THE INFLUENCING FACTORS OF STUDENTS' INNOVATIVE BEHAVIOR: A CASE STUDY OF YUNNAN COLLEGE OF BUSINESS MANAGEMENT

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This Independent Study has been Approved as a Partial Fulfillment of the Requirements for the Degree of Master of Business Administration

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ABSTRACT

The 21st century is the era of the knowledge economy. Therefore, under this kind of background, the promotion of university students' innovative behavior is particularly important. Most organizations, from for-profit to nonprofit organizations, from businesses to higher education institutions, face a rapidly changing environment and increasing uncertainty. This study aims to achieve the following objectives: 1) To explore the influence of leader-member exchange on innovative behavior of students in Yunnan College of Business Management; 2) To explore the factor mediating the relationship between leader-member exchange and innovative behavior; 3) To propose strategies to foster the development of students' innovative capabilities in educational practice.

This study explored the effect of self-efficacy on the relationship between lead-member exchange (LMX) and innovative behavior from the perspective of the social cognitive theory. In this study, 438 college students from Yunnan College of Business Management served as the research subjects. Utilizing Structural Equation Modeling (SEM) for quantitative analysis, the following findings were revealed: 1) LMX fosters the development of college students' innovative behavior; 2) Self-efficacy acts as the mediating mechanism in the relationship between lead-member exchange and innovative behavior. 3)The recommendations for fostering innovative behavior at Yunnan College of Business Management include the following areas: 1) Encouraging teachers to build quality relationships with students; 2) Creating a supportive organizational climate; 3) Providing teacher-student training and development programs.

Keywords: innovative behavior, leader-member exchange, self-efficacy

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Declaration

I, Guo Yadong, hereby certify that the work embodied in this independent study entitled "The Influencing Factors of College Students' Innovative Behavior: A Case Study of Yunnan College of Business Management" is result of original research and has not been submitted for a higher degree to any other university or institution.

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Chapter 1 Introduction

With the rapid development of science and technology, the country's demand for innovative talents is increasing. Innovation is the primary driving force for development. Strengthen the construction of a national innovation system and train a large number of high-level innovation talents and innovation teams. Nowadays, with the rapid development of information science, and technology, education cannot be neglected in the national development strategy, especially higher education plays an important role in promoting social development and improving the quality of development. In recent years, due to the influence of the national enrollment expansion policy, the rapidly increasing number of university students does not match the development of the faculty capacity and the infrastructure of the university, thus affecting the overall education quality of university students. Colleges and universities are important carriers of cultivating talents, financial and economic colleges, and universities mainly train talents in economy and management, it can promote the cultivation of economic and management talents and the development of economy and society, and it is also an important aspect to solve social and economic problems, has important practical significance.

1.1 Background of the Study

Higher educational institutions have always taken innovation development as one of the national development strategies, and at the same time attaches great importance to and develops higher education. In the cultivation of innovative talents, the quality of college students' education cannot be neglected (Qi & Wang, 2020). College students' education can provide intellectual support for the development of our country and bring strong impetus for national innovation (Li, 2012). Among them, the talents trained by finance and economics universities have unique advantages in the development of economy and society, and their innovative achievements in universities can directly or indirectly promote the development of society and economy, it plays an irreplaceable role in solving economic problems. In the education stage of college students of finance and economics, students are required not only to study professional knowledge, but also to invest some time in scientific research and innovation, so as to optimize their ability in this respect. Therefore, it is worth paying attention to the

cultivation of scientific research innovation behavior of college students (Wei et al., 2023).

Innovation is the soul of national progress, is the continuous driving force of organizational development, and college students' innovation is the key. College students' innovative behavior refers to the process that college students produce and implement creative behaviors in their study and work, which is of great significance to the sustainable development of organizations and the realization of college students' values (Alexander & Van Knippenberg, 2014).

The research results show that there are three factors that affect university students' scientific research innovation behavior, they are students, teachers and their external environment. Besides, teachers are the main body that influences the implementation of college students' education in our country. Therefore, the role and influence of college teachers on the cultivation of college students' innovative behavior are embodied (Zainal & Matore, 2019). At present, many scholars have carried out the research from the angle of the teacher's guiding style and the teacher's guiding content, and the research results have analyzed and demonstrated the guiding style of the two types of teachers: the supporting type and the controlling type, the final results show that these two types of teachers' styles have a significant impact on the cultivation of university students' scientific research innovation behavior. This also shows that a certain guidance style of teachers is helpful to the cultivation of university students' scientific research innovation behavior, teachers as leaders and university students as followers, from the perspective of leader and follower theory, there are relatively few researches on university students' innovative behavior. Some western studies have pointed out that in the field of education, especially in universities, the mode or style of teachers' guidance should be in a dynamic change, by constantly adapting to the needs of social development, therefore, it is more suitable for the Sustainable Development Goal of the society, the school and the students, so the leading teachers are needed to guide the students (Yang et al., 2024).

However, individualization and intellectual motivation pay more attention to the individual, because both of them focus on the follower's personal needs, abilities and emotional state, thus influencing and motivating the follower to integrate into the work. Some researchers have emphasized that leadership is a relationship between leaders and followers, despite the imbalance of power between leadership and follower, but they can play a positive role in shaping relationships and ultimately organizational outcomes (Howell & Shamir, 2005).

In addition, the theory of individual-centered leadership is defined as behaviors that allow individual followers to realize their full potential, enhance their abilities and skills, and enhance their self-efficacy and self-esteem, assess leadership in conjunction with follower behavior (Wang & Howell, 2010). The same can be said of higher education institution as a special organizational environment, although many teachers are not aware of their role as student leaders, because teachers not only impart knowledge to students in the classroom and gain their admiration, but also act as mentors and guides to students outside the classroom, effective following is an important component of successful organizations and successful leaders, and to place this in an educational context, students must be actively involved in the process in order to achieve learning goals, not just a container of knowledge (Strong & Williams, 2014).

1.2 Questions of the Study

The research questions in this study mainly include:

1. How does the leader-member exchange influence the innovative behavior of students in Yunnan College of Business Management, China?

2. What factor mediates the relationship between the leader-member exchange and students' innovative behavior in Yunnan College of Business Management, China?

1.3 Objectives of the Study

1. To explore the influence of leader-member exchange on innovative behavior of students in Yunnan College of Business Management.

