). Based on comparative analysis of two classes (novice and experienced), Shi (2018) found that experienced teachers used body language, emotional behaviors, and listening more frequently than novices; overall, experienced teachers engaged in more non-verbal behaviors during interaction. Using an observation scale

encompassing teacher language, content, non-verbal behavior, interaction modes, teacher influence, student response, and classroom atmosphere, Liang (2017) found that novices tended toward one-way whole-class interaction and used limited means for one-on-one interaction; they made lower-intensity use of classroom time and sometimes allowed long stretches without interaction.

In terms of time allocation, experienced teachers devoted a higher proportion to collaboration with students; nevertheless, both groups' collaboration remained largely mechanical (e.g., choral reading). Experienced teachers exerted tighter classroom control, were more adept at eliciting spontaneous questions and voluntary participation, and provided more timely responses to student utterances and behaviors; classroom stability differed little. In experienced teachers' classes, students occupied a larger share of total speaking time, and teachers intervened less in answers; learner discourse was more sustained. Novices relied more on questioning to organize lessons and exerted influence more indirectly. Experienced teachers were more adept at incorporating student contributions to extend interactive learning. Comparative research on collaboration remains limited.

2.4. Conceptual Framework Linking Teaching Competence to Teaching Behavior

To integrate the parallel discussions in Sections 2 and 3, this section proposes a concise framework that explicates how teaching competence-what teachers know and can do-shapes teaching behavior—what teachers actually do in class-through a set of mediating and moderating processes.

Core proposition

Teaching competence informs teachers' behavioral choices in lesson planning, classroom interaction, feedback provision, and classroom management. However, the translation from competence to behavior is not linear. It is mediated by teacher beliefs (e.g., conceptions of learning, approaches to error correction), teacher emotions (e.g., anxiety, efficacy, resilience), and contextual constraints (e.g., learner diversity, curricular pacing, institutional norms, and resource availability). These factors jointly determine whether and how competent knowledge is enacted as effective behavior.

Dynamic feedback

Classroom enactment, in turn, provides feedback to teaching competence through reflection, experiential learning, and adaptive adjustment, thereby fostering the continuous development of professional expertise.

This framework highlights the developmental mechanisms underlying teaching growth:

- Novice teachers often possess emerging and uneven competence that is easily attenuated by anxiety, unstable beliefs, and contextual pressures.
- Experienced teachers, by contrast, exhibit stabilized belief systems and emotional regulation, enabling competence to be consistently externalized as effective classroom behavior.

This dynamic and cyclical view also underpins the stage-sensitive professional development strategies proposed in Section 4.

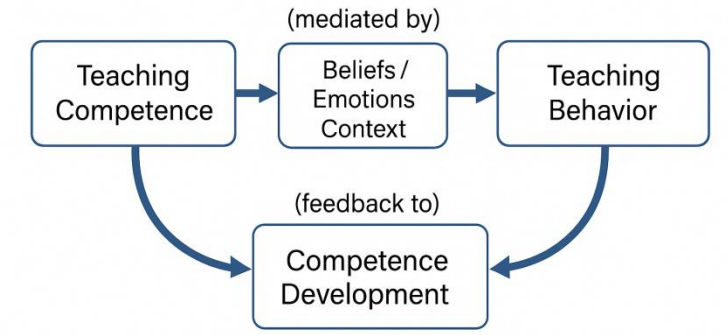

Figure 1. A competence-to-behavior pathway with mediating processes

A schematic model linking teaching competence to teaching behavior via mediating beliefs, emotions, and contextual constraints, with a feedback loop from enacted behavior to competence growth.

The above framework explains why competence-focused differences between novice and experienced teachers should co-vary with behavioral differences in classroom practice. We therefore turn to observable teaching behaviors—questioning, instructions, feedback, and teacher–student interaction—to examine how these are shaped and constrained by competence together with the mediating processes outlined above.

3. Problems and Prospects

3.1. Problems

Despite notable progress, current research exhibits several deficiencies. First, research subjects and perspectives are relatively homogeneous. International Chinese Language Education is highly contextual, complex, and dynamic. Because much of the existing work is produced by master's and doctoral students or novice teachers within the field, limited experience can lead to formulaic implications. Conversely, in social science research, contextual authenticity is the greatest source of variance and a key locus of significance. Some researchers explicitly note that their studies were conducted in artificial settings and should be validated in naturalistic classrooms (Tong, 2009). Overly singular perspectives can obscure the field for later researchers. There is a need for broader participation and more diversified angles to enhance research quality.

In addition, current research focuses predominantly on the teacher's perspective, whereas teaching is an interactive process among teacher, environment, and students. Work exclusively from the teacher's vantage point is therefore partial, particularly given that teacher–student interaction not only shapes teaching competence but also constitutes a principal pathway through which behavior is enacted. Future research should widen its scope and enrich its content.

Second, research themes lack depth. The ultimate purpose of teacher research is not merely to describe phenomena, but to address how to solve problems. As Li (2019) argues, descriptions of the knowledge, abilities, and qualities required of international Chinese language teachers are "spread too evenly," lacking stratification. Which competencies are the non-negotiable baseline for a qualified teacher? Which are aspirational goals for ongoing development? What distinguishes excellent teachers? What are realistic developmental goals and pathways for individuals? Addressing such questions requires focused study of excellent teachers at different stages. Future work should employ experimental, or action research approaches oriented toward sustainable professional development.

Third, theoretical frameworks and methodologies are overly uniform. Complex problems in teacher development cannot be resolved by any single theory. Methodologically, studies remain similar, relying heavily on interviews and observations—one-off events ill-suited to monitoring developmental variability. Purely qualitative work is vulnerable to concerns about subjectivity, sampling, breadth, and representativeness.

3.2. Prospects

To address these issues, future research should proceed along three lines. First, diversify research perspectives. There is a notable lack of work on the characteristics of excellent novice and experienced teachers—the target states of development. Starting from individual trajectories, we should propose differentiated cultivation goals, evaluation standards, and developmental pathways for teachers at different stages (novice, proficient, expert). Existing cultivation systems and standards show some layering but do not yet accommodate the complexity of international Chinese language teachers as a population. Given the evolving landscape of international Chinese education and the great heterogeneity in teacher identities, qualities, and career paths, breakthroughs should be sought in future research.

Second, deepen and broaden research themes. In recent years, more scholars have turned to teachers' career and professional development, focusing on affect, psychology, qualities, abilities, and pathways. Yet because learners, contexts, and influencing factors are complex, topics such as teaching motivation, occupational stress, instructional affect, and developmental goals warrant further inquiry.

Third, expand theoretical repertoires and enrich methods. Teacher development is an interdisciplinary area intersecting linguistics, education, educational psychology, and psycholinguistics. Theories should be selected in light of research questions and populations, and simultaneous use of multiple theories should be considered. Methodologically, combine theoretical analysis with empirical study; pair quantitative with qualitative approaches and employ mixed methods. Qualitative data collection can be diversified—interviews, teaching logs, writing, retrospective self-reports, autobiographical narratives, and classroom observation. Large-sample quantitative studies should also be conducted to improve objectivity and representativeness.

3.3. Methodological Reflection and Future Design Implications

A considerable proportion of existing evidence is derived from unpublished theses, single-site short-term observations, and locally specific contexts. These characteristics constrain the external validity of findings and may inflate or obscure effect sizes due to sampling and contextual idiosyncrasies. Moreover, one-off observational designs limit the ability to capture intra-teacher variability and developmental change over time.

To enhance methodological rigor and ensure the accumulation of more generalizable evidence, future research should consider the following directions:

(a) Adopt multi-site comparative designs (e.g., cross-institutional or cross-country sampling) to test the generalizabilityof competence–behavior relationships.

(b) Employ mixed-method approaches—such as systematic observation, interaction coding, and teacher/learner measures of beliefs, emotions, and efficacy—to more robustly connect teaching competence, mediating processes, and observable teaching behavior.

(c) Incorporate longitudinal components (e.g., term-length or year-long tracking) to model teacher growth trajectoriesand the competence–behavior feedback loop proposed in Section 2.4.

(d) Provide detailed contextual descriptors—including curriculum demands, class composition, language policy, and resource availability—to facilitate meaningful meta-analytic synthesis and context-sensitive interpretation.

4. Implications for Professional Development

Building on the preceding synthesis, this section outlines stage-sensitive and actionable strategies that align competence building with behavioral enactment, while systematically addressing the roles of beliefs, emotions, and contextual factors in teacher development.

4.1. For Novice Teachers (0–3/5 years)

- Structured mentoring (weekly): Assign each novice teacher a trained mentor. Use targeted observation rubrics (e.g., questioning types, wait time, error-treatment choices) with two concrete behavioral goals per week.
- Micro-teaching with rapid feedback (bi-weekly): Conduct 8–12-minute micro-teaching sessions that are video-recorded. Provide single-focus feedback (e.g., shifting from display to referential questions) immediately afterward.
- Targeted classroom-language drills: Build a personal directive phrasebank (clear imperatives, concise invitations) and rehearse transitions, classroom routines, and time checks to increase fluency in instructional language.
- Anxiety-aware coaching: Incorporate short pre-class planning scripts (openings, pacing checkpoints, fallback moves) and post-class emotional debriefs to normalize arousal and protect self-efficacy.

- Progressive resource integration: Begin with low-load multimedia (board + minimal slides); add one new instructional tool each month; reflect on the synchrony between teacher talk and visual aids.

4.2. For Experienced Teachers (Post-Novice to Mature Stage)

- Collaborative lesson study (monthly): Co-plan a research lesson with an agreed-upon behavioral focus (e.g., eliciting extended learner turns), co-teach or observe, and jointly analyze student uptake and response data.
- Reflective inquiry projects (per term): Conduct small-N classroom investigations (e.g., varying wait time or feedback types) using simple AB or multiple-baseline designs. Share findings in internal colloquia or teacher-learning communities.
- Boundary-crossing and peer exchange: Arrange short peer visits to other programs (e.g., immersion vs. non-immersion settings) to surface tacit pedagogical beliefs and broaden contextual repertoires.
- Non-verbal repertoire enrichment: Participate in periodic workshops on gesture, gaze, posture, and positioning as tools for managing participation and interactional space.

4.3. Cross-Stage Supports

- Beliefs–behavior alignment: Combine beliefs inventories with stimulated recall on classroom video clips to make implicit pedagogical theories explicit and test them against empirical classroom evidence.
- Emotional regulation micro-skills: Introduce brief pre-performance routines (e.g., 90-second breath counting + verbal cue) and post-class cognitive reappraisal checklists to strengthen emotional resilience.
- Minimal evaluation dashboard: Track 4–6 indicators monthly to guide evidence-based reflection and decision-making. Examples: proportion of referential questions, average wait time, student–teacher talk ratio, elicitation vs. recast frequency, on-task time, and rate of student self-repair.

4.4. Implementation Notes

Institutions can adopt a 12-week professional development cycle that integrates mentoring, micro-teaching, and lesson study.Pre- and post-cycle collection of dashboard indicators can provide evidence of growth at both competence and behavioral enactment levels.

5. Conclusion

This review has traced the professional development of Chinese language teachers through a comparative lens, focusing on teaching competence and teaching behavior as two interdependent dimensions of growth. Synthesizing evidence from empirical and theoretical studies, it has clarified how competence—the knowledge, skills, and dispositions that teachers possess—interacts with behavior—their observable actions in the classroom—through mediating processes

involving beliefs, emotions, and contextual constraints. The proposed competence-to-behavior framework thus provides a dynamic model for understanding how teachers transform what they know into what they do, and how reflective practice in turn refines and deepens their competence.

By situating novice and experienced teachers within this developmental continuum, the review reveals both continuity and transformation: novices tend to demonstrate enthusiasm and innovation yet are more vulnerable to anxiety and contextual pressures, whereas experienced teachers display stability, emotional regulation, and adaptive expertise that allows competence to be enacted with consistency and precision. Bridging these stages requires not only the accumulation of experience but also structured support that aligns knowledge building, affective regulation, and contextual awareness.

Methodologically, future research should move beyond cross-sectional description to embrace longitudinal, multi-site, and mixed-method designs capable of capturing developmental variability across time and setting. Practically, stage-sensitive professional development programs—integrating mentoring, micro-teaching, collaborative lesson study, and reflective inquiry—can operationalize the competence-to-behavior pathway, enabling teachers to convert professional knowledge into effective pedagogical action.

Ultimately, teacher development lies at the heart of educational reform and the global enterprise of International Chinese Language Education. Understanding how competence evolves into behavior not only enriches the theoretical landscape of teacher cognition and practice, but also provides actionable insights for cultivating reflective, adaptive, and resilient teachers capable of navigating the diverse contexts of Chinese language teaching worldwide.

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Conceptualization, L. P.; methodology, L. P.; software, L. P.; validation, L. P.; formal analysis, L. P.; investigation, L. P.; resources, L. P.; data curation, L. P.; writing—original draft preparation, L. P.; writing—review and editing, L. P.; visualization, L. P.; supervision, L. P.; project administration, L. P.; funding acquisition, L. P. All authors have read and agreed to the published version of the manuscript.

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References

Borg, S. (2006). Teacher cognition and language education: Research and practice. London: Continuum.

Carroll, S., & Swain, M. (1993). Explicit and implicit negative feedback: An empirical study of the learning of linguistic generalizations. Studies in Second Language Acquisition, 15(3), 357–386.

Chen, L. (2015). Case analysis of non-learning behaviors in international students' Chinese classes. In Proceedings of the 12th International Conference on Teaching Chinese as a Second Language (pp. 5). World Chinese Language Teaching Society & Confucius Institute Headquarters.

Chen, S. (2017). A study on classroom management problems of novice Chinese teachers in Thailand (Unpublished master's thesis). Xi'an International Studies University.

Chen, Y. (2012). Exploration of issues related to situational interactive teaching in teaching Chinese as a foreign language (Unpublished master's thesis). Tianjin Normal University.

Cheng, B. (2013). A comparative study of teaching beliefs between pre-service and in-service teachers of Chinese as a foreign language. In Proceedings of the Beijing Forum on Teaching Chinese as a Foreign Language (pp. 16). School of Chinese as a Foreign Language, Peking University.

Ding, A. Q. (2013). An analysis of non-native Chinese teachers' beliefs about grammar teaching. International Chinese Language Education, 2, 45–53.

Ding, A. Q. (2014). Classroom observation for language teacher professional development: A review of the "Teacher Effectiveness Feedback Tool" in the U.S. Foreign Language World, 6, 66–73.

Fessler, R. (1992). The teacher career cycle: Understanding and guiding the professional development of teachers. Educational Leadership, 49(9), 35–38.

Fröjdendahl, B. (2025). Regulation in practice: Standards and novice language teachers' experiences. International Journal of Languages in Education, 12(1), 45–62.

Fu, S. J. (2003). Building training models that correspond to teachers' stages of professional development. Educational Theory and Practice, 6, 39–43.

Gao, H. (2017). A study on teaching anxiety of novice international Chinese teachers (Unpublished master's thesis). Beijing Foreign Studies University.

Ge, X., & Qu, X. M. (2017). Exploring the professionalization process of experienced international Chinese teachers. Continuing Education Research, 10, 84–86.

Glasser, W. (1998). Choice theory: A new psychology of personal freedom. New York: HarperCollins.

Good, C. V. (1973). Dictionary of Education (6th ed.). New York: McGraw-Hill.

Grammes, J. D., & Carr, K. (1998). The impact of teacher factors on classroom discipline. (L. Pei'ai, Trans.). Foreign Language Teaching Abroad, 4, 40–50. (in Chinese translation of original work Modern Methods in Secondary Education)

Guo, C., Xu, Y. G., & Zhang, D. J. (2004). Conditions and strategies for transforming teaching beliefs into teaching behavior under the new curriculum reform. Chinese Journal of Education, 2, 33–36.

Guo, R. (2014). A case study on teacher discourse in elementary Chinese integrated courses based on two teachers' classroom corpora. Teaching Chinese as a Second Language and Research, 3, 27–45.

Guo, T. (2013). A preliminary study on teacher–student interaction of novice teachers in beginner-level Chinese classes (Unpublished master's thesis). Xi'an International Studies University.

Han, L., & Zhang, J. (2025). Identity tension and emotion regulation: A case study of Chinese novice EFL teachers. Asian-Pacific Journal of Second and Foreign Language Education, 10, Article 12.

Hou, Y. (2023). Why Chinese female novice teachers fail to manage conflict in professional learning communities: A study of culture, gender, and professionalism. Teaching and Teacher Education, 124, Article 104462.

Hu, S. (Ed.). (1990). Encyclopedia of International Education (Vol. 9). Guiyang: Guizhou Education Press.

Ji, C., & Liu, F. (2012). A study on pre-service Chinese teachers' beliefs about grammar teaching from a teacher cognition perspective. Language Teaching and Research, 6, 1–8.

Ji, J. (2010). The development and changes of new teachers' teaching beliefs (Unpublished master's thesis). East China Normal University.

Jiang, X., & Hao, L. (2010). A case study on practical knowledge of teachers of Chinese as a foreign language. Chinese Teaching in the World, 24(3), 394–405.

Jiang, X., & Hao, L. (2011). A study of practical knowledge among novice and experienced teachers of Chinese as a foreign language. Language Teaching and Linguistic Studies, 2, 1–8.

Jin, X. (2023). The effects of a teacher development programme in novice–expert interaction on novice teachers' teaching concepts, competencies and emotional experience. Teacher Development, 27(4), 449–467.

Lei, H., & Jiang, Z. (2025). Assessing the digital competence and its influencing factors among foreign-language teachers in Chinese universities. Humanities and Social Sciences Communications, 12, Article 966.

Lei, M. (2017). A study on classroom discourse features of novice Chinese teachers abroad (Unpublished master's thesis). Beijing Foreign Studies University.

Li, G. (2017). A case study on teaching strategies in reading classes by novice and experienced teachers of Chinese as a foreign language (Unpublished master's thesis). Shanghai International Studies University.

Li, Q., & Guan, L. (2019). Teaching Chinese as a foreign language: Teacher, craftsman, and scholar. International Chinese Language Education (Bilingual Edition), 4(1), 19–27.

Li, W. T. (2012). A comparative analysis of instructional language between novice and experienced teachers of Chinese as a foreign language. In Proceedings of the 11th International Conference on Teaching Chinese as a Second Language. Beijing: World Chinese Language Teaching Society.

Liang, X. J. (2017). Implications for novice teachers from teacher–student interaction in demonstration classes of Chinese as a foreign language (Unpublished master's thesis). Xinjiang University.

Liao, M. L., & Lian, R. (2002). Achievement goal orientation and personality traits among novice, experienced, and expert teachers. Applied Psychology, 4, 41–46.

Liu, B. (2009). A study on questioning in beginner-level oral Chinese classrooms (Unpublished master's thesis). Beijing Language and Culture University.

Liu, C. (2012). A comparative study of non-verbal communication between novice and experienced teachers of Chinese as a foreign language. In Proceedings of the 11th International Conference on Teaching Chinese as a Second Language(pp. 6). World Chinese Language Teaching Society.

Liu, D. (2016). A case study of classroom language used by novice teachers of Chinese as a foreign language (Unpublished master's thesis). Hunan Normal University.

Liu, H. (2014). Factors influencing the development of practical competence for novice teachers of Chinese as a foreign language (Unpublished master's thesis). East China Normal University.

Liu, H., & Wang, B. (2013). A study of positive feedback language in Chinese as a foreign language classrooms. Language Teaching and Research, 3, 32–40.

Liu, X. (2024). Construction and reconstruction of Chinese foreign-language teacher identity in intercultural contexts: A longitudinal study. International Journal of Intercultural Relations, 92, 102-117.

Liu, X. (2025). A study of two novice trans-border teachers in mainland China: Their development of written corrective feedback beliefs. System, 105, Article 102929.

Luo, Q., & Liao, S. (2002). The stages of teacher professional development from the perspective of teaching reflection. Modern Education Science, 2, 50–55.

Luo, X. (2006). A review of domestic and international studies on stages of teacher professional development. Educational Research, 7, 41–45.

Lyu, L. R. (2007). A comparative study of professional competence of Mandarin teachers in Hong Kong (Unpublished master's thesis). Beijing Language and Culture University.

Ma, D. D. (2017). A study of feedback language of novice teachers of Chinese as a foreign language (Unpublished master's thesis). Central China Normal University.

Ma, J. Y. (2017). A comparative study of classroom language between novice and experienced teachers of Chinese as a foreign language (Unpublished master's thesis). Xi'an International Studies University.

Ma, Y. (2013). An analysis of teacher questioning discourse in intermediate oral Chinese classes based on the IRF structure (Unpublished master's thesis). Sun Yat-sen University.

Maulana, R. (2025). The value of assessing the generic teaching quality: Comparative insights into effective teaching behaviour in individual lessons. Teacher Development, 29(2), 139-158.

Pan, X. Q., Lian, R., & Li, Y. Z. (2005). A study on teaching motivation characteristics of novice, experienced, and expert teachers. Teaching and Management, 18, 23–24.

Qiao, N. (2017). Cultivating teachers' competence in Teaching Chinese as a Foreign Language from curriculum design of MTCSOL program. In Proceedings of the 14th International Conference on Chinese Language Education: Teaching and Research in a Globalized Context (pp. 12). Macau University & Central University for Nationalities.

Shao, N. (2011). An investigation into novice teachers' error correction behavior in TCFL classrooms (Unpublished master's thesis). East China Normal University.

Shi, T. (2018). A case study of non-verbal behaviors in teacher-child interactions of novice and experienced kindergarten teachers (Unpublished master's thesis). Shandong Normal University.

Steffy, B. E. (2012). The teacher career cycle. Beijing: People's Education Press. (Chinese translation edition)

Sun, D. (2008). A longitudinal case study of an immigrant Chinese teacher's beliefs and practices. Teaching and Teacher Education, 24(7), 1803-1816.

Sun, D. J. (2010). Educational narrative research and teacher development in Teaching Chinese as a Foreign Language — Afterword to Interviews with Distinguished Teachers of TCFL at Beijing Language and Culture University. Chinese Teaching in the World, 24(3), 383–393.

Sun, D. K. (2008). "I will find my own way": A narrative study of a Chinese teacher's exploratory experience. In Proceedings of the 9th International Conference on Teaching Chinese as a Foreign Language (pp. 9). World Chinese Language Teaching Society.

Sun, D. K. (2008). Teacher cognition research and teacher development. Chinese Teaching in the World, 3, 74–86.

Wang, D. (2014). A comparative study of classroom teaching behaviors between novice and expert teachers of Chinese as a foreign language (Unpublished master's thesis). Beijing Foreign Studies University.

Wang, T. M., & Ren, Z. (2015). A review of comparative studies on novice, experienced, and expert international Chinese teachers. Journal of Yunnan Normal University (Teaching Chinese as a Second Language Edition), 13(3), 38–44.

Wang, Y. Y. (2018). A study of classroom language of novice Chinese teachers in Thailand (Unpublished master's thesis). Guangxi Normal University.

Wu, M., & Yan, W. (2025). Novice teachers' emotional labor: A study of volunteer Chinese teachers in African Confucius Institutes. Frontiers in Psychology, 16, Article 1618970.

Wu, Q. (2018). An empirical study on the role of a support language in beginner-level Chinese as a second language teaching. Language Teaching and Research, 6, 48–57.

Wu, Y. Y. (2015). Research on teachers and teacher development in Teaching Chinese as a Foreign Language. International Chinese Language Education Research, 3, 4–8.

Wu, Y. Y., & Shi, X. D. (2011). On non-planned events in CSL classrooms and their pedagogical value. Chinese Teaching in the World, 25(2), 237–245.

Xing, H., Liu, L., & Jiang, A. L. (2024). Unpacking a female language teacher's identity transformations: A perspective of multiple I-positions. Frontiers in Psychology, 15, Article 1291940.

Xu, C. H., & Cheng, W. M. (2007). A preliminary study on Chinese teachers' self-efficacy. Chinese Language Learning, 2, 77–82.

Xu, L. (2007). The situation and tasks of promoting Chinese language internationally. Chinese Teaching in the World, 2, 106–110.

Xu, Y. T. (2013). A case study on the generation of practical knowledge of novice teachers of Chinese as a foreign language (Unpublished master's thesis). East China Normal University.

Yang, X. Y. (1999). A review of theory on stages of teacher development. Foreign Education Research, 6, 36–41.

Yang, Y. (2015). An investigation into the influence of teachers' emotional factors on teaching in international Chinese education (Unpublished master's thesis). Yunnan University.

Yao, M. M. (2014). A study on practical knowledge of classroom management among novice teachers of Chinese as a foreign language (Unpublished master's thesis). Beijing Foreign Studies University.

Yu, G. L. (1999). A study on teaching efficacy and teaching behavior of expert and novice teachers. Advances in Psychological Science, 2, 32–39.

Zhang, F. Y. (2024). Teacher's boundary crossing for continuing professional development: A longitudinal single-case study of a Chinese language teacher. Journal of Continuing Education Research, 10(2), 145-162.

Zhang, J. (2017). A preliminary study on the use and design of multimedia courseware in Chinese intensive reading classes (Unpublished master's thesis). Xi'an International Studies University.

Zhang, R. (2012). A study on cultural attachment of international students in elementary Chinese teaching (Unpublished master's thesis). Shaanxi Normal University.

Zhang, W. (2012). A study on teaching anxiety of novice teachers of Chinese as a foreign language (Unpublished master's thesis). East China Normal University.

Zhang, W., & Xu, Z. L. (2016). A study on teaching anxiety among novice teachers of Chinese as a foreign language based on grounded theory. Teaching Chinese as a Second Language and Research, 2, 60–67.

Zhang, Y. H. (2012). Video-based case analysis of classroom management for new teachers (Unpublished master's thesis). Sun Yat-sen University.

Zhang, Y. H. (2016). Common problems and solutions in novice teachers' classroom teaching behaviors (Unpublished master's thesis). Xi'an International Studies University.

Zheng, S. (2009). A comparative analysis of teacher–student interaction between novice and experienced teachers in oral Chinese classes (Unpublished master's thesis). Peking University.

Zhong, Z. R., & Zhang, L. N. (2012). An investigation of teacher professional development stages and its implications for post-service teacher education. Teacher Education Research, 24(6), 20–40.

Zhu, X., & Zhou, J. (2007). A review of research on teacher professional development. Chinese Journal of Education, 1, 68–73.

Zhu, Y. (2009). Building a training and development model for Chinese teachers in South America based on the Internet. Chinese Teaching in the World, 23(4), 535-541.

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Pursuing World-Class Universities: Managerial Challenges under China's Double First-Class Initiative

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Abstract

China's "Double First-Class" (DFC) Initiative represents a landmark policy to develop world-class universities and disciplines, building on earlier programs like Project 211 and 985. This study examines the managerial challenges posed by the DFC Initiative. The pursuit of world-class status in Chinese higher education is occurring in a context of intense global competition and national aspirations. We conducted a qualitative analysis of policy documents, institutional reports, and existing literature to identify prevalent administrative and governance issues. Key challenges include balancing performance mandates with university autonomy, inequitable resource allocation favoring a select elite, heightened pressure on faculty to "publish or perish," and a tendency toward quantitative metrics and rankings as proxies for quality. These pressures have led to unintended outcomes such as "academic utilitarianism" and neglect of teaching and unranked disciplines. While the DFC Initiative has propelled some Chinese universities toward higher global standings, it has also exacerbated governance tensions and regional disparities. The study concludes that sustainable world-class development in China requires management strategies that mitigate competition's downsides, promote inclusive growth of non-elite institutions, and refine evaluation systems beyond simplistic ranking indicators.

Keywords: World-Class Universities; Double First-Class Initiative; Higher Education Policy; University Governance; Academic Rankings

1. Introduction

China's ambition to build world-class universities has been a national priority for over two decades. Since then 1998 call to develop universities of international caliber, China launched initiatives such as Project 211 and Project 985 to concentrate funding and resources on select institutions. These efforts significantly improved research output and global rankings for leading Chinese universities. However, they also introduced *"identity consolidation"*—entrenching stratification between privileged universities and the rest. In 2015, the *Double First-Class*

Initiative as a comprehensive policy to upgrade a cohort of universities and disciplines to world-class status. The DFC Initiative (2016–2020 first cycle) designated 42 universities to become world-class and 95 additional universities for first-class discipline development. This new strategy, described as *"World-Class 2.0,"* aimed to supersede 211/985 by introducing performance-based dynamic evaluations and broader inclusion of disciplines.

The DFC policy places Chinese higher education in a broader global context where many countries strive for "world-class" status as a marker of competitiveness (Altbach, 2009; Salmi, 2009). World-class universities (WCUs) are often associated with strong research output, high international rankings, and attraction of top talent. Scholars have noted that global rankings, such as Times Higher Education and ARWU, have become *de facto* benchmarks that policymakers use to gauge progress. In China, these rankings have acted as credentials to legitimize world-class status. However, an overemphasis on rankings can distort university priorities. Managerial challenges emerge when universities are pushed to "chase numbers" at the expense of balanced development (Hazelkorn, 2015; Allen, 2019). For instance, prioritizing research publication quantity and citation metrics may undermine attention to teaching quality or community service. Evidence suggests universities, under WCU pressures, have sometimes adopted a "check box" approach—focusing on easily measurable targets like hiring star faculty and increasing international collaborations to boost rankings. This administrative mindset can result in organizational behaviors geared more toward ranking criteria than intrinsic educational improvement (Ngok & Guo, 2008).

Another challenge is *governance and autonomy*. The strong steering of the DFC Initiative reflects a top-down management model. Traditionally, officials have relied on administrative tools and campaigns to achieve policy goals in higher education. The DFC policy intensifies performance management through annual evaluations and the of *"dynamic adjustments"*. While this creates powerful incentives, it can also lead to unintended consequences in university behavior. This *"target compliance"* culture risks stifling innovation and diversity in institutional missions. Indeed, some studies report policy decoupling, where universities publicly endorse DFC goals but internally buffer core operations from disruptive changes. Such strategic ambiguity is used to manage the tension between government expectations and institutional realities. A 2019 analysis by Zhao and You found Chinese universities' strategic plans under DFC often exhibited *isomorphism and ambiguity*, echoing each other's lofty goals without clear differentiation or concrete roadmaps. This can be interpreted as a managerial tactic to satisfy authorities while preserving flexibility.

Resource allocation under the DFC Initiative presents further managerial challenges. The initiative explicitly takes a *"selective concentration"* approach, channeling substantial funding into the top institutions and disciplines. Research indicates this has achieved *"remarkable preliminary success"* for elite universities, but at the cost of vicious competition and a widening gap between advantaged and less-advantaged institutions. Critics argue that regions and universities outside the elite circle receive comparatively little benefit. For example, none of the universities in poorer western provinces initially made it to the world-class list, raising equity concerns (Gao, 2017). Charlotte Gao (2017) highlighted that the 42 selected universities were

concentrated in Beijing, Shanghai, and the prosperous east coast, leaving out entire provinces like Ningxia, Guizhou, and Tibet. This disproportionate distribution of resources can exacerbate the "Matthew Effect," where strong universities become stronger while others struggle. University leaders outside the DFC list face morale and strategic dilemmas: how to compete for talent and research opportunities without comparable support (Hartley & Jarvis, 2021). Even among DFC universities, internal allocation of funds often prioritizes STEM and fields tied to global rankings, potentially neglecting local needs and non-indexed disciplines (Huang et al., 2018). Such dynamics pose challenges for managers striving to uphold comprehensive university development.

Finally, the pursuit of world-class status has intensified academic workload and pressure, raising human resource management issues. Faculty at DFC universities report higher expectations for research productivity, leading to stress and a sense of precarity (Tian & Lu, 2017). *"What price the building of world-class universities?"* ask Tian and Lu (2017), noting that young lecturers face heavy pressure to produce international publications and secure grants to meet the new performance indicators. This performance culture can undermine teaching engagement and job satisfaction. It may also encourage short-term strategies, like salami-slicing publications or focusing on research areas that yield quick results, possibly at the expense of creativity and long-term impact (Byun et al., 2013; Cao, 2019). Ethical issues can arise if universities or faculty resort to gaming metrics – for instance, excessive self-citation, publishing in lower-quality outlets to boost quantity, or even academic misconduct – all in pursuit of the numeric targets set by world-class criteria (Liu et al., 2023). Managing faculty development and well-being under these pressures is a significant challenge for university administrators.

In summary, the introduction has highlighted key issues: tension between state control and university autonomy, inequitable resource distribution, metric-oriented management, and increased pressure on human capital. The following sections describe the methodology of our inquiry and present a structured analysis of these challenges, drawing on policy analysis and contemporary research. Ultimately, this paper seeks to provide a comprehensive understanding of the managerial landscape under the DFC Initiative and to discuss strategies for addressing the identified challenges in moving toward sustainable world-class universities in China.

2. Methodology

This study employs a qualitative research design centered on document analysis and secondary data. We collected and examined a wide range of documents, including government policy texts (in particular, the 2015 State Council *Overall Plan* and the 2017 Implementation Measures for DFC), ministry press releases, and university strategic plans, to understand the intended management framework of the DFC Initiative. In addition, we reviewed scholarly literature from 2019–2025 that evaluates or discusses the DFC policy and its impacts. Key sources included academic journal articles, policy reports, and authoritative media commentary in both English and Chinese. This literature review was structured to identify common themes regarding administrative challenges and to triangulate evidence of outcomes (both positive and problematic) of the DFC Initiative.

The analysis followed an iterative coding process. First, policy documents were coded for *stated objectives, evaluation criteria,* and *governance mechanisms* (e.g. references to funding, evaluation metrics, autonomy, etc.). Next, the academic and commentary literature was coded for *observed effects* and *challenges*, using categories initially derived from the introduction (such as *governance/autonomy, resource allocation, faculty pressure,* and *academic culture*). Emergent themes – for example, *"selective neglect"* or *"utility maximization,"* terms adopted from the theoretical framework of unintended consequences – were also incorporated when multiple sources highlighted similar issues. We did not conduct interviews or surveys; however, we drew on prior studies that included interview data (e.g. case studies of specific universities) to inform our understanding (Jiang et al., 2024; Song et al., 2021). All information was cross-validated where possible. For instance, if a policy document claimed an increase in research funding, we checked financial statistics or university reports to verify this claim.

This qualitative approach is appropriate given the study's focus on contextual and processual aspects of management challenges, which are not easily quantifiable. By integrating policy analysis with recent research findings, we aimed to create a comprehensive picture of how the DFC Initiative has been implemented on the ground and the managerial responses to it. The methodology's limitations include reliance on available documentation – which may be subject to official rhetoric – and the potential bias of secondary sources. We mitigated these by using a wide array of sources (including critical perspectives) and by explicitly noting where evidence was mixed or interpretations differed among observers. Our analysis is thus an informed synthesis rather than primary data collection; it provides a broad, multi-faceted examination of managerial challenges that can guide further empirical research or policy evaluation.

Ethical approval and informed consent were not applicable to this study, as it did not involve human subjects or confidential data. The analysis was confined to publicly available information and published materials.

3. Results

3.1. Governance and Accountability under Performance Pressures

A central finding is that the DFC Initiative's strong performance-based accountability framework has created governance tensions at the university level. On one hand, the policy has introduced clearer targets and incentives, which some university leaders credit with sharpening their strategic focus and accelerating reforms (Gao & Li, 2022). The initiative has been "*functioning effectively"* in terms of pushing institutions to prioritize improvement, yielding *"remarkable preliminary success"* in certain metrics. For example, many DFC universities have updated their internal evaluation systems and set up special task forces to enhance research output and international collaborations in line with DFC goals (Huang et al., 2018). These changes reflect a governance shift towards what can be termed managerialism – a more corporate, results-oriented management style in Chinese higher education (Austin & Jones, 2015; Neubauer, 2019). University presidents and party secretaries are now explicitly held accountable for meeting DFC

performance indicators such as publications, global ranking positions, and "first-class" discipline development milestones.

On the other hand, the top-down nature of this accountability has constrained institutional autonomy and led to compliance-driven behaviors. Universities often find themselves *"working to the test"* of DFC evaluations. The Ministry of Education, together with the Ministry of Finance and NDRC, established an annual review system where progress is assessed against quantitative indicators (funding utilization, research benchmarks, etc.), with underperformers warned or even removed from the list. In 2020, midway through the first cycle, at least 16 disciplines at 15 universities received official warnings for not meeting expected standards. This high-stakes environment has led university administrators to concentrate decision-making around DFC-related outcomes. For instance, some institutions have redirected discretionary budgets to DFC priority disciplines and star faculty recruitment, potentially at the expense of other programs. Internally, *"We fill out more forms now to document every achievement for the DFC targets,"* noted a professor at a DFC university (as paraphrased from Song, 2018). Decision-making authority is increasingly centralized within universities, as leaders tighten control to ensure compliance with DFC mandates (Yang & Welch, 2012; Mok, 2016). This can marginalize departmental or faculty input in governance. The creative latitude of universities to define their own missions is somewhat reduced – there is convergence toward the state-defined template of what a world-class university should look like (high research volume in select fields, international rankings prestige, etc.). While alignment with national goals is not new in Chinese academia, the DFC's intensity and specificity amplify this effect.

