

ENHANCING EDUCATIONAL QUALITY AND EFFICIENCY THROUGH MANAGEMENT SUPPORT'S IMPACT ON CHINESE-INTERNATIONAL COOPERATIVE EDUCATION

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Abstract

Chinese-international cooperative education is an important development direction in China's higher education sector. With the acceleration of China's reform and opening-up process and the profound changes that have taken place in social and economic life, a rare opportunity has been provided for the promotion of the cause of Chinese-international cooperative education to move forward. Across China, various measures have been actively taken to promote the work of Chinese-international cooperative education. Colleges and universities have taken Chinese-international cooperation as a breakthrough in their reform and development. The most crucial thing is how to strengthen the management support to make it more effective. Management support is not only related to the success or failure of Chinese-international cooperative education. It is also directly related to the effectiveness of the whole project. Based on the current development of Chinese-international cooperative universities, this study reviews the relevant educational management theories, summarises the research results of scholars at home and abroad, and carries out an empirical study on the role of management support in Chinese-international cooperative universities from the perspectives of student management and faculty management. The importance of management support in Chinese-international cooperative education programmes is explored, especially its impact on enhancing educational quality and operational efficiency. It provides lessons and references for promoting the healthy and stable development of the Chinese-international cooperative education business.

Keywords: *management support, student management, faculty management, Chinese-international cooperation, effectiveness*

Introduction

The integration of Chinese-international cooperative education is a pivotal initiative in the global expansion of China's higher education sector and exemplifies the nation's strategy to open to international influences, as Zeng (2022) notes. The rapid pace of globalization has spurred a growing demand for individuals proficient in cross-cultural communication and possessing a global perspective. To meet this need, Chinese-international cooperative education has been established, broadening the scope of learning opportunities for students, and enhancing their competitiveness in the global arena. Furthering this development, local governments have introduced numerous policies and regulations to bolster Chinese-international cooperative

engagements in education, prompting universities to partake in these collaborative endeavors (Tham et al., 2017; Pambreni et al., 2019; Zhang and Ling, 2022; Herath et al., 2023).

Spurred by these regulatory frameworks, educational institutions globally are enthusiastically embracing Chinese-international cooperative models, aligning with their institutional strengths. This collaboration results in the sharing of high-quality educational resources, including pedagogical techniques, curriculum content, and faculty expertise, across various nations, thereby enriching the educational landscape and offering students a multitude of learning avenues, as Zhao, Xiong, and Wang (2023) elaborate. This exchange not only refines educational quality but also diversifies the learning choices available to students.

Through these varied educational pathways, students engaged in Chinese-international cooperative programs gain exposure to multiple cultural environments. This exposure is instrumental in enhancing their intercultural communication abilities, developing a global mindset, and fostering cultural sensitivity. Such experiences are crucial in equipping students to adapt to ongoing societal transformations, thereby elevating their overall caliber. In line with the demands of a globalized education market, Chinese-international cooperative universities are striving to meet or maintain international accreditation standards, ensuring the high quality of their programs and establishing their distinction in the educational landscape, as Lin (2022) indicates.

By 2021, there were 2,332 Chinese-international cooperative education institutions and projects, with approximately 90% of these focused on higher education, positioning China as a significant player in the global higher education arena. Approximately 600,000 students were enrolled in these programs, with around 550,000 in higher education initiatives, and over 2 million graduates from these programs, as noted by some authors (Lin, 2021; Zheng et al., 2023; Sudha et al., 2023). These cooperative efforts span over 200 majors across 11 disciplines, encompassing more than 200 postgraduate institutions and programs, about 1,000 undergraduate programs, and over 800 specialist-level initiatives.

Chinese-international cooperative education not only mirrors the shifts in global educational trends and market needs but also underscores the growing recognition of cultural diversity and international collaboration in the educational sector. As globalization deepens, this cooperative model is increasingly embraced by various countries, particularly those in developing regions.

Management support factors

Management support typically encompasses a variety of services and resources within an organization aimed at enhancing the efficiency of employees or teams in their professional roles. Within the educational sector, particularly in the realm of Chinese-international cooperation, management support has become a critical component of talent development strategies in numerous universities, as Zhao (2022) observes. In China, research on university management support predominantly concentrates on aspects such as resource distribution, administrative assistance, training and development, communication, collaboration, and financial backing.

The scope of student management includes overseeing the comprehensive well-being and academic success of students, as highlighted by Li (2023). This encompasses areas like enrollment strategies, academic support, student welfare services, involvement in activities and club management, as well as conduct and disciplinary measures. Conversely, teacher management is geared towards the administration and advancement of educators, encompassing recruitment, professional development, career progression, creating a conducive work environment, performance evaluation, and compensation and benefits.

Management support lays the foundational structure, providing essential resources and policy guidance necessary for both student and teacher management; these two facets are mutually interdependent. The quality of teaching and instructional methodologies directly impacts student learning outcomes, as Jiang (2023) points out. Similarly, student performance and requirements influence the focus and direction of teacher training and development (Udriyah et al., 2019; Horani et al., 2023; Jiang and Huang, 2023).