2. To explore the factor mediating the relationship between leader-member exchange and innovative behavior.

3. To propose strategies to foster the development of students' innovative capabilities in educational practice.

1.4 Scope of the Study

Taking the students from Yunnan College of Business Management as the research sample, combining with their educational background and characteristics, self-efficacy was introduced as a mediator variable to construct a model of the influence of leading teachers' guiding style on college students' scientific research innovation behavior. Through the questionnaire survey

method to collect data analysis, verify whether the model is true. Finally, according to the research conclusions from different levels of the university students' scientific research innovation ability to improve the quality of our university students to provide new ideas. Through reviewing related literatures, this paper tries to understand the relationship between leader-member exchange, self-efficacy, and innovation behavior, which explore the concrete influencing factors of college students' innovation behavior, it provides an inspiration for higher education institutions to train innovative talents.

1.5 Significance of the Study

1.5.1 The theoretical significance

This research lies in its integration of relevant theoretical frameworks and empirical analysis to explore the impact of Leader-Member Exchange (LMX) on college students' innovation behavior. Drawing on social cognitive theory, social learning theory, and self-efficacy theory, the study investigates the mechanisms through which LMX affects innovative behavior among college students. Furthermore, it extends the research scope of LMX by examining its influence on the integration of college teachers and students, thereby addressing a gap in the literature. By introducing self-efficacy as a mediating variable between LMX and students' innovation behavior, the study constructs a mediating model to elucidate the influence mechanism. Overall, this research not only confirms the applicability of LMX in Chinese university settings but also contributes to a deeper understanding of the mechanisms underlying the impact of LMX on college students' innovation behavior (Windraya & Budi, 2021).

1.5.2 The practical significance

This research across three dimensions. Firstly, it enlightens college students on the criticality of subjective and objective factors in fostering innovative behavior. It underscores the importance of enhanced communication with educators and the establishment of conducive team environments, fostering individual self-efficacy. This fosters an environment conducive to achieving advanced innovation outcomes during teacher-led research and independent academic pursuits. Secondly, it offers colleges and universities insights into the nexus between Leader-Member Exchange (LMX) and students' innovation behaviors, guiding institutions to devise strategies for faculty training aimed at

refining teaching methodologies conducive to innovative student outcomes. Lastly, for educators, it serves as a catalyst for enhancing instructional practices, guiding students with precision, and fostering a culture conducive to innovation among college students(Zhang et al., 2021).

Chapter 2 Literature Review

2.1 Introduction

This chapter mainly summarizes the scholars' research on the related concepts and specific variables, which provides a theoretical basis for this study. At the same time, it analyzes the development background of LMX theory and the status quo of college students' innovative behavior, which lays a foundation for this study.

2.2 Literature Review

2.2.1 Leader and Member Exchange (LMX)

Leader-Member Exchange (LMX) refers to the quality of communication between leaders and followers within an organization, establishing different supervisory or role relationships (Le Blanc & González-Romá, 2012). Rooted in social exchange theory proposed in 1975, LMX is a complex concept associated with the formation of in-groups and out-groups. Initially termed vertical dyad linkage, LMX was conceptualized in the 1970s to describe the dyadic relationships between leaders and followers (Dansereau et al., 1975). Based on the principle that leaders create different relationships with their followers through varied types of communication (Graen & Uhl-Bien, 1995), high-quality LMX relationships entail attributes such as respect, trust, and mutual sense of responsibility, leading to emotional attachment between parties (Matta et al., 2015). In this context, both leaders and followers perceive these relationships as social and emotional, transcending mere transactional economic exchanges (Khusanova et al., 2019). This fosters a reciprocal cycle, as expressing care and concern toward subordinates enhances the leader-follower relationship. Empirical evidence suggests that LMX is associated with various organizational outcomes (D. Wang et al., 2016).

The relationship between leaders and members gradually forms through the process of role definition. Initially, interactions between leaders and subordinates occur within the performance of formally defined roles. However, as these relationships progress, they eventually develop interests and efforts beyond fixed roles, evolving into non-contractual social exchange relationships. This includes situations where leaders request cooperation from members in unstructured tasks or where members voluntarily engage in activities and assume responsibilities

beyond prescribed roles. When members accept leaders' requests and leaders acknowledge members' activities beyond their roles, trust is formed, fostering the development of closer relationships (Scandura & Graen, 1984).

When a high-quality communication relationship is established, both parties make the utmost effort to exchange more information, provide financial and non-financial support, and assist each other in growing within the organization. This relationship evolves into a partnership characterized by mutual trust, respect, obligations, and the pursuit of common goals, with both parties continuing to care about each other's job requirements and interests (Erdogan & Bauer, 2015). In this relationship, employees are endowed with greater job autonomy, decision-making power, and opportunities to influence operations, and they devote more energy to performing unstructured tasks. The empirical reseach verified that when the quality of Leader-Member Exchange (LMX) is high, leaders expand their psychological discretion over work, such as decision-making scope, authorization, feedback, and support, thereby establishing job autonomy (Sparrowe & Liden, 2005).

Empirical studies have revealed that high levels of Leader-Member Exchange (LMX) have a positive impact on employees' promotion frequency, organizational commitment, low turnover rates, positive performance evaluations, supervisors' interest and concern for employees, ideal work backgrounds, work attitudes, and participation levels (Memili et al., 2014). Additionally, LMX has been shown to correlate positively with Organizational Citizenship Behavior (OCB), which can be considered a representative form of extra-role behavior (Newman et al., 2017). From the perspective of Conservation of Resources theory, these provisions are viewed as crucial job resources obtainable from relationships with leaders. In other words, leadership support or positive relationships between leaders and members represent significant work resources that positively influence effective job performance (Bakker et al., 2008).

An empirical study applied Conservation of Resources theory, suggesting that LMX, as a job resource, can enhance job performance by reducing employee stress (McLarty et al., 2021). Scott and Bruce (1994) unveiled a positive impact of LMX on innovative behavior. argued that members' heightened awareness of LMX fosters innovative behavior conducive to organizational performance. Leaders granting organizational members greater discretion related to tasks strengthens their sense of responsibility for task performance. Since innovative behavior entails uncertainty, it can be considered a higher-order job requirement. Therefore,

the increase in innovative behavior is built on job resources obtained through highly interactive relationships with leaders (Janssen & Van Yperen, 2004).

2.2.2 Self-Efficacy

Self-efficacy is the belief in one's capability to organize and execute necessary actions to accomplish specific tasks or achieve desired outcomes (Bandura, 1977). It encompasses an individual's beliefs, motivational capabilities, cognitive resources, and the factors required to successfully complete specific tasks under particular circumstances (Stajkovic & Luthans, 1998). When faced with challenging problems, individuals with high self-efficacy attribute reasons to lack of effort and strive to enhance their abilities continually. Self-efficacy fosters an attitude of overcoming challenges rather than giving up, promoting a resilient response even in difficult situations to achieve high job performance. Conversely, individuals with low self-efficacy perceive their abilities as insufficient to achieve their goals, leading them to avoid or abandon tasks, even when they are relatively easy to accomplish (Schmidt & DeShon, 2010)

The higher the quality of LMX, the more formal and informal support members receive in terms of financial, non-financial, and social aspects(Graen & Uhl-Bien, 1995). Moreover, high-quality LMX ensures that members receive positive support, encouragement, and constructive feedback when fulfilling their responsibilities (Martin et al., 2016). This fosters the belief among members that they are capable of addressing increasingly difficult and complex problems.