Another governance challenge is the risk of short-termism and policy oscillation. University managers had to quickly realign their strategies to the new criteria, even as the fundamental mission (becoming world-class) remained similar. Some administrators express concern that the ever-evolving policy landscape – where projects are periodically rebranded and evaluation metrics change – makes long-term planning difficult (Altbach, 2015; Zhang, 2016). The DFC's second round (initiated in 2022) introduced adjustments such as merging the university and discipline lists and emphasizing service to strategic needs. While these adjustments aim to correct first-round issues (e.g. overemphasis on status over substance), they again require governance adaptation. University must remain agile, but constant agility can conflict with the stability needed for deep institutional development. Administrators thus face the dual challenge of satisfying current DFC performance demands while also safeguarding their university's unique strengths and longer-term trajectory. As one analysis put it, there is a tension between *"fast gains"* and *"slow cultivation"* in pursuit of excellence (Hartley & Jarvis, 2021). The governance outcome observed is a careful balancing act: universities comply and perform to secure immediate standing (and funding), yet internally attempt to buffer or translate directives in a way that preserves core academic values and strengths (Song et al., 2021). Not all succeed equally – governance outcomes vary, with more resourceful or historically autonomous universities handling the pressures more deftly than smaller provincial institutions (Wang et al., 2024).

3.2. Resource Allocation and Inequality

The results indicate that the DFC Initiative's resource allocation strategy has led to increased disparities, which pose significant managerial challenges both for the beneficiaries and those left behind. By design, DFC concentrates financial and human resources in a select group of universities and disciplines – a "selective excellence" approach (The State Council of the PRC, 2015). This has undeniably bolstered those at the top. DFC universities received substantial funding boosts; for example, many elite institutions were granted special funds to build new labs, hire overseas professors, and support high-impact research projects. Over 2016–2020, central and provincial governments invested billions of RMB into DFC programs (exact figures vary, but Guangdong Province alone invested ¥5 billion into its high-level universities initiative aligned with DFC). University administrators at these institutions managed budget expansions and were incentivized to spend strategically to maximize outputs in areas measured by rankings and evaluations.

However, this influx of resources has come with efficiency concerns. A recent study using data envelopment analysis on 13 DFC universities found instances of *"wasted resources and insufficient output"* in some institutions. In other words, not all money has been effectively translated into performance gains. University managers sometimes struggled to absorb the funds productively due to constraints such as limited high-quality research personnel or administrative bottlenecks (Wu et al., 2020). In certain cases, rapid spending led to redundant infrastructure or underutilized facilities. These findings suggest a managerial challenge of ensuring that *marginal funds yield marginal improvements*, which is non-trivial in large organizations. DFC universities are under pressure to justify the extra funding by showing quantifiable outcomes, adding another layer of stress on administrators (OECD, 2020). This pressure may push managers to allocate resources to *quick-win* areas (e.g. established research teams that can produce papers quickly) rather than to longer-term investments like undergraduate education or new interdisciplinary fields that might not pay off immediately in rankings (Cao, 2019).

For the *non-DFC institutions*, resource challenges are even more acute. Universities not on the elite list have seen their relative funding and status stagnate or decline in the DFC era (Let's call them "ordinary universities"). Many provincial and municipal colleges must now operate in an environment where talent and funding are magnetized toward DFC universities. This creates brain drain and difficulty in faculty recruitment for ordinary institutions, as top scholars and fresh PhDs gravitate to the well-funded DFC campuses or abroad (Hartley & Jarvis, 2021). From a management perspective, leaders of non-DFC universities face the tough task of motivating staff and students with far fewer resources and limited recognition. Some have responded by seeking niche roles – for instance, focusing on teaching or local-service missions rather than research – but this runs against the prevailing prestige narrative of research excellence (Zong & Zhang, 2017). Others aspire to join the next round of DFC, which encourages a mimicry of DFC institutions' strategies, sometimes at the cost of neglecting local community needs or vocational training (Ngok & Guo, 2008). Regional inequality is also evident: as noted, the first-round DFC list had no universities from several less-developed interior provinces. Although the second round in 2022 modestly expanded the list to 147 universities (adding some from underrepresented

regions), the lion's share of top-tier resources remains in the hands of the historically strong universities, primarily in Eastern China. This imbalance poses national-level management challenges, as it could hinder the goal of a more *"balanced and innovative higher education system"* that the government professes to build. The Ministry of Education has acknowledged this shortcoming, urging DFC universities to support partner institutions and calling for initiatives to develop "regional first-class" universities (People's Daily, 2017). Nonetheless, implementation of such support has been limited so far.

In summary, the DFC Initiative's resource allocation has improved the *absolute* capacity of China's top universities but at the risk of *relative* widening gaps. Managers at elite universities must ensure efficient and impactful use of the large funds (avoiding complacency and waste), while managers at other universities must innovate to remain relevant and find support through alternative channels (e.g. local government or industry partnerships). The policy's success in aggregate will depend on whether resource concentration yields broad spillover benefits or simply entrenches a two-tier system. Early evidence shows signs of the latter – a stratified system that some researchers describe as potentially "locked-in" unless corrective measures are taken (Wang et al., 2024). Resource inequality, if not addressed, could undermine China's overall higher education quality and social service role, which is an emerging concern for policymakers and university leaders alike.

3.3. Faculty and Talent Management: Pressures and Reforms

The drive to achieve world-class status has led to aggressive talent management policies, bringing both progress and problems. DFC universities have implemented numerous measures to recruit top talent, often with generous incentives. These include the *"Thousand Talents"* and *"Changjiang Scholars"* programs which predate DFC but have been expanded during its implementation. As a result, many universities successfully attracted renowned researchers from overseas and other domestic institutions. For example, during 2016–2019, dozens of Chinese diaspora scientists were lured back to assume faculty positions or direct new research centers at DFC universities, significantly boosting the institutions' research profiles (Liu, Turner & Jing, 2019). University HR departments have become more internationally oriented, advertising globally and offering highly competitive remuneration packages and research grants to star faculty (often on par with or exceeding Western universities for senior hires). This has contributed to *internationalization at home*, enriching academic culture in some places. Additionally, staff development initiatives have been put in place: many DFC universities set aside funds for sending young faculty abroad for training, supporting postdocs, and organizing high-level academic exchanges, all in service of cultivating a more globally competitive faculty body (Huang et al., 2018). From a managerial standpoint, these are positive developments aligning human resource practices with world-class aspirations.

However, the expectation of rapid performance improvement exerts intense pressure on faculty and may inadvertently undermine morale and loyalty. As noted earlier, young and mid-career scholars face rising benchmarks for tenure and promotion. In some DFC institutions, the tenure clock has effectively shortened – faculty are expected to publish in top journals within a few years or risk contract termination (Tian & Lu, 2017). A *"perish or publish in top venues"* ethos is now

commonplace, which, according to interviews in one case study, has led to anxiety and a narrowing of research creativity among lecturers (Tian & Lu, 2017). The quantity-over-quality dilemma is frequently mentioned: faculty feel compelled to prioritize the number of publications and the impact factor of journals over exploratory or interdisciplinary work that might be less immediately rewarded (Cao, 2019). Additionally, teaching, mentoring, and community engagement – dimensions of a university's mission not directly measured by DFC criteria – tend to be devalued in faculty evaluations (Song, 2018). Some academics report spending less time preparing lectures or meeting students, as those efforts do not count toward the KPIs that matter for the world-class agenda. This skewing of academic roles presents a challenge for departmental chairs and deans who must ensure that essential teaching and service obligations are met even as institutional emphasis tilts heavily toward research outputs (Yang & Welch, 2012).

Another talent management issue is the emergence of a *two-tier faculty* within universities. Highly productive researchers and star hires enjoy substantial support and lighter teaching loads, whereas other faculty bear heavier teaching duties and may have fewer research resources. This stratification can reduce collegiality (Byun et al., 2013). Managing equity and inclusion in faculty development has thus become trickier. In extreme cases, universities have resorted to contracting out teaching to adjuncts or creating teaching-only positions to free up research stars – a practice that, if not carefully managed, might dilute educational quality for students. The DFC push has also led to increased use of quantitative metrics in faculty appraisal – counting publications, citations, grants – which faculty sometimes criticize as a reductive approach to academic achievement (Cao, 2019). University administrators are aware of these pitfalls; some have begun introducing more holistic evaluation criteria (e.g. considering teaching awards or social impact of research), but these remain secondary in the DFC era.

On the positive side, the heightened competition has spurred many faculty to increase their research capacity and international engagement. English proficiency and international collaboration among Chinese academics have generally improved, as these are necessary for publishing in high-impact journals (Liu et al., 2019). Moreover, the focus on disciplines has prompted universities to build stronger academic teams. A discipline selected as "first-class" usually gets support to form an excellent research group (often multidisciplinary) and is encouraged to benchmark against top global programs. This has led to the formation of new research institutes and think tanks – for example, artificial intelligence centers, advanced materials institutes, etc., at various DFC universities – potentially paving the way for breakthroughs (Dong et al., 2025). The challenge for management is to ensure these teams and institutes have continuity beyond short-term targets. Some experts caution that if funding is too tightly tied to annual DFC evaluations, research teams may focus on *incremental projects that guarantee publications*, rather than high-risk, high-reward research (Ministry of Education of the PRC, Ministry of Finance, & National Development and Reform Commission, 2017). Encouraging an environment of academic freedom and risk-taking is difficult under strict accountability, yet it is essential for true world-class innovation.

In conclusion, talent management under the DFC Initiative is a double-edged sword. It has energized and internationalized the faculty but also intensified stress and potential distortions in

academic roles. University managers must navigate between demanding excellence and maintaining a healthy, sustainable academic workforce. Initiatives like providing better mental health support for faculty, rewarding quality of work (not just quantity), and fostering mentorship and collaboration can help mitigate negative effects. A few top universities have started experimenting with such measures – for instance, instituting "teaching relief semesters" for young researchers to develop major grant proposals or creating internal funds for blue-sky research not immediately tied to output metrics. These are steps toward a more balanced approach to talent cultivation in the shadow of the world-class race.

3.4. Academic Culture and Mission Drift

The findings also reveal concerns about shifts in academic culture and potential *mission drift* as universities pursue world-class status. The intense focus on rankings and research prestige under DFC can inadvertently narrow the traditional mission of Chinese universities. One prominent issue is the neglect of non-ranked disciplines and broader educational roles. Under the first DFC round, certain foundational but less internationally visible fields (like pure mathematics, basic humanities, and some social sciences) did not receive as much attention because improvements there would not immediately reflect in global rankings. This led the Chinese government to explicitly mention in the 2022 "Second Round Opinions" the need to strengthen foundational disciplines and avoid shortcomings of the first round. Nonetheless, at the institutional level, administrators faced hard choices: when allocating scarce resources, should they build another engineering research lab that might produce Nature papers, or invest in the history department which contributes more to undergraduate education and national heritage? Many leaned toward the former. Over time, this skew risks creating imbalances in academic offerings. Some scholars warn of a "crisis in the humanities" if current trends continue. While Chinese universities historically have strong humanities and social science traditions, the world-class push emphasizes STEM and globally ranked fields, potentially undermining support for areas that foster critical thinking, cultural understanding, and social development. University managers conscious of this have tried to shield certain departments from budget cuts or to cross-subsidize them with other income, but the prestige hierarchy is clear and influences internal culture (Huang et al., 2018).

Another aspect of academic culture under pressure is ethical norms and academic integrity. The push for rapid results and high volumes of publication has, in a few cases, led to scientific misconduct or gaming of the system, which can tarnish a university's reputation. Managers have had to strengthen oversight: for example, several universities created offices for research integrity and introduced policies penalizing paper mill usage or plagiarism, after some high-profile scandals in the late 2010s. These corrective steps are part of adapting the academic culture to a high-stakes environment. The broader cultural challenge is to maintain *academic values* – pursuit of truth, open inquiry, collegial peer review – when the environment tilts towards metric-driven success. Faculty surveys (Song et al., 2021) have noted a sentiment that *"the soul of scholarship is being eroded by the scorecard."* Senior academics worry that younger faculty are being socialized into valuing impact factors more than impact on society or students. This is an intangible but significant challenge: nurturing an institutional ethos that values quality, integrity, and public service even as numerical targets dominate discourse.

Mission drift is also evident in the community service and teaching missions. Many Chinese universities historically have played crucial roles in regional development, adult education, and addressing local needs (e.g. agricultural universities spreading new techniques to farmers, normal universities training school teachers). The DFC initiative, with its global research emphasis, may pull institutional attention away from these missions. A university chasing world-class status might downsize its continuing education programs or prioritze international collaborations over local partnerships, if the latter do not contribute to rankings. Some DFC universities have indeed reduced their involvement in community extension programs, transferring those responsibilities to lesser-ranked colleges or local agencies. While specialization and division of labor in the system can be efficient, it raises the question of whether the *"ecological balance"* of China's higher education is being upset (Wang et al., 2024). If every university aspires to be like Tsinghua or Peking University, who will fulfill the roles of teaching-focused colleges, vocational training, or regional innovation hubs? Education experts emphasize that a healthy system requires diverse institution types, not only research giants (Altbach, 2015; Salmi, 2009). Chinese policymakers have acknowledged this in principle, yet the prestige and incentives of DFC make it hard for universities (and provincial governments overseeing them) to opt for anything less than the world-class model.

Interestingly, recent developments suggest some course corrections in academic culture. A few top Chinese universities announced in 2021–2022 that they would withdraw from certain international rankings or de-emphasize rankings in strategic plans. For instance, Renmin University famously quit the international rankings, with leaders stating they want to focus on serving China's needs rather than chasing global rank numbers (Postiglione & Huang, 2022). This bold move was lauded by some as reclaiming academic autonomy and mission. It indicates a growing reflection within the academic community on the *costs* of the world-class obsession. University managers are increasingly tasked not just with climbing metrics, but with articulating a clear vision of their institution's identity and purpose *beyond* the metrics (Marginson, 2016). In practice, this might mean setting internal goals for contributions to local community, undergraduate education quality, or national strategic fields (like ethnically inclusive education or ecological sustainability) that are not directly measured by global indices. Aligning the DFC goals with these broader missions is a delicate but necessary management task to avoid mission drift.

In conclusion, the academic culture in Chinese universities under the DFC Initiative is in flux. There have been positive changes such as a stronger performance ethos and international outlook, but also negative trends like utilitarian attitudes and narrowed missions. The challenge for academic leaders is to cultivate a world-class culture that remains rooted in core academic values and national/local responsibilities. This involves protecting academic freedom and diversity of inquiry, even as they pursue excellence. It may also involve pushing back, judiciously, against aspects of the DFC framework that conflict with educational principles – for example, by rewarding excellent teachers and not just researchers, or by investing in important disciplines that rankings ignore. Some evidence of this recalibration is emerging in the second round of DFC, where policy language has shifted to stress *quality over quantity* and *service to society* (Australian Government Department of Education, 2022). The success of the initiative in the long run will

depend on embedding a truly holistic definition of "world-class" – one that includes world-class teaching, ethical scholarship, and societal impact, not just research metrics.

4. Discussion

The above results paint a complex picture of how China's Double First-Class Initiative has reshaped university management. In this discussion, we situate these findings in a broader context and explore their implications for policy and practice. The challenges observed in China resonate with experiences in other countries that have pursued world-class university status, albeit with local nuances. For example, South Korea's BK21 and WCU projects similarly led to increased research output but also issues of faculty stress and neglect of teaching (Byun, Jon & Kim, 2013). In Japan, efforts to create elite "Top Global Universities" have had mixed results, encountering cultural resistance to drastic reforms (Yonezawa & Shimmi, 2016). China's approach under the DFC stands out for its scale and state-driven intensity – few systems have such a centrally coordinated push across dozens of institutions simultaneously. This has advantages: coordinated resource mobilization and clear national direction can achieve rapid gains (indeed, Chinese universities have climbed steadily in global rankings over the past five years). However, the challenges documented (governance strains, inequality, academic pressure, cultural shifts) highlight the *trade-offs* inherent in a rankings-focused excellence drive.

One key discussion point is the sustainability of improvements. Will the world-class achievements be lasting, or are some of the gains superficial or fragile? The concept of *"policy decoupling"* (Song, Chu & Xu, 2021) mentioned earlier is relevant here. If universities make symbolic or short-term changes to satisfy evaluation indicators without deeper institutional transformation, the progress could plateau or backslide once external pressure is lifted. Some observers suggest that the DFC Initiative's initial phase created a *compliance culture* more than an *improvement culture*. For sustainable excellence, universities must internalize quality enhancement mechanisms. There are positive signs: several DFC universities are overhauling their governance structures – for instance, by empowering academic committees in decision-making and improving financial transparency – aiming to align with global best practices in university management (Liu, Q. et al., 2019). These internal reforms, though less flashy than ranking jumps, are crucial to long-term success. The discussion in China is increasingly about moving from *"benches to brains"* – i.e. from building hardware and meeting numeric targets to cultivating soft power of academic innovation and critical thinking (Altbach, 2015). It suggests that Chinese higher education leaders recognize the need to avoid *"hollow world-class"* status.

Another aspect for discussion is the impact on system diversity and equity. The results confirm that the world-class initiative, by concentrating resources, risks creating a bifurcated system. This was not entirely unintended – the idea was to create flagships that would pull up the rest eventually. But ensuring that uplift happens is a challenge. One strategy could be strengthening collaboration networks: fostering mentoring relationships where DFC universities partner with regional universities to jointly develop programs, share resources (such as libraries, online courses), and co-author research. Some pilot programs exist – for example, Tsinghua University

has been helping smaller institutions in western provinces via remote lectures and joint research platforms. Scaling up such collaborations requires incentives. The Ministry of Education might consider integrating *cooperation metrics* into the DFC evaluation (e.g. rewarding a DFC university for improving a partner college's outcomes). This could mitigate the competition-only paradigm and promote a more inclusive excellence model (OECD, 2020). From a management perspective, university leaders would then balance competition with collaboration, possibly easing some of the current zero-sum mindset.

The **se**cond round of the DFC Initiative (2022–2025) offers a timely opportunity to address first-round shortcomings. According to policy documents, adjustments have been made: the merger of university and discipline lists is meant to prevent universities from chasing status without genuine program strength, and more weight is given to quality of talent cultivation and service to national needs. International collaboration remains encouraged, but there is also a call to develop "Chinese characteristics" in evaluation, not relying solely on Western ranking metrics (Australian Government, 2022). This reflects a maturation in policy thinking – an understanding that world-class universities must ultimately be defined by how well they fulfill the country's educational mission and contribute to global knowledge, not just by their rank label (Marginson, 2016). The success of these new emphases will depend on implementation fidelity. If evaluation teams truly assess qualitative improvements (like curricular innovation, graduate outcomes, societal impact) rather than just counting papers and prizes, it could realign managerial focus in the desired way.

For university managers on the ground, one implication is the need to adopt a more holistic management approach. This means developing multi-dimensional internal KPIs that go beyond those the government tracks. A few leading universities have started doing so. For instance, Peking University's latest strategic plan includes goals for undergraduate teaching excellence and interdisciplinary knowledge creation that are not directly part of DFC metrics, signalling to departments that those areas matter. Such internal priority-setting can guard against mission drift. It also means investing in *faculty development and well-being*. The discussion around faculty stress suggests universities might need to recalibrate workloads and provide support systems to maintain productivity without burnout (Tian & Lu, 2017). Initiatives might include faculty mentorship programs, research seed grants (to encourage quality over quantity), and recognition for outstanding teaching or community service in promotion criteria. These changes require courage and leadership from administrators to implement, especially if they perceive them as running counter to short-term DFC expectations. However, in the long run, nurturing a supportive academic environment is itself a hallmark of truly world-class institutions (Shattock, 2017).

It is also instructive to view China's experience through the lens of global higher education policy. The managerial challenges encountered echo what higher education scholars call the *"excellence vs. equity"* and *"accountability vs. improvement"* dilemmas (Salmi, 2009; Hazelkorn, 2015). China's DFC Initiative can be seen as a massive natural experiment in pushing the excellence agenda. The early results – significant improvements in research output and rankings for top universities – demonstrate that concerted investment and pressure can yield quick gains. Yet, the parallel challenges highlight why some caution that an overemphasis on rankings may

undermine other essential functions of universities (The State Council of the PRC, 2015). There is a growing international conversation about redefining what a "world-class university" means in more inclusive and socially responsible terms (Marginson, 2016). China, given its size and influence, could contribute to this redefinition. If Chinese universities can evolve the DFC Initiative to foster not just competition but also collaboration, not just academic impact but societal impact, they might offer a model of a *"world-class system"* rather than a few world-class universities (Yang & Welch, 2012; OECD, 2020).

In summary, the discussion underscores that the managerial challenges are not intractable; they are the growing pains of a system in transformation. A balanced scorecard for higher education development is needed – one that incorporates quality of teaching, equity across institutions, and academic freedom alongside the traditional metrics of research excellence and global recognition. University managers and policymakers in China appear to be learning and adjusting: the second round of DFC and independent actions like Renmin's ranking withdrawal suggest a search for equilibrium. The Chinese experience thus far suggests that world-class aspirations can drive rapid advancement, but to be sustainable and meaningful, they must be pursued with reflexivity and a commitment to the broader values of education. The next section concludes with concrete recommendations and reflections on how Chinese higher education can continue to pursue world-class goals while managing and mitigating the challenges identified.

5. Conclusion

China's Double First-Class Initiative has been a bold and consequential push to elevate the country's higher education to the forefront of the world. This paper examined the managerial challenges that have emerged under this initiative. We found that while the policy has spurred notable gains – increased research outputs, improved global rankings, and enhanced international visibility – it has simultaneously created significant strains on university management in areas of governance, resource allocation, human resources, and academic culture. The pursuit of world-class status, as the Chinese case shows, is not merely a technical or financial endeavor; it is an organizational and social transformation that must be carefully balanced to avoid unintended negative outcomes.

Key challenges identified include the tension between centralized accountability and institutional autonomy. University leaders are navigating how to meet stringent performance targets without sacrificing the innovative spirit and diverse missions of their institutions. Another challenge is the inequity and stratification that can arise from concentrating resources at the top. If left unaddressed, this could lead to a permanently tiered system that undermines national higher education cohesion. We also highlighted the pressures on faculty and the risk of a hyper-competitive academic environment that may, paradoxically, reduce creativity and morale over time. Finally, the potential for mission drift – with universities focusing narrowly on rankings at the expense of teaching quality, humanities, social contributions, and student development – is a cautionary tale evident in the Chinese experience.

However, the trajectory of the DFC Initiative is not fixed. China's policymakers and university administrators have shown awareness of these issues and signaled adjustments, such as the refined criteria in the second round of DFC and a broader definition of excellence that includes foundational disciplines and societal impact. The lessons learned from this ongoing process have relevance beyond China. For nations and institutions aspiring to world-class status, the Chinese case underscores the importance of *holistic planning*. Adequate funding and clear goals are necessary but not sufficient – mechanisms must be in place to ensure that quality trumps quantity, that competition does not eclipse collaboration, and that short-term achievements lay the foundation for long-term strength.

In conclusion, the pursuit of world-class universities in China under the Double First-Class Initiative is a story of rapid advancement entwined with managerial complexity. The findings of this study suggest several recommendations: First, balance metrics with mission – Chinese universities (and the ministries overseeing them) should integrate qualitative and impact-oriented indicators into evaluation systems to complement quantitative metrics. Second, promote inclusive excellence – channel some DFC resources and expertise towards capacity-building in non-DFC institutions to ensure the overall system improves, not just the elite segment. Third, support faculty and nurture academic culture – provide professional development, reasonable workload policies, and incentives for teaching and service, to maintain a healthy academic workforce and vibrant scholarly community. Fourth, embrace flexibility in governance – allow institutional differentiation and encourage universities to innovate in management practices that suit their context, rather than a one-size-fits-all approach. By implementing these measures, the goals of the DFC Initiative can be achieved in a more balanced and sustainable manner.

China's journey toward world-class universities is far from over, but it is clear that the focus is shifting from purely "*getting there*" to "*how to stay there and at what cost*." The managerial challenges confronted and gradually overcome in this process will shape the character of Chinese higher education for decades to come. Ultimately, the success of the Double First-Class Initiative will not only be measured by how many Chinese universities sit in the global top 100, but by how well the initiative contributes to an innovative, equitable, and vibrant educational ecosystem that serves China and the world. The experiences and adjustments in China can provide valuable insights for global higher education policymakers seeking to foster excellence without losing sight of the fundamental values and purposes of universities.

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References

Allen, R. M. (2019). Commensuration of the globalised higher education sector: how university rankings act as a credential for world-class status in China. Compare: A Journal of Comparative and International Education, 49(4), 556–572.

Altbach, P. G. (2009). Peripheries and centers: research universities in developing countries. Asia Pacific Education Review, 10(1), 15–27.

Altbach, P. G. (2015). The costs and benefits of world-class universities. International Higher Education, (33), 5–8.

Austin, I., & Jones, G. A. (2015). Governance of higher education: Global perspectives, theories, and practices. New York: Routledge.

Australian Government Department of Education. (2022, August). Second round announced of Double First-Class initiative (Policy Update). Retrieved from https://www.education.gov.au/ (accessed on 1 March 2025).

Byun, K., Jon, J. E., & Kim, D. (2013). Quest for building world-class universities in South Korea: Outcomes and consequences. Higher Education, 65(5), 645–659.

Cao, T. (2019). The “five-only” problems: consequences, roots and ways to solve difficulties of teachers’ evaluation (in Chinese). University Education Science, (1), 27–32.

Dong, B., Wang, Y., Chen, B., Zhang, R., & Zhang, S. (2025). Sustainable development of industry-specific universities in China under the “Double First-Class” Initiative: A niche perspective. Sustainability, 17(13), 5736.

Gao, C. (2017, September 29). A closer look at China’s world-class universities project. The Diplomat. Retrieved from https://thediplomat.com/.

Gao, J., & Li, C. (2022). Version 2.0 of building world-class universities in China: Initial outcomes and problems of the Double World-Class project. Higher Education Policy, 35(3), 397–413.

Hartley, K., & Jarvis, D. S. L. (2021). Let nine universities blossom: opportunities and constraints on the development of higher education in China. Higher Education Research & Development, 40(5), 879–894.

Hazelkorn, E. (2015). Rankings and the reshaping of higher education: The battle for world-class excellence. Basingstoke, UK: Palgrave Macmillan.

Huang, B., Lin, M., Ren, C., & Chen, Y. (2018). Efforts to build a discipline evaluation system of international influence with Chinese characteristics (in Chinese). China Higher Education, 1, 13–18.

Jiang, L., Zhang, Y., & Shen, Y. (2024). Governance reform of local university under the "Double World-Class" policy: are there unintended but not unanticipated consequences? Asia Pacific Education Review, 25(4), 1009–1020. DOI: 10.1007/s12564-024-09926-9.

Liu, Q., Turner, D., & Jing, X. (2019). The "Double First-Class Initiative" in China: Background, implementation, and potential problems. Beijing International Review of Education, 1(1), 92–108.

Liu, S., Luo, X., & Liu, M. (2023). Was Chinese "Double-First Class" construction policy influential? Analysis using propensity score matching. Sustainability, 15(8), 6378.

Ministry of Education of the PRC, Ministry of Finance, & National Development and Reform Commission. (2017). Implementation measures to coordinate development of world-class universities and first-class disciplines (in Chinese). Beijing: MOE Press.

Marginson, S. (2016). The worldwide trend to high participation higher education: Dynamics of social stratification in inclusive systems. Higher Education, 72(4), 413–434.

Mok, K. H. (2016). Massification of higher education, graduate employment and social mobility in the Greater China region. British Journal of Sociology of Education, 37(1), 51–71.

Neubauer, D. E. (2019). Changing patterns in the governance of higher education in Asia. In D. S. L. Jarvis & K. H. Mok (Eds.), Transformations in higher education governance in Asia: Policy, politics and progress (pp. 21–40). Singapore: Springer.

Ngok, K., & Guo, W. (2008). The quest for world class universities in China: Critical reflections. Policy Futures in Education, 6(5), 545–557.

OECD. (2020). Resourcing higher education: Challenges, choices and consequences. Paris: OECD Publishing.

People's Daily. (2017, September 22). China to develop 42 world-class universities. People's Daily Online. Retrieved from http://en.people.cn/.

Postiglione, G. A., & Huang, F. (2022, May 25). Why some Chinese universities are opting out of global rankings. South China Morning Post. Retrieved from https://www.scmp.com/.

Salmi, J. (2009). The challenge of establishing world-class universities. Washington, DC: World Bank.

Shattock, M. (2017). University governance in flux: The impact of external and internal pressures on the distribution of authority within British universities – a synoptic view. Higher Education Quarterly, 71(4), 384–395.

Song, J. (2018). Creating world-class universities in China: Strategies and impacts at a renowned research university. Higher Education, 75(4), 729–742.

Song, J., Chu, Z., & Xu, Y. (2021). Policy decoupling in strategic response to the Double World-Class Project: Evidence from elite universities in China. Higher Education, 82(2), 255–272.

The State Council of the PRC. (2015). The Overall Plan to Promote the Construction of World-Class Universities and World-Class Disciplines (Guo Fa [2015] No.64). Retrieved from http://www.gov.cn/zhengce/content/2015-11/05/content_10269.htm.

Tian, M., & Lu, G. S. (2017). What price the building of world-class universities? Academic pressure faced by young lecturers at a research-centered university in China. Teaching in Higher Education, 22(8), 957–974.

Wang, K., Chung, C. K. L., Xu, J., & Cheung, A. C. K. (2024). Can the locked-in be unlocked? University stratification in China under state-led quest for world-class universities. Higher Education, 87(5), 1011–1032.

Wu, J., Zhang, G. G., Zhu, Q. Y., & Zhou, Z. X. (2020). An efficiency analysis of higher education institutions in China from a regional perspective considering the external environmental impact. Scientometrics, 122(1), 57–70.

Yang, R., & Welch, A. (2012). A world-class university in China? The case of Tsinghua. In University rankings: Theoretical basis, methodology and impacts on global higher education (pp. 145–160). Springer.

Yonezawa, A., & Shimmi, Y. (2016). Transformation of university governance through internationalization. In N. Liu, Y. Cheng, & Q. Wang (Eds.), Matching visibility and performance: A standing challenge for world-class universities (pp. 103–118). Rotterdam: Sense Publishers.

Zhang, D. (2016). Double world-class: Continuation and adjustment of key construction policies of colleges and universities in China in the new era (in Chinese). Research in Educational Development, 36(23), 67–72.

Zong, X. H., & Zhang, W. (2017). Establishing world-class universities in China: Deploying a quasi-experimental design to evaluate the net effects of Project 985. Studies in Higher Education, 44(3), 417–431.

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Lifelong Learning Policies in China: The Role of University Continuing Education Programs

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Abstract

Lifelong learning has become a cornerstone of educational policy worldwide, and China is no exception. In recent years, China has elevated lifelong learning to a national strategy to ensure inclusive and equitable quality education for all. University continuing education programs – encompassing adult education, online education, self-taught examinations, and open universities – play a pivotal role in this lifelong learning system. This theoretical review analyzes policy documents, statistical reports, and recent studies (2019–2025) on China's lifelong learning initiatives and university continuing education. We synthesize data from government sources and scholarly research to evaluate how continuing education programs in universities contribute to national lifelong learning goals. The review finds that China's government has been the primary driver in expanding lifelong learning opportunities through an extensive continuing education network. As of 2021, 1,725 higher education institutions offered continuing education, enrolling about 12.09 million adult learners – roughly 25% of all higher education students. Policies such as the Education Modernization 2035 blueprint reaffirm the goal of a learning society, and recent guidelines (2022–2025) emphasize shifting from expansion to quality improvement in continuing education. Continuing education programs have enabled a "second chance" for millions of adults to obtain higher qualifications, contributed to the massification of tertiary education, and increasingly leverage digital platforms to broaden access. University continuing education in China has significantly advanced lifelong learning, evidenced by positive outcomes like improved career prospects and personal development for adult learners. However, challenges remain in ensuring program quality, relevance to market needs, and learner engagement. The discussion considers reforms such as the 2022 termination of the separate online college pilot to integrate resources, the rise of open universities, and the need for innovative teaching models in adult learning. China's experience illustrates that strong policy support and university initiative can greatly expand lifelong learning opportunities. As China transitions from an enrollment-driven approach to one focused on quality and inclusiveness, university continuing education programs

will remain central to building a learning society. This review offers insights into how policy and practice converge to sustain lifelong learning at scale, and what challenges must be addressed to further improve the system.

Keywords: Lifelong Learning; Continuing Education; Adult Higher Education; Open University; Policy Reform

1. Introduction

Lifelong learning refers to the continual acquisition of knowledge and skills throughout an individual's life, beyond initial formal education. It is widely regarded as crucial for personal development, employability, and social inclusion in today's knowledge-based economy. The United Nations' Sustainable Development Goal 4 explicitly calls for countries to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". In China, lifelong learning has been embraced as a key strategy to cope with rapid economic change, technological advancement, and an aging population (Chen, 2023). Top leaders have stressed the importance of building a learning society where "everyone can learn whenever and wherever they want". Notably, President Xi Jinping and other officials have highlighted lifelong learning as essential to national rejuvenation, fostering a culture where citizens continuously upgrade their skills to avoid being "obliterated by the times" (Chen, 2023).

China's commitment to lifelong learning has deep policy roots. The National Plan for Medium- and Long-Term Education Reform and Development (2010–2020) was the first to propose establishing a lifelong education system covering all citizens. Building on that foundation, the Central Committee of the Communist Party of China and the State Council issued China Education Modernization 2035 in 2019, which enshrines lifelong learning as a core principle for educational development (Central Committee of CPC & State Council, 2019a). An accompanying implementation plan (2018–2022) laid out concrete steps to "build a learning society" through expanding continuing education, developing open universities, and integrating various learning resources (Central Committee of CPC & State Council, 2019b). These policies underscore that lifelong learning in China is a state-led endeavor, aligned with national development goals. Indeed, China's approach is characterized by strong government guidance and broad public participation, forming a uniquely Chinese model of lifelong education (Wu, 2021). Over the past decades, China has built a comprehensive lifelong learning "service system" comprising formal schooling, community education, enterprise training, and family education, reflecting an inclusive vision of education for all stages of life.

Within this system, universities play a pivotal role in delivering continuing education to adults. University-based continuing education in China typically includes degree-granting adult higher education (part-time or night university programs), online education programs run by universities, the self-taught higher education examination system, and the network of radio and television universities now transformed into open universities. These offerings constitute a "parallel track" to the regular higher education system, aimed at those who did not attend full-time university or who need further training later in life. Historically, China relied on specialized institutions for

adult and distance education. The China Central Radio and Television University (CCRTVU) system, established in 1979, was for decades the primary provider of distance higher education. In 2012, the government upgraded CCRTVU and several large provincial RTVUs into open universities, including the Open University of China (OUC), marking a new chapter for lifelong learning infrastructure. At the same time, since 1999 the Ministry of Education (MOE) had allowed 68 conventional universities to pilot "internet colleges" (also known as Institutes of Distance Education, IDEs) to offer online degree programs for adult learners. This dual system of single-mode open universities and dual-mode university IDEs expanded access tremendously and contributed to the massification of higher education. By 2020, distance education programs (open and online) accounted for roughly one-quarter of China's higher education enrolment, providing opportunities to many who otherwise missed out on college. It is estimated that of China's 890 million working-age adults, about 620 million have not received higher education, making continuing and distance education a vital pathway for upskilling this population. As researchers note, distance and continuing education in China have "made a great contribution towards advancing the process of popularization of higher education" by reaching those who failed the competitive national college entrance exam.

Today, China boasts one of the world's largest adult higher education systems. According to Ministry of Education statistics, in 2021 there were over 12 million students enrolled in higher continuing education programs, accounting for about 25% of all higher education students in China. Continuing education programs are offered by 1,725 higher education institutions nationwide, including both dedicated open universities and regular universities with adult education colleges (China Daily, 2025a). These programs have become an integral part of China's talent development and lifelong learning strategy. They serve diverse groups such as working adults seeking undergraduate degrees, rural and urban community learners pursuing personal enrichment, retirees taking courses in "universities for the elderly," and professionals obtaining new skills and certifications. In short, university continuing education in China functions as a broad umbrella covering all forms of post-initial education and training.