Given its pivotal role, management support, encompassing both student and faculty management, is vital for the effective implementation of Chinese-international cooperative education. Investigating the influence of management support in this context, especially from the perspectives of student and teacher management, is thus crucial for enhancing the quality and efficiency of educational delivery.

Hypothetical development

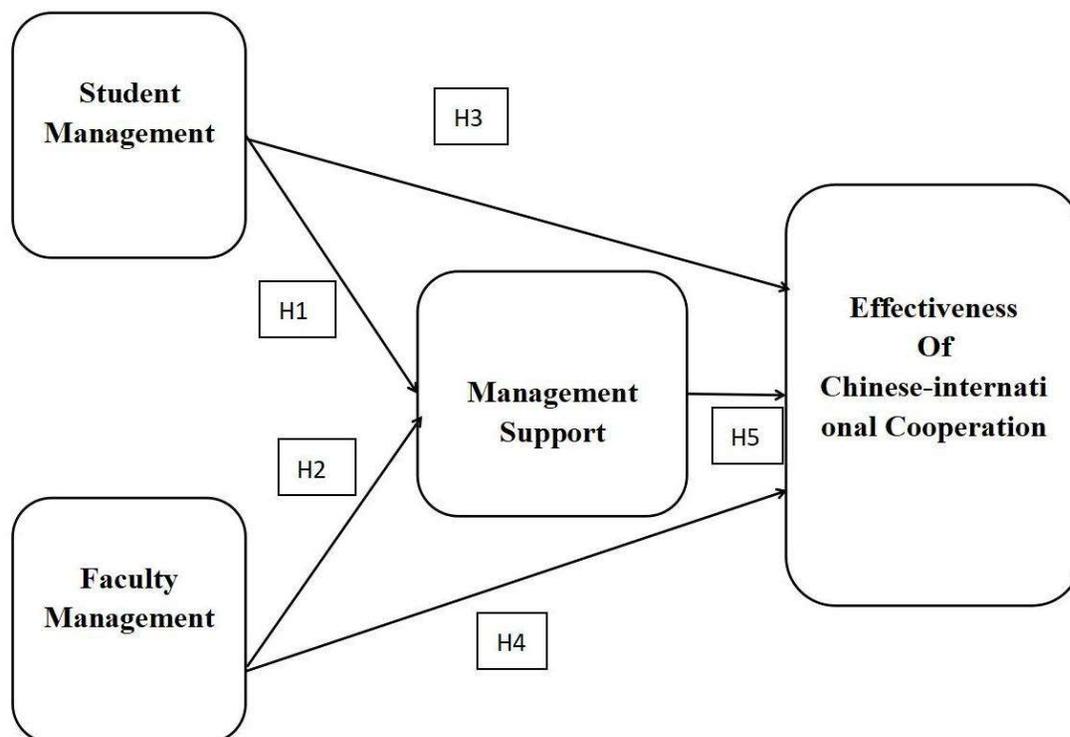


Figure 1. Theoretical framework

Student management and teacher management are closely related to the effective implementation of Chinese-international cooperation, and Vygotsky's socio-cultural and educational management theories provide a theoretical basis for studying the relationship between them. Vygotsky was a Russian psychologist. He developed a socio-cultural theory in which he proposed the Zone of Proximal Development (ZPD), which is the most famous concept in his theory. The Zone of Proximal Development refers to the area in which a student is able to perform a task that he or she can do with appropriate guidance but cannot do alone. This concept emphasises the role of appropriate teaching and support in facilitating student learning (Chen, 2018). He argues that in learning and development, individuals have a current level of competence and a potential level of development, and that learning usually occurs in the "zone of proximal development" between the two. Educational and social activities can help individuals realise their potential development, which in turn increases their current level of competence. He emphasises the important role of social and cultural environments in the cognitive development of individuals. Within this theoretical framework, the emphasis on the active participation and social interaction of the individual, as well as the focus on the potential development of the learner, provides important guidance for personalised and effective education (Wulandari et al., 2023; Ranawaka et al., 2023; Luo, 2003).

The development of educational management theories is interdisciplinary, drawing on theoretical and practical knowledge from a variety of fields, including psychology, sociology, and administration. To varying degrees, these theories have influenced the way in which educational institutions are managed in terms of school leadership, teacher development, student services and organisational structure (Dewey, 2022). Student management is inspired by the organisational behavioural and structural aspects of educational management theories in the areas of enrolment management, academic support, wellbeing and services, activities and club organisation, behaviour and discipline (Wang et al, 2019). Faculty management is inspired by human resource management and quality assurance assessment theories in recruitment and selection, professional development and training, career planning and promotion, work environment and culture, performance evaluation, and welfare and compensation (Huang, 2020). The effectiveness of Chinese-international cooperative education is mainly considered in terms of education quality improvement, resource sharing and optimal allocation, curriculum and education system innovation (Wang et al, 2023), student employment and development, and cross-cultural communication and understanding. The most important of them are strengthening the construction of teachers, improving the talent cultivation mode and teaching evaluation system, promoting harmony between teachers and students, and carrying out extensive and in-depth international exchanges. These are all conducive to the effective implementation of Chinese-international cooperative education (Guo, Zhang & Zhong, 2021). Social and cultural theories and educational management theories provide the theoretical basis for student management and teacher management to influence management support, which in turn influences the effectiveness of Chinese-international cooperative education.