Higher-quality LMX is associated with increased sense of responsibility and expectation of self-efficacy (Mathisen, 2011). Additionally, creativity and innovation differ from routine work. Innovative behavior entails considerable complexity and uncertainty; therefore, confidence in one's ability to perform creative and innovative work is essential for members to execute innovative actions effectively(Adil & Hamid, 2017). Members with high self-efficacy set more challenging goals, exert more effort to achieve them, and strive patiently toward their attainment (Prussia et al., 1998). Consequently, LMX enhances self-efficacy, which, in turn, fosters innovative behavior.

Hence, it can be inferred that self-efficacy serves as a parameter in the relationship between LMX and innovative behavior. As mentioned above, self-efficacy can be regarded as the judgment of whether a person can successfully complete a given task (Zimmerman, 2000). This implies an individual's confidence in their control and utilization of factors such as the knowledge and

skills required for task performance. Employees with strong self-efficacy tend to adopt a more proactive attitude towards demanding work requirements. Therefore, self-efficacy is highly likely to influence work behavior by reflecting individuals' perceptions of social and organizational resources. In other words, employees with self-efficacy are more likely to accept work resources, such as LMX, when they are provided (Breevaart et al., 2016). Moreover, individuals with high self-efficacy often engage in innovative behavior because they have the confidence, knowledge, and skills to generate ideas, apply them to work, and are more inclined to challenge and address uncertainty (Richter et al., 2012).

Furthermore, recent empirical research has indicated that self-efficacy is a precursor variable to innovative behavior (Newman et al., 2018). A previous study on self-efficacy revealed that LMX is a significant antecedent variable to self-efficacy (Mathisen, 2011). Additionally, self-efficacy serves as a mediator in the relationship between LMX and creativity, closely linked to innovative behavior (Liao et al., 2010). Moreover, a previous study indicated a positive correlation between self-efficacy and innovative behavior (Michael et al., 2011) [4]. Thus, there was anticipate positively relationship between LMX and self-efficacy, and infer that self-efficacy mediates the relationship between LMX and role extra-role behaviors, such as innovative behavior (Michael et al., 2011). Research suggests that self-efficacy serves as a parameter between leadership variables (such as LMX) and outcome variables related to employees (Sürücü et al., 2022).

2.2.3 Innovative Behavior

This paper focuses on the individual level, because in the process of internal entrepreneurship is the action of individuals or groups of individuals. Most scholars believe that individual innovative behaviors, such as the creative reorganization of resources to exploit opportunities, are an integral part of entrepreneurship (Shane, 2012). Despite some differences, both entrepreneurship and innovation within college students involve innovative activities, overcoming obstacles, and having business consequences (Sukkeewan et al., 2024). In fact, employee innovation at the individual level can be seen as the basis for entrepreneurship, which is usually a concept at the organizational level. Thus, employee innovation behavior is the micro-foundation of entrepreneurship within an organization (Felin et al., 2015). In this article, we define employee innovation behavior as the behavior of employees who generate or adopt new ideas and then try to implement them. There are many aspects of innovation

behavior that unfold over time. In general, the generation and subsequent execution of ideas are major components of innovation (Bledow et al., 2009). Innovation also has a social dimension, such as the need to influence and convince others of the value of an idea or the need to mobilize others to help implement new ideas. Previous studies on employee innovation behavior and internal entrepreneurship tend to focus on a simplified model of employee innovation behavior (Krause, 2004). We propose a model of college students' innovative behavior, which is one of the most fundamental technologies for achieving academic and professional goals, and research on students in educational settings is still limited(Chen & Chen, 2012). Universities also lack the necessary tools to create innovative undergraduate abilities. Innovation characteristics, leadership and competence all play an important role in innovation behavior. This gap provides a framework for studying the innovative behavior of college students (Chen et al., 2013).

2.3 Conceptual Framework

According to the analysis and summary of the influencing factors of college students' innovation, the influencing factors of college students' innovative behavior are leader and member exchange and self-efficacy. Therefore, the theoretical framework of this paper is as follows:

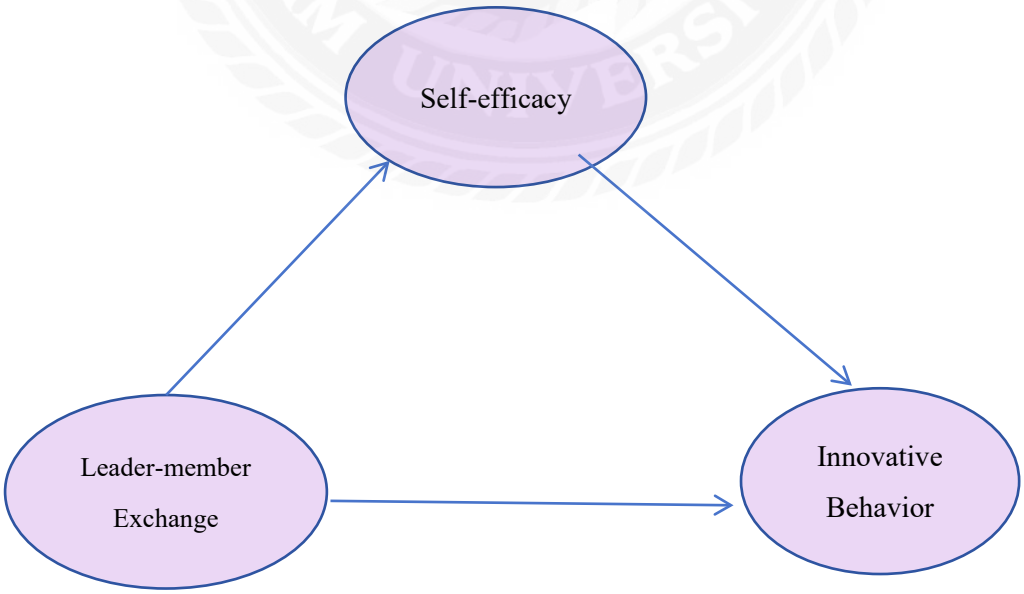

Figure 2.1 Conceptual Framework

2.4 Background of Yunnan College of Business Management

Founded in 1992, Yunnan College of Business management is one of the earliest private schools in Yunnan province. In 2014 approved by the Ministry of Education for the establishment of full-time ordinary undergraduate institutions.