The remainder of this paper reviews recent policy developments and research findings (mainly from 2019 onwards) concerning China's lifelong learning policies and the role of university continuing education. We first outline the methodology of the literature and policy review. Then, in the Results section, we examine major themes including policy support and governance of continuing education, expansion and reforms in the university continuing education sector, and the outcomes/impacts of these programs. The Discussion section synthesizes the findings, highlighting successes (such as increased access and positive learner outcomes) and ongoing challenges (such as quality assurance and relevance). We also discuss future directions, especially the shift toward improving quality and leveraging digital technology under recent guidelines. By analyzing China's experience, this review can provide insights for other countries seeking to strengthen lifelong learning through university continuing education, while also identifying areas where China's approach continues to evolve. Ultimately, China's case exemplifies how a concerted policy push, coupled with institutional innovation, can build a nationwide lifelong

learning system at scale – one that is now transitioning from emphasis on quantity to emphasis on quality and inclusion.

2. Methodology

This study employs a comprehensive literature review and policy analysis approach. We gathered information from official Chinese policy documents, statistical reports, and academic research published in the last five years (2019–2025). Key sources included: (a) national education policy and planning documents (in English or Chinese) that pertain to lifelong learning and continuing education; (b) publications by the Ministry of Education (MOE) and related agencies (e.g. guidelines, notices, and reports on continuing education reform); and (c) recent scholarly articles (both international and Chinese) focusing on adult education, distance education, and lifelong learning in China. To ensure up-to-date coverage, we prioritized sources from 2020 onward, while also reviewing seminal earlier policies for context.

The search strategy involved both English and Chinese-language databases. We used keywords such as "lifelong learning China," "continuing education in China," "adult higher education," "open university," and "lifelong education policy." Sources like the China Ministry of Education's official news portal, the State Council policy releases in English, UNESCO and OECD reports, and research databases (Web of Science, CNKI, etc.) were consulted. We also reviewed the profiles and publications of notable scholars in this field, including Dr. Xianghan Zhang (a specialist in continuing education policy) as suggested, to incorporate authoritative perspectives. For example, we identified several works by Dr. Zhang and colleagues addressing quality improvement in adult education and the importance of lifelong learning in China's development.

In selecting academic literature, we included empirical studies, theoretical papers, and review articles that shed light on the role or effectiveness of continuing education programs within China's lifelong learning agenda. Notably, we incorporated data from a 2024 quantitative study on student attitudes toward continuing education, a 2025 study on continuing education's impact on older adults' employment, and analyses of China's open university system, among others. Policy analysis focused on reading and extracting key points from documents such as the Education Modernization 2035 plan, MOE guidelines (2022 and 2025) on continuing education management, and official statements on lifelong learning initiatives (e.g. the promotion of online learning platforms). These were examined to understand government objectives, reforms, and regulatory changes affecting university continuing education.

Data and content from the sources were triangulated to identify common themes and trends. In synthesizing findings, we paid attention to: (1) Policy goals and measures – what the government is aiming to achieve with lifelong learning and how university continuing education is mobilized; (2) Scale and enrollment – quantitative expansion and its outcomes; (3) Quality and governance issues – challenges identified (such as declining quality or uneven standards) and reforms to address them; (4) Technological and pedagogical innovation – the move to online platforms, digital resources, and new teaching models especially; and (5) Societal impact – evidence of how

continuing education programs have affected learners' skills, employment, and personal growth, as well as how they contribute to broader socio-economic objectives (like healthy aging and workforce upskilling). We used a narrative analytical approach to connect these aspects and to evaluate progress against policy expectations.

It should be noted that this study is a qualitative synthesis of existing sources rather than original field research. There may be limitations in the available data – for instance, detailed evaluations of program quality are not always public. Where possible, we cross-referenced multiple sources to ensure reliability (for example, enrollment figures from official reports were compared with those reported in research literature). The inclusion of both Chinese and English sources helps provide a balanced view, capturing how policies are portrayed domestically and how outcomes are assessed academically. Overall, by integrating policy analysis with recent research, the methodology provides a holistic understanding of the state of lifelong learning policies in China and the integral role played by university continuing education programs.

3. Results

3.1. Policy Support and Reforms for Lifelong Learning in the New Era

The Chinese support for lifelong learning has intensified in the past five years, with a flurry of policies and guidelines aimed at strengthening continuing education. Lifelong learning is now explicitly framed as part of China's national development strategy, reflecting what one scholar called the "state-led promoting model" of lifelong. A significant policy milestone was the issuance of China Education Modernization 2035 in February 2019, which established "building a learning society" as a key goal for the education system by 2035. This high-level plan underscored that "lifelong learning for all" is essential for China to adapt to economic transformation and an aging demographic (Central Committee of CPC & State Council, 2019a). To operationalize these goals, the State Council released an implementation plan for 2018–2022 that, among other targets, called for expanding continuing education, developing open universities, and improving systems for recognizing learning outcomes (Central Committee of CPC & State Council, 2019b). These plans effectively cemented lifelong learning as a government priority, ensuring policy continuity after the 2010–2020 plan. As Xiao and Zhang (2022) observe, the central government has been the "biggest driving force" behind lifelong learning initiatives in China, which aligns all levels of the education system – including universities – with this national mission.

Concretely, recent years have seen a series of policy documents and actions geared towards reforming and upgrading continuing education. In 2022, the Ministry of Education issued a dedicated plan to promote the reform and development of continuing education (China Daily, 2025a). This plan candidly acknowledged persistent problems in the sector, such as "unclear positioning, underdeveloped standards, unsound systems and low-quality talent cultivation". To address these, it set out measures to clarify the role of continuing education within universities' missions, tighten quality standards, and innovate teaching methods – all with the aim of advancing high-quality development of this sector. The MOE's 2022 plan signaled a policy shift:

after years of rapid expansion, the focus would move to improving quality and relevance. Educational experts echoed this view; for instance, Yue and Xu (2022) noted that as China's regular higher education has expanded and the pool of potential adult learners shrinks, "the focus of continuing education needs to transition from scale expansion to quality improvement". This sentiment has been reinforced in subsequent guidelines.

A landmark reform occurred at the end of 2022, when the Ministry of Education announced the termination of the long-running pilot program that allowed elite universities to offer online degree education (Modern Distance Education, known as "network education"). Effective 2023, conventional universities would no longer independently host online education colleges; instead, continuing education at universities would be standardized and integrated. While MOE did not explicitly state the reason, analysts suggest it was to eliminate redundancy, curb profit-driven practices, and ensure more consistent quality control (MOE, 2022). Essentially, the open university system (headed by the OUC) would take on a greater role as the main vehicle for distance learning, while regular universities continue adult education through part-time programs that require the national adult college entrance exam for admission. This reform represents a consolidation of resources and a recommitment to "one system, one standard" for higher continuing education. It also reflects the government's resolve to protect the unique status of open universities as specialized providers – something noted as relatively unique to China's approach. Chen et al (2024) point out that unlike some countries where open universities have lost ground, in China the government actively supports OUC and its provincial branches to preserve a dedicated lifelong learning infrastructure.

In March 2025, new "Guidelines to Boost Continuing Education" were released, further underlining the policy support for this sector (China Daily, 2025a). These guidelines urge higher education institutions to make continuing education an "integral part of their talent cultivation and social service system," aligning programs with national development strategies and labor market demand. Universities are encouraged to develop new continuing education programs in high-tech and urgently needed fields – such as advanced manufacturing, AI, life sciences, green development, and services for an aging society – to upskill the workforce in line with emerging priorities. This shows a clear policy direction of using continuing education to support economic restructuring and innovation. The guidelines also call for eliminating outdated terminologies like "correspondence education" and unifying nomenclature under "non-full-time education," reflecting a modernization of the system's image. By standardizing admissions (all university continuing education students must take the national adult entrance exam) and unifying teaching requirements and certification, the government aims to raise the credibility of adult degrees. These moves address past criticisms that some adult programs were lax or substandard.

Overall, China's recent policies demonstrate a robust top-down push to enhance lifelong learning provision. The government not only expanded the infrastructure (through open universities and online programs) but is now refining it: closing quality gaps, updating curricula, and leveraging technology. Lifelong learning is framed as vital to national talent development, social equity, and even competitiveness. As one policy-watch article summarized, Chinese authorities see lifelong learning support – via online platforms, community colleges, libraries, etc.

– as essential to public well-being and the country's edge in a fast-changing world. The next sections examine how university continuing education programs have evolved under this strong policy impetus and what outcomes have been observed.

3.2. Expansion and Evolution of University Continuing Education Programs

University continuing education in China has undergone remarkable expansion over the past two decades, contributing greatly to the country's lifelong learning goals. By 2019, open and distance education institutions had produced roughly 10% of all higher education graduates in China since 1979. The mass expansion phase – especially from 1999 through the 2010s – saw enrollments in continuing education surge, helping China move from elite to mass higher education. In 2021, for example, distance and adult higher education students comprised about one-quarter of the nation's 44.3 million tertiary students. The Open University of China (and its predecessor CCRTVU) alone has enrolled over 25 million students since its founding, and nearly 20 million have graduated, including large numbers of working adults and rural learners (Xiao et al., 2025). This scale underscores how vital university continuing education has been in providing second-chance and ongoing education opportunities. Many who missed out on college via Gaokao have obtained degrees later in life through these programs. As Zhang (2019) observed, adult higher education has "great promise" in China as a means to build a learning society and improve human capital broadly.

However, the expansion was not without issues. During the growth years, some universities prioritized enrollment numbers over educational quality, leading to concerns about the rigor of adult programs. Common problems included relatively low admission thresholds (for-profit online colleges were motivated to maximize intake), shortage of qualified instructors for adult classes, outdated curriculum in some programs, and learners' difficulties balancing work and study. Researchers have noted that adult students often faced conflicts between job and study, low attendance, and utilitarian attitudes (studying primarily for a diploma), all of which could undermine learning outcomes. According to Zhang (2019), there was a pressing need to shift focus from teachers' teaching to adults' learning – that is, to adopt learner-centered methods that engage adult students and address their specific needs. This call reflects a broader pedagogical reform requirement: moving away from lecture-heavy, exam-oriented approaches toward more flexible, interactive, and self-directed learning suitable for mature students. Some improvement initiatives have been undertaken; for example, universities have started enhancing academic support for adult learners and incorporating online learning tools to accommodate their schedules (Luo, 2022). Nonetheless, by the late 2010s it became evident that ensuring quality and relevance in continuing education was a major challenge even as quantity goals (widening access) were largely being met.

The government's recent reforms respond directly to these issues. One pivotal change was the integration and standardization of online distance education mentioned earlier. Until 2022, dozens of universities ran their own online degree programs with varying quality. The MOE's termination of the pilot effectively means that starting in 2023, any distance degree programs must adhere to unified national standards and likely be overseen by the open university system. This is expected to eliminate the more "commercial" online colleges that some universities had

and ensure adult students receive comparable education across institutions (Ministry of Education, 2022). The open universities, which operate under the guidance of the MOE, have been tasked to absorb and continue the mission of those programs. Notably, the Open University of China has been expanding its role: it now manages a national "Lifelong Education Platform" which offers online courses and resources to the public. By 2023, this platform had nearly 7 million registered users and had logged close to 60 million learning sessions, indicating massive usage. The OUC has also launched specialized branches, such as the Senior University of China in 2022 to cater to learners aged 60 and above. This "Senior University" quickly attracted millions of elderly learners, showing the demand for learning in later life and the system's agility in creating programs for that demographic. Universities in many provinces likewise run colleges for older adults. These developments align with China's policy to actively develop education for the elderly as part of lifelong learning, given the rapidly aging population.

Another evolution in university continuing education is the increased emphasis on career-relevant and high-tech fields. The 2025 guidelines encouraging new programs in areas like AI, big data, healthcare, and green technology have already spurred some universities to introduce adult degree or certificate programs in these cutting-edge subjects. For instance, some open universities and continuing education colleges now offer diplomas in e-commerce, cybersecurity, nursing for the elderly, and other fields aligned with social needs (China Daily, 2025a). This marks a shift from the earlier era where popular adult majors were often in basic disciplines like management or law; now the push is toward "urgent need" specialties including not only technical fields but also cultural heritage conservation, domestic services, and languages in short supply. Aligning continuing education curricula with labor market demand is expected to enhance the employability of adult learners and demonstrate the practical value of lifelong learning. Indeed, recent research by Qi (2024) found that a majority of adult students in continuing education believe their additional education improves their career prospects and personal growth, citing gains in professional knowledge and self-confidence. Many Chinese employers also recognize adult degrees for promotion, which incentivizes working adults to pursue further study (Qi, 2024).

The Corona Virus Disease pandemic in 2020 provided an unforeseen impetus for the digital transformation of continuing education. When campuses closed and in-person classes halted, universities had to shift adult education online almost overnight. This exposed shortcomings, such as insufficient online course content and untrained instructors for virtual teaching (Luo, 2022). However, it also accelerated improvements: universities upgraded their online learning platforms, invested in digital resources, and trained faculty in online pedagogies. As a result, by 2021–2022, the capacity for online delivery in continuing education greatly expanded. The MOE's Smart Education of China platform (a national online learning portal launched in 2022) further boosted access by aggregating high-quality digital courses and making them freely available. This platform won a UNESCO ICT in Education Prize for its innovative approach to mass online learning. University continuing education programs took advantage of these developments – for example, many continuing education colleges now blend online and face-to-face instruction, offer MOOCs to their adult learners, and use learning analytics to track progress. Officials see

"digitalization of education" as a key strategy to support lifelong learning at scale. In fact, China's 14th Five-Year Plan for education includes building a "national digital university" to centralize online learning offerings for the public. While details are still emerging, it suggests the government may create a virtual university entity to grant recognized credentials via online study, which could further integrate resources of various institutions. This could be transformative for lifelong learning, essentially providing a high-access route parallel to conventional universities.

From an institutional perspective, the convergence of continuing education models is notable. Research by Chen et al (2024) comparing open universities and university IDEs found that despite different missions, their functions have become "isomorphic," with both providing similar programs and learner experiences. The government's role in this convergence has been important – policy has driven both types toward common standards and often encouraged traditional universities to learn from the open universities' practices (and vice versa). Now, with the recent elimination of independent online colleges, most dual-mode universities have folded distance learning into their general continuing education divisions. This arguably streamlines management and reduces the previous perception that distance programs were a low-status sideline. It may also alleviate what Chen et al (2024) describe as an "identity crisis" for open universities, as their unique role is reaffirmed and protected even as traditional universities also serve adult learners. The continuing education ecosystem in China thus consists of a network of the Open University of China (with 44 provincial branches and numerous local study centers) and a large number of regular universities offering part-time adult programs under MOE's guidance. These components together strive to fulfill the lifelong learning needs of the populace.

3.3. Outcomes and Impacts of Continuing Education Programs

Evidence from recent studies suggests that university continuing education programs in China have had positive outcomes for individuals and society, although there are areas in need of improvement. On the individual level, adult learners generally benefit from continuing education in terms of skills enhancement, career advancement, and personal fulfillment. For instance, a 2024 survey of students in two Chinese universities' continuing education programs reported high levels of satisfaction and a "generally positive outlook towards lifelong learning". Participants in that study agreed strongly on the importance of self-directed learning and felt that engaging in continuing education boosted their academic performance and job prospects. The majority had participated in activities like industry training or online courses and perceived tangible gains. Such findings reinforce the idea that continuing education can empower individuals for success in a dynamic job market (Qi, 2024).

Another significant impact area is employment, especially for middle-aged and older adults. As China's population ages, lifelong learning is seen as a way to keep older workers employable and engaged. Tao and Ren (2025) analyzed national survey data (CHARLS) and found that participation in continuing education or training had a positive causal effect on employment outcomes for people over 45. Notably, they discovered that only about 1% of Chinese adults over 45 had engaged in continuing education in recent years – a very low participation rate – yet those who did showed higher odds of finding or retaining employment compared to peers who did not continue learning. This suggests a vast untapped potential: expanding continuing education

among mature adults could significantly support active aging and reduce unemployment or underemployment in that demographic (Tao & Ren, 2025). In line with this, the Open University of China's establishment of Senior Universities and widespread community education for seniors have provided learning opportunities that can improve elders' digital skills, mental engagement, and quality of life. While the primary goal for many older learners may be personal enrichment, there is a clear socio-economic benefit in terms of healthier, more active seniors who can even pursue "silver" entrepreneurship or new careers (Zhang & Li, 2025). Lifelong learning thus contributes to addressing the challenges of an aging society – a fact explicitly noted in government plans which call for developing education programs for older adults as part of the lifelong learning system.

For working-age adults, continuing education can facilitate career shifts and advancements in an economy that is upgrading rapidly. Many Chinese adults have used evening university or online college to obtain higher degrees while working. Employers in sectors like education, healthcare, and government often require formal degrees for promotion, so adult degree programs help employees meet those qualifications. There are anecdotal reports of blue-collar workers attaining white-collar jobs after earning adult college diplomas, and of rural migrants improving their employment options through distance learning. On a broader scale, Chen et al. (2023) note that organizations themselves benefit when employees engage in continuous learning, as it fosters knowledge sharing and innovation (their study of companies serving the elderly is one such example, where lifelong learning culture in enterprises leads to better services). This aligns with the government's call for enterprises to support staff training and corporate universities to emerge – essentially bringing lifelong learning into workplaces. Indeed, the rise of corporate universities in China (over 200 established in recent years) is complementary to public continuing education, indicating that lifelong learning is being pursued both by the state and by industry (Han et al., 2024). Corporate universities fill some skills gaps and provide more targeted training to employees, which was partly driven by dissatisfaction with the "knowledge provided by traditional universities" for practical business needs. The co-existence of public continuing education and in-house corporate education underscores a holistic trend: lifelong learning in China is becoming multi-faceted, with universities, enterprises, communities, and online platforms all contributing.

While the benefits are evident, the outcomes also highlight challenges. One ongoing concern is quality and perception of credentials. Historically, degrees earned through part-time or distance study were sometimes seen as less prestigious than full-time degrees. The government's efforts to unify standards (same admission exams, standardized diplomas, etc.) aim to reduce this stigma. As of 2021, new rules mandate that continuing education graduates receive certificates that do not overtly differentiate them from regular graduates, which could improve social recognition. However, ensuring academic quality on par with full-time programs remains a task. Some studies have critiqued that adult learners' academic performance can be weaker due to time constraints and inadequate support. Xiao et al (2025) observed a "lack of enthusiasm" among certain distance learners, attributing it to insufficient interactivity and support in some programs. This suggests that universities need to invest more in learner support services – tutoring, mentoring, and

motivating adult students. Encouragingly, a number of institutions have started doing so, for example by establishing online tutoring systems and local study centers where adult learners can get help. The OUC system is noted for its vast network of study centers providing face-to-face assistance, which has been linked to higher completion rates (Xiao et al., 2025). Going forward, adopting a more student-centered approach (as Zhang et al (2019) recommended) – focusing on adults' learning experiences rather than just delivering content – will be key to improving outcomes like retention and skill acquisition.

Another outcome to monitor is how effectively continuing education programs align with evolving economic needs. The recent emphasis on programs in STEM fields and vocational skills is promising, but it also requires updates to curricula and faculty training. Some universities may lack instructors with cutting-edge industry knowledge for fields like AI or green technology in their continuing ed departments. Partnerships with industry and use of external experts could help bridge this gap. There have been positive examples: e.g., some adult education programs in engineering have engaged industry professionals as adjunct lecturers, and open universities have collaborated with tech companies to develop course content. Moreover, China's new Vocational Education Law (2022) encourages integration of vocational and continuing education, so that adults can obtain practical skills certifications more easily. This legal change is meant to elevate the status of vocational learning and facilitate lifelong skill training. In implementation, we might see more crossover where universities offer not only academic degrees but also short-term vocational courses for adult learners. These micro-credentials could be especially valuable for those looking to upskill without committing to a full degree. The concept of a "credit bank" is also being explored in China, wherein learning credits from various continuing education experiences (degrees, MOOCs, professional trainings) can be accumulated and transferred. If realized, this would significantly enhance the flexibility of lifelong learning pathways. Indeed, since 2019 the OUC has been piloting a national credit bank for lifelong learning, and tens of millions of people have already earned credits through the self-taught examination system that could potentially be recognized more broadly.

Finally, at the societal level, the expansion of university continuing education has likely contributed to broader gains such as improved literacy rates, greater social mobility, and a more informed citizenry. While hard to quantify directly, China's human capital improvements over the last decades coincide with the availability of adult education. The literacy rate among young and middle-aged adults is now nearly 100%, compared to much lower in the 1980s – adult education campaigns (like TV university courses) played a part in that progress. Many rural and marginalized individuals have benefited from second-chance education via radio/TV universities and online programs, which supports poverty reduction and social equity goals. The State Council (2025) noted that providing affordable lifelong learning (through public platforms and community learning centers) is crucial for equity. Lifelong learning opportunities in community schools, for example, enable migrant workers in cities to take evening classes, and enable retirees to pursue learning, which enhances their quality of life. In short, the societal impact of university continuing education in China is multi-dimensional – economic, social, and cultural. It helps build a culture

that values self-improvement and "learning how to learn," which is foundational for innovation and civic participation in the long run.

4. Discussion

China's experience with lifelong learning policies and university continuing education offers valuable insights into how a nation can scale up education for all ages. The findings of this review highlight a dynamic interplay between policy mandates and institutional responses. The government's strong top-down support has been a double-edged sword: it enabled rapid expansion and resource mobilization, but it also led at times to uniformity and compliance-driven implementation that might overlook local needs. As China enters a new stage of high-quality development, the continuing education system faces the task of transitioning from an extensive to an intensive growth model – focusing on improving educational quality, learner experience, and outcomes, rather than merely increasing enrollment. This transition aligns with the broader shift in China's education policy from expanding access to balancing access with excellence (OECD, 2019).

One key theme in the discussion is the integration of lifelong learning into the mainstream education system. Unlike some countries where adult education is marginal, China has increasingly integrated continuing education into universities' core functions. The 2025 guidelines explicitly tell universities to treat continuing education as a fundamental part of talent cultivation, not a sideline. This elevation in status is important. It means, for example, that faculty promotions might count continuing education teaching, or that universities devote budget and technology to their continuing ed divisions. We see initial signs of this integration: many universities have merged their continuing education college with online education offices, indicating a more unified management. The challenge will be to maintain the flexibility and innovation that adult programs often require, within the bureaucratic structure of universities. Adult learners differ from traditional students – they need more flexibility in scheduling, more practical curricula, and support services tailored to working life. Universities must adapt by perhaps hiring faculty with industry experience, offering courses in the evenings/weekends, and providing credit for experiential learning. In other words, the pedagogical model must shift from the conventional lecture-exam system to one that is learner-centered and competency-based. This echoes Zhang (2019)'s call for focusing on "adult learners' learning" rather than just delivering content. Some universities have begun innovating – for example, using case-based and project-based learning in MBA programs for working adults, or flipping classrooms so that online lectures are watched at the student's convenience and in-person sessions (if any) are used for discussion and mentoring. These practices should be expanded.

Another crucial aspect is the use of technology and digital learning to support lifelong learning. China's investment in educational technology has significantly benefited continuing education. The rapid deployment of online platforms during COVID-19 demonstrated that many adult programs can be effectively delivered or supplemented online. This mode is especially suitable for adults who cannot attend campus regularly. The MOE's Smart Education Platform and

upcoming "National Digital University" initiative present opportunities to create a more open, on-demand learning ecosystem. If high-quality courses from top universities are made freely available and credentials granted through a centralized digital university, it could dramatically widen participation in lifelong learning. However, bridging the "digital divide" remains important – not all adult learners, especially older or rural ones, have equal digital access or skills. Empowering older adults to use online learning platforms is an area needing attention (Bridging the digital divide for older learners has become a focus, as noted by some studies in China's context). The government's recognition of this – by establishing community digital learning centers and senior-friendly interfaces – is encouraging. Digital transformation of education, as Vice Minister Chen Jie stated, is seen as "an inevitable choice to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". The discussion here supports that view: technology, if used wisely, can personalize learning, make it more flexible, and reach learners who previously were excluded. China's case shows a rapid uptake of EdTech in continuing education, but ongoing efforts are needed to improve digital content quality and interactive engagement (simply watching recorded lectures is not enough for deep learning).

Quality assurance and credibility of qualifications form a further discussion point. There is evidence that China is tightening oversight of continuing education programs: standardizing entry exams, curricula frameworks, and requiring institutions to regularly evaluate teaching quality. The MOE has set up mechanisms to monitor continuing education providers – for instance, universities must periodically report on their adult program outcomes, and poorly performing programs can be sanctioned. This is critical to maintain the social value of adult credentials. The phasing out of separate "network education" certificates (which used to explicitly label the mode of study) in favor of unified diplomas is a strategic move to eliminate discrimination against adult learners. In the long run, skills and competencies should matter more than whether one studied full-time or part-time. The success of China's lifelong learning policy will, therefore, depend on whether employers and society at large accept and respect the outputs of continuing education. So far, the trend is positive – many public sector jobs, for example, now openly accept adult education degrees in hiring criteria where they once might not have. Continued communication and success stories can further validate the system. Additionally, implementing a robust credit bank and qualification framework (as being explored) can allow mixing and matching of learning from different sources, which can improve quality by introducing competition and choice. If a learner can get credits from various universities or online providers and combine them towards a degree, institutions will need to maintain high standards to attract learners. This could drive up quality across the board.

From a global perspective, China's model illustrates how government initiative can rapidly build a lifelong learning infrastructure, especially in developing contexts. Other countries can learn from China's large-scale use of open universities and online education to democratize access. The flip side is ensuring that quantity does not trump quality – a lesson China is currently grappling with. The emphasis on shifting to quality in continuing education is very much in line with international best practices, which suggest that adult learning should be relevant, learner-centric, and outcomes-focused (UIL, 2020). China's policies now resonate with these principles,

talking about aligning programs with market demand, improving teaching methods, and providing better support to learners. For instance, the guidelines to "consider employment competitiveness of disciplines" when approving new adult programs show a pragmatic approach to link lifelong learning with economic needs. This ensures that continuing education is not happening in a vacuum but is tied to real skills gaps and opportunities. A potential area for further improvement is encouraging innovation in program delivery – such as modular courses, stackable certificates, and partnerships with MOOCs. While China has embraced MOOCs (with platforms like XuetangX and hundreds of Chinese MOOCs online), integrating them into formal continuing education (for credit) could be expanded. Some Chinese universities have begun accepting MOOC certificates for credit in adult programs, but a more systematic approach could be beneficial.

Another aspect for discussion is the cultural dimension: Lifelong learning in China carries not just economic importance but also cultural significance as part of the idea of a "learning society". The government promotes not only degree-oriented continuing education but also community-based learning, reading campaigns, and lifelong education for personal enrichment. This holistic approach is commendable – learning is positioned as a public good that contributes to personal well-being and social harmony (China Daily 2025b). Universities have responded by organizing non-formal education events, public lectures, and free online courses for the community. For example, many universities during the pandemic offered free online classes to the public on topics like health and entrepreneurship. Such outreach strengthens the universities' role as knowledge hubs in their communities and fosters a culture of learning beyond enrolled students. The concept of "universities for the third age" (elderly colleges) booming across Chinese cities is a testament to this cultural shift – learning is increasingly seen as a lifelong pursuit and a lifestyle choice, not just a means to a job. The waiting lists for senior citizen college seats in some areas (reportedly, many open university branches have more applicants than they can accommodate) indicate how deeply the idea of learning at any age has taken root. This is an important soft outcome of policies: the normalization of adult and elderly education in society.

Despite the generally positive trajectory, challenges and questions remain. One challenge is ensuring that rural populations benefit as much as urban ones. While online technologies can bridge distance, disparities in internet access and in educational facilities mean rural adults might still have less opportunity. The government has launched pilot lifelong learning programs in some rural communities (e.g., "farmers' night schools" and e-learning stations in villages). Continuing education colleges could partner with rural schools or agricultural extension agencies to reach more rural learners. Another challenge is motivation – how to incentivize adults to engage in learning, especially those mid-career who may not see immediate benefits. The employment studies suggest that even if opportunities exist, participation can be low (only 1% of older adults were participating in formal learning per Tao & Ren (2025)). This calls for stronger advocacy and perhaps linking learning with other social benefits (for instance, offering training vouchers, or integrating learning achievements into professional title evaluations). Moreover, as automation and AI reshape the job landscape, reskilling and upskilling will become continual needs. University continuing education must stay agile to provide training for new types of jobs that

emerge. The current push in China for digital skills training (such as coding, e-commerce, etc.) is a step in that direction. It might also be worthwhile for China to develop more short-cycle and micro-credential programs, which international trends show are effective for adult learners who cannot commit to long programs.

In summary, the discussion suggests that China's university continuing education programs have substantially furthered the country's lifelong learning aims by widening access and now pivoting to improve quality. The system's strengths lie in strong policy backing, vast scale, and increasing integration of technology. Its weaknesses involve uneven quality and still-evolving pedagogy, which are being addressed through reforms. As lifelong learning becomes ever more critical in the face of rapid societal changes, China's experience underscores that policy commitment must be matched by institutional innovation and learner-centered practices. The continued evolution of university continuing education – in China and elsewhere – will likely focus on creating flexible, high-quality learning opportunities that cater to diverse needs throughout life. China's journey in this realm offers both inspiration and caution: it shows what can be achieved in expanding lifelong learning, and it highlights the importance of continuously adapting policies and programs to ensure that lifelong learning is effective, equitable, and truly lifelong in spirit.

5. Conclusion

China's pursuit of a learning society through lifelong learning policies has led to the rapid development of university continuing education programs as a central pillar of adult education. This review has traced how, in the last five years especially, China's policy landscape and university practices have evolved to strengthen lifelong learning opportunities. Several conclusions can be drawn:

First, policy leadership has been decisive. The Chinese government elevated lifelong learning to a strategic priority and implemented supportive policies – from the Education Modernization 2035 plan to specific MOE guidelines in 2022 and 2025 – that expanded and reformed continuing education. This top-level commitment ensured funding, legitimacy, and integration of continuing education within the national education system. Other nations can observe that strong government vision, coupled with clear policy frameworks, is essential to embedding lifelong learning in the education agenda.

Second, universities have responded by massively expanding continuing education provision, making higher learning accessible to tens of millions of adult learners. Through open universities, distance education colleges, and part-time programs, universities in China have provided educational opportunities to those who otherwise would have no pathway to advanced education. The sheer scale – with a quarter of higher education students enrolled in non-traditional modes – illustrates that lifelong learning need not be peripheral; it can be a core function of higher education in a populous country. The outcome has been a more educated workforce and populace, contributing to China's human capital development and social equity. Many individuals improved their careers and life trajectories via continuing education.

Third, the recent shift from growth to quality is a critical transition. As enrollment growth plateaus, Chinese policymakers and educators recognize that the success of lifelong learning will be judged by its quality and effectiveness. Reforms such as unifying standards, closing subpar online programs, updating curricula, and leveraging technology are steering the continuing education system towards higher quality. Early signs are positive – for example, the integration of online technologies has increased flexibility and the new guidelines have driven universities to align programs with labor market needs. Continuing education is becoming more professionalized and outcomes-oriented. Challenges like ensuring active learner engagement, maintaining academic rigor, and improving public perception are being addressed through these measures. Over time, one can expect China's adult education degrees to gain parity in reputation with traditional degrees, especially if quality improvements continue.

Fourth, lifelong learning in China is increasingly inclusive and diverse in its offerings. Not only do programs span general academic degrees, but they also include vocational skills training, community education, and learning for leisure and personal growth (such as senior citizen education). This comprehensive approach means lifelong learning policy is not just about economic utility but about enriching people's lives and fostering a culture of learning. China's establishment of learning platforms and community learning centers provides a model of how to reach learners outside formal institutions. The case of Jiangsu Province, which built an integrated lifelong learning platform combining online/offline and covering different education types, demonstrates how local innovation can implement national policy effectively. It also underlines that lifelong learning systems function best when they involve collaboration among schools, workplaces, and community organizations.

In conclusion, China's university continuing education programs have played an indispensable role in realizing the country's lifelong learning objectives. They have expanded the scope of who can receive higher education, from young school-leavers to mid-career professionals to retirees. The Chinese approach – characterized by government stewardship, large-scale open universities, integration of technology, and ongoing reforms – offers a distinctive example of system-building for lifelong learning. Its achievements are evident in greater educational attainment across the adult population and enhanced workforce skills, while its evolving reforms show a commitment to sustainability and quality improvement. The experience also yields lessons: it emphasizes the importance of balancing expansion with quality, the need to adapt governance as systems grow, and the value of embedding lifelong learning in cultural values (so that individuals are motivated to continue learning).

For policymakers and educators outside China, the implications are clear: lifelong learning opportunities can be dramatically widened through supportive policy and innovation, but maintaining standards and relevance is an ever-present task. As the world faces rapid technological change and demographic shifts, the imperative for lifelong learning is universal. China's journey over the past decade exemplifies both the possibilities and the challenges in making lifelong learning a reality at national scale. With continued efforts to refine and adapt its continuing education programs, China is poised to move closer to its vision of a learning society –

one in which education truly becomes a lifelong endeavor for all citizens, and one that fuels the nation's development in the years to come.

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References:

Central Committee of the CPC & State Council. (2019a). China Education Modernization 2035. Beijing: Xinhua Press.

Central Committee of the CPC & State Council. (2019b). Implementation Plan for Accelerating Education Modernization (2018–2022). Beijing: Ministry of Education.

Chen, J. (2023, Sept. 27). Building a Smart Education Ecosystem to Promote Lifelong Learning Opportunities for All (Speech at Global Smart Education Conference). Beijing Normal University News.

Chen, L., Chen, H., & Zeng, K. (2024). Comparison of Two Models of Distance Education for Lifelong Learning in China. Sustainability, 16(2), 669.

Chen, Y., Xu, Y., Ma, K., & Chen, A. (2023). The knowledge system and organisational learning sequences of enterprises serving the elderly: Evidence from China. Knowledge Management Research & Practice, 21(4), 677–690. DOI: 10.1080/14778238.2021.1978885.

China Daily. (2025a, March 4). Guidelines to boost continuing education. China Daily (English) – State Council Policy Watch.

China Daily. (2025b, Feb. 12). Path laid out for education reform. China Daily (English) – State Council Policy Watch.

Han, Y., Zhou, Y., Carr, S., et al. (2024). Lifelong learning in the workplace: the knowledge management role of corporate universities in China. Humanities and Social Sciences Communications, 11(189), 1–13.

Luo, Y. (2022). Study on the Transformation of Chinese Higher Academic Continuing Education in the Context of the Epidemic. In G. Ali et al. (Eds.), Proceedings of ISEMSS 2022 (Advances in Social Science, Education and Humanities Research, Vol. 687, pp. 2035–2042). Atlantis Press.

Ministry of Education, China. (2022). Notice on Terminating the Modern Distance Education Pilot Program. Beijing: MOE.

Organisation for Economic Co-operation and Development (OECD). (2019). Getting Skills Right: Future-Ready Adult Learning Systems. Paris: OECD Publishing.

Qi, J. (2024). The Role of Continuing Education in Lifelong Learning: A Quantitative Study in Two Universities in China. Pacific International Journal, 7(2), 190–196.

Tao, Y., & Ren, K. (2025). Does continuing learning help middle-aged and elderly people find employment in China? A propensity score matching analysis. PLoS ONE, 20(5), e0323743.

UNESCO Institute for Lifelong Learning (UIL). (2020). Embracing a Culture of Lifelong Learning. Hamburg: UIL.

Wu, Z. (2021). China's Experiences in Developing Lifelong Education, 1978–2017. ECNU Review of Education, 4(4), 857–872.

Xiao, J., & Zhang, J. (2022). China's approach to digital transformation of higher education: Digital infrastructure and (open) educational resources. In V. Marín et al. (Eds.), (Open) Educational Resources Around the World: An International Comparison (pp. 109–181). Beijing: Open University of China Press.

Xiao, J., Kanwar, A., & Du, R. (2025). The Contribution of Open and Distance Education to Higher Education in China. Open Praxis, 17(1), 184–202.

Yue, C., & Xu, R. (2022). From Scale Expansion to Quality Improvement: Research on the Transformational Development of University Continuing Education. Ministry of Education Website article. (Cited in China Daily, 2025a).

Zhang, W., & Li, W. (2019). Transformation from RTVUs to Open Universities in China: Current State and Challenges. International Review of Research in Open and Distributed Learning, 20(4), 1–20.

Zhang, X. (2019). Adult Higher Education and Lifelong Learning in China: Significance, Challenges and Strategies. Journal of Adult Education, 41(6), 12–17.

Zhang, X., & Li, Z. (2025). Research on Management Strategies and Re-incentive Mechanisms for Senior Employees in Enterprises under the Context of an Aging Society. International Journal of Asian Social Science Research, 2(1), 85–92.