Sang (2019) conducted a study on the management of students in Chinese-international cooperative schools. Pu and Li (2021) studied the current situation of Chinese-international cooperative education, and proposed that the development of scientific and reasonable teaching plans and management methods, the strengthening of the construction of auxiliary teaching teams for the introduced courses, the scientific and reasonable development and implementation of the admission criteria, and the strengthening of the management of students and teachers in Sino-foreign cooperative education have a positive effect on the cultivation of international talents. Chang (2023) comprehensively and objectively analysed the characteristics of students in Chinese-international cooperative universities, explored the countermeasures for student management in Chinese-international cooperative universities, and proposed that efficient student services are crucial for improving students' learning experience and satisfaction. Bian (2023) studied the current situation of student education management in Chinese-international cooperative education programmes, discussed the strategies of student education management in Chinese-international cooperative education programmes from a cross-cultural perspective, and proposed that student education management strategies are of great significance for the sustainable development and improvement of Chinese-international cooperative education. Wu (2023) explored the characteristics and innovative optimisation strategies regarding student management work in foreign co-operation in higher education schools. Based on the above theories and research results, hypothesis H1 is proposed for the relationship between student management and management support.

H1: In Chinese-international cooperative education, there is a positive correlation between student management and management support.

Lin (2019) studied the construction of Chinese-international cooperative teaching team and proposed that the construction of teaching team is the core of the connotation construction of Chinese-international cooperative colleges and universities, and that the construction of teaching team of Chinese-international cooperative colleges and universities can be improved by innovating the management system and strengthening the humanistic care and incentive mechanism. Zhu (2020), through the analysis of the current situation of talent cultivation in Chinese-international cooperative projects, studied the impact of the faculty and curriculum system on the improvement of management support on the quality of talent cultivation. Cao et al. (2022) believe that Chinese-international cooperative education is an effective measure to achieve internationalisation of higher education. In particular, teachers' teaching ability plays a crucial role in the quality of talent training. They take the logistics engineering (cooperatively-run) major of Beijing Union University as the research object to analyse the channels and ways to enhance the teaching ability of professional teachers. It provides certain reference for the improvement of management support for similar cooperative schooling majors. Based on the above theories and research results, hypothesis H2 is proposed for the relationship between teacher management and management support.

H2: In Chinese-international cooperative education, there is a positive correlation between faculty management and management support.

Luo (2022) analyses the importance of student management in Chinese-international cooperative universities in the context of intelligent media for the effective development of Chinese-international cooperative universities. Xu (2020) starts from the current situation of student management in the mode of Chinese-international cooperative education, puts forward that the effectiveness of student management is related to the quality of education, and accordingly discusses the measures that should be taken to improve the level of student management. Wang (2020) believes that Chinese-international cooperative education is an important way to meet the needs of the current development of higher education and to promote international educational exchanges, and in order to better promote Chinese-international cooperative education, it is necessary to do a good job in student management. He studied the current situation of student management in Chinese-international cooperative schools and suggested that student management affects the healthy development of Chinese-international cooperative schools. Wu (2023) analyses the problems between student management in Chinese-international cooperative schools and the healthy and stable development of Chinese-international cooperative schools, and discusses the characteristics and innovative optimization strategies of student management in Chinese-international cooperative schools in higher education schools concerned. Based on the above theories and research results, the hypothesis H3 is proposed for the relationship between student management and the effectiveness of Chinese-international cooperative education.

H3: In Chinese-international cooperative education, there is a positive correlation between student management and the effectiveness of Chinese-international cooperative education.

Jiang (2023) describes the history of Chinese-international cooperative education in colleges and universities, discusses the requirements of Chinese-international cooperative education in colleges and universities for teachers, analyses the current situation of Chinese-international cooperative education in colleges and universities, and puts forward an optimal path to enhance the development of cooperation from the construction of teachers of Chinese-international cooperative education in colleges and universities. Zhao (2023) made a detailed analysis of the current problems in the construction of teachers, and put forward the establishment of an effective guarantee mechanism to ensure the quality and effectiveness of teaching from the aspects of optimising the structure of teachers, perfecting the service and management mechanism, building a platform for mutual learning and co-construction, and optimising the assessment of teachers. Sun (2023) takes Lemerton College of Jilin University as an example to explore the strategy of constructing a teacher community based on the advantages and problems of Chinese-international cooperative education teacher construction in the context of digitisation, with a view to strengthening the exchange and cooperation between Chinese and foreign parties, complementing the strengths and weaknesses of the Chinese and foreign parties, creating an internationalised faculty team, and better promoting the internationalisation of education. Wang (2023) reviewed and sorted out the relevant literature on the Internet from the perspective of faculty construction in Chinese-international cooperative education, analysed and reviewed the current status of research on faculty construction in the view of Chinese-international cooperative education, and aimed to understand the current research results on faculty construction in the view of Chinese-international

cooperative education. Based on the above theories and research results, hypothesis H4 is proposed for the relationship between teacher management and the effectiveness of Chinese-international cooperative education.