The college has 11 secondary departments, including the School of Finance and Accounting, the School of Business, the School of Architecture and Engineering, the School of Information and Intelligent Engineering, the School of Arts and Media, the School of Education, the School of Medicine, and the Vocational College. In combination with the needs of the industry and the cultivation of applied undergraduate talents, the school has jointly established industrial colleges such as ICT, intelligent manufacturing, and big data with enterprises. There are 46 undergraduate majors offered, covering 9 disciplines including management, economics, engineering, medicine, science, education, literature, art, and law. There are currently 3 provincial-level first-class undergraduate major construction sites. As of March 2024, the school currently has 23749 enrolled students; Among them, there are 2749 senior students in 2020; There are 6130 junior students enroll in the 2021; There are 8061 sophomore students enroll in the 2022; There are 6809 first-year students enroll in the 2023.

Chapter 3 Research Methodology

3.1 Introduction

This study adopted the method of quantitative research. This chapter first analyzes the design of the study, then analyzes the sample size involved in the study and related data collection processes and methods, to find out the use of various variables of the scale, and finally analyzes the reliability and validity of the scale, lay the foundation for the following empirical analysis.

3.2 Research Design

This research adopted the quantitative research method, using a questionnaire to analyze the influence of leader-member exchange on innovative behavior of students in Yunnan College of Business Management. Based on the experience of using the classic scale, a unified five-point Likert scale was used, and the data were analyzed using Amos software, this paper reveals the relationship between leadership and member exchange and innovative behavior under the influence of self-efficacy as a mediator variable. The specific design is as follows.

3.2.1 Questionnaire Design

The research population was full-time students who have registered in Yunnan College of Business Management. Before designing the questionnaire, a lot of research literature was reviewed and consulted, and were invited scholars in management and innovation and entrepreneurship fields to review the questionnaire and put forward corresponding suggestions. According to their opinions and suggestions, the questionnaire was supplemented, modified and improved to form the investigation and research questionnaire.

Table 3.1 Questions on the characteristics of the respondents

Constructs	Questions Setting
Gender	1.Male; 2. Female
Age	1.18-19; 2.20-21; 3.22-23; 4.24-25; 5. above 26.
Background	1. Regular College Education; 2. Junior College Education
Grade	1.Freshman; 2. Sophomore; 3. Junior; 4. Senior

3.2.2 Questionnaire Items and Variables

This survey mainly measures the observed variables in classic scales and targets college students as respondents. Utilizing the Likert 5-point scale, this study designed a questionnaire comprising single-choice questions. The formulation of the questionnaire was informed by an extensive review of pertinent literature and integrated the theory of lead-member exchange (LMX) as it applies to the context of higher education in China. Specifically, the survey targeted students at Yunnan College of Business Management to identify the determinants of their innovative behavior.

In this study, the influence mechanism is divided into three types: independent variable, intermediate variable and dependent variable. The independent variable was lead-member exchange (LMX), the mediating variable was self-efficiency, the dependent variable was student's innovative behavior.

Lead-member exchange (LMX) was measured using seven items developed by Scandura and Graen (1984); Self-efficacy as a mediation measured using three items developed by Spreitzer (1995); Innovative behavior as a dependent variable was measured using six items developed by Scott and Bruce (1994).

Table 3.2 Measurement Scale

Constructs	Observed Variables
Leader-Member Exchange Scandura and Graen (1984)	Do you usually feel that you know where you stand? Do you usually know how satisfied your immediate supervisor is with what you do?
	How well do you feel that your immediate supervisor understands your problems and needs?
	How well do you feel that your immediate supervisor recognizes your potential?
	Regardless of how much formal authority your immediate supervisor has built into his or her position, what are the chances that he or she would be personally inclined to use power to help you solve problems in your work?
	Again, regardless of the amount of formal authority your immediate supervisor has, to what extent can you count on him or her to “bail you out” at his or her expense when you really need it?

	I have enough confidence in my immediate supervisor that I would defend and justify his or her decisions if he or she were not present to do so.
	How would you characterize your working relationship with your immediate supervisor?
Self-Efficacy Spreitzer (1995)	I am confident about my ability to do my job.
	I am self-assured about my capabilities to perform my work activities.
	I have mastered the skills necessary for my job.
Innovative Behavior Scott and Bruce (1994)	I search out new technologies, processes, techniques, and/or product ideas.
	I generate creative ideas.
	I promote and champions ideas to others.
	I investigate and secures funds needed to implement new ideas.
	I develop adequate plans and schedules for the implementation of new ideas.
	I am innovative.

3.3 Hypotheses

H1: Leader-member exchange has a positive effect on innovative behavior.

H2: Leader-member exchange has a positive effect on self-efficacy.

H3: Self-efficacy has a positive effect on innovative behavior.

H4: Self-efficacy mediates the relationship between leader-member exchange and innovative behavior.

3.4 Population and Sample Size

This research took the students of Yunnan College of Business Management as the research subjects. The purpose of this study is to explore the impact of leader and member exchange theory on college students' innovative behavior. The database of this study is described in terms of sample size and problem set. The following is a detailed description of the study database. Sample size: according to Saunders et al. (2007), the current student population of Yunnan College of Business Management is 23,749. In alignment with the research objectives and the questions posed, a sample size of 383 was determined to be

adequate to ensure the statistical validity of the study. However, to bolster the reliability of the findings, the study ultimately garnered 438 valid responses, exceeding the initial estimate and thus providing a more comprehensive dataset for analysis.

3.5 Data Collection

This research mainly used the questionnaire survey method to collect the data. The steps of data collection are as follows: first, in order to facilitate data collection, this study designed a questionnaire, divided into two parts: the first part includes basic information, in the second part, a Likert scale survey was conducted on leadership and member exchange, self-efficacy and college students' innovative behavior, to understand the attitude of the respondents for subsequent data processing and results analysis. Secondly, data were collected between January and March 2024, primarily from students at Yunnan College of Business Management, using an online star-rating platform for the questionnaire. Finally, 485 questionnaires were distributed during the period of data collection, data were cleaned up and screened, and some invalid questionnaires were eliminated to ensure the quality and reliability of the data. A total of 438 valid questionnaires were obtained, and the effective rate was 90.30%, which can be used as a basis for further research This study provides a full research and analysis database of research with descriptions of data collection methods, a detailed schedule, and a widely collected questionnaire. Clarifying the number of data collection processes and their results has a critical impact on ensuring the reliability and accuracy of studies.

3.6 Data Analysis

In this article, the questionnaire was rated using a 5-point Likert scale, and the collected data was analyzed using AMOS and SPSS. The questionnaire consists of a series of scales, each with five levels, from "strongly disagree" to "strongly agree", as shown below: 1) represents "strongly disagree"; 2) represents "disagree"; 3) represents "somewhat agree": 4) represents "agree"; 5) represents "strongly agree". Respondents were asked to choose the option that best reflects their views or attitudes.