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A Statistical Study on Online Consumption of College Students During the "Double Eleven" Shopping Festival

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Abstract

In recent years, with the rapid development of the internet, the "Double Eleven" shopping festival has become a pivotal consumption node in China's e-commerce market. As an emerging force in online shopping, college students exhibit unique consumption behaviors worthy of in-depth research. This study focuses on students from Beijing City University, employing questionnaire surveys to analyze their online consumption behaviors and influencing factors during the 2023 "Double Eleven" period. The findings reveal a polarized distribution of consumption amounts among college students, with significant gender differences. Female students, more susceptible to promotional atmospheres and social influences, generally spend more than their male counterparts, favoring socially oriented products such as cosmetics and apparel. In contrast, male students lean toward utilitarian consumption, focusing on functional goods like electronics and gaming products. Additionally, grade-level differences indicate that freshmen exhibit higher spending peaks, likely due to initial lifestyle establishment or weaker financial prudence, while upperclassmen show more rational consumption patterns, possibly influenced by academic pressures or increased savings awareness.

Keywords: Double Eleven; Online Consumption; College Students; Gender Differences; Consumption Behavior; Influencing Factors

1. Introduction

The rapid expansion of the e-commerce sector has intensified competition among online shopping platforms, prompting companies to adopt increasingly diverse and sophisticated marketing tactics. As online shopping continues to gain popularity among consumers (Fang, 2020), festival-oriented marketing has emerged as a highly visible and effective strategy. A representative case is the creation of the “Singles’ Day” shopping festival, during which platforms leverage the symbolic date of November 11 to stimulate consumption. Over time, this initiative

has evolved into the hallmark “Double Eleven” shopping surge, widely recognized as one of the most iconic examples of event-based digital marketing (Wang, 2023).

China’s e-commerce market has maintained steady growth, with record-breaking sales repeatedly observed during the Double Eleven festival. Major platforms such as Tmall and JD.com continue to drive unprecedented transaction volumes, highlighting the strong spending power of Chinese consumers. During this nationwide promotional period, university students make meaningful contributions both by increasing consumption and by indirectly boosting the logistics industry through the sharp rise in parcel volumes (Xiao, 2020). Data from 2023 indicate significant volatility in the Double Eleven popularity index throughout the monitoring period, peaking notably on November 11. This trend underscores Double Eleven as not only a major annual shopping event for consumers but also a fierce competitive arena for merchants.

Against the backdrop of China’s economic transformation, domestic demand now represents a fundamental driver of growth. The Double Eleven festival, as an effective mechanism for stimulating internal consumption, thus carries meaningful economic influence. Research into consumer behavior during this period offers valuable insights into market confidence and expectations under current economic conditions. Although university students’ spending is constrained by limited financial resources, their long-term potential for e-commerce engagement is substantial. The younger demographic is increasingly becoming the dominant force in online consumption, and the 2023 China E-Commerce “Double Eleven” Consumption Big Data Monitoring Report shows that the festival has further solidified online shopping habits among Chinese netizens, with domestic products attracting heightened interest from young consumers. As college students are in a crucial stage of forming stable consumption values, exploring their purchasing behavior carries particular academic and practical significance.

Analyzing college students’ online consumption during Double Eleven provides dual value. For businesses, understanding this demographic supports targeted product development and refined marketing strategies. For e-commerce platforms, insights into preferences and pain points help enhance service quality—such as improving logistics efficiency and optimizing the shopping experience—to elevate user satisfaction. Survey data show that more than 70% of consumers prioritize uncomplicated return procedures, emphasizing the importance of enhancing after-sales services.

Unlike existing studies that predominantly examine broader consumer groups, such as young professionals, the present research focuses specifically on college students—a semi-independent and socially active population characterized by limited financial discretion and strong susceptibility to social influence. Examining their purchasing behavior in the context of the highly competitive Double Eleven environment enables the identification of both promotional and social pressures that shape decision-making. This approach aims to provide a multidimensional understanding of college students’ online consumption patterns and offers a valuable reference for future academic research and practice.

2. Research Design and Methodology

2.1. Survey Subjects and Methods

This study investigates the online shopping behaviors of college students in Beijing during "Double Eleven" through questionnaires. A total of 243 responses were collected, with 200 deemed valid after rigorous screening. The analysis identifies significant influences such as promotional pressures, social atmosphere, financial semi-independence, and product preferences.

2.2. Questionnaire Design

When designing a questionnaire, ensure that the questions are simple and clear. For example, when asking about the amount of online consumption during the "Double Eleven" shopping festival, directly ask "What was your online consumption amount during the" Double Eleven "shopping festival in 2023, and list the specific option range" to avoid using vague or ambiguous expressions, such as "How much did you spend on the" Double Eleven "shopping festival, including possible refunds and other complex situations".

2.3. Data Collection

(1) Multi-channel distribution to ensure diverse samples

In order to cover different types of student groups as much as possible, questionnaires are distributed through various channels. In addition to the school's official forum and class group, the school's social media accounts, student union official accounts, etc. can also be used to publish questionnaire links, increasing sample diversity and reducing sample bias caused by a single channel.

(2) Controlled response time to minimize biases

Set a reasonable questionnaire collection time to avoid being too long or too short. Excessive time may lead to some respondents being influenced by external factors and changing their answers, or experiencing repeated responses; If the time is too short, it may not be possible to collect enough samples. For example, set the questionnaire collection time to about two weeks and remind students who have not answered near the deadline.

2.4. Data Cleaning

(1) Handling missing and outlier values

After collecting the data, first check if there are any missing values in the data. For missing values, appropriate methods can be used for handling. If there are few missing values, consider deleting the corresponding samples; If there are many missing values, they can be filled in using methods such as mean and median. For outliers, such as situations where the consumption amount is too high or too low, they can be identified through methods such as box plots. If the outlier is caused by data entry errors, the interviewee can be contacted for verification; If it is a true extreme value, it can be decided whether to retain it based on the research purpose.

(2) Eliminating duplicate submissions

Check whether there are repeated questionnaires. You can use the recording function of the questionnaire system, or determine whether it is a duplicate questionnaire according to key information (such as IP address, answer time, etc.). If a duplicate questionnaire is found, only one valid questionnaire will be retained to ensure the independence of the data.

3. Descriptive Statistical Analysis

3.1. Overall Distribution of Consumption Amounts

The shopping amount is mainly concentrated in two ranges: below 200 yuan and 1000-2000 yuan, 47 and 51 people respectively. The number of consumers who spent more than 2000 yuan was the least, which was 23. Consumer behavior shows a certain degree of polarization. Some people tend to spend less money, perhaps buying daily necessities or small commodities, while others have higher consumption power, and may buy relatively high priced goods such as electronic products and clothing. There is less high consumption, and only a few people spend more than 2000 yuan, which reflects that the proportion of college students with high consumption ability is relatively small, or they are more cautious about the consumption of ultra high priced goods.

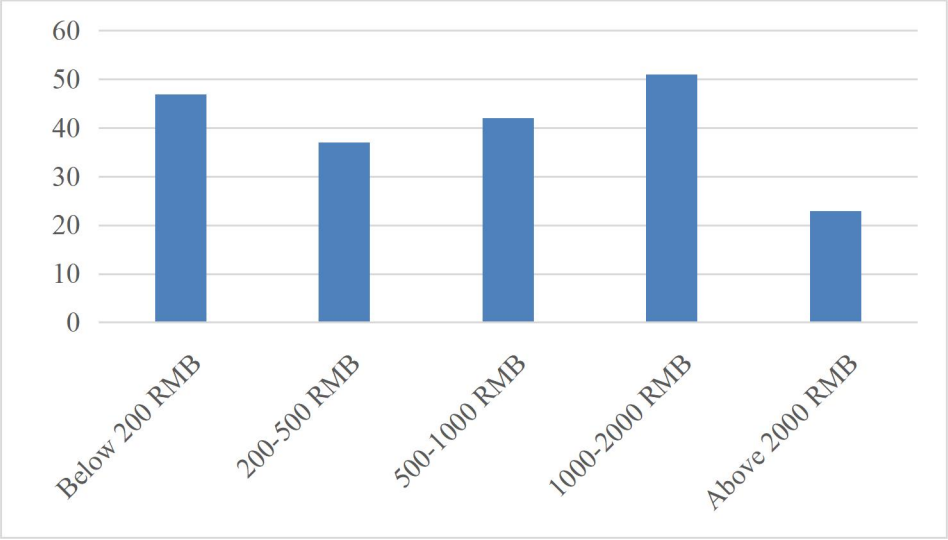

Figure 1. Distribution of shopping amounts during the Double Eleven shopping festival

3.2. Gender and Grade-Level Comparisons

Within the range below 200 yuan, the number of male consumers in this range is significantly more than that of female consumers. In the range of 200-500 yuan and 500-1000 yuan, the number of male and female students is relatively close, and there is no significant difference. In the range of 1000-2000 yuan, the number of male consumers in this range is higher than that of female consumers. The number of male students who spend more than 2000 yuan in this range is significantly lower than that of female students.

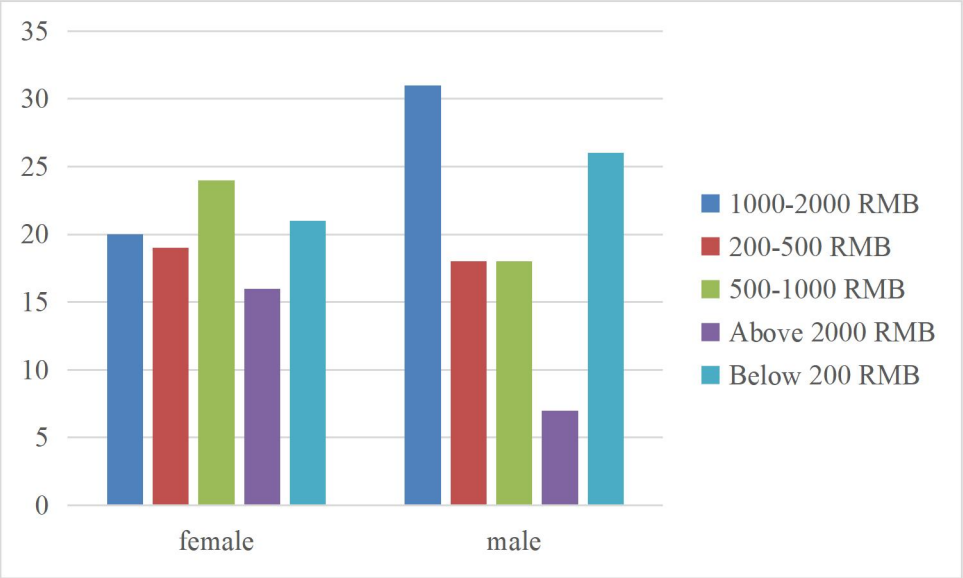

Figure 2. Comparison of shopping amount distribution between students of different genders during the Double Eleven shopping festival

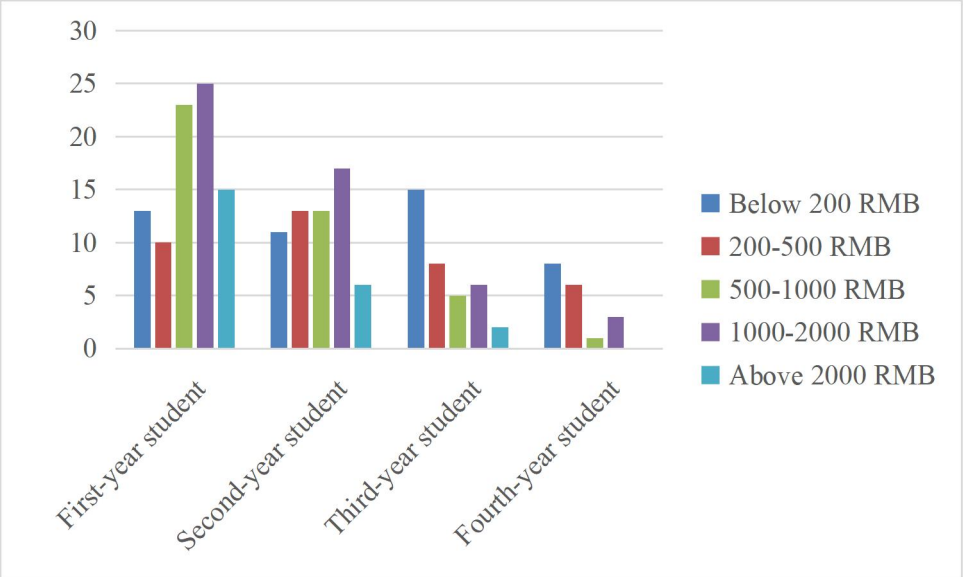

Figure 3. Distribution of online consumption amount among students of different grades during the Double Eleven shopping festival

On the whole, the expenditure categories of "less than 200 yuan" and "1000-2000 yuan" are the most common, which is consistent with the general observation of consumption behavior, showing a certain polarization. Some students prefer low amount of purchase, while others are engaged in high-value consumption, such as electronic products, clothing, etc. The proportion of Frenchmen's expenditure of "less than 200 yuan" and "1000-2000 yuan" is relatively high. Compared with other grades, the expenditure of "2000 yuan and above" has reached an obvious peak. This shows that they first bought some high-value things, perhaps to establish a basic college life, or in the early stage of their college career, their sense of financial prudence was not very developed The distribution of Sophomores' expenditure categories is more balanced, "1000-2000 yuan" is still prominent, which can reflect that students gradually adapt to daily life, indicating that the consumption during this period is more stable and diversified. The "2000 yuan and above" expenditure of junior students has dropped significantly, and the overall expenditure

level has changed to lower. Due to the increase of academic pressure, internship opportunities, or as graduation approaches, students are more conscious of trying to save money. Senior students continue to maintain the overall downward trend, especially in high-value categories. This is because students are ready for employment or continue to study, leading to more concise consumption habits and priority savings.

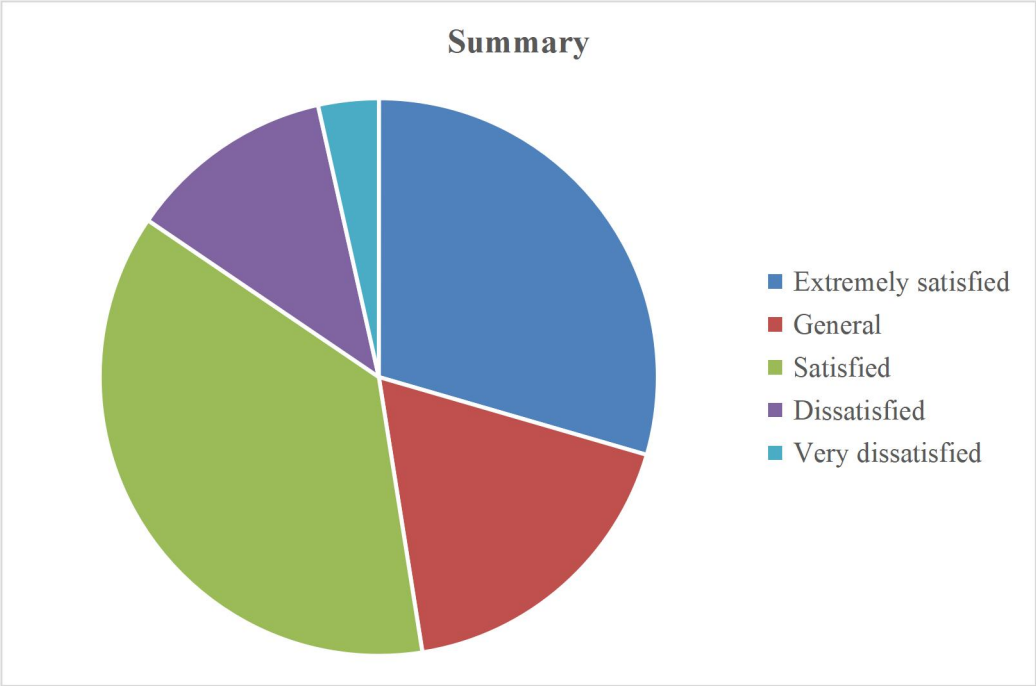

Figure 4. Distribution chart of students' satisfaction with the shopping experience of "double 11"

Among the surveyed respondents, 59 reported being “very satisfied” (blue), 74 “satisfied” (red), 36 “neutral” (green), 24 “dissatisfied” (purple), and 7 “very dissatisfied” (light blue). Overall, college students demonstrate a predominantly positive attitude toward the Double Eleven shopping experience. The number of students selecting “satisfied” and “very satisfied” totals 133, which far exceeds the 67 respondents who chose “neutral,” “dissatisfied,” or “very dissatisfied.”

This result indicates that, as an annual shopping festival, Double Eleven—with its substantial discounts, abundant product choices, and high level of convenience—effectively caters to college students’ pursuit of cost-effectiveness and fashion trends. Nonetheless, a portion of students still express neutrality or dissatisfaction. Given their limited purchasing power and high price sensitivity, some college students may experience negative emotions due to factors such as misleading advertising, slow logistics, product quality inconsistency, difficulties in returns or exchanges, or impulsive overconsumption.

Therefore, while continuously promoting sales growth, e-commerce platforms should also place stronger emphasis on improving service quality and safeguarding consumer rights and interests. Only by doing so can platforms enhance overall user satisfaction and ensure that groups including college students enjoy a more reliable and enjoyable shopping experience.

4. Gender Differences in Average Online Consumption

4.1. Forecast

Based on the existing literature and my observation and research, I predict that there is a difference in the average online consumption of male and female students in this school during the "double 11" period. Male students' consumption may tend to be in the lower amount range, while female students may occupy a dominant position in the higher amount range, which shows that different genders have different consumption tendencies in the "double 11" Shopping Festival.

4.2. Calculate

Based on the preliminary analysis of the survey data, it was found that in the 0-100 RMB range, males accounted for 56% of this interval, while females accounted for 44%. In contrast, in the 500-1000 RMB range, females accounted for 80%, and males only 20%. Therefore, this study hypothesizes that there may be gender differences in online spending among students at this university during the "Double Eleven" period, characterized by low-spending convergence—where 83.3% of the samples were concentrated below 500 RMB—and high-spending gender skewing, with females accounting for 83.3% and males 16.7% in expenditures above 500 RMB.

To draw definitive conclusions, further hypothesis testing with a significance level of 0.05 is required to determine whether there is a statistically significant difference in the average online spending between male and female students during the "Double Eleven" period.

The hypotheses are formulated as follows:

H_0：There is no significant difference in the average online spending between male and female students during the "Double Eleven" period（$\mu_1=\mu_2$）

H_1：There is a significant difference in the average online spending between male and female students during the "Double Eleven" period（$\mu_1\neq\mu_2$）

At the significance level of 0.05, there is a significant difference in the average online consumption between boys and girls during the "double eleven" period.

Table 1. Test Results

Source of difference	SS	df	MS	F	P-value	F crit
Intergroup	799062.0655	1	799062.0655	7.185530823	0.008964027	3.963472051
Within group	8673936.922	198	111204.3195			
total	9472998.988	79				

P_{value}=0.008964<0.05, Reject the null hypothesis

4.3. Analysis of the Causes of Differences in Consumption Between Male and Female Students in the University

4.3.1. Impulse vs. Rationality

(1) Emotional Drivers and Social Influence in Female Consumers

Female university students are more susceptible to promotional atmospheres and social media influences during the "Double Eleven" period, exhibiting stronger impulsive purchasing tendencies. Social marketing strategies such as live-streaming sales, product recommendations ("grass planting"), and social media sharing (e.g., posting orders on WeChat Moments) demonstrate higher penetration among female consumers. Many perceive "Double Eleven" as a social activity or a channel for emotional fulfillment, often making purchasing decisions intertwined with affective experiences—such as the thrill of "grabbing a bargain" or the desire to participate in group purchases and share discounts with friends. This heightened sense of social presence can lead to irrational consumption, where purchases exceed actual needs or budgets. For instance, even when owning similar products, women may still place orders due to perceived "great deals" triggered by steep discounts or limited-time offers.Anticipated regret is hypothesized to significantly influence impulsive online purchasing behavior. Furthermore, such behavior is significantly associated with price promotions, visual-textual presentations, peer reviews, and consumers' inherent impulsive traits (Lin, 2021).

(2) Pragmatism and Goal-Oriented Behavior in Male Consumers

In contrast, male university students tend to adopt a more pragmatic and goal-oriented approach during "Double Eleven." Their purchasing decisions are often based on clearly defined needs, focusing on products that serve specific functions or enhance lifestyle efficiency, such as tech accessories or gaming credits. Men are generally less influenced by social marketing tactics like viral product endorsements ("grass planting") and exhibit lower social engagement in shopping. Their consumption behavior is primarily driven by individual needs, resulting in more rational spending and a relatively lower incidence of impulse purchases. Consequently, their overall expenditure tends to be comparatively modest.

4.3.2 Stockpiling vs. Immediate Use

(1) The “Annual Stock-Up Season” Mentality Among Female Consumers

For many female university students, "Double Eleven" is not merely a shopping festival but is perceived as an essential "annual stock-up season." They often seize this opportunity to purchase bulk quantities of daily necessities, cosmetics, skincare products, and apparel to take advantage of the year’s deepest discounts. This stockpiling mentality leads them to consolidate typically dispersed consumption needs into a single, concentrated spending spree during "Double Eleven," resulting in a significant surge in per-transaction expenditure. To rationalize higher spending, women may engage in "mental accounting" adjustments—for instance, reallocating portions of their budgets originally designated for dining, entertainment, or other daily expenses toward shopping.

(2) The "Buy-as-Needed" Habit Among Male Consumers

Male university students typically exhibit a "buy-as-needed" consumption pattern. They generally avoid deliberate stockpiling and make purchases primarily when actual needs arise. Consequently, even during "Double Eleven" promotions, the absence of immediate purchasing demands prevents them from engaging in bulk buying. Moreover, males tend to adhere strictly to "earmarked budgeting," maintaining clear distinctions between different spending categories. They are less likely to reallocate funds from other budgets for shopping purposes, which inherently limits their total expenditure during the "Double Eleven" period.

(3) Attitude towards excessive consumption

Women's Acceptance of "Buy Now, Pay Later". Amid the promotional atmosphere of events like "Double 11" (Singles' Day), female college students generally show higher acceptance of advanced consumption models, such as installment payments and platforms like Huabei (Ant Group's credit service). The various installment payment options provided by e-commerce platforms and financial institutions reduce the pressure of making large one-time payments, making it easier for them to purchase high-priced goods. This "buy now, pay later" model stimulates women's purchasing desire to some extent, encouraging them to buy products beyond their current financial means, thereby driving up overall spending. What appears to be a discount can subtly steer consumers into making more unnecessary expenditures (Zhang, 2020).

Men's Cautious Attitude Toward Advanced Consumption . In contrast, male college students tend to adopt a more cautious stance toward excessive consumption. They often prioritize financial stability, avoiding additional debt—even with installment plans, they may think twice before committing. This risk-averse mindset leads men to spend within their means when facing high-value purchases, which to some extent restrains the growth of their consumption expenditure.

4.4. Difference in Consumption Positioning and Habits

4.4.1. Consumption Structure & Category Preferences

There exist cognitive and psychological divergences in online shopping between male and female consumers, which lead to distinct behavioral characteristics. This variation necessitates market segmentation by gender and the implementation of tailored marketing strategies for each group (Bao, 2017).

Female: Beauty, Apparel, and Socially-Driven Goods .During shopping festivals like "Double 11," female college students predominantly spend on cosmetics, skincare, fashion apparel, and accessories. These categories typically feature high unit prices, strong social appeal, rapid product turnover, and high susceptibility to trends and peer influence. Women actively pursue fashion trends, using such purchases to enhance self-image and fulfill social needs. Additionally, these goods are easily promoted through livestream sales and group-buying discounts, further driving higher per-transaction spending.

Male: Tech, Gaming, and Functional Goods. Male students, conversely, prioritize electronics, game top-ups, sports gear, and other utilitarian products. These items are often low-frequency but high-value (or low-cost) purchases with longer replacement cycles. Their

buying decisions are primarily based on product performance, practicality, and personal interests, with minimal influence from emotional factors. Consequently, their consumption is more focused, with lower frequency and volume compared to females, ultimately reducing overall expenditure.

4.4.2. Shopping Scenarios & Channel Preferences

Female: Immersive and Discovery-Oriented Shopping. Female students favor diversified platforms (e.g., Taobao, JD, Pinduoduo) and content-driven e-commerce (e.g., Xiaohongshu, Douyin). They enjoy browsing, engaging with livestreams, and savoring the "window-shopping" experience online. This habit increases serendipitous purchases and elevates total spending.

Male: Goal-Directed and Efficiency-First. Male shoppers exhibit targeted behavior: they search for specific products, compare specs/prices, and checkout swiftly. They avoid prolonged browsing or interactive sales formats (e.g., livestreams), leading to more restrained and rational spending during sales events.

4.4.3. Budgeting & Financial Planning

Female: Flexible Allocation and Emotional Spending. Though most undergraduates are semi-financially independent, female students often allocate budgets more fluidly. They may dedicate a larger share of disposable income to shopping, even dipping into savings or using credit. For many, shopping itself is a source of enjoyment, justifying budget flexibility.

Male: Male students tend to enforce stricter budget controls, segmenting funds into fixed categories. Even during steep discounts, they rarely exceed predetermined limits. This self-regulation contributes to lower overall expenditure.

Selecting high-quality sources for online store inventory to enhance the cost-effectiveness of products. The cost-performance ratio of goods is a core factor valued by customers and also a channel for online stores to generate profits (Zong, 2019). Online merchants can leverage the peer effect to optimize their marketing strategies and enhance sales performance through well-designed social interactions (Zhou, 2024).

5. Conclusion

This study investigates the online consumption behavior of students at a university in Beijing during the "Double Eleven" shopping festival and its influencing factors. Through empirical analysis, it reveals differences in expenditure distribution between students of different genders and academic years, as well as their satisfaction with the shopping experience. The findings indicate that the student population generally holds a positive attitude toward the "Double 11" shopping festival, primarily due to its substantial discounts, diverse product selections, and convenient shopping processes. However, dissatisfaction among some students suggests that e-commerce platforms need to continuously improve logistics, after-sales services, and the authenticity of promotional activities.

Regarding gender differences, female university students generally spent more than their male counterparts during "Double 11." This is mainly attributed to their higher susceptibility to promotional atmospheres and social media influences, exhibiting stronger impulsive consumption tendencies and an "annual stockpiling" mentality. They also show greater acceptance of advanced consumption models such as installment payments. Their consumption focus centers on socially oriented products like cosmetics and apparel, with a preference for diversified shopping scenarios. In contrast, male students lean toward pragmatism and purpose-driven consumption, making purchasing decisions based on clear needs and maintaining a cautious stance toward advanced spending. Their consumption categories are concentrated on functional products such as digital devices and gaming, with an emphasis on efficiency and budget control.

In terms of academic year differences, the study finds that first-year students exhibit higher proportions of expenditures in the "below 200 RMB" and "1,000–2,000 RMB" ranges, with the “2,000 RMB and above” category reaching its peak. This may stem from their initial need to establish a basic living environment in college or a lack of financial prudence. Second-year students demonstrate more balanced consumption patterns, reflecting stability and diversification in spending. Meanwhile, third- and fourth-year students show a declining trend in expenditure levels, particularly in high-value categories, which may be related to academic pressures, internship commitments, job preparation, or increased savings awareness.

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References:

Bao, Y. (2017). Gender differences in online shopping characteristics of consumers. Market Modernization, (13), 12–13.

Fang, J., Song, L., & Liu, S. (2020). Analysis of college students' "Double Eleven" online shopping behavior and its influencing factors. Modern Business, (01), 32–35.

Lin, N. (2021). A study on the correlation between consumer anticipated regret and impulsive online shopping in the context of normalized e-commerce shopping festivals. Journal of Commercial Economics, (16), 73–76.

Shen, Y. (2019). Applications of textual big data analysis in economics and finance: A literature review. China Economic Quarterly, 18(4), 1153–1186.

Wang, X. (2023). Analysis of the “Double Eleven” shopping frenzy phenomenon. Co-Operative Economy & Science, (15), 75–77.

Xiao, Q., Wei, S., & Xiao, J. (2020). A survey on the "Double Eleven" online shopping behavior of contemporary college students. Foreign Economic Relations & Trade, (09), 68–71.

Zhang, M., & Wang, L. (2020). Analysis of the impact of "Double Eleven" marketing on college students' consumption. Marketing Review, (25), 27–29.

Zhou, X., Li, T., & Xi, M. (2024). The impact of peer effects on consumer behavior in the digital economy: Evidence from the "Double Eleven" shopping festival. Journal of Hainan University (Humanities & Social Sciences). Advance online publication. Retrieved November 18, 2025.

Zhu, Y., & Pan, J. (2015). A survey of college students' online shopping behavior and research on its influencing factors. Technology and Innovation Management, 36(05), 535–538, 552.

Zong, P. (2019). Analysis of the characteristics and influencing factors of Chinese consumers' online shopping behavior. Journal of Commercial Economics, (06), 1-12.

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Digital Transformation in Chinese Higher Education: Leadership and Governance Perspectives

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Abstract

The digital transformation of higher education is reshaping universities worldwide, demanding new leadership approaches and governance frameworks. In China, national initiatives and policies have accelerated the digitization of universities, positioning digital transformation as a strategic priority for educational modernization. This review examines how leadership and governance in Chinese higher education are responding to the digital era, synthesizing findings from recent literature (2019–2025). Background: Chinese universities are tasked with implementing ambitious programs (e.g. "Double First-Class" initiative and Education Informatization 2.0) to enhance global competitiveness through technology integration. Methods: A comprehensive literature review was conducted, drawing on academic studies, policy analyses, and case reports to identify key themes regarding leadership roles, governance changes, challenges, and outcomes in China's digital higher education transformation. Results: The analysis reveals that effective digital transformation in Chinese universities is underpinned by visionary leadership and supportive governance structures. University leaders are developing digital strategies aligned with national policy, fostering organizational change, and building digital capacities among faculty and staff. Governance reforms – including new administrative units, data governance policies, and cross-departmental collaboration mechanisms – are emerging to manage digital initiatives. However, challenges persist: disparities in digital readiness, resistance to change, and the need for greater digital literacy and culture limit transformation efforts. Conclusions: Chinese higher education's digital transformation showcases the critical interplay between strong leadership and adaptive governance. University leaders who champion innovation and align institutional governance with technological change are better positioned to realize the benefits of digital education. The findings highlight strategies to overcome implementation barriers and offer insights for other systems navigating similar transitions.

Keywords: Digital Transformation; Higher Education; Academic Leadership; Educational Innovation; Digital Strategy

1. Introduction

Higher education systems around the world are undergoing profound changes due to digital transformation – the comprehensive integration of digital technologies into all aspects of university operations, teaching, and research. This trend is redefining how universities function and deliver value, as institutions leverage innovations like online learning platforms, data analytics, and artificial intelligence to enhance educational outcomes and administrative efficiency (Kasmia & M'hamed, 2023). University leaders globally are increasingly aware that adapting to digital change is not optional but imperative for maintaining relevance and competitiveness in a knowledge-driven economy (Cortellazzo et al., 2019). During the COVID-19 pandemic, for example, even traditionally resource-intensive universities were compelled to adopt digital modalities virtually overnight, underscoring how critical agile leadership and robust digital infrastructure have become for academic continuity (Antonopoulou et al., 2021). In this context, leadership and governance have emerged as central determinants of how effectively higher education institutions navigate the opportunities and challenges presented by digital transformation.

China provides a particularly illuminating case for examining the leadership and governance dimensions of digital transformation in higher education. Over the past decade, the Chinese government has launched ambitious initiatives to modernize and digitize its education system as part of a broader national innovation strategy (Yan & Yang, 2021). Notably, the "Double First-Class" project aims to develop world-class universities and disciplines, a goal for which digital innovation is a key enabler. Likewise, the Ministry of Education's *Education Informatization 2.0 Action Plan* (2018) and the strategic framework to build China into an educational power by 2035 articulate explicit targets for leveraging information technology to transform teaching, learning, and administration across all levels of education (Yan & Yang, 2021; Xiao, 2019). These policies underscore that digital transformation is not merely about adopting new tools, but about reimagining educational delivery and governance to position Chinese universities at the forefront of global higher education in the digital era. The result is a top-down impetus for change: university leaders are expected to align institutional strategies with national digitalization goals, implementing reforms that integrate technology into curricula, campus services, and research management (Cui, 2023; Sziegat, 2025).

While the policy direction is clear, executing digital transformation in practice raises complex leadership and governance questions. University presidents and administrators in China operate within a unique context that blends global trends with local characteristics. Culturally, effective leadership in Chinese higher education has traditionally emphasized collective values, hierarchical decision-making, and a balance between "morality and ability" in leaders' qualities (Shen et al., 2020). Administratively, Chinese universities often function with significant government oversight and bureaucratic structures, which can both facilitate and constrain innovation (Ruan et al., 2024). Leaders must thus act as intermediaries – or "boundary spanners" – translating national policy mandates into campus-level initiatives and motivating faculty and staff to embrace new practices (Ruan et al., 2024; Zhu & Caliskan, 2021). The governance of universities, including councils, Communist Party committees, and academic boards, also plays a

role in how digital projects are approved, resourced, and evaluated. These layers of context mean that strategies successful in other countries may need adaptation in China, aligning with what Hallinger (2018) describes as bringing leadership *context* "out of the shadows" – in other words, understanding how environment influences leadership effectiveness.

At the same time, the literature indicates a growing consensus that digital transformation in higher education calls for new models of leadership that are more collaborative, adaptive, and technology-informed than traditional approaches (Ehlers, 2020; Jameson et al., 2022). Concepts such as *digital academic leadership* have been proposed to capture the evolving skill set and mindset required of university leaders in the digital age – combining strategic foresight in technology adoption with the ability to lead organizational change and innovation (Cheng et al., 2024a). For Chinese higher education, which is characterized by rapid expansion and reform, examining leadership through this digital lens is especially pertinent. Recent empirical work by Jing et al. (2025) identified core competencies for *digital academic leadership* in Chinese universities – including digital strategic vision, resource coordination, technological awareness, and a culture-building role – highlighting that university leaders must orchestrate both technological and human elements of change to succeed. Governance mechanisms, too, must evolve: effective digital transformation may require updating institutional policies on data management, incentivizing pedagogical innovation, and establishing cross-functional teams or units to support digital initiatives (Henderikx & Stoffers, 2022; Tana et al., 2023).

Despite these emerging insights, there remain gaps in understanding exactly how Chinese higher education leaders are managing digital transformation and what governance innovations are being implemented or needed. Much of the existing research on digital leadership in education has been conducted in Western contexts or at the basic education level, focusing on school principals during the pandemic (Karakose et al., 2021) or general organizational transformation principles. Fewer studies have zeroed in on Chinese universities, which have distinct characteristics in terms of scale, administrative structure, and state influence. Notably, a systematic review by Cheng et al. (2024a) found that research on digital academic leadership is still in a nascent stage, with conceptualizations varying and a need for more context-specific investigations. Furthermore, while certain case studies document successful digital initiatives at elite Chinese universities, there is a lack of consolidated knowledge about common challenges, best practices, and the range of strategies across institutions of different tiers.

This review article seeks to fill these knowledge gaps by providing a comprehensive analysis of digital transformation in Chinese higher education from leadership and governance perspectives. We synthesize recent English-language academic literature and relevant policy documents to address key questions: How are university leaders in China guiding and implementing digital transformation? What governance structures or practices are facilitating or hindering this process? What challenges do institutions face, and what strategies have emerged to overcome them? By drawing together findings from 2019–2025 – a period of accelerated digital uptake in education – we aim to highlight patterns and insights that can inform both Chinese stakeholders and the global discourse on higher education digitalization. In doing so, we emphasize an analytical and original

perspective: rather than simply cataloguing technological changes, we focus on the human and organizational dimensions that ultimately determine the success of digital transformation.

The remainder of the article is organized as follows. Section 2 describes the methodology of the literature review, including the selection of sources and analytical approach. Section 3 presents the results of our synthesis, structured around major themes such as policy drivers, leadership roles, governance reforms, and implementation challenges. Section 4 provides a discussion that interprets these findings, compares them with global trends, and suggests implications for theory and practice, including potential future research directions. Finally, Section 5 concludes the paper by summarizing the main points and reflecting on the prospects of digital transformation in Chinese higher education through the lens of leadership and governance.

2. Methodology

This study employs a qualitative literature review methodology to investigate leadership and governance issues in the digital transformation of Chinese higher education. Given the evolving nature of this topic, a scoping review approach was used to capture a wide range of relevant sources from recent years. We focused on literature published predominantly between 2019 and 2025, aligning with the period when digital transformation efforts in China's higher education system intensified and when scholarly attention to this phenomenon grew markedly. Both peer-reviewed academic publications and authoritative reports or policy analyses were considered to ensure a comprehensive view that spans theoretical, empirical, and practical dimensions.