H4: In Chinese-international cooperative education, there is a positive correlation between faculty management and the effectiveness of Chinese-international cooperative education.

Tang and Li (2020), in view of the current situation of Chinese-international cooperative education, suggest that management support can enable the government, schools and all sectors of society to form a synergy and continuously optimise the Chinese-international cooperative education model. Zhang (2022), through collating domestic and international literature, summarised the influencing factors of Chinese-international cooperative education in Chinese higher vocational colleges and universities into five aspects: top-level design, curriculum development, teaching quality, faculty, supply guarantee, etc., and put forward the following measures: to strengthen the top-level design, to serve the high-quality output of vocational education; to ensure the coverage of the whole process of teaching and supervision by internal and external bidirectional integration; to increase the training of faculty, to promote the competence of faculty with international standards; to build an international platform, to enhance the quality of the Chinese-international cooperative education model. It is proposed to promote the optimisation and upgrading of the management support system of Chinese-international cooperative education in China's higher vocational colleges and universities in five aspects: strengthening the top design to serve the high-quality output of vocational education; two-way internal and external integration to ensure the coverage of the whole process of teaching supervision; increasing teacher training to promote the teachers' ability to meet the international standards; setting up an international platform to enhance the international influence of cooperative education; and providing supply guarantee to ensure the smooth and orderly operation of cooperative education to meet the demand for the high-quality, efficient and sustainable development of cooperative education. Lin (2022) studied the construction of a reasonable and effective quality assurance norms and quality assessment system based on the current development of Chinese higher education, and proposed management strategies and methods to improve the effectiveness of governance. Liu (2022) took the cooperative education projects of Xijiao Liverpool University, Zhejiang University International Joint College, China University of Mining and Technology and RMIT University as case studies, and studied ten elements of talent cultivation, such as academic discipline and professional setting, scientific research and collaborative innovation, internships and training on and off-campus, enrollment process, organisational structure, internationalisation of faculty, sources of funding and financial support for running the university, teaching facilities and resources of the Chinese and the foreign parties, evaluation of the effectiveness of talent cultivation, and the construction of internal governance system. It also provides empirical evidence for the construction of talent cultivation mechanism of Chinese-international cooperative universities, and puts forward countermeasures and suggestions to strengthen the management support of the cultivation process and promote the realisation of the objectives of the universities.

Based on the above theories and research results, hypothesis H5 is proposed for the relationship between management support and the effectiveness of Chinese-international cooperative education.

H5: In Chinese-international cooperative education, there is a positive correlation between management support and the effectiveness of Chinese-international cooperative education.

Method

This study collects data from faculty members of Chinese higher education institutions who have experience working in Chinese-international cooperative education. Questionnaires were distributed to them through Questionstar to obtain responses (Azam et al., 2021; Azam et al., 2023). Therefore, the respondents of this study are faculty and staff of Chinese higher education institutions with Chinese-international cooperative education. A total of 300 faculty members responded to the questionnaire, therefore, the total sample size was 300. For the returned data, this study used software such as SPSS and AMOS to perform statistical processing to determine the final results. SPSS is widely used in social science research fields such as sociology, psychology, market research, health research, and education research, etc., and it is capable of handling large datasets and conducting complex data processing and analyses, usually government departments and educational institutions use SPSS for various research and analysis projects (Pallant, 2022). AMOS is widely used in various fields such as social sciences and market research, which provides rich outputs including graphs and tables for easy interpretation and reporting (Byrne, 2010). Therefore, this study used SPSS and AMOS to analyse the data.

In addition, the data were collected through questionnaires. The questionnaire method was used to collect data from the teaching staff of Chinese and foreign cooperative education in Chinese higher education institutions. The questionnaire was divided into two main parts. The first part presents the profile of the respondents. The second part deals with items related to key variables, namely: student management, faculty management, management support, and Chinese-international cooperation effectiveness. For these items we used Likert scales to collect data.

Results

This study analyzed the external model using factor loadings, reliability, and validity through SPSS. For reliability analysis, the Cronbach's Alpha coefficient was used to examine the consistency of the research variables across various measurement items in the survey questionnaire. It is generally believed that a variable must have a Cronbach's Alpha coefficient greater than 0.7 for good reliability (George, 2011). As shown in Table 1, the Cronbach's Alpha coefficients for each variable are above the 0.7 threshold, indicating good internal consistency reliability. The CITC is above the 0.5 standard, suggesting that the measurement items meet the research requirements. From the perspective of "Cronbach's Alpha value if an item is deleted," removing any item will not lead to an increase in the Cronbach's Alpha value, which also indicates good reliability of the variables (Field, 2013).