The Likert 5-point scale is a concise scoring method that allows respondents to quickly understand and make choices. This method provides a standardized

method for comparing and evaluating multiple options, as well as quantitative data to assist in statistical analysis and comparison.

3.7 Reliability Analysis of the Scale

3.7.1 Reliability Analysis of the Questionnaire

Reliability is a measure of the overall Reliability of a questionnaire. Because in most cases, the questionnaire is in the form of a scale, the rationality and accuracy of the question design, will have a direct impact on the reliability and referential quality of the results. The questionnaire used in this study was adapted and adjusted based on previous studies and was robust. In order to test the hypothesis, the reliability of the questionnaire was analyzed. It is generally accepted that the minimum acceptable level of reliability factors is higher than 0.7 (Hair et al., 2011). The reliability of the collected data was checked using SPSS 26 software. See Table 3.3.

Table 3.3 Reliability of Item-Total Statistics

Constructs	CITC	SMC	CAID	CA
LMX1	0.870	0.789	0.954	
LMX2	0.880	0.809	0.954	
LMX3	0.884	0.813	0.953	
LMX4	0.867	0.763	0.955	0.961
LMX5	0.837	0.741	0.957	
LMX6	0.856	0.759	0.955	
LMX7	0.846	0.726	0.956	
SE1	0.830	0.708	0.894	
SE2	0.877	0.771	0.856	0.921
SE3	0.813	0.672	0.908	
IB1	0.853	0.756	0.956	
IB2	0.900	0.843	0.951	
IB3	0.908	0.847	0.950	0.961
IB4	0.827	0.727	0.960	
IB5	0.879	0.792	0.953	
IB6	0.896	0.808	0.951	

Note: **CITC**=Corrected Item-Total Correlation; **SMC**=Squared Multiple Correlation; **CAID**=Cronbach's Alpha if Item Deleted; **CA**=

Cronbach's Alpha.

3.7.2 Validity Analysis of the Questionnaire

Validity analysis is a test of the rationality of quantitative data design. The more consistent the data collected with the content of the study, the more effective it will be. Using online SPSS Software, KMO and Bartlett tested the study data to verify its validity. The KMO value of the study data was 0.968 and the KMO value was greater than 0.6. Significance is less than 0.05. Only one dimension was extracted in principal component analysis (PCA), 75.375% of which was suitable for information extraction.

KMO and Bartlett's Test

KMO Value		0.973
Bartlett's Test	Approx. Chi-Square	30445.367
	df	120
	Significance	0.000
Cumulative variance explanation rate %		75.38%

Note: Significance=P Value < 0.001; df= Degree of Freedom.

Chapter 4 Findings

4.1 Introduction

Based on the above-mentioned research design and data collection, this chapter focuses on the analysis and summarization of relevant data, the identification of specific issues, and the exploration of the factors that influence students' innovative behavior under the leadership and membership exchange theory, finally, the validity of the above hypothesis is verified.

4.2 Descriptive Statistical Analysis

After collecting and arranging the questionnaires, the data were sorted and summarized, the basic situation of college students was analyzed, and the factors that affect their innovative behavior were analyzed. The characteristics of respondents in this survey are descriptive statistics in Table 4.1

Table 4.1 Sample Descriptive Statistical Analysis

Variables	Percentage
Gender	
Male	**53.8 (236)**
Female	**47.2(202)**
Age	
18-19	**8.5 (37)**
20-21	**32.5 (142)**
22-23	**40.2 (176)**
24-25	**16.1 (71)**
26 and above	**2.7 (12)**
Education	
Regular College Education	**73.5 (322)**
Junior College Education	**26.5 (116)**
Level	
Fresh	**16.7 (73)**
Sophomore	**29.1 (128)**
Junior	**31.3 (137)**
Senior	**22.9 (100)**

4.3 Confirmatory Factor Reliability and Validity Analysis

When conducting Structural Equation Modeling (SEM) studies, researchers typically evaluate the measurement model (whether the measured variable accurately reflects the desired latent variable) before evaluating the structural model. But the particular latent variables in the model are not worthy of further attention, so it makes little sense to link constructs in the SEM model. In many cases, issues with the SEM model stem from those within the measurement model, which can be effectively identified and assessed through Confirmatory Factor Analysis (CFA) by examining the latent variables within the conceptual model individually (Jackson et al., 2009).

Table 4.2 LMX Standardized Regression Weights

Items			Estimate	CA
LMX7	<---	LMX	0.860	
LMX6	<---	LMX	0.865	
LMX5	<---	LMX	0.845	
LMX4	<---	LMX	0.884	**0.961**
LMX3	<---	LMX	0.913	
LMX2	<---	LMX	0.910	
LMX1	<---	LMX	0.899	

Note: CA=Cronbach Alpha

LMX=Leader-Member Exchange

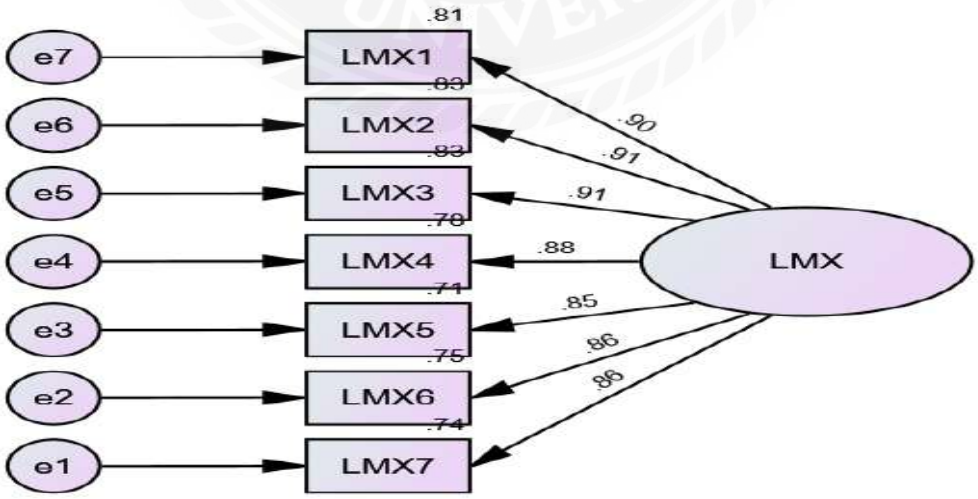

Figure 4.1 CFA Assessment of LMX

The path coefficient of LMX was higher than 0.700, and the item reliability was equal the square of path coefficient, SMCs were greater than 0.5 which mean the outcomes were acceptance.