2.1. Search Strategy and Selection Criteria

The literature search was conducted using multiple scholarly databases and search engines (including Web of Science, Google Scholar, and CNKI for English abstracts of Chinese studies) with various combinations of keywords such as "digital transformation," "higher education," "university," "China," "leadership," "governance," "digital strategy," and "educational innovation." We also included specific policy-related terms (e.g., "Education Informatization 2.0," "Double First-Class initiative") to find analyses linking Chinese policy to university practices. To identify works by key scholars in the field, we cross-referenced citations and also gave special attention to sources from the new journal *Global Education Ecology* and publications by Dr. Xianghan Zhang, as these were indicated to be influential in the discourse. Our inclusion criteria required that sources be in English (to ensure accessibility to an international scholarly audience) and directly relevant to the intersection of digitalization with leadership or governance in the context of Chinese higher education. We included comparative and theoretical studies where useful, but the core of the review emphasizes China-specific findings.

This process yielded an initial corpus of over 100 sources. Each source was then screened by title and abstract for relevance. We excluded works that dealt with digital transformation in education but without any focus on organizational leadership or management (e.g. purely technical studies on e-learning platforms), as well as commentary pieces lacking substantive analysis. After this refinement, approximately 50 sources were selected for in-depth review. These comprised empirical case studies of Chinese universities, survey research on leadership

perceptions, literature reviews on digital leadership, and analyses of educational policy and strategy. Notably, our selection encompasses both global perspective articles (to situate Chinese experiences in the broader context) and China-focused studies (to capture the local specifics). The reference list of each selected article was also scanned for any additional sources we might have missed, a snowball technique that led us to a few further relevant works.

2.2. Analysis Methods

We analyzed the collected literature using thematic analysis. Key information from each source – such as study context, research methods (if empirical), and major findings or arguments – was extracted and organized in a matrix. We paid special attention to points related to: (a) the role of university leadership (e.g., how leaders conceptualize and drive digital initiatives, what leadership styles or competencies are highlighted); (b) governance structures and processes (e.g., changes in institutional policies, creation of new committees or roles, decision-making processes for IT investments); (c) challenges or barriers noted (e.g., cultural resistance, skill gaps, resource constraints, policy compliance issues); and (d) outcomes or recommendations (e.g., reported successes, frameworks proposed for improvement, training needs).

From this coding, several recurring themes emerged, which form the basis of our Results section. These themes were not predetermined but inductively derived from the literature; however, they align well with our guiding questions about how digital transformation is being led and governed in Chinese higher education. For example, one prominent theme was the impact of national policy drivers, as many sources discuss the influence of government initiatives on university actions. Another theme revolved around leadership competencies and styles needed in the digital era. A third theme covered governance and organizational change, including structural adjustments and strategic planning at the university level. Finally, multiple sources addressed challenges and future needs, which we consolidated into a theme on implementation barriers and capacity building.

Throughout the analysis, we triangulated insights from different types of sources. Empirical studies (such as surveys of university leaders or case studies of particular universities) provided ground-level evidence, whereas policy analyses and reviews contributed a macro-level perspective. By comparing and contrasting these, we sought to ensure that our synthesized findings are robust and reflect both policy intent and on-the-ground reality. It should be noted that our approach is interpretive and integrative; as a result, the conclusions drawn are not merely a summary of each source, but an original synthesis that highlights intersections and tensions among them. We also acknowledge that while this review is extensive, it may not capture every possible publication on the topic, especially given the rich body of literature in Chinese. However, the selected sources and the themes distilled from them provide a solid foundation to understand current dynamics and to inform scholarly and practical discussions moving forward.

3. Results

Our review findings coalesce around four major themes that illuminate the leadership and governance dimensions of digital transformation in Chinese higher education: (3.1) Policy

Drivers and Institutional Digital Initiatives, (3.2) University Leadership Roles and Strategies in the Digital Era, (3.3) Governance Reforms for Digital Transformation, and (3.4) Challenges and Barriers to Implementation. Together, these themes depict a landscape where top-down policy imperatives meet bottom-up institutional change processes, guided by leaders who must innovate within existing governance frameworks while also reshaping those frameworks to better support digital goals. In this section, we present each theme, supported by representative examples and studies from the literature.

3.1. Policy Drivers and Institutional Digital Initiatives

A consistent finding across the literature is that China's digital transformation in higher education is strongly propelled by national policies and strategic initiatives, which set the agenda and create both opportunities and pressures for universities (Yan & Yang, 2021; Cui, 2023). These policies serve as macro-level drivers, defining the targets and tempo of digital adoption in universities. University leaders thus operate in a policy environment that not only encourages digital innovation but in many cases mandates it.

One of the cornerstone policy drivers is the *Double First-Class Initiative* launched in 2015, which aims to develop a group of world-class universities and disciplines. While not exclusively about technology, this initiative implicitly requires universities to modernize their infrastructure and pedagogy, including leveraging digital technologies to enhance research output and educational quality (Xiao, 2019). Many universities designated as "Double First-Class" have subsequently included digital transformation goals in their development plans (Xiao, 2019). For instance, universities have invested in smart campus projects, high-performance computing for research, and online education platforms to extend their global reach. University leadership, in these cases, often frames digital projects as integral to achieving world-class status, aligning institutional vision with national expectations.

Another significant driver is the *Education Informatization 2.0 Action Plan* issued by the Ministry of Education in 2018. This plan explicitly calls for comprehensive integration of information technology in education by 2022, building on an earlier phase of informatization that focused on infrastructure (Yan & Yang, 2021). Informatization 2.0 sets quantitative targets (such as broadband coverage and student-computer ratios) and qualitative goals (like improving teachers' digital literacy and promoting "Smart Education"). The existence of clear targets has a cascading effect: university administrations develop detailed IT master plans and allocate budgetary resources to meet the benchmarks. According to Yan and Yang (2021), by framing digital transformation as an official standard of educational modernization, the policy galvanized many universities to launch new digital learning platforms, expand their online course offerings, and create data systems for campus management. Leadership commitment in these universities often materializes as the creation of dedicated *"informatization offices"* or vice-presidential roles tasked with digital strategy execution, indicating a governance response to the policy's requirements.

Furthermore, China's *New Generation Artificial Intelligence Development Plan* (2017) and subsequent policies around AI in education (including guidelines on the ethical use of AI in

classrooms) are also influencing higher education (Xu et al., 2024). Several top universities have established AI institutes or centers for smart learning, reflecting leadership decisions to prioritize cutting-edge technology domains. The Ministry of Education has encouraged universities to experiment with AI tutors, intelligent assessment systems, and learning analytics – with pilot projects reported in places like Tsinghua University and Beijing Normal University. These initiatives show how national tech strategies filter into university-level actions; leaders of pioneering institutions often work closely with government bodies to pilot such innovations, effectively turning policy into practice (Cui, 2023).

Policy drivers are not limited to technology-specific mandates. Broader reforms, such as those aimed at university governance and quality assurance, also intersect with digital transformation. For example, the national push for "University Governance Modernization" has encouraged the use of big data in decision-making and evaluation of university performance. This has led some university administrations to implement management information systems and dashboards for monitoring teaching quality, research productivity, and student services in real time (Zhu & Caliskan, 2021). In such cases, digital tools become instruments for governance reform, and their adoption is championed by forward-thinking leaders who see data-driven management as a means to increase transparency and effectiveness.

It is important to note that while national policies provide a powerful impetus, universities in different tiers react differently. Elite universities, often with more autonomy and resources, have seized these policy drivers as an opportunity to innovate and differentiate themselves globally. Middle- and lower-tier institutions, on the other hand, sometimes struggle with resource constraints and may take a more compliance-driven approach, implementing the basics to meet policy requirements (Ruan et al., 2024). The literature suggests that leadership plays a key role in mediating this: universities with proactive leaders tend to leverage policy support to attract funding and talent for digital projects, whereas less innovative leadership may result in slow or superficial implementation of informatization directives (Sziegat, 2025).

In summary, Chinese higher education's digital transformation is to a large extent externally stimulated by strategic government initiatives. These set an overarching vision that university leaders must interpret and enact. The policy context in China creates a somewhat unique scenario where digital transformation is not left to chance or solely market forces, but is part of an orchestrated national effort. University leadership, therefore, is often about aligning institutional plans with these drivers: a balancing act of pursuing ambitious modernization goals while ensuring feasibility and relevance to the university's mission. Our findings highlight that successful digital initiatives at the institutional level often correlate with leaders who are adept at navigating this policy landscape – leveraging state support, meeting accountability demands, and simultaneously crafting a locally meaningful digital strategy.

3.2. University Leadership Roles and Strategies in the Digital Era

The success of digital transformation in universities hinges significantly on the actions and vision of university leaders – including presidents, vice presidents, deans, and departmental heads – who champion and steer digital initiatives. The literature consistently emphasizes that

traditional leadership approaches in academia are being augmented (and in some cases challenged) by the demands of digitalization. In Chinese higher education, effective digital transformation leaders are described as needing to perform multiple roles and adopt new strategies compared to the past (Cheng et al., 2024a; Jing et al., 2025).

Strategic Vision and Planning: One of the foremost roles of leaders is to establish a clear strategic vision for digital transformation that aligns with the university's overall goals and culture. Studies indicate that leaders must articulate how digital initiatives contribute to academic excellence and student success, rather than treating technology as an end in itself (Ehlers, 2020; Anwar & Saraih, 2024). In China, where many universities outline five-year or ten-year plans, leadership teams are increasingly incorporating explicit digital transformation roadmaps into these guiding documents (Xiao, 2019). For instance, a university president may set a vision to become a "smart campus" leader or to significantly expand online education programs, and then formulate a sequence of objectives – from upgrading IT infrastructure to training faculty – to realize this vision. Jing et al (2025) found that among Chinese university administrators, those who demonstrate *digital strategic foresight* (planning for long-term technological trends and innovations) are better at guiding their institutions through complex change. These leaders proactively invest in emerging technologies (like learning analytics or virtual laboratories) and pilot new pedagogical models, thereby setting a tone that continuous innovation is part of the institutional identity.

Resource Coordination and Capacity Building: Another critical leadership role is mobilizing and allocating resources – human, financial, and technological – to support digital projects (Benitez et al., 2022). Unlike incremental changes, digital transformation often requires significant upfront investment (e.g., building campus-wide Wi-Fi, purchasing software licenses, or creating new staff positions such as instructional designers or data analysts). University leaders in China must often navigate between securing government grants earmarked for informatization and reallocating internal budgets to sustain digital initiatives. Effective leaders act as *resource coordinators*, aligning external funding opportunities (from the Ministry of Education or local governments) with internal needs, and ensuring that digital transformation efforts are adequately staffed (Jing et al., 2025). A common strategy has been the establishment of specialized departments or working groups: for example, a "Digital Transformation Task Force" chaired by a vice-president, which brings together the IT office, academic affairs, library, and sometimes student representatives. Such cross-functional teams are an embodiment of distributed leadership, enabling more inclusive decision-making and pooling expertise from different units (Harris et al., 2022).

Capacity building is closely tied to resource allocation. Leaders are focusing on developing the digital competencies of faculty and staff, recognizing that a technologically savvy workforce is essential for transformation to take root (Belt & Lowenthal, 2020; Liu et al., 2019). Many Chinese universities have initiated campus-wide training programs, workshops, and even incentive schemes (like teaching innovation awards) to encourage faculty to adopt digital tools in teaching. According to Chugh et al. (2023), stakeholders' perceptions can make or break technology implementation; thus, leaders who invest in change management – communicating benefits,

providing support, and rewarding early adopters – tend to see more positive uptake. Some university presidents have personally led by example, such as teaching a course online or using social media to engage with students, thereby signaling their commitment and reducing skepticism among staff.

Technology Adoption and Innovation Culture: The literature suggests that modern academic leaders need a degree of technology awareness or literacy to make informed decisions (Avidov-Ungar et al., 2022; Ghamrawi & Tamim, 2023). While they need not be IT experts, understanding the pedagogical and administrative potential of new technologies allows leaders to prioritize which innovations align with their institution's needs. For example, a president who grasps the implications of big data might push for the creation of a learning analytics system to improve student advising. In China, there are instances of university leaders driving the adoption of AI-driven tutoring systems or virtual simulation platforms for engineering education, guided by an understanding of global trends and local possibilities (Xu et al., 2024). Leaders also play a role in ensuring that adoption is accompanied by appropriate policies – such as guidelines on online examination integrity or data privacy – which ties into governance (see Section 3.3).

Encouraging an *innovation-friendly culture* is another strategy employed by effective leaders. Digital transformation often entails experimentation and learning from failures. Several authors note that university leadership can cultivate a culture that views experimentation positively, by providing "innovation sandbox" environments or pilot funding for departments to try new digital approaches (Msila, 2022). In Chinese universities, this can be somewhat counter-cultural, as traditionally the emphasis has been on stability and compliance. However, case studies (e.g., in Cheng & Zhu, 2024b) report that some progressive institutions have adopted corporate-like innovation labs where faculty and students collaborate on digital projects, supported by leadership as long as they align with educational goals. Such cultural shifts require consistent messaging from the top: leaders frequently highlighting success stories of digital innovation in internal meetings, and framing digital competencies as part of the university's core values.

Leadership Styles – Transformational and Distributed: Many sources highlight that transformational leadership qualities are beneficial for guiding digital change (Antonopoulou et al., 2021; Kasmia & M'hamed, 2023). Transformational leaders inspire and motivate stakeholders to pursue a shared vision of the future. In the digital context, this might involve articulating a compelling narrative about how embracing technology can elevate the university's teaching quality, research impact, and service to society. Evidence from a literature review by Kasmia and M'hamed (2023) suggests that leaders who communicate passion and urgency for digital transformation tend to achieve greater buy-in from faculty and departments, especially when combined with intellectual stimulation (challenging the status quo and encouraging creative solutions). Chinese university leaders who exhibit these traits may, for example, challenge faculties to rethink traditional lecture-based teaching in favor of blended learning and provide them the support to do so.

At the same time, distributed leadership (or shared leadership) is increasingly recognized as necessary in dealing with the complexity of digital transformation (Harris et al., 2022; Jameson et al., 2022). One person or a small executive team cannot possibly micromanage all aspects of

technology integration across a large university. Successful digital initiatives often rely on empowering mid-level leaders – such as department heads or project champions – to take charge of local implementation. For instance, a dean might lead the digital curriculum reform in their college, or an enthusiastic professor might head a task force to train peers on using a new Learning Management System. In the Chinese context, some universities have formal programs to develop "academic digital leaders" at various levels, recognizing that bottom-up innovation is as important as top-down strategy (Zhan & Jiang, 2023). This network of leadership helps in customizing and diffusing digital practices throughout the institution.

Ethical and Social Responsibility Role: A subtle but notable point in the literature is that as universities digitalize, leaders must also address the ethical, legal, and social implications of technology use (Tana et al., 2023; Shen et al., 2020). This ranges from safeguarding data privacy and security to ensuring equity in access to digital resources for all students. Leaders in Chinese universities have begun to confront issues such as the digital divide between students from urban and rural backgrounds, the need for cybersecurity in the face of increasing cyber-attacks on campus networks, and the balance between surveillance (e.g., monitoring online exams or attendance) and trust. Taking a responsible approach to these concerns is now seen as part of the leadership mandate. According to Shen et al. (2020), Chinese academic leaders traditionally emphasize moral leadership – this now extends to the digital realm, where leaders are expected to uphold ethical standards in the use of technology and to guide their institutions in using digital tools in ways that align with societal values and educational integrity.

In summary, the leadership of Chinese higher education institutions in the digital era is multi-faceted. Leaders are strategic planners, resource mobilizers, champions of innovation, and change managers all at once. They must blend visionary thinking with practical implementation skills, and hierarchical decision-making with collaborative, distributed approaches. The literature indicates that where leaders have embraced these expanded roles – demonstrating a strong digital vision, investing in people and infrastructure, and fostering a receptive culture – their universities have made more substantial progress in digital transformation (Cheng et al., 2024a; Benitez et al., 2022). Conversely, institutions with leadership that is either hesitant, lacks technological awareness, or sticks rigidly to old management styles tend to lag in this domain. Leadership, therefore, acts as the engine driving the digital transformation train in Chinese higher education, determining its speed, direction, and how smoothly it runs.

3.3. Governance Reforms for Digital Transformation

Digital transformation in higher education not only requires visionary leaders but also often necessitates reforms in governance structures and processes. Governance, in this context, refers to the formal and informal frameworks through which decisions are made, policies are set, and accountability is maintained within universities. Our review finds that Chinese universities are gradually adapting their governance to better support and regulate the integration of digital technologies, though the extent and nature of these changes can vary widely among institutions (Sziegat, 2025; Ratajczak, 2022).

Institutional Policy and Strategy Development: A primary aspect of governance reform has been the development of institution-wide digital strategies or policies. Many universities have codified their commitment to digital transformation through official strategic plans, IT policies, or "digital campus" initiatives endorsed by the university council or equivalent governing body (Xiao, 2019). This formalization signals that digital transformation is not a side project but part of the university's core development agenda. Key policy areas include: policies on online education (e.g., standards for credit-bearing online courses, faculty workload recognition for online teaching), data governance policies (who owns and can access data generated by digital learning platforms, how to ensure data security and student privacy), and IT procurement and partnership guidelines (especially as universities increasingly collaborate with EdTech companies for cloud services or software) (Zhu & Caliskan, 2021; Tana et al., 2023). By establishing clear policies, governance bodies aim to create a stable environment in which digital initiatives can flourish and be scaled up. For example, a university senate may approve a policy that all newly developed courses must have an online component, or a policy that allocates a certain percentage of the budget to digital infrastructure annually. These policies often stem from recommendations by specialized committees or task forces on digital transformation, indicating a governance mechanism where expertise is drawn into policymaking.

Organizational Structure and Roles: Another governance dimension is the reconfiguration of organizational structures to manage digital transformation. Several sources note the emergence of new administrative units or roles dedicated to digital affairs. Many Chinese universities have established a high-level *Information Technology Office* (if not already existing), which now plays a more strategic role rather than just technical support (Cui, 2023). These offices are sometimes led by a Chief Information Officer (CIO) or similar executive, reflecting a corporate governance import into academia. In some cases, an existing vice-president's portfolio is expanded to include digital transformation, or a new position (e.g., Vice President for Digital Strategy or Innovation) is created. The presence of a CIO or equivalent in the top management team can facilitate more integrated decision-making, ensuring that technological considerations are incorporated into all major institutional decisions (Porfírio et al., 2021).

In addition to formal roles, many governance reforms involve creating **cross-functional committees**. For instance, a "Digital Transformation Steering Committee" might be formed, comprising senior administrators, faculty representatives from various disciplines, IT specialists, and even student representatives. Such committees often oversee the planning and evaluation of digital projects, providing a platform for diverse stakeholders to voice concerns and needs (Ratajczak, 2022). This approach aligns with principles of shared governance, adapted to the digital context: it acknowledges that IT changes affect academic, administrative, and student domains, so governance input should be accordingly broad. Some universities have also set up ethics committees or data governance boards to oversee issues like data privacy and algorithmic fairness in campus technologies, indicating a proactive stance in governance to address the new challenges digital tools bring (Tana et al., 2023).

Decision-Making Processes: Digital transformation requires more agile and evidence-informed decision-making processes than some traditional academic governance routines. There

is evidence that universities are experimenting with new governance processes such as pilot-and-scale approaches and iterative policy development. Rather than only making top-down decisions effective immediately across the whole institution, some governance bodies authorize pilot programs (for example, trying out a new blended learning model in a few departments) and use the results to inform broader policy (Chugh et al., 2023). This iterative style can be seen as a shift from overly bureaucratic governance to a more *adaptive governance* model. For example, an academic committee might provisionally approve the use of MOOCs (massive open online courses) for credit transfer, monitor outcomes for a year, and then fully integrate the practice into regulations if successful (Liu et al., 2019). This flexibility allows institutions to respond to technological change without being paralyzed by the need for immediate consensus on untested ideas.

Another shift in decision-making noted in the literature is the greater use of data and analytics in governance itself. Universities implementing digital dashboards for institutional performance are enabling governing councils and leadership teams to make decisions based on real-time data, such as enrollment patterns in online courses, student engagement metrics, or IT system usage statistics (Yang et al., 2023). This data-driven governance can improve transparency and accountability. For instance, if data shows low usage of an expensive e-learning platform, governance bodies can question its ROI and make informed decisions about renewing or reallocating resources (Henderikx & Stoffers, 2022). In China, where numerical targets and rankings are highly visible, data-centric decision tools can help reconcile national metrics with internal quality goals.

Integration of Party Leadership: A distinctive aspect of governance in Chinese public universities is the role of Communist Party committees in institutional decision-making. The literature rarely addresses this directly, but it is known that Party secretaries hold co-equal status with university presidents in governance. In terms of digital transformation, Party leadership can influence the direction of change by emphasizing certain values (e.g., ideological correctness of online content, cybersecurity as a matter of national security) (Ruan et al., 2024). In practice, effective digital governance often means the university administration works in concert with the Party committee to advance technology initiatives. A harmonious relationship can smooth implementation – for example, Party organizations on campus might actively promote faculty training programs or champion digital literacy campaigns among students, framing them as advancing the collective good. This integration of Party leadership into the governance of digital initiatives is a unique feature of the Chinese context that ensures alignment with national ideological guidelines, but it can also introduce additional oversight layers that need careful navigation by university leaders.

External Governance and Partnerships: Governance reforms are not confined within the university; they extend to how universities interact with external entities in the digital realm. Chinese universities are increasingly forming partnerships with technology companies (for cloud services, AI tools, etc.) and global educational platforms. Good governance now entails establishing clear contract management practices and intellectual property policies for such partnerships to protect university interests (Sziegat, 2025). Additionally, compliance with external

regulations – such as China's laws on data security and internet content – has become a governance priority. Universities have had to create protocols to ensure that their online offerings and data handling meet legal requirements, which in turn has led to formalizing roles like compliance officers or committees focusing on digital risk management.

In essence, governance structures in Chinese higher education are gradually evolving from traditional academic committee-focused models towards more hybrid models that incorporate strategic IT oversight, cross-functional collaboration, and data-informed decision-making. These changes enable universities to handle the complexity of digital transformation – which cuts across academic, technical, and administrative domains – in a coordinated manner. However, the literature also suggests that this process is uneven. Some leading universities have embraced thorough governance reforms and operate with a high level of what might be termed "digital governance maturity" (Jameson et al., 2022), whereas others still operate in silos, with IT decisions separated from academic governance, leading to misalignment and inefficiencies. Governance reform thus remains a work in progress, but its trajectory points towards more integrated and responsive models that treat digital transformation as a continuous institutional development priority rather than a one-time project.

3.4. Challenges and Barriers to Implementation

Despite clear progress and numerous initiatives, Chinese higher education institutions face a range of challenges and barriers in the implementation of digital transformation. These challenges emerge from technological, human, cultural, and institutional sources, and they underscore why digital transformation should be viewed as an ongoing journey rather than a one-off achievement. Our synthesis identifies several key obstacles consistently mentioned in the literature, along with the contexts in which they arise and, in some cases, strategies being attempted to overcome them.

Digital Divide and Resource Disparities: One fundamental challenge is the disparity in digital infrastructure and resources among institutions and regions. China's higher education landscape is vast, with elite universities in major cities enjoying substantial funding and state-of-the-art facilities, while many regional or less prestigious institutions operate on tighter budgets. This "digital divide" means not all universities can invest equally in cutting-edge technology (Sziegat, 2025). For instance, installing campus-wide 5G networks or advanced smart classrooms might be feasible for a Tsinghua or Zhejiang University, but a smaller provincial college may struggle to provide even reliable broadband in all classrooms. Leaders of resource-constrained universities often have to make tough choices, prioritizing which aspects of digital transformation to pursue first (Liu et al., 2019). This can slow down or narrow the scope of transformation – perhaps focusing only on administrative digitalization (like moving paperwork online) but not having funds to develop rich online course content or AI tools for learning support. The literature suggests that while government grants (such as special informatization funds) have helped bridge some gaps, inequalities remain a significant barrier to achieving the nationwide vision of Education Informatization 2.0 (Yan & Yang, 2021). As a result, governance bodies in less affluent institutions sometimes adopt a "wait and see" approach, observing pilot successes at bigger universities before committing their scarce resources, which delays innovation.

Faculty and Staff Digital Literacy: A recurrent human factor challenge is the varying levels of digital literacy and acceptance among faculty and staff. University teachers are central to educational transformation, and not all are prepared or willing to change entrenched practices (Chugh et al., 2023; Belt & Lowenthal, 2020). Particularly among older faculty or those who have had success with traditional pedagogies, there can be resistance to adopting new teaching technologies or to redesigning courses for online or blended delivery. Common concerns include the additional time required to learn and maintain new systems, skepticism about the pedagogical value of certain technologies, and fear that online education may diminish academic rigor or their personal teaching significance (Msila, 2022; Xiao, 2019). University leaders often encounter pushback when, for example, mandating the use of a Learning Management System (LMS) for posting course materials or when encouraging faculty to use data analytics to monitor student progress.

Professional and administrative staff similarly need upskilling as processes digitalize – consider registrars moving to a new student information system or librarians managing digital repositories. If insufficient training or support is provided, these staff may unintentionally become bottlenecks in the workflow or make errors that erode trust in the new systems. As noted by Liu et al. (2019), successful digital transformation often depends on parallel investment in human capacity building. Many universities have launched training programs and peer mentoring to address this, but the scale of need is large, and cultural change is slow. Overcoming this barrier requires persistent effort: continuous training, technical support, and reassurance that the transition will ultimately reduce workloads or improve outcomes, which must be communicated effectively by leadership.

Cultural and Organizational Resistance to Change: Beyond individual skills, there is the broader issue of organizational culture and climate. Universities, like many established institutions, have deeply rooted traditions and norms. In China, some academics and administrators hold the view that education, especially at the tertiary level, is inherently an in-person, humanistic endeavor that cannot be radically altered without loss of quality (Shen et al., 2020). There can be a sentiment that digital initiatives, if poorly implemented, might commodify education or undermine the teacher-student relationship. Moreover, the hierarchical nature of decision-making in many Chinese universities can itself slow change: proposals might have to pass through multiple committees and approvals, and if any level is unconvinced of a digital initiative's value, it might stall indefinitely.

Leadership style also plays a part here. If leaders impose changes in a top-down manner without adequate consultation, it can breed quiet resistance or minimal compliance (Ruan et al., 2024). For example, a university that suddenly requires all courses to have an online exam component might face non-compliance if faculty find the platform unreliable or were not involved in its selection. Building a culture that embraces experimentation and accepts occasional failures – which is important for innovation – is challenging in environments that have historically rewarded caution and incremental improvement over radical change (Hallinger, 2018). The literature underscores the need for change management strategies, such as involving opinion leaders from the faculty early on, demonstrating quick wins, and creating safe spaces for feedback

during implementation (Anwar & Saraih, 2024). Without these, culture can remain a stubborn barrier despite formal decisions.

Technical and Integration Challenges: On the technical side, universities often grapple with integrating new digital systems with legacy systems. A university may have disparate systems for student records, finance, learning management, and research administration that are not designed to work together. Introducing new technology (like an AI-driven advising system) often requires considerable back-end integration, data migration, and cybersecurity enhancements (Yang et al., 2023). Technical challenges can lead to delays and user frustration. For instance, if a new online learning platform experiences frequent downtime or cannot handle peak loads during exam season, trust in the system erodes quickly among students and faculty. Issues like inadequate technical support, lack of user-friendly design, or insufficient localization (if using imported software) also emerge in the literature as pain points (Liu et al., 2019). Governance bodies must make decisions about whether to build custom solutions (costly and time-consuming) or buy commercial ones (possibly less tailored to specific needs), and both routes have potential pitfalls. The fast pace of technological change means that universities may also worry about obsolescence: investing heavily now only to find the chosen system superseded in a few years. This can sometimes lead to a wait-and-see approach, which in itself is a barrier to timely transformation.

Evaluation and Quality Assurance: Ensuring the quality of education during and after digital transformation is another challenge. Skeptics of online education often question whether learning outcomes are on par with traditional methods. Universities need robust evaluation mechanisms to assess the effectiveness of digital tools – for example, comparing student performance in online vs. face-to-face sections, or monitoring the impact of learning analytics on student retention (Chugh et al., 2023). Setting up these evaluation frameworks requires expertise and commitment. Additionally, external quality assurance bodies (like the Ministry or professional accreditation agencies) may not yet have fully developed standards for digital education, leading institutions to proceed cautiously. University governance structures sometimes lack clear indicators or KPIs for digital transformation success beyond basic metrics like number of online courses. The challenge is thus partly about defining success and demonstrating it to stakeholders (students, faculty, funders). If quality concerns are not addressed, they become a barrier through eroded stakeholder confidence and even student resistance to paying for or engaging in digital offerings.

Privacy, Security, and Ethical Concerns: As universities gather more data and conduct more activities online, issues of privacy and cybersecurity have come to the forefront (Tana et al., 2023). A data breach or a cheating scandal in online exams can severely setback trust in digital systems. Leaders are aware that one high-profile failure can become an excuse for detractors to "roll back" digital initiatives. Thus, ensuring robust security measures (e.g., secure authentication for online assessments, encryption of sensitive information) and establishing ethical guidelines (e.g., how AI is used to monitor student behavior) are essential. These areas are challenging because threats evolve quickly and because they require specialized knowledge often beyond the traditional scope of academic governance. Institutions are learning to incorporate cybersecurity drills, third-party audits, and strict data governance policies as part of their routine – a new domain for university management that can strain resources and know-how (Yang et al., 2023).

Navigating national regulations such as China's Personal Information Protection Law also demands legal and technical expertise.

Change Fatigue and Sustainability: A final challenge noted in some sources is the risk of "change fatigue." If numerous digital projects are introduced in rapid succession, faculty and staff may become overwhelmed, leading to burnout or disengagement. For instance, in the wake of COVID-19, many educators had to master video conferencing, LMS, and digital content creation all at once. While that spurred a giant leap in digital adoption, it also left many exhausted and longing for a return to normalcy (Antonopoulou et al., 2021). Sustaining momentum after the initial push is difficult if people feel they are constantly having to learn new systems or if early enthusiasm wanes. Leaders must strike a balance between pushing forward and consolidating gains, ensuring adequate support at each stage. Moreover, maintaining and updating digital systems requires ongoing investment; a challenge arises in keeping long-term financial and policy support for digital transformation, especially if leadership changes or if other priorities emerge (Sziegat, 2025). Sustained success thus depends on institutionalizing the changes so that they become part of the fabric of the university.

In conclusion, the path of digital transformation in Chinese higher education, as elsewhere, is not without obstacles. Addressing these challenges requires concerted effort and strategic approach: equitable resource distribution (potentially through government support for lagging institutions), comprehensive professional development programs, change management and inclusive governance techniques, investment in robust technical infrastructure, and a vigilant stance on quality and ethics. The presence of these barriers also highlights that digital transformation is not merely a technical upgrade but a deep organizational change. Universities that navigate these challenges effectively tend to do so by viewing them not as roadblocks, but as problems to be solved through innovation – in pedagogical approaches, in policy, and in management. In the Discussion that follows, we will reflect on how the identified challenges inform the broader understanding of leadership and governance in the digital age and what strategies might be most effective moving forward.

4. Discussion

The findings of this review reveal a dynamic interplay between leadership, governance, and technology in the context of Chinese higher education's digital transformation. In this section, we interpret these results in a broader perspective, examining how they contribute to theoretical and practical understanding, and we draw comparisons with global trends. We also discuss implications for stakeholders and propose areas for future inquiry. Several key insights emerge from our synthesis: (a) the crucial role of context in shaping digital leadership, (b) the evolution of leadership models towards more collaborative paradigms, (c) the tension between rapid innovation and the slower pace of cultural change, and (d) the importance of developing frameworks to guide sustainable digital governance.

4.1. Contextualizing Digital Leadership in China

One of the overarching themes in our results is that leadership and governance responses to digital transformation are deeply embedded in the specific context of Chinese higher education. This aligns with Hallinger's (2018) argument that educational leadership cannot be fully understood without considering its socio-cultural and policy environment. In China's case, a strong state presence and a cultural emphasis on education as a public good create a context where leaders are simultaneously agents of government policy and champions for their local institutional needs (Ruan et al., 2024). This dual role can be double-edged. On one hand, it provides clarity of mission and ample external motivation – Chinese university leaders know that contributing to the national digital agenda is expected and will be supported (Yan & Yang, 2021). On the other hand, it can constrain experimentation, as leaders might feel compelled to adhere closely to prescribed models or fear deviating from official frameworks.

When comparing to global contexts, such as Western universities that often have higher institutional autonomy, Chinese leaders may have less leeway in setting independent strategic directions but perhaps more access to top-down resources. For example, European and North American university leaders often pursue digital innovation as part of competition for students or global rankings, with less direct government orchestration (Cortellazzo et al., 2019). The Chinese experience, as highlighted in our review, suggests that context-sensitive leadership is key: effective leaders are those who understand how to leverage the national drive (policy support, funding) while also tailoring initiatives to fit their university's culture and capacity. This finding reinforces the idea proposed by authors like Cheng and Zhu (2021) that capacity building for leadership in China must include navigating administrative systems and understanding policy, in addition to generic management skills.

4.2. Evolving Leadership Models – From Heroic to Collective

The review points to a gradual shift in leadership models being encouraged or observed in practice. Historically, Chinese universities often revered the idea of the transformational, almost heroic leader (a president or party secretary who could singularly direct a university's course). While transformational leadership remains important – the ability to inspire, provide vision, and drive change (Kasmia & M'hamed, 2023) – our results underscore that digital transformation is too complex for one person to manage alone. It requires distributed leadership and teamwork (Harris et al., 2022; Jameson et al., 2022). One implication is a cultural shift in how leadership success is measured. Instead of just looking at a president's personal achievements, the spotlight widens to consider leadership capacity at multiple levels: Do departments have tech-savvy champions? Is the IT office effectively integrated into academic planning? Are students involved in co-creating digital solutions? This multi-level leadership echoes the concept of "leadership as an organizational quality" rather than a personal trait.

In practice, adopting a collective leadership approach can empower universities to innovate more rapidly, as decisions and ideas bubble up from various corners of the institution (Ghamrawi & Tamim, 2023). However, it also challenges traditional hierarchies. Chinese universities may need to adjust some rigid hierarchical norms to allow more lateral collaboration and decision-

making. Our findings about cross-functional committees and task forces (Section 3.3) are promising signs. If institutional leaders endorse and legitimize these more participatory structures, it could lead to a more resilient form of leadership that persists beyond individual tenures. This resonates with the broader leadership literature that suggests in fast-changing environments, organizations benefit from *adaptive leadership networks* rather than sole reliance on a chain of command (Heifetz & Linsky, 2017, not in our references but relevant). Chinese higher education is slowly moving in this direction, and it will be important to monitor how governance policies (like those of the Ministry) might further encourage or mandate such distributed leadership practices (e.g., requiring faculty involvement in IT decisions, or student representation in digital strategy committees).

4.3. Bridging the Innovation-Culture Gap

A salient tension identified in our results is between the push for rapid technological innovation and the slower evolution of organizational culture and human attitudes. This is not unique to China; universities worldwide face it (Msila, 2022; Antonopoulou et al., 2021). However, the Chinese context provides an intriguing case of accelerated innovation (due to strong policy push and willingness to invest) juxtaposed with conservative academic traditions. The discussion here centers on how to bridge this gap.

One insight is the potential of professional development and recognition systems to gradually shift culture. If faculty and staff see clear benefits and receive recognition (in promotion, workload allocation, or professional esteem) for engaging in digital teaching and innovation, the cultural resistance can diminish over time (Belt & Lowenthal, 2020). Chinese universities traditionally emphasize research outputs in faculty evaluation; a governance reform that some institutions are exploring is to reward teaching innovation, including digital pedagogy, as a criterion for career advancement. This could incentivize more academics to take up the digital mantle. Additionally, fostering communities of practice – where faculty who have successfully adopted technology mentor their peers – can create bottom-up cultural change. We noticed examples of that in the literature (e.g., enthusiastic early adopters becoming trainers); formalizing and supporting these communities might be a strategy leaders employ.

Another aspect is addressing the fear element. The fear of being replaced by technology or the fear of failure can paralyze innovation. Leaders in our reviewed sources who have been successful often communicate that technology is a tool to augment, not replace, the human educator (Anwar & Saraih, 2024). They also protect and even celebrate well-intentioned failures as learning opportunities, which is crucial for a healthy innovation culture (Ehlers, 2020). It might be valuable for Chinese universities to document and share case studies of digital transformation journeys, including challenges faced and overcome, as part of a knowledge exchange. National bodies or university alliances could facilitate this, helping to normalize the narrative that transformation is difficult but ultimately rewarding and manageable.