Table 1. Reliability Analysis
Reliability Analysis

Variable	Item	CITC	Cronbach's Alpha after Item Deletion	Cronbach's Alpha
SM	SM1	0.682	0.884	0.894
	SM2	0.755	0.868	
	SM3	0.789	0.861	
	SM4	0.689	0.882	
	SM5	0.796	0.859	
FM	FM1	0.647	0.831	0.856
	FM2	0.709	0.816	
	FM3	0.677	0.824	
	FM4	0.648	0.831	
	FM5	0.669	0.826	
MS	MS1	0.762	0.912	0.924
	MS2	0.74	0.915	
	MS3	0.784	0.91	
	MS4	0.865	0.898	
	MS5	0.674	0.923	
	MS6	0.862	0.898	
ECIIC	ECIC1	0.742	0.929	0.935
	ECIC2	0.758	0.928	
	ECIC3	0.812	0.924	
	ECIC4	0.763	0.928	
	ECIC5	0.78	0.926	
	ECIC6	0.767	0.927	
	ECIC7	0.797	0.925	
	ECIC8	0.785	0.926	

Exploratory factor analysis was conducted using SPSS to perform the KMO and Bartlett's Test of Sphericity on the scale, with results presented in Table 2.

Table 2. KMO and Bartlett's Test
KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.947
Bartlett's Test of Sphericity	Approximate Chi-Square	5091.347
	df	276
	Sig.	.000

From Table 2, the KMO value is 0.947, greater than 0.7, and the Bartlett's Test of Sphericity is significant (Sig. < 0.001), indicating that the survey data meet the prerequisites for factor analysis (Field, 2013). Therefore, further analysis is conducted. Principal component analysis is used for factor extraction, with factors extracted for eigenvalues greater than 1. For factor rotation, varimax orthogonal rotation is applied. The results yield a total of 4 factors, with a total explanatory power of 69.735%, which is greater than 50%, indicating that the 4 extracted factors have good representativeness (Costello & Osborne, 2005). From the analysis results, it can be seen that the factor loadings of each measurement item are all greater than 0.5, and the cross-loadings are all less than 0.4. Each item falls into its corresponding factor, demonstrating good structural validity.

After the above analysis, confirmatory factor analysis was conducted using AMOS. This study has four dimensions, encompassing a total of 24 measurement items. After performing confirmatory factor analysis with AMOS, the results are presented in Figure 2 and Table 3.

Figure 2: Confirmatory Factor Analysis

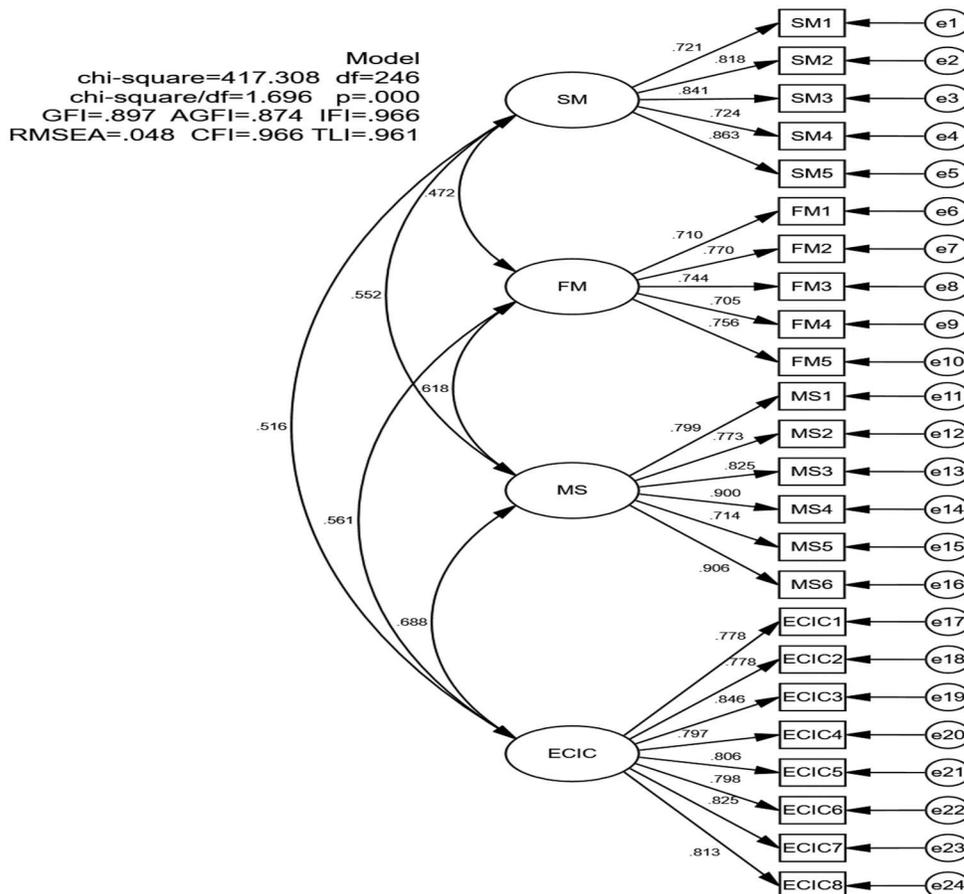


Table 3: Confirmatory Factor Model Fit
Confirmatory Factor Model Fit

Model Fit Indices	Optimal Criterion Value	Statistical Value	Fit Condition
CMIN	—	417.308	—
DF	—	246	—
CMIN/DF	<3	1.696	Good Fit
RMR	<0.08	0.041	Good Fit
GFI	>0.8	0.897	Good Fit
AGFI	>0.8	0.874	Good Fit
NFI	>0.9	0.920	Good Fit
IFI	>0.9	0.966	Good Fit
TLI	>0.9	0.961	Good Fit
CFI	>0.9	0.966	Good Fit
RMSEA	<0.08	0.048	Good Fit