Table 4.3 SE Standardized Regression Weights

Items			Estimate	CA
SE3	<---	SE	0.853	
SE2	<---	SE	0.948	**0.921**
SE1	<---	SE	0.877	

Note: CA=Cronbach Alpha

SE=Self-Efficacy

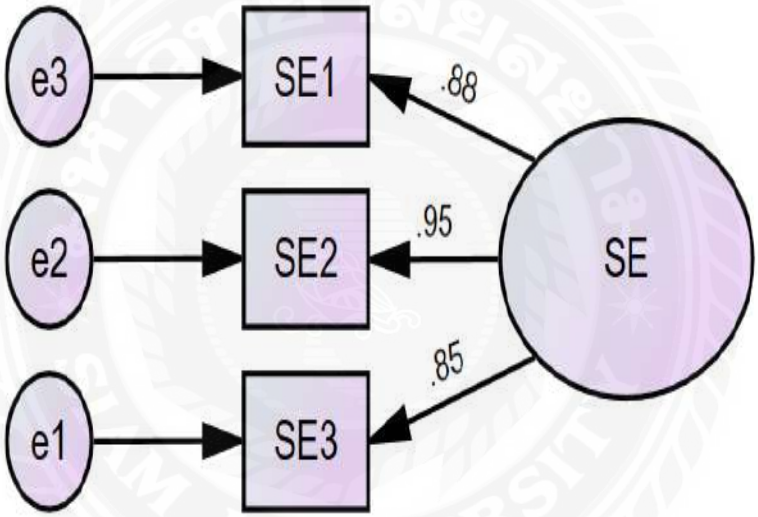

Figure 4.2 CFA Assessment of SE

The path coefficient of SE was higher than 0.700, and the item reliability was equal the square of path coefficient, SMCs were greater than 0.5 which mean the outcomes were acceptance.

Table 4.4 IB Standardized Regression Weights

Items			Estimate	CA
IB6	<---	IB	0.916	
IB5	<---	IB	0.882	**0.961**
IB4	<---	IB	0.834	
IB3	<---	IB	0.938	

IB2	<---	IB	0.933
IB1	<---	IB	0.883

Note: CA=Cronbach Alpha IB=Innovative Behavior

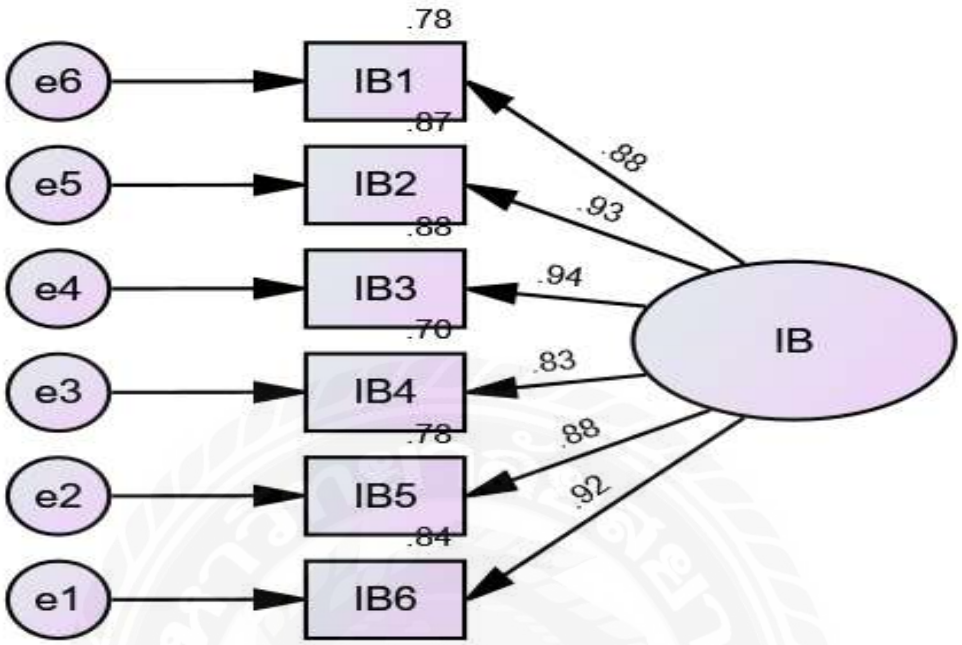

Figure 4.3 CFA Assessment of IB

The path coefficient of IB was higher than 0.700, and the item reliability was equal the square of path coefficient, SMCs were greater than 0.5 which mean the outcomes were acceptance.

Utilized the CFA to assessment of each construct. The LMX, SE and IB, the path coefficient and the item reliability were fit the criterion (See Table 4.2-4.4). So, the study would choose other method to calculate the model fit of the research model. The research study each construct CFA analyzed before the informed research model. See Table 4.5

Table 4.5 Each Construct CFA Analyzed

Construct	**Items**	**Unstd**	**S.E.**	**T**	**P**	**Std**	**SMC**	**CR**	**AVE**
	LMX7	1				860	740		
LMX	LMX6	1.06	0.023	45.539	***	865	748	961	779
	LMX5	1.051	0.024	43.602	***	.845	.714		
	LMX4	1.115	0.023	47.487	**	.884	.781		

	LMX3	1.129	0.022	50.778	***	.913	.834		
	LMX2	1.114	0.022	50.414	***	.910	.828		
	LMX1	1.096	0.022	49.2	***	.899	.808		
	SE3	1.007	0.023	44.737	***	.853	.728		
SE	SE2	1.078	0.021	51.477	***	.948	.899	922	800
	SE1	1				.877	.769		
	IB6	1				.916	.839		
	IB5	1.002	0.018	54.708	***	.882	.778		
	IB4	1.015	0.021	47.807	***	.834	.696		
IB	IB3	1.025	0.016	65.744	***	.938	.880	962	807
	IB2	0.993	0.015	64.465	***	.933	.870		
	IB1	0.947	0.017	54.867	***	.883	.780		

Note: SMC=Item Reliability

Table 4.6 Convergent and Discriminant Validity

	AVE	**LMX**	**SE**	**IB**
LMX	0.779	0.883		
SE	0.800	0.826	0.894	
IB	0.807	0.859	0.813	0.898

Note: Square root of AVE in bold on diagonals. Off diagonals are Pearson correlation of constructs.

Composite reliability (CR) is the combination of all construct reliability, indicating the internal consistency in scale items, much like Cronbach's alpha. The higher CR indicates the higher internal consistency of the dimension, 0.700 is an acceptable threshold. During the CFA, the CR of LMX, SE, and IB were

0.961, 0.922, and 0.962, which higher than 0.700.