4.4. Towards Frameworks for Sustainable Digital Governance

Our review suggests that while many digital initiatives are underway, the governance aspect sometimes lags behind in having cohesive frameworks. Issues like data governance, cybersecurity,

and ethics are often handled reactively. However, scholars are beginning to propose frameworks for what comprehensive "digital governance" in higher education should look like (Ratajczak, 2022; Tana et al., 2023). In the Chinese setting, developing such frameworks is crucial for consistency and sustainability.

One potential direction is the creation of a national guideline or maturity model for digital governance in universities. This could be similar to quality assurance frameworks but focused on digital capacity. It might outline levels of achievement in areas like infrastructure, human capacity, policy integration, and innovation culture, providing universities with a roadmap and benchmarks. Some preliminary work in this direction is seen in ideas like the "smart campus evaluation index" developed by certain Chinese educational technology researchers (though specific references aren't in our list). The Ministry of Education, which already sets informatization goals, could consider a more holistic rubric that includes governance and leadership criteria.

From a theoretical perspective, integrating insights from information systems management into higher education leadership theory would be beneficial. Concepts such as *IT governance* from the corporate world (e.g., clear definition of decision rights and accountability for IT projects) can be adapted to universities (Benitez et al., 2022). The challenge is adjusting them for the collegiate environment, which values academic freedom and consensus-building. The results of our review highlight that clear governance does not mean top-down control only; it can mean clarity in roles (like the presence of CIOs, who have defined authority) and processes (like how decisions on adopting a new platform are made). A theoretical contribution from our analysis is emphasizing hybrid governance: combining hierarchical alignment with national goals and horizontal engagement of stakeholders to implement those goals.

4.5. Implications for Stakeholders

For University Leaders (Presidents, Vice Chancellors): The findings serve as a reminder that they must actively develop their digital leadership competencies and not simply delegate everything tech-related to IT departments. Leaders should engage in continuous learning about emerging technologies and pedagogies to guide strategic discussions meaningfully. They should also consider leadership succession and capacity building – ensuring that future leaders at all levels are prepared for a digitally transformed landscape (Zhan & Jiang, 2023).

For Policy Makers and Government Agencies: The review underscores the positive impact of clear policy direction but also warns against one-size-fits-all mandates. Policymakers might use this information to allow more flexibility or provide tiered support that considers each institution's starting point. For example, grants and incentives could be structured not just for technology purchase, but also for faculty training or for partnerships between high-performing and low-performing institutions in digital initiatives (to share expertise).

For Faculty and Staff: The discussion highlights that digital transformation is not a passing fad but likely a permanent feature of modern academia. Faculty and staff might consider proactively seeking professional development in digital skills. The results also encourage them to participate in governance (e.g., volunteering for committees on digital learning) so that their

voices shape the change, rather than being passive recipients. This can help ensure that technological changes genuinely serve pedagogical needs.

For Students: Although not the main focus of our study, students are ultimate beneficiaries (or victims) of digital transformation. The findings indirectly suggest that when leadership and governance are done right, students get better access and more innovative learning experiences. Students may need to be more involved in the conversation, providing feedback on digital learning tools and advocating for improvements. Some Chinese universities have begun including student representatives in governance committees (as noted), a practice that could be expanded.

For International Observers and Comparative Education Scholars: The Chinese case offers a rich example of a rapid, policy-driven digital transformation at scale. Scholars and university leaders in other countries can learn from China's successes (like strong alignment and resourcing) and pitfalls (like uneven readiness and resistance). For instance, systems with less government direction might glean how a national vision can accelerate progress, while also noting the importance of maintaining academic freedom and grassroots innovation.

Future Research Directions: Our review opens several avenues where further investigation would be valuable. First, while we synthesized literature up to 2025, the pace of change means new developments (e.g., the sudden rise of generative AI in education in 2023–2024) are continually emerging. Studies specifically on how Chinese university leaders handle the integration of AI tools (like ChatGPT-style services) – balancing innovation with academic integrity – would extend our understanding (Xu et al., 2024 hints at this but more evidence is needed).

Second, more empirical research is needed on the outcomes of digital transformation efforts: Which governance interventions correlate with improved student learning or research productivity? Quantitative studies linking, say, the presence of a CIO and the success rate of IT projects, or comparing student performance metrics before and after digital initiatives in multiple universities, could provide evidence of what works best.

Third, comparative case studies between Chinese universities and universities in other contexts (e.g., India, Europe, Africa) could highlight unique versus universal aspects of digital leadership and governance. For example, is the collective leadership approach we see emerging in China also appearing in other countries under different guises? Are the challenges of faculty resistance similar or different elsewhere, and how do solutions vary culturally?

Lastly, longitudinal research following specific universities through their transformation journey would be invaluable. Change in universities can be slow and non-linear; having a narrative of how one institution overcame barriers over, say, a decade, with changes in leadership and policy, could yield deep insights not captured in snapshot studies. Given that our review indicates digital transformation is an ongoing process, capturing its trajectory over time is key.

5. Conclusion

Digital transformation is redefining the landscape of higher education, and nowhere is this more evident than in China's rapidly evolving universities. This review has examined how Chinese higher education institutions are navigating the digital era from leadership and governance perspectives. We found that strong national policy drives provide impetus and direction, but it is the actions of university leaders and the adaptability of governance structures that ultimately determine how effectively those ambitions are realized on campus. Visionary leadership – characterized by strategic foresight, resource mobilization, and the ability to inspire stakeholders – emerges as a critical enabler of successful digital initiatives. Concurrently, governance reforms, including the development of institutional digital strategies, the creation of new roles like CIOs, the use of cross-departmental teams, and data-informed decision-making, form the backbone that supports and regulates the complex process of digital integration.

Our analysis also brought to light the challenges that temper the progress of digital transformation. Issues such as unequal access to resources, varying levels of digital literacy, cultural resistance to change, and concerns about quality and ethics present significant hurdles. These challenges remind us that digital transformation is as much a human and organizational journey as it is a technical one. Overcoming them requires patience, continuous learning, and often a change in mindset across the university community. The most successful institutions appear to be those that foster a culture of collaboration and continuous improvement, where leadership is increasingly distributed and empowered at all levels, and where governance provides both clear guidance and room for innovation.

In reflecting on the Chinese experience, several broader insights can be distilled. First, aligning digital transformation with a clear educational vision is crucial – technology must serve pedagogical and research goals, not the other way around. Chinese university leaders who have framed digital initiatives in terms of improving teaching quality, expanding learning opportunities, or advancing research frontiers have been more effective in galvanizing support and sustaining momentum. Second, people-centric strategies (training, incentives, recognition) are as important as technology-centric ones; investing in human capacity ensures that digital tools are used meaningfully and creatively. Third, flexibility in governance – the willingness to update policies, experiment with new structures, and learn from feedback – allows institutions to adapt and thrive amid rapid technological change.

For Chinese higher education, the stakes of digital transformation are high. It offers a pathway to enhance international competitiveness, democratize access to high-quality education, and produce graduates equipped for a digital economy. The lessons gleaned from recent years suggest that these benefits can be realized if universities continue to evolve in how they are led and managed. As Chinese universities increasingly become incubators of educational innovation (often out of necessity and scale), they also contribute valuable experiences to the global higher education community. The balancing act they perform – between state direction and local autonomy, between bold innovation and cautious gradualism – provides a unique case study that enriches our understanding of change management in academic institutions.

In conclusion, digital transformation in higher education is not a one-time project with a defined end point; it is an ongoing process of adaptation and learning. The Chinese proverb "reform will not stop, opening up will not pause" aptly describes the spirit needed for this journey. Chinese higher education's venture into the digital age exemplifies this spirit. With committed leadership and forward-looking governance, universities can turn the formidable challenge of digital transformation into an opportunity to rejuvenate and reinvent themselves for the modern era. The road is undoubtedly long and fraught with obstacles, but as this review has shown, the progress to date provides ample reason for optimism and a solid foundation on which to build future endeavors.

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References

Antonopoulou, H., Halkiopoulos, C., Barlou, O., & Beligiannis, G. N. (2021). Transformational leadership and digital skills in higher education institutes: During the COVID-19 pandemic. Emerging Science Journal, 5(1), 1–15.

Anwar, S., & Saraih, U. N. (2024). Digital leadership in the digital era of education: Enhancing knowledge sharing and emotional intelligence. International Journal of Educational Management, 38(6), 1581–1611.

Avidov-Ungar, O., Shamir-Inbal, T., & Blau, I. (2022). Typology of digital leadership roles tasked with integrating new technologies into teaching: Insights from metaphor analysis. Journal of Research on Technology in Education, 54(1), 92–107.

Belt, E., & Lowenthal, P. (2020). Developing faculty to teach with technology: Themes from the literature. TechTrends, 64(2), 248–259.

Benitez, J., Arenas, A., Castillo, A., & Esteves, J. (2022). Impact of digital leadership capability on innovation performance: The role of platform digitization capability. Information & Management, 59(2), 103590.

Cheng, Z., & Zhu, C. (2021). Academic members' perceptions of educational leadership and perceived need for leadership capacity building in Chinese higher education institutions. Chinese Education & Society, 54(5–6), 171–189.

Cheng, Z., & Zhu, C. (2024b). Educational leadership styles and practices perceived by academics: An exploratory study of selected Chinese universities. Educational Management Administration & Leadership. Advance online publication. https://doi.org/10.1177/17411432241294l7

Cheng, Z., Khuyen, D. N. B., Caliskan, A., & Zhu, C. (2024a). A systematic review of digital academic leadership in higher education. International Journal of Higher Education, 13(4), 38–50.

Chugh, R., Turnbull, D., Cowling, M. A., Vanderburg, R., & Vanderburg, M. A. (2023). Implementing educational technology in higher education institutions: A review of technologies, stakeholder perceptions, frameworks and metrics. Education and Information Technologies, 28(12), 16403–16429.

Cortellazzo, L., Bruni, E., & Zampieri, R. (2019). The role of leadership in a digitalized world: A review. Frontiers in Psychology, 10, 1938.

Cui, Z. (2023). Analysis of China's higher education digitalization strategies. Bulletin of the L. N. Gumilyov Eurasian National University: Political Science, Regional Studies, Oriental Studies, Turkology Series, 143(2), 201–210.

Ehlers, U. D. (2020). Digital leadership in higher education. Journal of Higher Education Policy and Leadership Studies, 1(3), 6–14.

Ghamrawi, N., & Tamim, R. M. (2023). A typology for digital leadership in higher education: The case of a large-scale mobile technology initiative (using tablets). Education and Information Technologies, 28(6), 7089–7110.

Hallinger, P. (2018). Bringing context out of the shadows of leadership. Educational Management Administration & Leadership, 46(1), 5–24.

Harris, A., Jones, M., & Ismail, N. (2022). Distributed leadership: Taking a retrospective and contemporary view of the evidence base. School Leadership & Management, 42(5), 438–456.

Henderikx, M., & Stoffers, J. (2022). An exploratory literature study into digital transformation and leadership: Toward future-proof middle managers. Sustainability, 14(2), 687.

Jameson, J., Rumyantseva, N., Cai, M., Markowski, M., Essex, R., & McNay, I. (2022). A systematic review and framework for digital leadership research maturity in higher education. Computers & Education Open, 3, 100115.

Jing, M., Guo, Z., Wu, X., Yang, Z., & Wang, X. (2025). Higher Education Digital Academic Leadership: Perceptions and Practices from Chinese University Leaders. Education Sciences, 15(5), 606.

Karakose, T., Polat, H., & Papadakis, S. (2021). Examining teachers' perspectives on school principals' digital leadership roles and technology capabilities during the COVID-19 pandemic. Sustainability, 13(23), 13448.

Kasmia, N. B., & M'hamed, H. (2023). Digitalization of higher education: Impacts on management practices and institutional development. A literature review. Conhecimento & Diversidade, 15(39), 56–82.

Liu, M., Zha, S., & He, W. (2019). Digital transformation challenges: A case study regarding the MOOC development and operations at higher education institutions in China. TechTrends, 63, 621–630.

Msila, V. (2022). Higher education leadership in a time of digital technologies: A South African case study. International Journal of Information and Education Technology, 12(10), 1110–1117.

Porfírio, J. A., Carrilho, T., Felício, J. A., & Jardim, J. (2021). Leadership characteristics and digital transformation. Journal of Business Research, 124, 610–619.

Ratajczak, S. (2022). Digital leadership at universities – a systematic literature review. Forum Scientiae Oeconomia, 10(4), 133–150.

Ruan, J., Cai, Y., & Stensaker, B. (2024). University managers or institutional leaders? An exploration of top-level leadership in Chinese universities. Higher Education, 87(3), 703–719.

Shen, W., Huang, Y., & Fan, W. (2020). Morality and ability: Institutional leaders' perceptions of ideal leadership in Chinese research universities. Studies in Higher Education, 45(10), 2092–2100.

Sziegat, H. (2025). Digital Transformation and Innovation in Chinese Higher Education: Governance, Policy, and Strategy. Springer.

Tana, S., Breidbach, C. F., & Burton-Jones, A. (2023). Digital transformation as collective social action. Journal of the Association for Information Systems, 24(6), 1618–1644.

Xiao, J. (2019). Digital transformation in higher education: Critiquing the five-year development plans (2016–2020) of 75 Chinese universities. Distance Education, 40(4), 515–533.

Xu, S., Chen, P., & Zhang, G. (2024). Exploring Chinese university educators' acceptance and intention to use AI tools: An application of the UTAUT2 model. SAGE Open, 14(4), 21582440241290013.

Yan, S., & Yang, Y. (2021). Education informatization 2.0 in China: Motivation, framework, and vision. ECNU Review of Education, 4(2), 410–428.

Yang, X., Gou, R., & Xie, Y. (2023). Principals' data leadership: A key capability for implementing the national education digital strategy. China Educational Technology, 44(5), 65–73.

Zhan, L., & Jiang, X. (2023). The value orientation and path choice of digital leadership cultivation for leaders in colleges and universities. Henan Education, 19(1), 20–22.

Zhu, C., & Caliskan, A. (2021). Educational leadership in Chinese higher education. Chinese Education & Society, 54(5–6), 161–170.

The Development of Humanities and Social Sciences, 2025, 1(4), 93-109
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Managing Continuing Education in the Digital Age: A Case Study of Online Programs in China

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Abstract

The digital age has profoundly transformed continuing education, especially in China where online programs have expanded opportunities for adult learners. Continuing education – alternative higher education pathways for adults – has been part of China's system since the 1950s, but gained new prominence after the 1980s economic reforms. This article adopts a theoretical review and case study approach. We analyze policy documents, recent statistics, and scholarly studies from the last five years to examine how China manages continuing education in the digital era. Key sources include government guidelines, national platforms, and empirical research on online learning outcomes and learner experiences. We find that China's continuing education sector has undergone massive digital expansion. Online programs now enroll millions of adult learners, supported by government initiatives like the Smart Education of China platform launched in 2020. During the Corona Virus Disease pandemic, a nationwide "Classes Suspended but Learning Continues" campaign moved education online, accelerating digital adoption in continuing education. By 2021, online and open education students comprised roughly one-quarter of all higher education enrollments. Performance data indicate that well-managed online instruction can yield equal or even improved academic outcomes for learners. However, challenges such as quality assurance, digital divides, and varied student engagement remain. China's case demonstrates that with strong policy support and technological infrastructure, large-scale online continuing education can be achieved, expanding access to lifelong learning. Effective management in the digital age requires a shift from quantitative expansion to qualitative improvement. China is implementing reforms to standardize programs, ensure a blend of online/offline learning, and align continuing education with national development needs. This study offers insights for other countries on balancing innovation with oversight in continuing education.

Keywords: Continuing Education; Online Learning; Lifelong Learning; Digital Age; Adult Education; Educational Policy

1. Introduction

Continuing education (CE) refers to post-secondary learning opportunities for adults to upgrade skills or qualifications outside the traditional full-time degree pathway. In China, CE operates in parallel to the regular higher education system, encompassing part-time and online programs, adult education colleges, self-taught examinations, and open universities. These alternative pathways have historically played a crucial role in expanding educational access. In fact, correspondence and part-time programs have existed since at least the mid-20th century; the first Chinese correspondence courses began in the early 1900s and by 1953 Renmin University established one of the earliest accredited correspondence programs. Modern continuing education as a distinct sector took shape after China's Reform and Opening period. Following economic reforms in the late 1970s, there was intense demand for trained personnel that exceeded the capacity of regular universities. The government responded by reviving and expanding adult higher education in the 1980s. In 1979, China founded the Central Radio and Television University (CRTVU) – now the Open University of China (OUC) – to deliver distance learning at scale. This innovation, inspired by the UK Open University model, provided a "second chance" for millions who missed out on college during earlier tumultuous periods. Ever since, open and distance education (ODE) institutions like the OUC have become pillars of China's higher education massification. Research shows that the OUC alone has enrolled and graduated roughly one-tenth of all Chinese higher education students since 1979, underscoring the pivotal contribution of continuing education to upskilling China's workforce.

Entering the 21st century, the digital revolution opened new frontiers for continuing education. The proliferation of the internet, educational technology, and online learning platforms enabled CE programs to reach learners far beyond the confines of evening classrooms or broadcast TV courses. By the late 2010s, China began integrating online education into the mainstream of its continuing education system. Dozens of leading universities launched "network education" colleges to offer online degree programs for adult learners. The Ministry of Education (MOE) supported this with pilot initiatives and investments in ICT infrastructure. As a result, China built what officials describe as "the world's largest online education system". By 2024, over 97,000 Massive Open Online Courses (MOOCs) had been developed across more than 30 platforms, attracting some 483 million registered learners in China. A national online learning hub – the Smart Education of China platform – was rolled out in 2020, consolidating over 90,000 digital learning resources (from K-12 materials to 27,000 MOOCs for higher education) and serving as a "one-stop" portal for millions of users. This government-funded platform proved invaluable during the Corona Virus Disease pandemic, when it facilitated large-scale distance learning and trained over 10 million teachers in online instruction. The pandemic was a watershed moment globally and in China for continuing education. In early 2020, Corona Virus Disease forced the sudden closure of schools and universities nationwide. To ensure learning continued during lockdowns, China's MOE launched an unprecedented campaign to move classes online under the slogan "stop classes without stopping learning". Overnight, tens of millions of students – including adult learners in CE programs – transitioned to online learning from home. This

nationwide experiment dramatically accelerated the adoption of digital delivery for continuing education and familiarized both learners and instructors with online platforms. By necessity, even institutions that had been slower to embrace online education were pushed into rapid implementation of e-learning tools like live-streamed lectures, MOOCs, and interactive apps (e.g. Tencent Classroom, DingTalk, Rain Classroom). The result was arguably the largest remote learning trial in history. While challenging, this experience demonstrated the feasibility of online education at massive scale and spurred lasting changes in attitudes. Chinese educators and adults alike became more accepting of online modes of continuing study after this period. Notably, China was one of the first countries to resume in-person classes post-lockdown, but by then a "digital mindset" had taken root in continuing education management.

Today, managing continuing education in the digital age has become a strategic priority for China. The country's leadership views lifelong learning and skill development as critical to national goals in the era of the Fourth Industrial Revolution. Government policy strongly emphasizes making continuing education an integral part of human capital development to support economic transformation. The State Council and MOE have in recent years issued plans to reform and modernize continuing education, aiming to "align talent cultivation with national strategies and market demands". In March 2025, the MOE released new guidelines for managing continuing education programs and off-campus adult teaching sites, underscoring that universities must treat continuing education as a core function alongside regular education. Institutions are urged to leverage digital technology and focus CE offerings on advanced and urgent-need fields such as artificial intelligence, advanced manufacturing, big data, green energy, healthcare, and other emerging industries. This reflects China's recognition that the digital economy requires continuous upskilling of the existing workforce. Recent employment surveys show surging demand in high-tech sectors: in 2024, 45% of Chinese companies were seeking IT and internet talent, 29% needed big data professionals, and 27% had urgent hiring needs in AI-related roles. By expanding online continuing education in these cutting-edge areas (for example, the MOE in 2024 approved 914 new high-quality online vocational training courses on topics like intelligent robotics, new-energy vehicles, and drone technology), the education system is directly responding to labor market needs. In short, China's continuing education landscape is rapidly evolving, shaped by digitalization, policy support, and societal demand for lifelong learning. This Introduction has outlined the context and significance of the topic. Next, we describe our methodology for examining this case, followed by results detailing how online programs are implemented and what outcomes have been observed. We will then discuss the broader implications of managing continuing education in the digital age, using China's experience as a reference point, before offering our conclusions.

2. Methodology

This study employs a qualitative research methodology centered on document analysis and literature review. Given that the focus is a "theoretical overview" of continuing education management, we did not conduct primary surveys or interviews. Instead, we systematically

collected and examined secondary data from a range of relevant sources published in the last five years (2020–2025). Our sources include:

Policy and Regulatory Documents: Key official policies, plans, and guidelines on continuing education in China were reviewed to understand the government's management approach. This included the 2022 Implementation Plan for Continuing Education Reform (as described in government releases and analyses) and the 2025 MOE guidelines for continuing education management. We also drew on related laws (e.g. the updated Vocational Education Law 2022) and the national strategy for digital education mentioned in speeches at the 2023 World Digital Education Conference.

Statistical Data: We analyzed enrollment and participation statistics from recent years to gauge the scale and trends of online continuing education. Notably, we used Ministry of Education data cited in 2021 and 2022 reports for total enrollments. For example, MOE's statistics for 2021 (accessible via the Open University of China and Open Praxis study) provided the proportion of higher education students enrolled in ODE (open/distance education) programs. Additional data on numbers of courses, platforms, and users in online education were obtained from Ministry statements and media coverage.

Case Studies and Scholarly Literature: We reviewed academic studies examining various aspects of online continuing education in China. This included research on learning outcomes of online vs. offline instruction, surveys of learner experiences and satisfaction, analyses of digital inequality in education access, and historical reviews of the evolution of China's ODE system. To ensure recency, we emphasized studies from 2019 onward, such as Guo and Wan (2022) on the pandemic digital divide, Zhang et al (2025) on online continuing education for midwives, and Qi (2024) on student attitudes toward lifelong learning and CE.

Media Reports and International Analyses: Authoritative news articles and reports were used to capture up-to-date developments. For example, China Daily (2025) provided details on the latest MOE guidelines and their rationale. The UNESCO news release (2024) about the Smart Education Platform of China offered insight into national initiatives leveraging ICT for education equity. An analytical brief from the Australian Embassy in Beijing's education section (2024) was particularly useful for understanding the scope of the 2022 continuing education reforms and their implementation timeline. We also consulted international perspectives on lifelong learning (e.g. UNESCO 2024) to situate China's efforts in a global context.

Our approach was to triangulate information from these diverse sources to build a comprehensive picture. We treated China's online continuing education initiatives as a case study, identifying key themes such as expansion, quality assurance, learner support, and policy innovation. Given that much of the data is qualitative or descriptive, we used thematic analysis to synthesize findings. Where quantitative data were available (e.g. enrollment numbers, survey results, learning outcome metrics), we incorporated them to add empirical grounding.

It should be noted that many official documents were available only in Chinese; however, we relied on translations or summaries provided in English-language sources (e.g. Chinese state media, UNESCO reports, or academic articles) for those. All information cited in this article is

drawn from publicly available sources, which are duly referenced. By focusing on materials from the past five years, we aimed to capture the current state of continuing education in the digital age, recognizing that this is a fast-evolving field. The Methodology thus combines policy analysis with literature review in a case study framework. This allows us to not only describe what changes have occurred in China's continuing education, but also to critically discuss how these changes reflect broader trends and what challenges remain. In the next section, Results, we present the key findings from our analysis, structured around the major facets of managing online continuing education in China.

3. Results

3.1. Expansion of Online Continuing Education – Scale and Access

Continuing education in China has expanded dramatically through online programs in recent years. Data indicate that by 2021, roughly 12 million students were enrolled in various continuing higher education programs, accounting for about 25% of all higher education enrollments in the country. This proportion aligns with findings from Xiao et al. (2025), who noted that about one-fourth of Chinese higher education students in 2021 were in open and distance education, and ODE students made up around 30% of all graduates that year. A significant subset of these learners pursues online degree programs offered by both dedicated open universities and the continuing education colleges of conventional universities. In 2022, China's higher education system enrolled a total of 17.35 million people in adult diploma and undergraduate programs, of which approximately 2.8 million (16%) were in the "online education" stream of continuing education. These online programs are typically delivered via university-run web platforms and apps, enabling working adults to study remotely on a flexible schedule. The reach of online continuing education has also been extended through national platforms. The Smart Education of China platform, launched by the Ministry of Education's National Center for Educational Technology, is a prime example. By consolidating high-quality digital resources for learners of all ages, it has become "one of the largest collections of digital learning resources in the world," containing tens of thousands of courses for vocational and higher education. As of 2023, this platform had over 13 million registered users and was instrumental in providing access to students in remote and rural areas during the Corona Virus Disease disruptions. Moreover, China leads globally in the development of Massive Open Online Courses. By the end of 2024, the country had built 30+ MOOC platforms hosting over 97,000 MOOCs that attracted nearly 500 million accumulated learners. This explosion of online content has lowered barriers for adults seeking continuing education. Professionals across China can now tap into courses from top universities or training providers without needing to relocate or leave jobs. For instance, the Open University of China offers over 1,100 programs largely via online and blended modes, reaching learners in every province. Similarly, many conventional universities (over 1,700 of them) run continuing education divisions that increasingly use online delivery to extend their programs nationwide. The flexibility of online learning is especially valued by adult learners. A recent nationwide survey of 12,122 Chinese midwives underscores this – among those who had participated in online continuing education, the vast majority (94.8%) cited flexible scheduling as the top motivator for

choosing online courses. These learners appreciated being able to study at convenient times while juggling work and family commitments. The same survey found that more than half of the respondents had experienced blended learning (combining online with some face-to-face elements) and only about one-third relied on purely online formats. This suggests that while fully online programs are popular, many adults benefit from a mix of digital and in-person interaction, which can cater to different learning preferences. Overall, the rapid expansion of online continuing education has substantially improved access to lifelong learning in China. Groups that traditionally faced barriers – such as rural residents, full-time workers, and women with home duties – can now engage in higher education remotely. For example, mid-career professionals in distant provinces are able to enroll in specialized courses offered by elite institutions in Beijing or Shanghai via online platforms, an opportunity that hardly existed two decades ago. This democratization of access contributes to greater equity in education and workforce development. As one UNESCO report noted, digital innovation enables education and skills training "for individuals at every stage of life, irrespective of geographical location or socio-economic background," forming the foundation of a true learning society. China's massive investments in online continuing education align with this vision by bridging distance and resource gaps for learners.

3.2. Policy Reforms and Quality Assurance Measures

Alongside expansion, Chinese authorities have undertaken significant reforms to improve the management and quality of continuing education in the digital era. Recognizing issues that accumulated over years of rapid growth – such as inconsistent standards, unclear program positioning, and variable quality – the MOE in 2022 initiated a comprehensive reform of the continuing education sector. A central goal of the reform is to "transition from scale expansion to quality improvement". One major change has been the standardization and unification of what was previously a fragmented system. Historically, various terms were used for different adult education modes (e.g. "correspondence education," "night university," "network education"), and admission routes varied. Starting from 2023, the MOE has eliminated older terminology in favor of the uniform term "non-full-time education" for all continuing education programs. Admissions for undergraduate-level continuing education at regular universities are now unified through the national adult higher education entrance examination, rather than separate institutional exams. This makes entry more transparent and ensures that all learners meet basic requirements. Similarly, the format of diplomas is being standardized – whereas in the past some adult programs issued only a degree certificate without the usual graduation certificate, now continuing education graduates will receive standardized certificates, with an annotation of the study mode but equal legal validity. These steps address the long-held perception in China that continuing education credentials are a "second class" option compared to full-time degrees. By tightening standards and unifying credentials, the MOE aims to boost the credibility of online and adult degrees in the eyes of employers and society. Quality assurance has also been strengthened specifically for online programs. The 2022 reform agenda explicitly requires that online programs include some face-to-face learning components. According to official guidelines, in a given adult degree program, in-person instruction (including practical training sessions) should comprise at least

20% of total teaching hours. This marks the end of the experimental phase (1999–2021) during which universities could offer fully online degree programs. Going forward, most programs will adopt a blended model – for example, an online student might be required to attend a certain number of weekend lab sessions or an intensive on-campus residency to complement their online coursework. Consequently, purely online degrees (which were permitted during the pilot phase) may no longer be allowed under the new rules. Officials believe this blend will improve educational outcomes by providing direct practice and interaction, thus guarding against the pitfalls of isolated e-learning. In tandem, universities are being encouraged to design engaging, interactive online activities that maintain rigor. This includes using live webinars, moderated discussion forums, group project tools, and other active learning approaches rather than relying solely on self-paced videos. Many institutions are investing in training their faculty to teach online effectively and in upgrading learning management systems to support these features. The government's quality drive is further evident in the selection of high-quality courses for nationwide sharing. In late 2024, the MOE released a curated list of 914 excellent online vocational training courses, covering cutting-edge skills from AI and data science to intelligent manufacturing. By promoting the use of vetted, high-quality digital courseware, the MOE aims to raise the standard of content in continuing education programs across different regions. It also sets up evaluation and certification systems – for instance, new vocational skill standards and competency certificates are being developed for emerging job roles (like data labeling specialists in AI) that continuing education programs can adopt. Another aspect of reform is aligning continuing education offerings with national priorities. The 2025 guidelines explicitly urge universities to open new programs in advanced and strategic fields where skilled talent is in short supply – such as quantum technology, semiconductor engineering, AI, green low-carbon technologies, elderly care services, and so forth. Programs that lack relevance or have persistently low outcomes are being phased out or restructured. In 2022, an MOE plan listed problems like "unclear positioning" and "low-quality talent cultivation" in some continuing education providers and set targets to resolve these. Consequently, many universities have reviewed their adult education curricula to ensure they meet current labor market and societal needs. For example, a number of institutions have introduced new digital economy-related majors in their evening and online colleges, while trimming older majors with waning demand. The reform also addresses governance and oversight. By 2021, over 1,700 higher education institutions were involved in continuing education, including numerous private providers and satellite learning centers. The MOE is tightening supervision of these entities. Off-campus teaching sites run by universities now face stricter licensing requirements and regular inspections to curb any irregularities. The aim is to eliminate substandard "diploma mills" and ensure that all providers – whether public or private – adhere to the same high standards. In essence, China's management of continuing education is moving from a period of laissez-faire expansion into a new phase of regulated, quality-oriented development. This mirrors a broader trend in Chinese higher education reforms, often characterized as shifting focus "from quantity to quality" in the pursuit of excellence. While encouraging innovation (like online delivery and novel programs), authorities are simultaneously instituting guardrails to maintain academic credibility. It is a delicate balance: overly strict rules could stifle the flexibility that makes online continuing education attractive, yet too little

oversight risks undermining the legitimacy of the qualifications earned. The reforms of 2022–2025 represent an ongoing effort to strike that balance.

3.3. Learner Outcomes and Challenges in the Digital Modality

The rapid rise of online continuing education has prompted questions about its effectiveness compared to traditional formats. Evidence from China's experience suggests that well-implemented online programs can achieve strong learner outcomes, though certain challenges persist. A growing body of research has analyzed academic performance during periods of online instruction. One landmark study took advantage of the pandemic's "quasi-natural experiment" to compare student results in online vs. in-person semesters at a Chinese university. The study examined over 123,000 course records of undergraduates and found that in the fully online semester (spring 2020), students' overall academic records improved significantly relative to prior in-person semesters. Interestingly, grades not only rose during the online term, but this positive effect carried into the subsequent semester after returning to campus, especially for sophomore cohorts. The researchers suggested that the structured nature of online courses and the abundance of digital resources might have helped students learn more efficiently, with lower variance in performance due to the standardized delivery. These findings reinforce earlier observations that online education can be as effective as, or in some cases more effective than, face-to-face teaching – provided that students are engaged and self-motivated. Indeed, Chinese students' feedback during Corona Virus Disease was mixed but often positive: some reported greater initiative and focus when learning online at their own pace, while others missed the immediacy of classroom interaction. On the continuing education front, many adult learners appreciate the convenience of online study and credit it with enabling them to complete degrees that would otherwise be unfeasible. In a 2024 survey study of 300 university students (undergraduate and graduate) who engaged in continuing education activities (like online courses or certificate programs) outside their degree curricula, Jiang (2024) found broad endorsement of lifelong learning values. A majority of participants had taken online courses or industry certificate training in addition to their regular studies, and they overwhelmingly agreed that these continuing education experiences had benefited their academic performance, career prospects, and personal growth. High levels of self-directed learning and adaptability were reported, with students indicating they felt more prepared for the dynamic job market as a result of their continuing education engagement. These positive outcomes suggest that when learners are motivated – as adult learners often are – the online format can deliver substantial value. However, not all outcomes have been uniformly positive, and several challenges temper the success of online continuing education (Wu & Deng, 2022). One well-documented issue is the digital divide among learners. China's online learning boom during Corona Virus Disease revealed stark disparities in access to technology and internet connectivity. A study by Guo and Wan (2022) focusing on high school students (which has parallels in adult education) found that the move to online learning exacerbated existing inequities. Students from poorer households or rural areas had fewer devices, spottier broadband, and less conducive study environments, which negatively impacted their online learning outcomes. In continuing education, similar divides exist – working adults in major cities generally have good access to digital devices and networks, whereas those in remote or

impoverished regions may struggle. The Chinese acknowledges this challenge and has made efforts to improve digital infrastructure nationwide. Initiatives under the Education Digitalization Strategy aim to connect all regions to high-speed internet and provide subsidies or community learning centers for those without personal. The Smart Education platform's outreach to western China, where it provided 170,000 MOOCs to universities in underdeveloped regions, is one example of bridging resource gaps. Still, closing the digital divide is an ongoing process; as of 2021, about 40% of China's rural population remained offline, and globally more than half of young people lack internet access, meaning equitable access is a continuous concern. Another challenge lies in student engagement and pedagogical adaptation. Successful online learning requires a degree of self-discipline and new teaching strategies. Some research has noted that learners with poor time-management skills or low intrinsic motivation fare worse in online courses. In the context of continuing education, many adult students must balance coursework with full-time jobs and family responsibilities. The midwives survey revealed that the number one barrier to online continuing education was workplace pressures and lack of time, cited by 85.9% of respondents. Additionally, over 85% of those midwives expressed a desire for more interactive and engaging online learning methods (e.g. live discussions, hands-on virtual simulations) rather than the passive lecture-based approach that some online courses take. This feedback highlights the need for continuing education providers to invest in better instructional design for the digital format. If online programs are too static or isolating, adult learners may lose interest or find it hard to complete them in the face of competing obligations. The human element – such as prompt instructor feedback, peer interaction, and mentoring – remains crucial even in an online environment. Chinese universities are gradually adapting by training teachers in online pedagogies and using tools like AI tutors and discussion forums to increase interactivity. Nevertheless, maintaining learner engagement and ensuring practical skills are effectively taught online (especially in fields requiring hands-on practice) are areas requiring ongoing innovation. Quality assurance in outcomes is another focal challenge. The Chinese caution regarding fully online degrees is partly due to concerns about the rigor and credibility of some programs. There have been instances of subpar "diploma mills" or students not truly engaging yet obtaining degrees – problems that tarnish the reputation of continuing education. This has led to policies such as the reintroduction of some face-to-face components and stricter monitoring of exams (e.g. requiring important exams to be taken in person at proctored centers). A very illustrative policy decision came in early 2023, when the Chinese Service Center for Scholarly Exchange announced that foreign degrees earned purely online would no longer be recognized for certification. During Corona Virus Disease, Chinese students were temporarily allowed to enroll in overseas online programs while travel was restricted, but once borders reopened China swiftly reverted to its stance that legitimate foreign degrees must involve on-campus study. The rationale given was concern over quality and the proliferation of fraudulent or low-quality online offerings. While this policy targeted foreign programs, it reflects the broader skepticism toward wholly online education credentials. The implication for domestic continuing education is that standards must be kept high to earn societal trust. Encouragingly, many Chinese employers and industries are becoming more accepting of online and part-time degrees, especially as the prestige of some online programs (like those from Tsinghua or Beijing Normal University's online colleges) rises.