From Table 3, it can be seen that CMIN/DF is 1.696, which is below the standard of 3, GFI and AGFI are both greater than 0.8 and within the acceptable range (Nazari et al, 2020), NFI, TLI, IFI, CFI all reach the standard of above 0.9, RMR is 0.041, which is less than 0.08, RMSEA is 0.048 which is less than 0.08. All these fit indices meet the general research standards, therefore, it can be considered that this model has a good fit.

Table 4: Confirmatory Factor Analysis Results
Confirmatory Factor Analysis Results

Variable	Item	factor loading	CR	AVE
SM	SM1	0.721	0.896	0.633
	SM2	0.818		
	SM3	0.841		
	SM4	0.724		
	SM5	0.863		
FM	FM1	0.71	0.856	0.544
	FM2	0.77		
	FM3	0.744		
	FM4	0.705		
	FM5	0.756		
MS	MS1	0.799	0.926	0.676
	MS2	0.773		

	MS3	0.825		
	MS4	0.9		
	MS5	0.714		
	MS6	0.906		
	ECIC1	0.778		
	ECIC2	0.778		
	ECIC3	0.846		
ECIC	ECIC4	0.797	0.937	0.649
	ECIC5	0.806		
	ECIC6	0.798		
	ECIC7	0.825		
	ECIC8	0.813		

As shown in Table 4, the standardized factor loadings of each measurement indicator for each variable are all greater than 0.6, the composite reliability (CR) is greater than 0.7, and the average variance extracted (AVE) is greater than 0.5, indicating that each variable has good convergent validity (Cheung et al, 2023).

After completing the above analysis, this study adopted the more stringent AVE method to assess discriminant validity. According to Fornell and Larcker (1981), the square root of the AVE for each factor needs to be greater than the correlation coefficients of each pair of variables, indicating that the factors have discriminant validity. The square roots of the AVEs of each factor are greater than the standardized correlation coefficients outside the diagonal, hence this study still possesses discriminant validity. The lower triangular part of the matrix shows the correlation coefficients. Refer to the detailed Table 5 below:

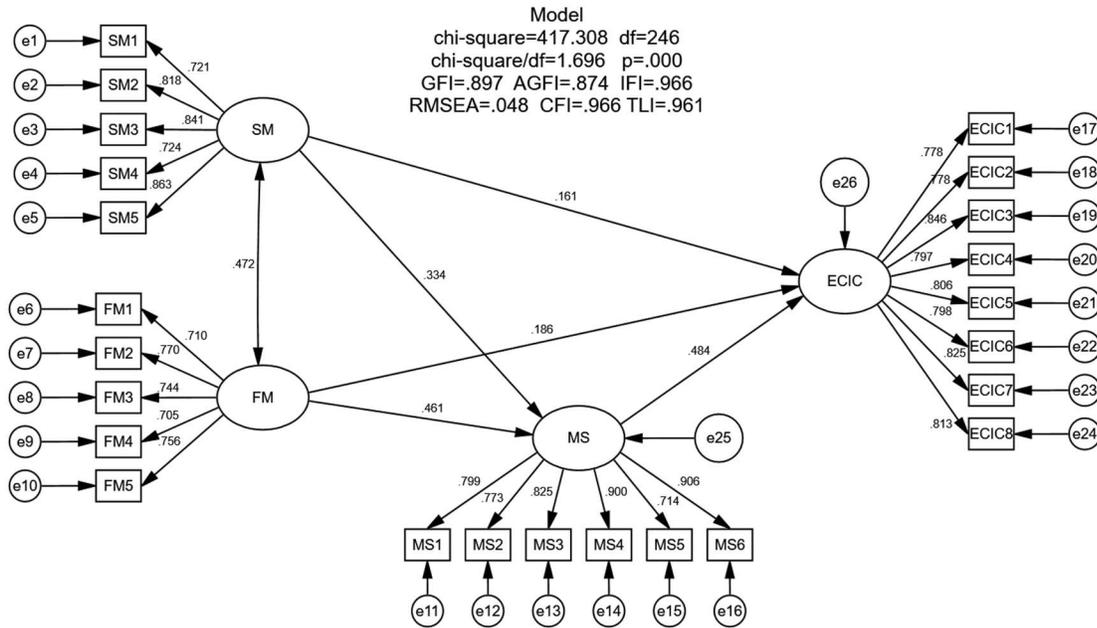
Table 5: Discriminant Validity

Discriminant validity

	SM	FM	MS	ECIC
SM	0.796			
FM	.415**	0.738		
MS	.509**	.570**	0.822	
ECIC	.485**	.505**	.654**	0.806

Then, proceeding to the next step of the analysis, calculations were performed using AMOS, utilizing the maximum likelihood method. The results are displayed in the following Figure 3:

Figure. 3 Summary of hypotheses test results



From Table 6, it is evident that CMIN/DF is 1.696, which is below the standard of 3, GFI and AGFI are both greater than 0.8 and within the acceptable range (Nazari et al, 2020), NFI, TLI, IFI, CFI all reach the standard of above 0.9, RMR is 0.041, which is less than 0.08, RMSEA is 0.048 which is less than 0.08. All these fit indices meet the general research standards; therefore, it can be concluded that this model has a good fit (Awang, Afthanorhan & Asri, 2015).