Average of variance extracted (AVE) is represented the items average interpretated ability to the constructs. The AVE should be higher than 0.500, in which between 0.36-0.500 is acceptance (Fornell & Larcker, 1981). During the CFA, the AVE of LMX, SE, and IB were 0.779,0.800, and 0.807.

Discriminant validity is a subtype of construct validity which shows how well a test measures the concept it was designed to measure. It is the square root of AVE in bold on diagonals. Off diagonals are Pearson correlation of constructs.

Based on the CFA research, the study reduces the problem of the research framework which the CR, convergent validity, discriminant validity, and path coefficient were acceptance.

4.4 Reliability and Validity Analysis of the Structural Equation Model

This research used Amos 26.0 to conduct CFA to determine the model's reliability and validity which analysis to test our research hypotheses, and followed the recommendations of Preacher and Hayes (2008) in using the bootstrapping approach to test the mediation hypothesis. The mediation hypothesis was analyzed by calculating the index of mediation introduced by Hayes (2018).

4.4.1 The Measurement Model

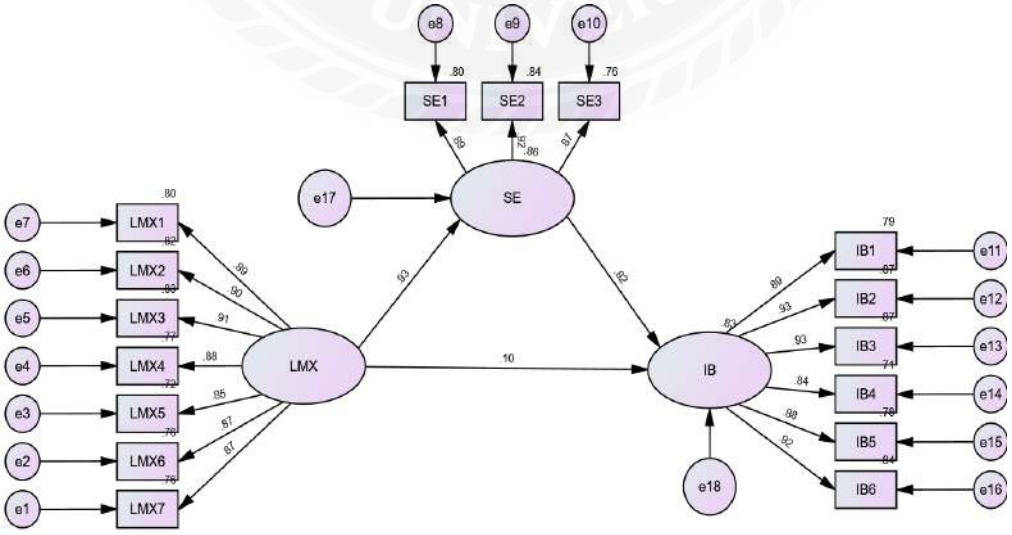

Figure 4.4 The Research Framework

Consistent with previous research, after conducting the Confirmatory Factor Analysis (CFA), the outcomes exceeded the established criteria. Therefore, both the measurement model and the structural model of the Structural Equation Model (SEM) were deemed acceptable(See Table 4.6).

Table 4.6 The SEM of Reliability and Validity Analysis

Construct	Items	Unstd	S.E.	T	P	Std	SMC	CR	AVE
LMX	LMX7	1				0.872	0.760	0.961	0.780
	LMX6	1.052	0.022	47.525	***	0.870	0.757		
	LMX5	1.04	0.023	45.149	***	0.848	0.719		
	LMX4	1.094	0.023	48.599	***	0.879	0.773		
	LMX3	1.114	0.021	52.785	***	0.913	0.834		
	LMX2	1.091	0.021	51.538	***	0.903	0.815		
	LMX1	1.075	0.021	50.429	***	0.895	0.801		
SE	SE1	1				0.893	0.797	0.923	0.800
	SE2	1.024	0.018	55.721	***	0.917	0.841		
	SE3	1.013	0.02	49.668	***	0.873	0.762		
IB	IB1	1				0.887	0.787	0.962	0.808
	IB2	1.041	0.018	58.13	***	0.930	0.865		
	IB3	1.072	0.018	58.814	***	0.935	0.874		
	IB4	1.073	0.023	45.831	***	0.840	0.706		
	IB5	1.055	0.021	51.185	***	0.884	0.781		
	IB6	1.049	0.019	55.661	***	0.915	0.837		

Note: SMC=Item Reliability

4.4.2 The Structural Model

A full latent model was developed, and this is shown in Figure 2.1. Taking into consideration the effects of SE, the AMOS Output for Figure 2 is shown in the model. The full latent model was formed from the modified CFA of each construct with acceptable model fit estimates (CMIN/DF = 6.914, CFI=0.954, SRMR = 0.0264, RMSEA=0.096 based on the thresholds published by Hu and Bentler (1999). But in AMOS the samples were not the normality distribution, and the Chi-square was extended (Bollen & Stine, 1992). The final model fit estimates (CMIN/DF = 2.736, CFI=0.954, GFI=0.99, AGFI=0.98, NFI=0.99, RMSEA=0.03) which fit the thresholds.

4.5 The Direct Effect

Based on the developed model, we have formulated research hypotheses. Utilized the Maximum Likelihood Estimation to estimate the relationship between the LMX, SE, and IB (See Table 4.7). The hypotheses of direct effect were supported.

Table 4.7 The Direct Effect

Hypotheses			Unstd	S.E.	T-value	P	Std	Supported
SE	<---	LMX	0.990	0.023	43.599	***	0.926	YES
IB	<---	SE	0.812	0.051	15.99	***	0.822	YES
IB	<---	LMX	0.103	0.051	2.013	*	0.098	YES

Note: ***P<0.001; *P<0.05.

4.6 The Intervening Variable Effect

Baron and Kenny (1986) proposed that the value of path coefficient (Path a, b) was significantly account for variation mean the variable had mediated function. Hayes (2009) stated that Sobel test was a supplement to Baron and Kenny approach rather than instead of it. But the two methods were just simple Z test, and the sampling size was not fit the normality distribution. This study focused on the bootstrapping as better of the two options to calculate this framework (See Table 4.5).