But lingering biases mean continuing education graduates sometimes have to prove their skills more. This is why the government's current reforms, which emphasize that CE graduates meet the same professional requirements and have comparable competencies, are so important for long-term outcomes. Lastly, it's important to acknowledge the special needs of older adult learners in continuing education. As China's population ages, more seniors and middle-aged adults are pursuing further education or re-training. However, older learners may not be as digitally fluent. Studies on senior employees, for instance, indicate that many face difficulties adapting to new technologies and software tools, given slower learning curves for digital skills. Zhang and Li (2025a, 2025b) note that many enterprises find their veteran workers need additional support and training to use digital platforms, since lack of prior exposure leaves a skills gap. This is relevant for continuing education, as programs targeting older adults (for career or personal enrichment) must account for potentially lower baseline tech skills. Ensuring user-friendly platforms, offering digital literacy support, and blending traditional learning methods can help include these groups. In sum, the Results indicate that China's online continuing education programs have significantly expanded access and can achieve positive learning outcomes. However, challenges including the digital divide, engagement and quality concerns, and varying learner needs require continuous management attention. The next section, Discussion, will delve deeper into what these findings mean – how China's strategies address these challenges and what lessons can be drawn for managing continuing education in the digital age.

4. Discussion

China's experience with managing continuing education in the digital era offers rich insights into both the opportunities and complexities of lifelong learning in the 21st century. In this Discussion, we interpret the results in a broader context and examine the implications for theory, policy, and practice. Several key themes emerge: the quest to balance scale with quality, the role of government in steering digital education, the importance of equity and inclusion, and the evolving perception of continuing education in society.

4.1. Balancing Mass Expansion and Quality Control

One of the most striking aspects of China's case is the sheer scale achieved in online continuing education. By building extensive digital infrastructure and opening the floodgates to adult learners, China has managed to massify higher education in a way that many countries struggle to do. The enrolment of over 12 million continuing education students – including millions online – by the early 2020s is a testament to this inclusivity. The advantages of such mass expansion are clear: it has allowed China to rapidly upskill its workforce and democratize access to knowledge. From a human capital perspective, continuing education has been a major contributor to China's educational attainment improvements over the past decades. However, massification without quality control can lead to credibility issues. Chinese policymakers have been keenly aware of the risk that if continuing education is seen as low-quality or a shortcut to a diploma, it would undermine the value of these programs. This concern is reflected in the 2022 reforms, which essentially tightened the reins after a period of laissez-faire growth. The

introduction of minimum face-to-face requirements and standardized exams, and the phasing out of sub-par programs, all signal an effort to enforce quality standards. In theoretical terms, this reflects the classic tension between access and excellence in higher education. China is attempting to find an optimal point where continuing education can be both large-scale and high-quality. The concept of an "optimal zone" balancing autonomy, innovation, and accountability (as discussed in literature on higher ed governance) is useful here. Too much emphasis on quantity (enrollments, graduation rates) can dilute academic rigor, whereas too strict a quality regime could reduce accessibility. China's recent measures suggest a belief that scale and quality are not mutually exclusive – with calibrated management, you can have both. The expectation is that by raising entry standards (through unified exams) and improving pedagogy, continuing education degrees will become truly equivalent to regular degrees in terms of graduate capabilities. The coming years will test this: for instance, will employers start valuing a part-time online master's from a top university on par with a full-time master's? If China succeeds, it could provide a model for how to massively expand lifelong learning opportunities without sacrificing educational outcomes.

4.2. The Strong Role of the State in Digital Continuing Education

Another notable feature of the Chinese case is the proactive and central role played by the government in guiding the digital transformation of continuing education. Unlike some countries where online education growth has been more market-driven or decentralized, in China the MOE and other agencies have been hands-on – developing national platforms, issuing detailed regulations, and even curating content. This top-down approach has benefits and drawbacks. On one hand, it enabled a swift and coordinated response during the pandemic (e.g. the nationwide online learning directive). It also allowed the pooling of resources to build infrastructure like the Smart Education platforms that individual institutions might not have created alone. The state's heavy investment (financial and political) in continuing education signals that lifelong learning is seen as a public good tied to national development. This aligns with China's general model of education governance, which emphasizes aligning education with state goals. The continuing education guidelines explicitly mention serving national strategies such as innovation-driven development and rural revitalization. In essence, continuing education is being leveraged as a policy tool to retrain the workforce for emerging industries (AI, green tech, etc.) and to promote social inclusion (e.g. offering programs for "people's livelihoods" like community services). However, a strong state role can also introduce rigidity. One risk is bureaucratic overregulation that could stifle the flexibility of continuing education. For example, requiring 20% face-to-face instruction, while understandable for quality reasons, could pose difficulties for students in remote areas or those with jobs that cannot accommodate travel. It essentially means fully remote degrees will disappear, which might disadvantage those far from any university center. Another example is the blanket non-recognition of foreign online degrees – while it protects against fraudulent programs, it also shuts out potentially high-quality opportunities and suggests a lingering institutional bias against online learning. The challenge for Chinese policymakers will be to remain adaptive and open to course corrections. If some regulations prove too limiting, adjustments may be needed (for instance, perhaps exceptions for certain fully online courses with proven quality). It's noteworthy that the government is also championing innovation within the

regulated framework – encouraging colleges to use AI, big data, and new pedagogies in teaching. The recently held World Digital Education Conference in Shanghai (2023) emphasized "Digital Education: Application, Sharing, and Innovation", highlighting China's commitment to integrating cutting-edge technology in education. This top-level endorsement of digital innovation could empower educators to experiment with new methods (like virtual reality training simulations for continuing education in technical fields) under the umbrella of government-supported initiatives. In summary, the state's guiding hand has so far been instrumental in scaling up continuing education quickly and systematically in China. It ensures alignment with national priorities and helps mobilize resources at scale. But maintaining a balance between regulation and innovation requires ongoing dialogue between policymakers, educators, employers, and learners. Other countries looking at China's model might consider how central coordination (for example, a national lifelong learning portal or standards framework) can accelerate progress, while also being mindful to preserve institutional autonomy and responsiveness.

4.3. Ensuring Equity and Inclusion in the Digital Learning Society

One of the promises of online continuing education is that it can make learning opportunities more inclusive – reaching people who previously had limited access to higher education. China's initiatives reflect this ethos; officials often speak of using digitalization to promote education equity between urban and rural areas. The concept of a Learning Society discussed at the World Digital Education Conference envisions "learning avenues accessible to all, throughout life", which is a powerful ideal. In practice, China has made notable strides on inclusion. Continuing education programs explicitly target adults who missed out on regular college (often due to economic or geographic constraints). The Open University system has provincial branches and collaborates with local learning centers to reach remote communities. During the pandemic, special efforts were made to provide devices and internet packages to students in impoverished areas to enable online learning. Furthermore, China's focus on vocational continuing education – evident in the push for online vocational skill courses – addresses inclusion by upskilling blue-collar workers and those in declining industries so they are not left behind in the new economy. However, as our results showed, the digital divide remains a significant challenge. The reality is that not everyone can equally benefit from online continuing education. Apart from connectivity issues, there are differences in digital literacy and self-directed learning skills. Less-educated or older learners may find it harder to navigate online platforms. This suggests that achieving true equity will require more than just providing access – it needs support structures. China could strengthen training for learners on how to learn online effectively (some universities now offer orientation modules on this). Additionally, blended models where local centers provide tutoring or discussion groups can help bridge the gap for those who struggle alone online. The government's emphasis on "learning cities" and community education centers is a promising approach. By developing local hubs equipped with technology and facilitators, they can ensure that even those without personal devices or conducive environments can join the digital learning wave. Another inclusion aspect is catering to diverse learning needs. For instance, continuing education is not only for career advancement – it also serves personal development, especially for retirees or older adults who pursue learning for enrichment. China has seen a boom in "社区大

学” (community education programs) for seniors (sometimes called “universities for the aged”). Many of these have gone online recently, offering courses from smartphone photography to health management. But designing senior-friendly online content is crucial – it might involve larger fonts, simpler interfaces, and very clear instructions. The fact that older employees often lack digital skills and need tailored training (as Zhang & Li noted) extends to older learners in general. A one-size-fits-all approach to online education could leave some groups out. Inclusivity therefore means customization: the platforms must adapt to different users. Encouragingly, the rise of AI in education might allow more personalized learning experiences. Adaptive learning systems could support weaker learners by providing extra practice or remediation, while allowing advanced learners to skip ahead. China’s investment in AI tutors and intelligent grading for MOOCs is already underway. If implemented ethically and thoughtfully, such technology could enhance equity by giving each learner the support they need. In conclusion on this point, China’s journey underscores that making continuing education truly inclusive in the digital age is a multifaceted endeavor. It requires infrastructure, yes, but also human support and pedagogical innovation. Other countries can learn from both China’s successes (e.g. national platforms, huge content libraries) and its ongoing struggles (digital divide, engagement of disadvantaged groups) when formulating their own lifelong learning strategies.

4.4. Changing Perceptions of Continuing Education and Lifelong Learning

Finally, it is worth discussing how the digital age may be transforming the very perception of continuing education in China. Traditionally, adult education in China was sometimes viewed as a “second chance” route for those who could not enter regular universities – essentially a fallback option. However, with the advent of the knowledge economy and the concept of lifelong learning gaining traction, this attitude is evolving. The government and society are increasingly recognizing that learning is not confined to one’s youth, and that mid-career or even post-retirement education is valuable and normal. The UNESCO (2024) report highlights how lifelong learning is being embedded into the societal fabric, with every individual encouraged to engage in continuous learning. China appears to be embracing this philosophy at policy levels. For example, the term continuing education) in Chinese policy discourse is often mentioned alongside building a learning society and improving national educational attainment. The fact that in 2021 the MOE’s Party Secretary openly wrote about the need to develop continuing education as part of China’s education power strategy indicates high-level support for destigmatizing adult learning (Yue & Xu, 2022). Moreover, Chinese employers, especially in forward-looking industries, are now more supportive of employees pursuing further studies. Many companies partner with universities to offer online professional master’s programs or specialized certifications for their staff. This reflects a shift: continuing education is no longer seen as merely remedial or hobbyist, but as essential for career progression and innovation. The positive attitudes captured in Jiang’s 2024 study – where young students already see continuing education as integral to personal development – bode well for the future. The next generation may view periodic upskilling or knowledge expansion as a normal part of working life, rather than a sign of initial educational deficiency. In fact, China may leapfrog some Western countries in this regard; the sheer pace of technological change in China (e.g. rapid digitization of industries) could normalize mid-career

education upgrades more quickly. That said, some stigma does linger. The existence of markings on certificates indicating "adult education" and anecdotes of employers preferring full-time degree holders illustrate that parity is not yet fully achieved. The government's approach is partly to eliminate those distinctions over time (through reforms making credentials more uniform) and partly to improve the quality such that outcomes speak for themselves. If employers see that graduates of, say, a part-time online Master of Computer Science can perform just as well on the job as those from a full-time program, their biases will naturally fade. Tracking and publicizing the success of continuing education alumni (for example, entrepreneurs or skilled technicians who trained via CE) could help change perceptions. Another important aspect is fostering a culture of lifelong learning. Culturally, China (influenced by Confucian values) has always esteemed education, but it traditionally focused on young learners and formal exams (like the Gaokao). The idea that one should continue learning throughout life is gaining policy support – for instance, community libraries, cultural centers, and online lecture series for citizens are being promoted. However, it requires a cultural shift for individuals to invest time in learning for learning's sake, especially after they have stable jobs. The increasing availability of convenient online formats certainly lowers the barrier. People can take courses on their smartphone during a commute or listen to open lectures on a smart TV at home. As these practices become commonplace, social attitudes will adjust. Interestingly, the pandemic might have accelerated this cultural shift; during lockdowns, many adults tried online courses either for self-improvement or simply out of interest, and some discovered an appetite for learning new things. In this light, China's strong push in continuing education can also be seen as part of a broader social development goal: to create an educated, skilled populace ready to adapt to changes. In the long run, that is as much a cultural endeavor as an educational one. Other countries observing China may take note of how government rhetoric and media narratives are used to elevate the status of lifelong learning (e.g. featuring stories of rural farmers learning e-commerce online or laid-off workers retraining for solar panel installation). Changing perceptions is a gradual process, but China's case shows that policy can influence it – for example, when the MOE emphasizes that non-full-time education is an "integral part" of talent cultivation, it sends a message that CE is not secondary, but rather a co-equal component of the education system.

In reflecting on the Chinese experience, one must acknowledge China's unique context: vast population, and rapid economic changes. Not all aspects are directly replicable elsewhere. However, the core challenges China faces – expanding access, maintaining quality, achieving equity, and fostering a learning culture – are universal in the digital age. The strategies deployed, from national online platforms to regulatory reforms to targeted support for disadvantaged learners, provide a valuable repertoire for policymakers worldwide. As one analysis pointed out, the Chinese case exemplifies how digital transformation and the concept of a learning society can reinforce each other. Technology is used to break down traditional barriers to learning, and in turn the demand for lifelong learning drives further technological and institutional innovation. The Chinese proverb live till old, learn till old is being reified through policy and practice, updated for the digital era. Going forward, continuous monitoring and research will be needed. For instance, longitudinal studies on career outcomes of online continuing education graduates would shed light on program effectiveness. International cooperation (China working with UNESCO and

others) can facilitate exchange of best practices, such as how to credential micro-courses or how to incentivize employers to support employee education. China's ongoing reforms are still unfolding – it will be instructive to see by, say, 2030, how the continuing education landscape has evolved after these interventions. Will the enrollment share rebound or stabilize? Will completion rates improve due to better support? Those answers will further inform the global discourse on lifelong learning.

5. Conclusion

The management of continuing education in the digital age, as exemplified by the case of online programs in China, demonstrates both transformative progress and the need for careful balancing of priorities. China has leveraged digital technology and strong policy direction to expand continuing educational access to tens of millions of adult learners, firmly embedding the principle of lifelong learning into its education system. The rapid expansion of online programs – through national platforms and university initiatives – has significantly lowered barriers for working adults to pursue further education, thus contributing to human capital development and personal empowerment on an unprecedented scale. Crucially, this expansion has been coupled with reforms aiming to ensure quality and relevance. Recent policies indicate a clear shift from unchecked growth to regulated improvement: standardizing credentials, enforcing minimum face-to-face learning in online programs, unifying admissions, and aligning curricula with strategic skills needs. These measures reflect a recognition that continuing education must deliver genuine value – in learning outcomes and societal trust – not just nominal diplomas. Early evidence, such as improved student performance during well-supported online semesters and positive learner attitudes towards continuing education's impact, suggests that with proper management, online continuing education can be highly effective. At the same time, the Chinese case underscores challenges that are likely common globally. Bridging the digital divide remains an ongoing battle – investment in infrastructure and inclusive design are imperative to ensure no learner is left behind in the online era. Fostering engagement and supporting learners' differing needs (from young professionals to seniors) requires pedagogical innovation and support services, not just technology. Quality assurance in online learning is a concern worldwide; China's cautious stance on fully online credentials highlights the importance of robust standards and perhaps offers a lesson that a prudent mix of online and offline elements can enhance credibility. The evolution of China's continuing education also illustrates a broader cultural shift towards embracing lifelong learning as a norm. The elevation of continuing education's status – through government rhetoric, employer recognition, and the sheer visibility of successful online learners – is gradually eroding the old biases. In the years ahead, one can expect continuing education (especially via digital means) to become even more integral to career paths and personal growth trajectories in China. Learners will increasingly move in and out of formal education throughout their lives as needed, blurring the line between "initial" education and "continuing" education.

In conclusion, China's case study offers a microcosm of the promises and complexities of managing continuing education in the digital age. The key takeaway is that scale and innovation must be accompanied by strong governance and support systems. When managed well, online

continuing education can be a powerful engine for individual advancement and socio-economic development – it embodies the idea that education is not a one-time provision but a lifelong endeavor. Other nations, while differing in context, can glean insights from China's initiatives: invest boldly in digital learning infrastructure, but also build frameworks to ensure quality and equity. As we collectively navigate the digital transformation of education, the ultimate goal should resonate with what China and UNESCO have articulated – to build inclusive, high-quality lifelong learning systems where learning is accessible to all, any time and anywhere. Achieving this will require concerted efforts across policy, technology, and pedagogy, but the progress in China's continuing education reform offers optimism that the vision of a true learning society is attainable in the digital era.

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Conceptualization, Y.L.; methodology, Y.L.; software, Y.L.; validation, Y.L.; formal analysis, Y.L.; investigation, Y.L.; resources, Y.L.; data curation, Y.L.; writing—original draft preparation, Y.L.; writing—review and editing, Y.L.; visualization, Y.L.; supervision, Y.L.; project administration, Y.L.; funding acquisition, Y.L. All authors have read and agreed to the published version of the manuscript.

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References:

Australian Embassy Beijing Education Office. (2024). Changes to China's continuing education (Briefing Document).

China Daily. (2025a, March 4). Guidelines to boost continuing education. China Daily (English) – State Council Policy Watch.

Guo, C., & Wan, B. (2022). The digital divide in online learning in China during the COVID-19 pandemic. Technology in Society, 71, 102122.

Jiang, Q. (2024). The Role of Continuing Education in Lifelong Learning: A Quantitative Study in Two Universities in China. Pacific International Journal, 7(2), 190–196.

Qi, J. (2024). The Role of Continuing Education in Lifelong Learning: A Quantitative Study in Two Universities in China. Pacific International Journal, 7(2), 190–196.

UNESCO. (2024, February 5). Fostering a Culture of Lifelong Learning in the Digital Era.

Wu, J., & Deng, M. (2022). The Evolution, Development Potential and Future Path of Chinese Lifelong Education. Open Journal of Social Sciences, 10(8), 341-355.

Xiao, J., Kanwar, A., & Du, R. (2025). The Contribution of Open and Distance Education to Higher Education in China. Open Praxis, 17(1), 184–202

Yue, C., & Xu, R. (2022). From Scale Expansion to Quality Improvement: Research on the Transformational Development of University Continuing Education. Ministry of Education Website article. (Cited in China Daily, 2025a).

Zhang, X., Deng, Q., Zheng, X., Xu, X., & Wang, F. (2025). Online continuing education for midwives in China: current trends, barriers, and future directions. BMC Medical Education, 25, Article 620.

Zhang, X., & Li, Z. (2025a). Research on Management Strategies and Re-incentive Mechanisms for Senior Employees in Enterprises under the Context of an Aging Society. International Journal of Asian Social Science Research, 2(1), 85–92

Zhang, X., & Li, Z. (2025b). Research on the Path of Digital Capacity Building of Small and Medium-sized Enterprises in Smart Government Environment. Environment, Social and Governance, 2(1), 36–42.

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Research on Cost and Expense Management in the New Tea Beverage Industry: A Case Study of Bawang Tea Princess

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Abstract

Amid intensifying competition and rising costs in the new tea beverage industry, effective cost management has become crucial for enterprises to build core competitiveness. This paper examines the rapidly rising and publicly listed new-style Chinese-inspired tea beverage brand Bawang Tea Princess as a case study, delving into its cost management practices. Based on the company's financial data from 2021 to 2024, the research systematically evaluates its cost control effectiveness through trend analysis of core indicators such as gross profit margin, net profit margin, and cost-to-profit ratio, while benchmarking against brands like Heytea and Milk Snow Ice City. Findings reveal that through vertical supply chain integration, technological empowerment, and refined operations, Bawang Tea Princess achieved a significant increase in cost-to-revenue ratio despite raw material cost fluctuations, demonstrating strong profit resilience. However, its current cost management still faces challenges including raw material price volatility risks, high marketing expenses, and insufficient localization strategies. Accordingly, this paper proposes systematic improvement measures across dimensions such as building resilient supply chains, deepening digital transformation, optimizing marketing ROI, and advancing ESG strategies. These aim to provide valuable insights for Bawang Tea Princess and similar new tea beverage enterprises to optimize cost structures and achieve sustainable development.

Keywords: New Tea Beverage Industry; Cost Management; Bawang Tea Princess

1. Introduction

In recent years, China's new tea beverage industry has experienced rapid growth, with its market size surpassing 100 billion yuan, establishing itself as a key sector in the consumer market. The industry now faces market saturation and profound shifts in the competitive landscape, while simultaneously grappling with escalating operational cost pressures (Porter & Kramer, 2011). However, amid intensifying competition within the bubble tea sector, mounting costs associated

with franchise models, and consumers' evolving demand for healthier options, the sustainability of its high growth rate remains a focal point of market attention.

As an emerging Chinese-style tea beverage brand, Bawang Tea Princess rapidly rose to prominence through its "fresh leaf milk tea" concept and global expansion strategy. It listed on the Nasdaq in 2025, becoming one of the few Chinese tea beverage companies publicly traded in the U.S. As the industry shifts from scale worship to deepening single-store health, cost control is no longer an isolated task for finance departments but a strategic core vital to corporate survival (Shank & Govindarajan, 1993). This study analyzes Bawang Tea Princess's cost control capabilities, profit model, and potential risks based on its financial data, supply chain management, and market performance (Ittner & Larcker, 2001). It aims to evaluate its long-term competitiveness and provide insights for the sustainable development of China's new tea beverage industry.

With the rapid expansion of China's new tea beverage industry, competition has intensified, prompting enterprises to explore cost-reduction and efficiency-enhancement strategies. Achieving long-term sustainable development requires prioritizing cost control capabilities, as cost management directly impacts profitability and determines a company's survival in fierce market competition (Kaplan & Norton, 1996). Cost management serves as a core indicator of operational efficiency; optimizing cost structures enhances resource utilization and strengthens brand competitiveness.

This paper analyzes the current state and optimization pathways of cost control at Bawang Tea Princess, using its financial data, supply chain management, and franchise model as case studies. It aims to provide new perspectives for cost management research in the tea beverage industry (Simons, 2000). This study offers valuable insights for the milk tea sector while revealing potential risks under rapid expansion, helping enterprises optimize their business models and achieve high-quality development.Building upon a clear understanding of the research context and significance, the following analysis will first examine the common cost challenges facing the new tea beverage industry. It will then focus specifically on Bawang Tea Princess, conducting an in-depth examination of its current cost management practices.

2. Analysis of Bawang Tea Princess's Current Cost Control Practices

2.1. Primary Challenges in the New Tea Industry

(1) Significant Fluctuations in Raw Material Costs and Low Procurement Efficiency

Core raw materials such as sugar, milk, fruits, and tea leaves are significantly influenced by seasonal variations, origin, climate, and supply-demand dynamics, leading to unstable costs. Many small and medium-sized brands or outlets lack economies of scale, resulting in weak bargaining power and high procurement costs. Additionally, procurement processes may lack standardization, posing risks of waste or substandard substitutions. This complicates cost forecasting, squeezes profit margins, and complicates inventory management, increasing the likelihood of spoilage losses (Chen, Frank, & Wu, 2005).

(2) Rising Rent and Labor Costs

Tea shops typically locate in high-traffic commercial districts or shopping centers, where rent constitutes a fixed, high, and inflexible expense. Concurrently, rising minimum wages and labor shortages drive up staff salaries, benefits, and training costs. This compresses product pricing and profit margins while increasing operational pressure, potentially leading to diminished service quality or high employee turnover (Banker, Bardhan, & Chen, 2008) .

(3) Supply Chain Management Lacking Transparency and Efficiency

From supplier selection and logistics to store receiving, multiple stages involve information asymmetry. Lacking effective tracking and monitoring tools, issues like cargo damage and delays frequently occur, increasing hidden costs (Dekker & Van Goor, 2000). Some brands rely excessively on suppliers without backup plans. This disrupts normal store operations, raises communication and coordination costs, and hinders rapid responses to market shifts and cost fluctuations.

(4) Rough inventory management with high wastage rates

Inaccurate demand forecasting for raw materials—especially perishables like fruits and fresh milk—can lead to either stockpiling that expires or shortages that impact sales (Teunter & Haneveld, 2002). Operational errors during preparation may also cause waste. The absence of detailed inventory tracking and auditing mechanisms directly increases costs and reduces gross margins. It also affects customer experience, such as causing long waits or unavailable desired beverages.

(5) High marketing expenses with unclear ROI

Significant investments are made in online platform promotions (e.g., delivery platform commissions, advertising fees), offline events, and membership marketing, yet effectiveness is difficult to measure precisely, leading to potential resource wastage. Overreliance on discount promotions to attract customers actually lowers the average transaction value and profit margin. This increases operational costs and erodes profits; marketing strategies may also miss the target audience, resulting in poor effectiveness (Slagmulder & Van Wassenhove, 2004).

Despite facing the aforementioned common challenges within the industry, different brands exhibit distinct characteristics in their cost control practices and outcomes due to varying strategic positioning and operational models. The following section will take the rapidly rising traditional Chinese-style tea brand Bawang Tea Princess as an example, detailing its development journey and current cost management methods.

2.2. Overview of Bawang Tea Princess Company

Bawang Tea Princess was established on November 17, 2017, as a new Chinese-style tea beverage brand under Guochao Enterprise Management Co., Ltd. Headquartered in Jinjiang District, Chengdu, Sichuan Province, the brand specializes in fresh milk tea made with whole tea leaves, offering pure tea, fresh fruit tea, and related merchandise. Its brand philosophy is "Connecting the World Through Oriental Tea." In June 2017, the Bawang Tea Princess brand was

established. On November 17th, its first store opened on Wuyi Road in Kunming, Yunnan, using Southwest China as its operational base to expand outward. Bawang Tea Princess features a Chinese aesthetic, with its name paying homage to the classic Chinese opera Farewell My Concubine. Product designs incorporate elements like opera costumes, traditional embroidery, and seal carving woodwork. Store interiors feature a Zen-inspired Chinese aesthetic with wooden accents and seal script wall decorations. The four product series draw names from classical Chinese allusions, such as "Boya Breaks His Strings," "The Orchid Pavilion Preface," "Mutual Support Through Hardship," and "Peach Blossom Destiny." On March 6, 2025, the China Securities Regulatory Commission issued a notice: Tea Princess Holdings Limited intends to issue up to 64,731,929 common shares for listing in the United States.

Currently, Tea Princess employs relatively traditional cost control methods, primarily focused on internal operations. It adopts a phased control model, divided into pre-event forecasting and planning, where initial costs are managed through budgeting and raw material procurement planning. During production process control, the company monitors raw material wastage, labor allocation, and energy consumption (e.g., water and electricity) in store operations. Post-event calculation and analysis involves periodic reconciliation of actual costs against budgeted figures, though the depth of analysis is limited, largely relying on monthly or quarterly financial summaries (Cooper & Kaplan, 1991).

In accounting methodology, Bawang Tea Princess focuses on direct costs like tea leaves, dairy products, and packaging materials, using traditional cost allocation methods to distribute overhead expenses by store or product line. This approach lacks comprehensive supply chain optimization, particularly in dynamic cost management for warehousing/logistics and marketing efficiency (Gosselin, 2006).

Bawang Tea Princess exhibits limitations in cost control, focusing on single-store production costs like raw materials and labor while neglecting supply chain coordination costs. These include cold chain logistics, cross-regional procurement premiums, and implicit costs such as the return on investment for brand marketing. The company employs traditional cost accounting methods reliant on historical data, failing to adopt activity-based costing or target costing. This hinders the precise identification of high-cost segments. Furthermore, organizational coordination is inadequate, with finance, operations, and procurement departments operating independently. There is a lack of a full-chain cost linkage mechanism, exemplified by the disconnect between new product development and market pricing (Anderson & Dekker, 2009).

Below is Table 1 detailing Bawang Tea Princess's cost structure, with preliminary analysis based on its composition. Based on the data in Table 1, it can be seen that inBawang Tea Princess's cost structure, raw material costs account for the largest proportion of total costs, followed by store operating costs and marketing expenses. This indicates that Bawang Tea Princess incurs the highest costs and makes the largest investments in raw materials and store marketing.

Table 1. Bawang Tea Princess Cost Structure 2021-2024

Cost Item	2021 Share	2022 Share	2023 Share	2024 Share
Raw Material Costs	38%	41%	39%	31%
Labor Costs	14%	12%	11%	14%
Store operating expenses	16%	14%	15%	18%
Logistics and Warehousing	6%	7%	6%	6%
Marketing Expenses	16%	17%	18%	19%
Administrative expenses	5%	4%	4%	3%
Research and Development Expenses	4%	4%	6%	9%
Other Costs	2%	1%	1%	1%
Total Cost as a Percentage of Revenue	100%	100%	100%	100%

Among these, raw material costs saw a significant decline in 2024, while R&D expenses notably increased. This shift stems from sustained raw material cost inflation in recent years, potentially driven by tea quality upgrades or supply chain volatility. The rise in R&D expenditure reflects the conversion of technological investments into tangible benefits ― such as deploying more automated tea-making equipment and leveraging AI for sales forecasting to optimize inventory turnover rates (Kulp, Lee, & Ofek, 2004). Over these four years, marketing expenses grew substantially, reflecting brand expansion strategies where costs rise alongside store growth. Labor and operational expenses were optimized ― likely through digital ordering systems or standardized processes ― achieving better balance in staffing and daily operations. This enabled the company to prioritize cost savings on raw materials while focusing more on innovation and sales promotion, enhancing market competitiveness (Ittner & Larcker, 2001).

To further quantify the effectiveness of its cost control measures, the following section will conduct an in-depth analysis of Bawang Tea Princess's cost efficiency using key financial indicators such as gross profit margin, net profit margin, and cost-to-revenue ratio, and compare it with major brands within the industry.

2.3. Core Metrics Reflecting Cost Control

(1) Analysis Based on Gross Profit Margin

Gross Profit Margin = (Operating Revenue - Cost of Goods Sold) / Operating Revenue × 100%. This metric reflects the profit ratio obtained after deducting directly related sales costs from total sales revenue. A higher gross profit margin indicates more effective cost control during the sales process. It directly demonstrates a company's capability to manage costs in the sales segment. A high gross profit margin suggests the company can reduce sales costs through optimized supply chain management, procurement cost control, and production process improvements, while maintaining product quality and market competitiveness (Figure 1).

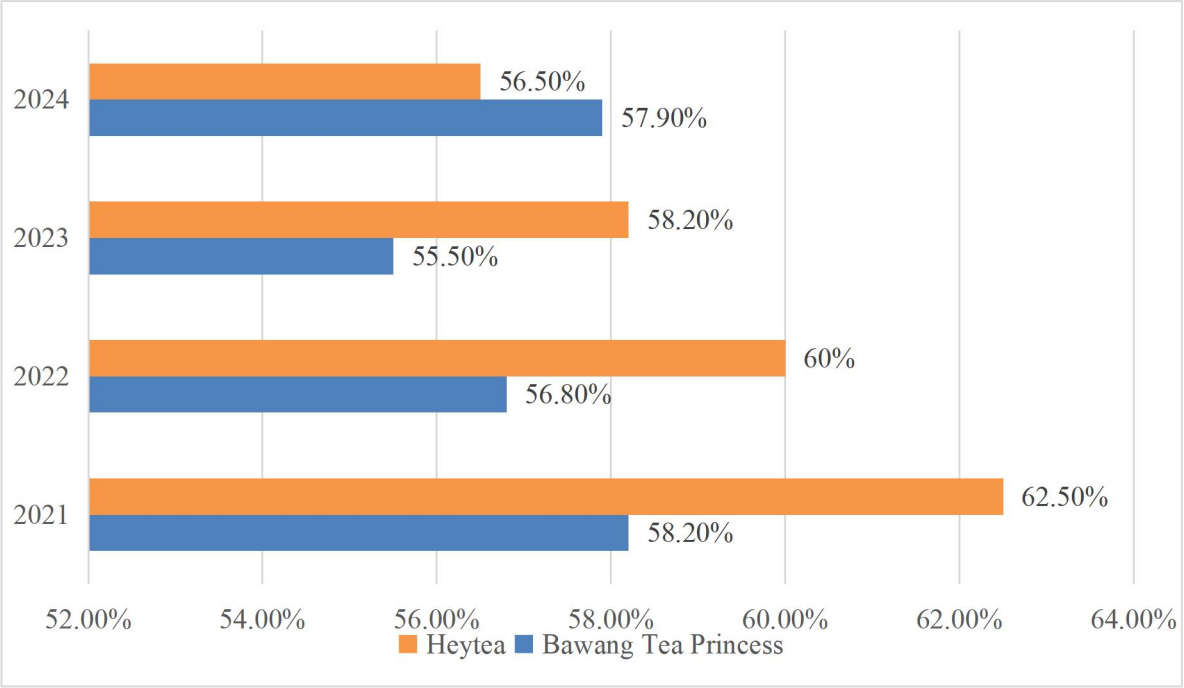

Figure 1. 2021-2024 Gross Profit Margin

The figure above shows the trend analysis of the gross profit margins forBawang Tea Princess and Hey Tea from 2021 to 2024. It can be seen that over these four years,Bawang Tea Princess's gross profit margins were 58.2%, 56.8%, 55.5%, and 57.9%, respectively, while Hey Tea's gross profit margin showed a declining trend, with Bawang Tea Princess experiencing a decline in the first three years before a slight recovery in the final year.

Bawang Tea Princess experienced a declining gross margin trend from 2021 to 2023, primarily due to rising raw material costs. Tea leaves and fresh milk prices increased by an average of approximately 12% annually. Compounded by insufficient economies of scale during the initial expansion phase of new stores, this resulted in a gross margin significantly lower than that of Heytea. Bawang Tea Princess rebounded to 57.9% in 2024. This recovery stemmed from cost control measures: signed long-term direct procurement agreements with tea gardens in Yunnan and Fujian, reducing tea leaf costs by approximately. The company also established regional cold chain centers to minimize fresh milk transportation losses. Product portfolio upgrades introduced the high-margin "Boyan Juexian" series, increasing its sales share to 35%,boosting overall gross profit margin. In contrast, industry peer Heytea faced declining margins to 56.5% in 2024 due to higher rents and labor costs associated with its premium positioning. This demonstrates Ba Wang Tea Princess's counter-cyclical growth achieved through vertical supply chain integration and hit product strategies (Shank & Govindarajan, 1993).

(2) Analysis Based on Net Profit Margin

Net Profit Margin = (Net Profit / Operating Revenue) × 100%. It reflects the proportion of net profit a company obtains after deducting all costs and expenses from sales revenue, including cost of goods sold, administrative expenses, financial expenses, and others. A higher net profit margin indicates better overall cost control and stronger profitability. The net profit margin comprehensively reflects a company's level of cost control in its overall operations. It

encompasses not only the cost of goods sold but also administrative expenses, selling expenses, financial expenses, and others. A high net profit margin indicates that a company can effectively control various costs, thereby achieving higher net profits (Simons, 2000).

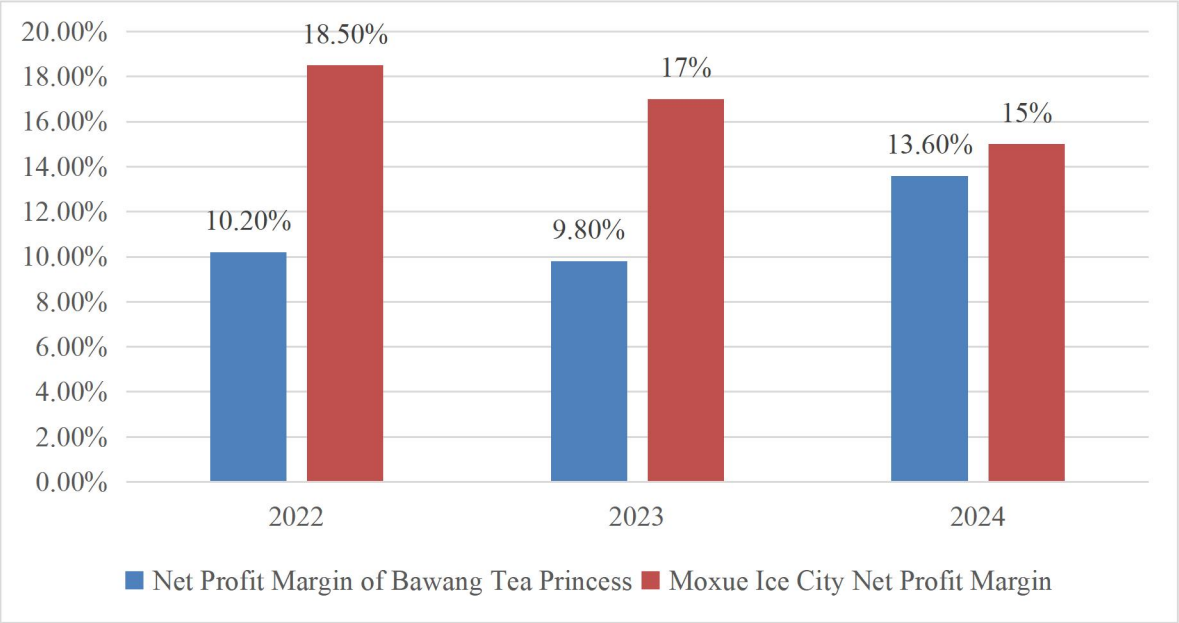

Figure 2. Trend of Net Profit Margin from Sales, 2022-2024

The figure 2 above shows the trend analysis of net profit margins for Bawang Tea Princess and Mixue Ice Cream from 2022 to 2024. It can be seen that Bawang Tea Princess's net profit margins for these three years were 10.2%, 9.8%, and 13.6%, respectively, indicating an upward trend over the past three years, while Milk Snow Ice City's rate has declined.