Table. 6 Model fit

Model fit

Model fit indices	Optimal criterion value	Statistical value	Fit condition
CMIN	—	417.308	—
DF	—	246	—
CMIN/DF	<3	1.696	Good Fit
RMR	<0.08	0.041	Good Fit
GFI	>0.8	0.897	Good Fit
AGFI	>0.8	0.874	Good Fit
NFI	>0.9	0.920	Good Fit
IFI	>0.9	0.966	Good Fit
TLI	>0.9	0.961	Good Fit
CFI	>0.9	0.966	Good Fit
RMSEA	<0.08	0.048	Good Fit

Analyzing the data presented in Table 7 reveals several key relationships. Firstly, Student Management (SM) exhibits a notable positive effect on Management Support (MS), as indicated

by a β value of 0.334 and a significance level of $p < 0.05$, thereby substantiating the proposed hypothesis. Similarly, Faculty Management (FM) also demonstrates a significant positive impact on Management Support, with the same β value of 0.334 and a p value below 0.05, corroborating the corresponding hypothesis.

Additionally, the influence of Student Management on the Effectiveness of Chinese-International Cooperative Education (ECIC) is significant and positive, reflected by a β value of 0.161 and a p value less than 0.05, thus supporting the associated hypothesis. In parallel, Faculty Management positively and significantly affects ECIC, with a β value of 0.186 and a p value below 0.05, thereby validating its respective hypothesis.

Finally, the relationship between Management Support and the Effectiveness of Chinese-International Cooperative Education is both significant and positive, as indicated by a β value of 0.484 and a p value less than 0.05. This finding upholds the relevant hypothesis, underscoring the critical role of Management Support in the context of Chinese-International Cooperative Education.

Table.7 Path Coefficient

Path Coefficient

Path	standardized coefficient	unstandardized coefficient	S.E.	C.R.	P	Hypothesis
MS <--- SM	0.334	0.404	0.075	5.402	***	confirmed
MS <--- FM	0.461	0.544	0.08	6.815	***	confirmed
ECIC <--- SM	0.161	0.174	0.064	2.715	0.007	confirmed
ECIC <--- FM	0.186	0.196	0.07	2.795	0.005	confirmed
ECIC <--- MS	0.484	0.432	0.065	6.668	***	confirmed

After completing the analysis, this study employed the bootstrapping method to validate the mediating effects. The research indicates that if the bootstrap confidence interval does not include 0, then the corresponding total, indirect, and direct effects exist (Byrne, 2013). In AMOS, the Bootstrap method was run 5000 times, yielding Bias-Corrected and Percentile confidence levels at 95%, as shown in Table 8.

Table.8 Mediation analysis

Mediation analysis

Effect size	Bias-Corrected 95%CI	Percentile 95%CI
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		Lower	Upper	Lower	Upper
SM_ECIC Total	0.323	0.174	0.475	0.171	0.471
SM_MS_ECIC	0.162	0.093	0.253	0.085	0.242
SM_ECIC Direct	0.161	0.003	0.336	0.002	0.334
FM_ECIC Total	0.409	0.272	0.53	0.278	0.535
FM_MS_ECIC	0.223	0.13	0.339	0.123	0.33
FM_ECIC Direct	0.186	0.036	0.342	0.041	0.346

From Table 8, it can be inferred that the total effect of SM_ECIC is 0.323, and as the values in the Lower and Upper intervals of the Bias-Corrected and Percentile 95% CI do not contain 0, it indicates the existence of the total effect. The mediating effect of SM_MS_ECIC is 0.162, and since the values in the Lower and Upper intervals of the Bias-Corrected and Percentile 95% CI do not include 0, it demonstrates the presence of the mediating effect. The direct effect of SM_ECIC is 0.161, and as the values in the Lower and Upper intervals of the Bias-Corrected and Percentile 95% CI do not include 0, this signifies the presence of the direct effect. The total effect of FM_ECIC is 0.409, and as the values in the Lower and Upper intervals of the Bias-Corrected and Percentile 95% CI do not contain 0, it indicates the existence of the total effect. The mediating effect of FM_MS_ECIC is 0.223, and since the values in the Lower and Upper intervals of the Bias-Corrected and Percentile 95% CI do not include 0, it demonstrates the presence of the mediating effect. The direct effect of FM_ECIC is 0.186, and as the values in the Lower and Upper intervals of the Bias-Corrected and Percentile 95% CI do not include 0, this signifies the presence of the direct effect.