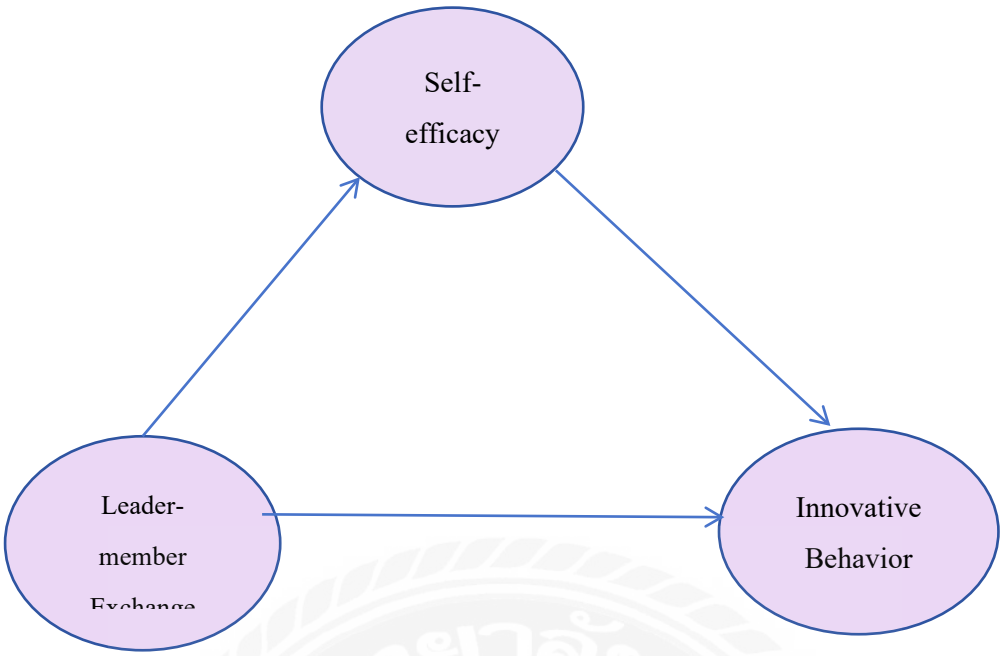

Figure 4.5 The Intervening Effect

The process was repeated for a total of 5000 times. Using the 2000 to generate a 95% confidence interval. This procedure yields a percentile-based bootstrap and adjusted to yield a bias corrected or a bias-corrected and accelerated confidence interval. The two-tailed significance prove that the SE could partial mediated the relationship between LMX and IB (See Table 4.8).

Table 4.8 Standardized direct, indirect, and total effects of the hypothesized model

Point Estimate	Product of Coefficient		Bootstrapping				
			Bias-Corrected 95% CI		Percentile 95% CI		Two-tailed Significance
	SE	Z	Lower	Upper	Lower	Upper	
LMX→IB Total Effect							
0.908	0.024	37.833	0.858	0.954	0.858	0.955	***
LMX→IB Indirect Effect							
0.804	0.08	10.050	0.658	0.972	0.659	0.973	***
LMX→IB Direct Effect							
0.103	0.083	1.241	-0.067	0.26	-0.068	0.258	N.S.

Note: 2000 Bootstrap Samples; ***P < 0.001; N.S.=Non-Significance.

4.7 Hypotheses Testing and Results

The four hypotheses proposed in the research were tested, and the hypotheses were supported as shown in the table below:

Table 4.9 Hypotheses testing and results

No.	Hypotheses	Supported
H1	Leader-member exchange has a positive effect on innovative behavior.	YES
H2	Leader-member exchange has a positive effect on self-efficacy.	YES
H3	Self-efficacy has a positive effect on innovative behavior.	YES
H4	Self-efficacy mediates the relationship between leader-Member exchange and innovative behavior.	YES

Chapter 5 Conclusion and Recommendation

5.1 Introduction

This chapter focuses on the application of the previous chapter of structural equation data analysis, obtain the corresponding results, and explain that supported the research objectives. The independent variables and mediating factors affecting innovation behavior were analyzed.

5.2 Conclusion

Lead-member exchange (LMX) has a positive impact on innovative behavior because followers of lead-member exchange (LMX) can gain more support and resources from leaders to implement innovation. In colleges and universities, students who are followers can get more support from teachers, first, because LMX helps students generate innovative ideas. High LMX students are more likely to receive domain-related knowledge from teachers and to have teachers share their technical expertise and understanding of work-related issues with students. Such knowledge and experience may provide cognitive stimulation to these students, thus stimulating them to produce more creative thinking. Second, students with high-quality LMX are more likely to convince other important team members to embrace new ideas and establish the support and collaboration needed to implement them. An individual who is perceived as having a close relationship with the teacher may also be viewed positively by other students in the group because of the perceived cognitive pressure in the observer's perception. Therefore, high LMX will enhance the reputation and credibility of focus students within the group. Students with high-quality LMX are also perceived as more powerful and influential because they are more likely to receive valuable information and resources from their teachers than students with low LMX. As a result, high LMX students earn the respect and trust of the rest of the team. With the support of teachers, high LMX students will have more confidence to promote and implement new ideas within the organization.

This study reveals the mediating role of self-efficacy as a mechanism to explain the relationship between LMX and innovative behavior. This is consistent with previous findings that self-efficacy is a parameter between leadership variables such as LMX and employee-related dependent variables. In the university environment, students with a strong sense of self-efficacy will choose a supportive environment to

achieve their learning goals and be more sensitive to external factors that contribute to the learning process. It can therefore be inferred that self-efficacy, as a personal-mediated resource, generates positive relationships with teachers in the learning environment, teachers play an active role in influencing this important learning resource. One of the main interests of leadership research is to reveal the concrete process of leadership influence. The conclusion of this study is that the whole process of LMX improving college students' self-efficacy and inducing innovative behavior is hypothesized and verified.

5.3 Recommendation

Firstly, encourage teachers to build quality relationships with all students in their teams. Train teachers to improve their communication, empathy, and mentoring skills, and promote positive communication with team-based students. Establish clear expectations and guidelines for fair treatment and equal opportunities within the organization to promote trust and transparency in teacher-student relations. Foster an open and collaborative culture in which teachers and students can easily share ideas, concerns, and feedback.

Secondly, create a supportive organizational climate in universities that fully empowers and values creativity, experimentation, and risk-taking. Encourage and recognize students' innovative efforts and promote students' sense of ownership. Micro-panning student teams provide resources such as mentors, time, funding and technology to support innovation programs and projects. Promote interdisciplinary collaboration and multiple perspectives to stimulate creative thinking and problem-solving skills. To establish the mechanism of the creation, evaluation and implementation of innovation consciousness, such as Innovation Laboratory and Innovation Institute.

Finally, provide teacher training and development programs aimed at increasing students' self-efficacy beliefs, with a focus on building innovative skills, setting innovative goals and overcoming barriers to innovation. Provide constructive feedback and recognition to strengthen students' confidence in their abilities and achievements. Foster a supportive work environment that encourages risk-taking and learning from failure, rather than punishing mistakes. Promote self-reflection and self-awareness among students in order to identify their strengths and areas of expertise and empower them to take the initiative and pursue challenging tasks. Students are encouraged to look for mentors or role models who can provide guidance and support in building self-efficacy.

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