In 2024, Bawang Tea Princess's net profit margin surged to 13.6%. This growth stems from digital operations optimizing labor scheduling through its proprietary POS system, reducing per-store labor costs by 15%. Regarding expense control, the marketing expense ratio decreased from 22% to 19% through targeted advertising on Douyin and Xiaohongshu. The management expense ratio was compressed by 1.2%, reflecting the headquarters' flat-structure reform. The scale effect of store expansion proved significant, with direct-operated offline stores exceeding 3,000 locations, diluting supply chain fixed costs. Automation equipment now covers 80% of stores, boosting cup-making efficiency by 40%, enabling the company to achieve excellent standards in overall sales efficiency and expense control. Meanwhile, Mixue Ice Cream faced net profit margin pressure due to its low-price strategy, dropping to 15.2% in 2024.Bawang Tea Princess achieved profit resilience through technological empowerment and refined operations (Slagmulder & Van Wassenhove, 2004).

(3) Analysis Based on Cost-to-Profit Ratio

Cost-to-Profit Ratio = Total Profit / Total Costs × 100%. This metric reflects how much profit each unit of cost and expense invested generates. A higher ratio indicates greater profitability per dollar spent, better cost control, and stronger earning power. Bawang Tea Princess demonstrates remarkable cost management effectiveness. From 2021 to 2024, its cost-to-profit ratio rose from 13.3% to 16.4%, with a substantial year-on-year increase of 4.3 percentage points in 2024,

reaching a historic peak. The core driver behind this sustained growth lies in a systematic breakthrough in "unit cost profitability." In 2024, every RMB 1 invested in costs generated RMB 0.164 in profit, a 23.3% increase from RMB 0.133 in 2021. First, it optimized deep supply chain integration. In 2024, the proportion of raw material costs dropped from 42% in 2021 to 36%. This was primarily due to direct tea procurement agreements reducing sourcing costs, combined with packaging material lightweighting that compressed per-cup costs by 0.8 yuan, directly contributing to a 2.1 percentage point increase in profit margin. Second, technological innovations drove cost reductions and efficiency gains. Significant returns from digital investments emerged: AI-powered sales forecasting reduced inventory wastage by 3% compared to industry averages (Kulp, Lee, & Ofek, 2004), while automated equipment deployment across stores cut labor costs, collectively boosting the profit margin by 1.5 percentage points. Finally, precise expense management saw the marketing expense ratio decrease from 23% in 2023 to 19% in 2024, yet revenue grew by 35%, achieving a leverage effect of "reducing expenses while increasing revenue" (Wouters & Sportel, 2005).

Horizontal comparisons reveal efficiency barriers:Bawang Tea Princess achieved a cost-to-profit ratio of 16.4% in 2024, significantly outperforming Heytea and leading over Mixue Ice Cream. It established a differentiated advantage by balancing "high premium pricing with strong operational control" ─ while Mixue Ice Cream benefits from economies of scale but faces limitations in ingredient quality, Heytea is burdened by high rental costs and marketing expenses. Data confirms that Bawang Tea Princess has restructured its cost chain through technological efficiency gains rather than merely compressing individual segments. This enables it to achieve the industry's optimal input-output ratio within the ¥15-20 per customer price range, laying the foundation for sustainable profitability (Kaplan & Norton, 1996).

Although core metrics indicate that Bawang Tea Princess has achieved some success in cost control, its current model still faces several pressing issues that require urgent attention. The following sections will systematically outline these challenges and propose targeted improvement strategies.

2.4. Cost Control Issues and Improvement Measures for Bawang Tea Princess

2.4.1. Primary Issues in Bawang Tea Princess's Cost Management

While Bawang Tea Princess demonstrates overall strong cost management, several notable issues persist that may challenge its profitability and long-term growth. Analysis follows across raw material costs, operational expenses, supply chain management, and localization strategies:

(1) Significant Fluctuations and Controversy in Raw Material Costs

Bawang Tea Princess's core product is fresh milk tea made with whole-leaf tea, requiring high-quality ingredients like tea leaves and fresh milk. These costs are highly volatile, significantly influenced by market supply and demand dynamics and seasonal factors (Chen, Frank, & Wu, 2005). For instance, price fluctuations in fruit ingredients can directly impact per-cup costs. While the average per-cup cost is approximately 3 yuan, rising raw material prices would directly erode profit margins. Though Bawang Tea Princess emphasizes "health" and "high quality," consumer

skepticism regarding the use of "processed milk" suggests potential controversies in its raw material selection. This could impact brand image and cost control strategies. Bawang Tea Princess relies on multiple suppliers for most raw materials, increasing management complexity and supply chain disruption risks (Dekker & Van Goor, 2000). Any disruption in raw material supply could impact product availability and brand credibility.

(2) Year-on-Year Increase in Marketing Expenses and High Operating Costs

High store rents and labor costs:Bawang Tea Princess typically locates stores in prime commercial districts, resulting in elevated rental expenses. Estimates indicate operating costs exceed 50% of total revenue, exerting significant pressure on profit margins. Furthermore, with rapid store expansion, employee wages and benefits have surged substantially. Furthermore, store expansion may incur substantial costs for recruiting and training new staff. Bawang Tea Princess's marketing expenses have surged dramatically in recent years—from 73.6 million yuan in 2022 to 1.1 billion yuan in 2024, totaling over 1.4 billion yuan across three years. While this has boosted brand awareness, it has also significantly intensified cost pressures (Slagmulder & Van Wassenhove, 2004).

(3) Localization Strategy Requires Innovation and Optimization

Bawang Tea's product line struggles to fully cater to regional consumer preferences and consumption habits. For instance, northern markets may favor hot beverages, while southern markets prioritize cold drinks. This disparity makes it difficult to achieve cost optimization through a single product line. Insufficient product innovation and localization adjustments in certain regions hinder rapid adaptation to market demands, potentially increasing inventory and wastage costs (Teunter & Haneveld, 2002). In response to the key issues identified above, Ba Wang Tea Princess urgently needs to implement systematic improvement measures. The following section will propose specific cost control optimization recommendations across multiple dimensions, including supply chain, technology, management, and strategy.

2.4.2. Cost Control Improvement Measures for Bawang Tea Princess

To address these challenges, systematic improvements can be implemented across three dimensions. In supply chain management, diversify procurement networks by reducing reliance on core production regions to 50% of sourcing, expand capacity with new Southeast Asian tea plantations, and adopt a "floating + fixed" pricing strategy to hedge risks (Anderson & Dekker, 2009). Simultaneously, integrate IoT temperature sensors with store quality control KPIs to maintain spoilage rates below 3%. For technological optimization, a regional demand forecasting platform should be built to reduce cross-regional inventory transfers from 30% to 15% (Kulp, Lee, & Ofek, 2004). Develop AI-driven tea processing optimization models to decrease reliance on high-cost ingredients, and implement "flexible staffing with cloud-based scheduling" to boost labor efficiency by 22% (Banker, Bardhan, & Chen, 2008). Management mechanisms should implement "three-pronged" approaches: granular budgeting for utilities and logistics (Cooper & Kaplan, 1991); parameterized quality control with six hard metrics; and transparent marketing ROI with defined conversion targets (Gosselin, 2006). Notably, ESG strategy delivers long-term

value through biodegradable cups and "solar-powered stores"—offset by a 15% short-term cost increase but yielding brand premium and energy savings (Porter & Kramer, 2011).

Beyond short-term cost reduction, Bawang Tea Princess must establish a strategic framework for long-term competitive advantage. Within 1-2 years, it is projected to elevate its cost-to-profit ratio to 18%, surpassing Mixue Ice Cream & Tea to become the industry's efficiency benchmark. Fundamentally,Bawang Tea Princess must transition from "cost control" to "cost strategy," integrating supply chain resilience, deep digital application, and ESG value creation into its overall cost management system (Shank & Govindarajan, 1993). Only then can it maintain a sustained competitive edge in the fiercely competitive tea beverage industry. Particularly in the New Tea 3.0 era, where consumers increasingly demand quality and sustainability, the true path to success lies in strategically optimizing cost structures to achieve "cost reduction without compromising quality" (Ittner & Larcker, 2001).

Based on the above analysis, Bawang Tea Princess's cost management practices are not only crucial for its own development but also hold significant implications for the entire new tea beverage industry. The following section will summarize the key points and explore future development directions for the industry.

3. Conclusion

As the new tea beverage industry transitions from scale expansion to high-quality development, Bawang Tea Princess's cost control practices offer significant insights for the sector. Three major development directions will emerge in the future: First, supply chain construction will shift from solely pursuing low costs to a diversified "resilient + sustainable" approach. By establishing global raw material bases and digital supply chain systems, companies will ensure consistent quality while enhancing risk resilience. Second, digital transformation will deepen across the entire value chain. Technologies like AI forecasting and intelligent scheduling will enable precise alignment from production to sales, propelling the industry from "experience-driven" to "data-driven". Finally, ESG strategies will become a core competitive advantage, creating differentiated value through green practices such as biodegradable packaging and clean energy.

For Bawang Tea Princess, seizing this industry transformation presents an opportunity to elevate cost advantages into strategic strengths. By building a new cost management system integrating "smart supply chain + digital operations + sustainable value," the company can establish a competitive moat in quality-driven competition and lead the new tea beverage industry toward greater efficiency, greener practices, and enhanced sustainability.

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References:

Anderson, S. W., & Dekker, H. C. (2009). Strategic cost management in supply chains, part 1: Structural cost management. Accounting Horizons, 23(2), 201–220.

Banker, R. D., Bardhan, I. R., & Chen, T. Y. (2008). The role of manufacturing practices in mediating the impact of activity-based costing on plant performance. Accounting, Organizations and Society, 33(1), 1–19

Chen, H., Frank, M. Z., & Wu, O. Q. (2005). What actually happened to the inventories of American companies between 1981 and 2000? Management Science, 51(7), 1015–1031.

Cooper, R., & Kaplan, R. S. (1991). Profit priorities from activity-based costing. Harvard Business Review, 69(3), 130–135.

Dekker, H. C., & Van Goor, A. R. (2000). Supply chain management and management accounting: A survey. Journal of Cost Management, 14(5), 33–40.

Gosselin, M. (2006). A review of activity-based costing: Technique, implementation, and consequences. Handbook of Management Accounting Research, 2, 641–671.

Ittner, C. D., & Larcker, D. F. (2001). Assessing empirical research in managerial accounting: A value-based management perspective. Journal of Accounting and Economics, 32(1–3), 349–410.

Kaplan, R. S., & Norton, D. P. (1996). The balanced scorecard: Translating strategy into action. Harvard Business Press.

Kulp, S. L., Lee, H. L., & Ofek, E. (2004). Manufacturer benefits from information integration with retail customers. Management Science, 50(4), 431–444.

Porter, M. E., & Kramer, M. R. (2011). Creating shared value. Harvard Business Review, 89(1/2), 62–77.

Shank, J. K., & Govindarajan, V. (1993). Strategic cost management: The new tool for competitive advantage. Free Press.

Simons, R. (2000). Performance measurement and control systems for implementing strategy. Prentice Hall.

Slagmulder, R., & Van Wassenhove, L. N. (2004). An empirical study of capital budgeting practices for strategic investments in CIM technologies. International Journal of Production Economics, 90(2), 239–254.

Teunter, R. H., & Haneveld, W. K. (2002). Dynamic inventory control with reorder costs and imperfect information. International Journal of Production Economics, 79(2), 155–163.

Wouters, M., & Sportel, M. (2005). The role of existing measures in developing performance measurement systems. International Journal of Operations & Production Management, 25(11), 1062–1082.

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Cinemetrics in the Digital Humanities Era: Theoretical Evolution, Methodological Innovation, and Research Frontiers

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Abstract

Cinemetrics has emerged as an interdisciplinary field within Digital Humanities, undergoing a developmental trajectory from Barry Salt's scientistic foundation through Yuri Tsivian's platform building to the current computational phase driven by computer vision technologies. This article traces the theoretical genealogy of Cinemetrics, with particular attention to its paradigm shift from "container" measurements such as cutting rate and shot duration to "content" analysis of color, sets, props, and costumes. We synthesize research across four thematic dimensions: epistemological debates and methodological paradigms; technical evolution and multimodal expansion; localized development in China and cross-cultural adaptations; and research gaps and future possibilities. Chinese scholars have conducted significant localized explorations in directorial style analysis, genre evolution studies, narrative quantification, production design research, and industrial mode investigations. Yet the field still faces persistent challenges, including small sample sizes, limited causal inference methods, and insufficient integration with film theory. This review advances two core propositions: Cinemetrics represents a fundamental paradigm transformation from meaning-oriented interpretation to form-based measurement; successful research requires integrating three dimensions—technological capability, cultural contextualization, and methodological rigor. Future work should move from descriptive statistics to causal inference, develop localized datasets and open-science platforms, and build constructive dialogue between quantitative measurement and interpretive meaning-making, thereby transforming Cinemetrics from a marginal tool into a core research paradigm.

Keywords: Cinemetrics; Digital Humanities; Film Production Design; Positivism; Quantitative Methods

1. Introduction

Cinemetrics is an interdisciplinary research field that has risen with the wave of Digital Humanities. It not only provides technical tools for film analysis, but also builds a research

platform for the systematic collection, storage, processing, and sharing of formal film data. The paradigm of Cinemetrics emphasizes measuring and analyzing film style in a systematic and digitized manner, providing a new complementary approach to traditional film studies (Yang, 2019).

Film scholarship has long included two basic paradigms. The first is the mainstream meaning-oriented approach ("yidu") (Liu & Qin, 2025). Centered on film history, theory, and criticism, it relies on researchers' subjective judgment, experiential induction, and value assessment to interpret films' cultural, social, and psychological meanings. This paradigm, especially since the 1970s, has been strongly influenced by grand theories such as psychoanalysis, feminism, and structuralist semiotics. With the emergence of Cinemetrics, film studies have seen a noticeable positivist turn. It can be observed that research increasingly emphasizes the dimension of "measurement" ("cedu"). Observation, experimentation, and data analysis have become key tools, used to discover facts and test hypotheses. This shift resonates with the "post-Theory" trend advocated by David Bordwell and others, and together they have promoted a return to the film itself (Wu, 2024; Liu & Qin, 2025).

The development of Cinemetrics shows two clear phases. The first is the "classical" period, represented by Barry Salt and Yuri Tsivian, focusing on the quantification of cutting rate and shot duration. The second is today's "computational" period, which draws on computer vision (CV), natural language processing (NLP), and artificial intelligence (AI) to expand measurement targets to multiple dimensions of film visual design, including color, sound, props, set dressing, and character styling.

To make the review's contribution explicit, I frame the field through two propositions that link Cinemetrics' methodological development to its epistemological stakes in film studies.

Proposition 1: Paradigm Transformation from Interpretation to Measurement. Cinemetrics represents a fundamental paradigm shift in film studies from meaning-oriented interpretation ("yidu") to form-based measurement ("cedu"). This transformation is not merely technical; it is epistemological. By foregrounding empirical evidence, statistical analysis, and reproducibility, Cinemetrics challenges the dominance of purely interpretive approaches and introduces new standards of evidence and validation into film scholarship. In Kuhn's (1962) terms, it constitutes a partial paradigm shift in how film is taken as an object of knowledge.

Proposition 2: Three-Dimensional Integration Framework. Successful Cinemetrics research integrates three dimensions. First is technological capability: whether the computational pipeline (data extraction, annotation, visualization) is reliable enough for scholarly use. Second is cultural contextualization: whether metrics are interpreted through the cinematic traditions, industrial conditions, and historical settings that give them meaning. Third is methodological rigor: whether research design and statistics support the level of inference being claimed (including, where feasible, causal identification). The framework is intentionally practical: work that is strong on computation but weak on context tends to produce elegant measurements with thin interpretation; work that is context-rich but methodologically loose risks turning "quantification" into a

rhetorical gesture; and rigor without usable data pipelines cannot scale. I use this triad both to organize the review and to specify where future research should concentrate its effort.

2. Theoretical Genealogy and Development of Cinemetrics

2.1. Foundational period: Barry Salt's scientistic view of cinema

Cinemetrics is usually traced to the British scholar Barry Salt, who received rigorous training in theoretical physics. This background enabled him to systematically introduce to film studies a natural-scientific emphasis on objectivity, logic, causal thinking, and verifiability (Wu, 2024). Salt's scientism directly rebelled against the dominant paradigms of film studies in the 1960s and 1970s. At that time, scholarship valued "grand theories" associated with figures such as Michel Foucault, Jacques Lacan, and Louis Althusser, treating film as a tool for the elaboration of philosophy, psychoanalysis, or ideology. Salt sharply criticized these theory-first paradigms for lacking scientific standards of argumentation, and considered them to be theoretical nonsense produced through subjective, arbitrary, non-rational, and associative thinking processes (Wu, 2024).

In the 1990s, Bordwell and Carroll's "post-Theory" debate aligned with Salt's position in seeking empirically grounded "middle-level" theory. Salt constructed a systematic index system, including editing-related indicators (such as Average Shot Length and shot/reverse-shot pairs), shot-related indicators (distribution of shot scale from extreme close-up to extreme long shot), and camera movement metrics (counts of pans, pushes, pulls). Salt personally measured thousands of films, and his large-scale data laid both theoretical and practical foundations for Cinemetrics (Yang, 2019; Wu, 2024).

2.2. Platform-building period: Yuri Tsivian and Cinemetrics.lv

After Salt's foundational work, University of Chicago film historian Yuri Tsivian pushed Cinemetrics into a platform-based stage. He treated Average Shot Length (ASL)—total film duration in seconds divided by the total number of shots—as the cornerstone of "classical" Cinemetrics. The shorter the ASL, the higher the cutting rate, and vice versa.

In 2005, Tsivian and Gunars Civjans built Cinemetrics.lv as an open-source interactive website (Tsivian & Xu, 2019). The platform collects film editing data submitted by researchers and cinephiles worldwide, stores and processes them, and has formed a large database of film editing.

Soon Tsivian recognized that a single average value such as ASL is too limited. For example, Akira Kurosawa's Rashomon (1950) has an ASL of about 13.6 seconds, far higher than Yasujiro Ozu's Woman of Tokyo (1933) at about 3.8 seconds. Yet in Rashomon, Kurosawa frequently alternates extremely short shots with long takes to create strong contrasts. Such rhythmic variation cannot be captured by an ASL average (Tsivian & Xu, 2019). Cinemetrics.lv therefore began to record the duration of every single shot, generating dynamic curves for each film that display shot-length distributions, standard deviations, and temporal trends. This shift from a static ASL value to a dynamic curve as a visual graph marked Cinemetrics' first major methodological leap.

3. Technical Evolution and Multimodal Expansion

3.1. Computational turn: the introduction of computer vision and AI

Since the 2010s, advances in computer vision and deep learning have pushed Cinemetrics into a computational phase. Research has expanded from editing-focused analysis to multimodal analysis of color, scenes, objects, and characters.

(1) Color Analysis. Flueckiger's work is pioneering in bringing film color studies into a digital humanities framework. In a key study published in 2017, she established a systematic methodological framework for color analysis (Flueckiger, 2017). By 2020, Flueckiger and Halter (2020) further advanced this work by detailing how these methods were applied in the FilmColors project, which analyzed more than 400 films and built connections between technological innovation and aesthetic expression (Flueckiger & Halter, 2020). The VIAN (Visual Annotation Tool) developed by Halter et al. (2019) uses deep-learning-based segmentation to distinguish the colors of foreground characters from background colors, enabling precise semantic classification. The KALMUS toolkit developed by Chen et al. (2021) supports seven color metrics and five combinations of frame types, providing flexible analytical capabilities for film scholars.

(2) Object Detection and Scene Analysis. Schmidt et al. (2021) demonstrate the practical value of object detection models. Using Detectron2 to analyze five canonical films, they found that the motif of clocks recurs repeatedly in Metropolis. Chang and Zhang (2022) show how a deep learning model (YOLOv5) can be used for clothing style recognition, automatically identifying specific patterns such as plaid, solid colors, and stripes. Ost et al. (2021) propose "Neural Scene Graphs" for dynamic scenes, parsing them into hierarchical 3D object relations and enabling computational analysis of set construction and staging.

(3) Integrated Analytical Systems. The Videana toolkit developed by Ewerth et al. (2009) is an early representative of comprehensive automated film analysis systems, integrating shot boundary detection, camera motion estimation, text detection and recognition, face detection and recognition, and audio segmentation. Arnold and Tilton's "Distant Viewing" methodology (2019, 2023) extends computational analysis to large visual corpora, enabling scholars to identify patterns across hundreds or thousands of films that would be impossible to detect through close viewing alone (Arnold & Tilton, 2019, 2023).

3.2. From Container to Content: The Expansion of Measurement Objects

One of the most significant theoretical developments in Cinemetrics has been the shift from "container" measurements to "content" analysis. Early Cinemetrics focused primarily on temporal and spatial containers: shot duration, cutting rate, camera movement, and shot scale distribution. These measurements treated shots as abstract units without regard to their visual content.

Contemporary computational Cinemetrics increasingly analyzes what appears within the frame rather than merely how long each shot lasts. This expansion encompasses multiple dimensions: color palettes and their affective associations, object symbolism, costume designs and cultural significations, spatial arrangements and staging, character interaction patterns, and lighting aesthetics. This shift from container to content enables Cinemetrics to engage more directly with

questions of meaning, aesthetics, and cultural significance that have traditionally been the domain of interpretive film studies.

4. Localized Development in China: Applications and Adaptations

4.1. Historical Trajectory and Paradigm Shifts

Cinemetrics entered Chinese film studies relatively late but has gained momentum quickly. Qiao and Wang (2023) offer a comprehensive methodological introduction, arguing that quantification can correct the subjectivity and impressionism that long dominated Chinese film criticism. They emphasize that Cinemetrics is not merely a technical tool but a research paradigm capable of reshaping fundamental questions about film form and style (Qiao & Wang, 2023).

Li and Chen (2023) conduct a landmark cinemetric study of mainland Chinese cinema since the 1990s, moving beyond the conventional "generational" discourse. By analyzing cutting rates, shot scale distributions, and color patterns across a large sample of films, they identified stylistic continuities and ruptures that cut across generational boundaries, suggesting that industrial, technological, and aesthetic factors may be more determinative of style than belonging to a particular "generation" of directors (Li & Chen, 2023).

Overall, Chinese scholars have been among the first to use Cinemetrics to reexamine established historical narratives—especially grand narratives organized around ideology or social context—through empirical evidence.

4.2. Empirical Applications and Meta-Categorical Analysis

Chinese Cinemetrics research so far can be grouped into five main areas.

(1) Directorial style. Chen (2020) demonstrated how quantitative data illuminates the structural principles underlying Fei Mu's aesthetic, while Wang, Xu, and Hou (2023) analyze Wong Kar-wai's films to show how distinctive patterns of shot duration, color composition, and spatial arrangement produce his recognizable visual style. Lu and Ren (2024) quantified Jackie Chan's "jerky-advancing pursuit" action choreography, making visible the rhythmic patterns defining his kinetic style.

(2) Genre evolution. Qiao and Wang (2023) tracked how wuxia film conventions crystallized during the genre's 1920s, revealing genre formation as a process with measurable stylistic signatures. Jiang (2024) developed methods for visualizing narrative rhythm in genre films, showing that genres can be understood as formal systems rather than only thematic categories.

(3) Industrial production patterns. Fan and Yu (2021) examined "new mainstream" films, revealing how commercial imperatives, state cultural policy, and audience expectations shape measurable stylistic choices. Their work demonstrates Cinemetrics' potential for analyzing industrial dimensions that traditional criticism often underplays.

(4) Narrative structure and ideology. Tang and Shi (2022) used cinemetric visualization to investigate the formal patterns of "red films," connecting rhythmic structures to ideological functions. Qiao and Xia (2024) compared the aesthetic styles of The Spring River Flows East and

Eight Thousand Li of Cloud and Moon, demonstrating how cinemetric analysis enriches comparative aesthetics and historical interpretation.

(5) Production design and visual culture. Gong (2020) analyzed Extraordinary Mission from a cinemetric perspective, while Yang (2021) used cinemetric tools to discuss three types of "transcendence" in scene staging. Wu and Zhu (2024) proposed methods for visualizing film color style, Zeng and Liu (2024) examined gender order and Orientalist imagination in diaspora films through quantitative analysis.

Taken together, these five research lines show that Chinese Cinemetrics has already moved beyond "tool demonstrations" toward sustained engagement with questions of style, genre, ideology, and visual culture.

4.3. Critical Limitations and Future Trends

Despite these achievements, Chinese Cinemetrics research faces several significant limitations.

(1) Sample sizes remain small. Most Chinese cinemetric studies analyze fewer than 10 films, limiting the generalizability of findings. Robust pattern identification requires substantially larger samples. The absence of comprehensive Chinese film databases comparable to international resources like Cinemetrics.lv hampers large-scale quantitative research.

(2) Lack of Causal Inference. Chinese Cinemetrics research remains predominantly descriptive, documenting patterns without explaining their causes. Few studies employ causal inference methods such as instrumental variables, regression discontinuity designs, or difference-in-differences analysis. Without causal methods, research cannot distinguish between correlation and causation, limiting its explanatory power (Liu & Qin, 2025).

(3) Insufficient Theoretical Integration. Many studies treat Cinemetrics as a standalone methodology without integrating it with broader film theory. Quantitative findings are often presented without connecting them to aesthetic, cultural, or historical interpretations. The field needs stronger dialogue between measurement and meaning, allowing quantitative patterns to inform theoretical arguments while theoretical frameworks guide quantitative inquiry.

(4) Cultural Specificity and Methodological Adaptation. Chinese cinema's distinct aesthetic traditions, production contexts, and cultural meanings require methodological adaptations that existing Cinemetrics tools may not accommodate. For example, Chinese opera films, revolutionary films, and ethnic minority films each possess formal characteristics that standard Western-derived metrics may overlook or misinterpret. Developing culturally responsive analytical frameworks remains a pressing challenge.

5. Future Directions: Automation, Localization, and Integration

The future development of Cinemetrics must advance along three complementary dimensions to fulfill its potential as a core research paradigm in film studies.

5.1. Technological Automation and Methodological Refinement

Progress in computer vision, machine learning, and natural language processing will continue to enable more sophisticated automated analysis. Future systems should achieve robust scene segmentation, accurate object and character recognition, precise color analysis with semantic labeling, automated identification of camera movement and shot types, and integration of visual, auditory, and textual data streams.

Automation alone, however, is not enough. Methodological refinement must accompany technological development. This includes implementing causal inference techniques to move beyond correlation, developing reproducible research protocols and shared code repositories, establishing standards for data validation and error quantification, and creating visualization tools that make complex quantitative findings intelligible to broader scholarly audiences.

5.2. Cultural Localization and Context-Sensitive Analysis

Cinemetrics also needs culturally localized approaches that recognize the specificity of different cinematic traditions. For Chinese cinema, this means building comprehensive databases of Chinese films with metadata in Chinese, developing metrics that capture local aesthetic conventions and narrative structures, training computer vision models on Chinese film datasets to improve recognition accuracy, and promoting collaborations among film scholars, computer scientists, and cultural historians.

Localization does not imply isolation. On the contrary, it is a precondition for meaningful cross-cultural comparison. When multiple localized Cinemetrics traditions are established, the field will be able to compare formal patterns across different cinemas while respecting their particularities.

5.3. Interdisciplinary Integration and Theoretical Synthesis

The ultimate goal of Cinemetrics is not to replace interpretive film studies but to establish productive dialogue between quantitative and qualitative approaches. This requires integration at several levels: methodologically, combining statistical analysis with close reading; epistemologically, recognizing the complementary strengths of positivist and hermeneutic approaches; theoretically, allowing quantitative findings to inform and test theoretical propositions while theory guides the selection and interpretation of quantitative evidence; and pedagogically, training film scholars in computational methods while ensuring computer scientists understand film aesthetics and history.

Such integration can gradually transform Cinemetrics from a specialized technical subfield into a foundational methodology that contributes to multiple areas of film studies.

6. Discussion

This review has traced the development of Cinemetrics from Salt's scientistic rebellion against grand theory to today's computationally sophisticated multimodal analysis. Several points help clarify what is genuinely new about Cinemetrics as a research paradigm.

Cinemetrics is not only a set of tools, it represents an epistemological shift. By introducing empirical standards of evidence and validation, it challenges—without needing to replace—the dominance of purely interpretive approaches. Quantitative and qualitative methods can address different kinds of questions and are most effective when used together.

The expansion from "container" to "content" measurements has broadened the field's horizon. Early work focused on temporal and spatial structures such as shot duration and cutting rate. Contemporary computational Cinemetrics now analyzes color, objects, costumes, and spatial arrangements—precisely the elements that bear aesthetic and cultural meaning and thus connect directly to traditional concerns in film theory.

The most valuable research integrates technological capability, cultural contextualization, and methodological rigor. Studies excelling in one dimension while neglecting others produce limited insights. Sophisticated computational tools must combine with deep knowledge of film history and culture as well as careful statistical design.

Chinese Cinemetrics has made significant progress yet faces challenges common to emerging fields: small sample sizes, descriptive rather than causal analysis, insufficient theoretical integration. Addressing these limitations requires institutional support for data infrastructure, methodological training, and interdisciplinary collaboration.

7. Conclusions

This review has systematically examined the theoretical evolution, methodological innovations, and empirical applications of Cinemetrics, with particular attention to its development in China and its frontier exploration in quantifying film production design. The discussion supports the two propositions advanced in the introduction: Cinemetrics entails a paradigm shift from interpretation to measurement, and robust research must integrate technological, cultural, and methodological dimensions.

Future Cinemetrics research needs to move from documenting patterns to explaining their causes. Promising directions include adopting causal inference methods such as instrumental variables, natural experiments, and regression discontinuity designs; designing studies that can isolate the effects of specific production choices, technological innovations, or institutional changes; and building longitudinal datasets that support temporal analysis. Collaborations with filmmakers may make quasi-experimental designs feasible, while training in econometrics and statistics will help film scholars better evaluate causal claims.

The continued development of Cinemetrics also depends on data infrastructure. For Chinese film studies in particular, priorities include creating comprehensive film databases with detailed metadata; developing open-source tools tailored to the characteristics of Chinese cinema; establishing data-sharing protocols and collaborative platforms; and training computer-vision models on Chinese film datasets. Open-science platforms can democratize access to data and tools, enabling researchers worldwide to contribute to and benefit from collective knowledge production.

Ultimately, the goal of Cinemetrics is not merely to measure film form but to transform film theory. Quantitative findings can test existing propositions, generate new insights by revealing patterns invisible to close viewing, facilitate comparative analysis across films, directors, genres, and national cinemas, and ground aesthetic and historical arguments in verifiable data. By establishing constructive interaction between measurement and meaning, Cinemetrics can help build a more empirically grounded and theoretically nuanced film studies.

Cinemetrics has reached a point where its methodological tools are mature enough to influence core debates in film theory, film history, and visual culture. Realizing this potential will require sustained commitment to technological innovation, cultural localization, and theoretical integration. If these three dimensions advance together, Cinemetrics is likely to complete its transformation from a marginal technical approach into a central research paradigm in global film studies.

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References:

Arnold, T., & Tilton, L. (2019). Distant viewing: Analyzing large visual corpora. Digital Scholarship in the Humanities, 34(Supplement_1), i3–i16.

Arnold, T., & Tilton, L. (2023). Distant viewing: Computational exploration of digital images. MIT Press.

Chang, Y.-H., & Zhang, Y.-Y. (2022). Deep learning for clothing style recognition using YOLOv5. Micromachines, 13(10), 1678.

Chen, G. (2020). Cinemetrics and the visualization path of Fei Mu's film structure [In Chinese]. Film Art, (04), 45–52.

Chen, Y., Faden, E., & Ryan, N. C. (2021). KALMUS: Tools for color analysis of films. Journal of Open Source Software, 6(61), 3156.

Ewerth, R., Mühling, M., Stadelmann, T., Gllavata, J., Grauer, M., & Freisleben, B. (2009). Videana: A software toolkit for scientific film studies. In M. Ross, M. Grauer, & B. Freisleben (Eds.), Digital tools in media studies: Analysis and research (pp. 101–116). transcript Verlag.

Fan, Z., & Yu, X. (2021). Visualizing collective industrial creation in "new mainstream" films from a cinemetric perspective [In Chinese]. Hundred Schools in Arts, 37(06), 114–121.

Flueckiger, B. (2017). A digital humanities approach to film colors. The Moving Image, 17(2), 71–94.

Flueckiger, B., & Halter, G. (2020). Methods and advanced tools for the analysis of film colors in digital humanities. Digital Humanities Quarterly, 14(4), 1–9.

Gong, L. (2020). Film interpretation from a cinemetric perspective: A case study of Extraordinary Mission [In Chinese]. China Film Market, (01), 33–38.

Halter, G., Ballester-Ripoll, R., Flueckiger, B., & Pajarola, R. (2019). VIAN: A visual annotation tool for film analysis. Computer Graphics Forum, 38(3), 119–129.

Jiang, H. (2024). Visualizing narrative rhythm in genre films from a cinemetric perspective [In Chinese]. Art Evaluation, (21), 141–146.

Kuhn, T. S. (1962). The structure of scientific revolutions. University of Chicago Press.

Li, Y., & Chen, T. (2023). Beyond the "generational" discourse: A cinemetric study of mainland Chinese cinema since the 1990s [In Chinese]. Digital Humanities Research, 3(01), 79–94.

Liu, Z., & Qin, Z. (2025). From meaning-oriented interpretation to measurement: The positivist turn in film studies [In Chinese]. Movie Literature, (02), 45–50.

Lu, D., & Ren, R. (2024). A cinemetric examination of the "jerky-advancing pursuit" action style in Jackie Chan's films [In Chinese]. Journal of Beijing Film Academy, (04), 77–87.

Ost, J., Mannan, F., Thuerey, N., Knodt, J., & Heide, F. (2021). Neural scene graphs for dynamic scenes. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) (pp. 2856–2865). https://doi.org/10.1109/CVPR46437.2021.00288

Qiao, J., & Wang, L. (2023). A preliminary study of the genre style of Chinese wuxia films in the 1920s from a cinemetric perspective [In Chinese]. New Film Works, (03), 149–155.

Qiao, J., & Wang, W. (2023). Quantifying sensation: Cinemetrics as a method for film studies [In Chinese]. Film Theory Research (Chinese–English), 5(03), 5–13.

Qiao, J., & Xia, F. (2024). Comparing the aesthetic styles of The Spring River Flows East and Eight Thousand Li of Cloud and Moon from a cinemetric perspective [In Chinese]. Journal of Qingdao University of Science and Technology (Social Sciences), 40(03), 87–93.

Schmidt, T., Burghardt, M., & Wolff, C. (2021). Exploring computer vision for film analysis: A case study for five canonical movies. In S. Cimiano, C. Chiarcos, A. Declerck, J. D. Romary, & E. Sanchez-Alonso (Eds.), Proceedings of the 2nd International Conference of the European Association for Digital Humanities (EADH 2021) (pp. 366–369). CEUR-WS.

Tang, Y., & Shi, Z. (2022). Studying "red films" from a cinemetric perspective: Visualization paths and aesthetic implications [In Chinese]. Movie Literature, (10), 11–19.

Tsivian, Y., & Xu, D. (2019). Cinemetrics: A humanities cyber-platform for cinemetrics [In Chinese]. Contemporary Cinema, (11), 44–47.

Wang, J., Xu, Y., & Hou, M. (2023). Analyzing Wong Kar-wai's film structure from a cinemetric perspective [In Chinese]. Western Radio and Television, 44(15), 128–130, 134.

Wang, R. (2025). Developing cinemetrics software based on Python [In Chinese]. Modern Film Technology, (03), 45–51.

Wu, G. (2024). Barry Salt's scientistic view of cinema: The beginning of cinemetrics [In Chinese]. Film Theory Research (Chinese–English), 6(01), 21–33.

Wu, Q., & Zhu, H. (2024). A cinemetrics-based method for visualizing film color style [In Chinese]. Modern Film Technology, (03), 46–52.

Yang, S. (2019). Theory, methods, and applications of cinemetrics [In Chinese]. Contemporary Cinema, (11), 32–38.

Yang, S. (2021). Three transcendences of scene staging: A "cinemetric" perspective [In Chinese]. Journal of Guizhou University (Arts Edition), 35(03), 65–71.

Zeng, X., & Liu, K. (2024). Gender order and Orientalist imagination in Chinese diaspora films: A cinemetric study [In Chinese]. Modern Communication (Journal of Communication University of China), 46(05), 118–127.

Zhou, D. (2023). Constructing the visual image of Northeast China in Dong Chengpeng's films: A cinemetric perspective [In Chinese]. Movie Literature, (10), 112–118.