Specifically, student management affects the effectiveness of Chinese-international cooperation, and management support mediates between student management and the effectiveness of Chinese-international cooperation, and teacher management affects the effectiveness of Chinese-international cooperation, and management support mediates between teacher management and the effectiveness of Chinese-international cooperation. The results show that both student management and faculty management play a significant positive influence on the effectiveness of Chinese-international cooperation, and both student management and faculty management promote the effectiveness of Chinese-international cooperation through management support, which plays an important mediating role between them.

Conclusion

Through the conduct of this study, we can see that student management is an important aspect of management support in the field of education, especially in the context of Chinese-international cooperative education. There is a significant positive correlation between student management and management support. Management support provides direction, resources, and frameworks for student management. As the foundation of student management, it helps in formulating and implementing effective management strategies, ensuring that students' needs and expectations are met (Everard, Morris & Wilson, 2004) . Management support is responsible for allocating

necessary resources for student management (such as financial, human resources, technological support, etc.) to ensure the effective implementation of student management activities (Kim & Gonzales-Black, 2018). Student management is the concrete practice and application of management support in terms of student welfare and educational outcomes (Coverdale-Jones, 2013). As a practical application of management support, student management directly relates to students' welfare, personal development, and maintaining a conducive learning environment. The interaction and feedback between management support and student management directly impact the quality of education in Chinese-international cooperative institutions. They jointly work towards achieving educational goals, enhancing student satisfaction and academic achievements in Chinese-international cooperative higher education institutions, and promoting their continuous improvement and innovation.

Similarly, faculty management also has a significant positive correlation with management support. In the context of Chinese-international cooperative education, management support, serving as the foundation of faculty management, provides strategic direction, resources, and policy frameworks. It helps in setting standards and procedures for faculty recruitment, training, evaluation, and motivation, providing the necessary resources for faculty management activities, such as financial support, training facilities, and technological tools. As the implementation of management support, faculty management contributes to improving teaching quality and teacher satisfaction through the assessment and feedback of teachers' performance. It ensures teachers' professional development and continuing education programs, aiding the management in setting and executing corresponding goals to achieve the desired outcomes, thereby ensuring that schools maintain a high level of teaching quality (Liu, Bellibaş, & Gümüş, 2021). Faculty management and management support are interdependent and collectively contribute to Chinese-international cooperative higher education institutions, assisting them in adjusting and optimizing policies related to teacher development and performance. The combination of management support and faculty management promotes innovation in teaching methods and course content, enhancing the attractiveness and competitiveness of educational programs (Gist & Bristol, 2022). Through management support and effective faculty management, Chinese-international cooperative higher education institutions can improve teaching quality, thereby enhancing student learning outcomes and satisfaction.

The effective integration of student management and faculty management can greatly enhance the educational quality and efficiency of Chinese-international cooperative education through management support. By focusing on students' learning experiences and satisfaction, as well as teachers' teaching quality and professional development, management support can create a more harmonious and efficient educational environment. This not only helps improve educational outcomes but also enhances the attractiveness and competitiveness of Chinese-international cooperative education, creating richer and more productive learning and teaching experiences for both students and teachers.

Theoretical Significance

The conduct of this study expands the field of research in Chinese-international cooperative education by introducing management support as a key variable. It offers a new perspective for understanding and analyzing the effects and challenges of Chinese-international cooperative education. By delving into the impact of management support on educational quality and efficiency, this study enriches the existing theoretical framework of Chinese-international cooperative education. Its conduct strengthens the interdisciplinary research between management and education, applying the principles and practices of management to the field of education, especially in the context of Chinese-international cooperative education, thereby enhancing the dialogue and integration between the two disciplines. It proposes new theories on the role of management support in enhancing educational quality and efficiency, providing new theoretical foundations for the integration of management and education studies.

Practical Significance

The results of this study point out the key role of management support in enhancing the quality and efficiency of Chinese-international cooperative education, provide schools and policy makers with specific directions for improvement, and provide an empirical basis for relevant policy formulation, which can help to guide the management and optimisation of Chinese-international cooperative education programmes. At the same time, the findings indicate the importance of management support in promoting international educational cooperation. Considering the cultural differences between Chinese and foreign cooperative schools, the conduct of this study deepens the understanding of the success factors of Chinese-international cooperative schooling, provides empirical evidence for the development of management rules, guides the specific management and optimisation of Chinese-international cooperative schooling projects, enhances a deeper understanding of the successful management of Chinese-international cooperative projects, and moreover, helps to promote the smooth development of international education cooperation.

Innovations

Compared with previous studies, this study takes management support as a core variable in analysing the effects of Chinese-international cooperative education, which is rare in the existing literature (Lin, 2019). At the same time, the conduct of this study strengthens the cross-study between management and education, applies the principles and practices of management to the field of education, considers the factors of student management and faculty management in Chinese-international cooperative education, and analyses the impact of management support in depth, which is an innovative point in management and education research. This innovative point provides new insights into how to effectively manage and support cooperative education programmes. Particularly in the cross-cultural and international context, this study provides references for more effective design and implementation of international education programmes for Chinese-international cooperative schools in China, as well as for higher education cooperative institutions and policy makers in other countries or regions of the world.

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