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## Welcome Address from President, Sripatum University

Welcome to the twelfth volume of International Journal of Management, Business, and Economics (IJMBE). IJMBE is dedicated to increasing the depth of the subject across business disciplines with the ultimate aim of expanding knowledge of the subject. The IJMBE is a thrice peer-reviewed journal published by Graduate College of Management, Sripatum University; University of Greenwich; and Lincoln University.

In retrospect, Sripatum University, one of the oldest and most prestigious private universities in Thailand, was established in 1970 by Dr. Sook Pookayaporn by the name "Sripatum College." The name "Sripatum" meaning "Source of Knowledge Blooming like a Lotus" was conferred on the college by Her Royal Highness the Princess Mother. In 1987, the college was promoted to university status by the Ministry of University Affairs, and has since been known as Sripatum University. The university's main goal is to create well-rounded students who can develop themselves to their chosen fields of study and to instill the students with correct attitudes towards education so that they are enthusiastic in their pursuit of knowledge and self-development.

To strive to be among the best, this second issue of the IJMBE is therefore instrumental for the most important academic growths to extend a high quality tradition in the education field to the world. The journal welcomes the submission of manuscripts that meet the general criteria of significance and scientific excellence, and will publish original articles in basic and applied research, case studies, critical reviews, surveys, opinions, commentaries and essays. It is hoped that this second issue will set a new benchmark in terms of academic publications. Through the support of our Editorial and Advisory Boards, I hope this journal could provide academic articles of the highest quality to all readers.



Dr. Rutchaneeporn Pookayaporn Phukkamarn  
President, Sripatum University

## Welcome Address from Dean, Sripatum University

It is appropriate to celebrate the continuity of an exciting and esteemed journal. The IJMBE will serve and provide a forum for exchange of ideas among business executives and academicians concerned with Management, Business, and Economics issues. With the rapid evolution of corporate business from international to global in recent years, general business has been one of the areas of greatest added complexity and concern for corporate managers. The IJMBE will be an academic journal combining academic inquiry and informed business practices. It will publish empirical, analytical, review, and survey articles, as well as case studies related to all areas of Management, Business, and Economics. A sentiment often expressed by practitioners is that academic research in general may not be addressing the most relevant questions in the real world.

It is fair to say that the IJMBE will publish high-quality applied-research papers. Nevertheless, studies that test important theoretical works and shed additional light on the issue with some business implications will also be solicited. Each submitted paper has been reviewed by several members of the IJMBE international editorial board and external referees. On the basis, we would like to thank all of them for their support with review process of submitted papers.

I cordially invite papers with theoretical research/conceptual work or applied research/applications on topics related to research, practice, and teaching in all subject areas of Management, Business, and Economics, or related subjects. I welcome paper submissions on the basis that the material has not been published elsewhere. The ultimate goal is to develop a journal that will appeal to both management and business practitioners. I expect the IJMBE to be an outstanding international forum for the exchange of ideas and results, and provide a baseline of further progress in the aforementioned areas.



Assoc. Prof. Dr. Vichit U-on  
Dean, Graduate College of Management  
Sripatum University

## The Editors

### Editor-In-Chief



Dr. Ungul Laptaned is an Assistant Professor in the Graduate College of Management, Sripatum University. He graduated with a Ph.D. in 2003 from the University of Nottingham, United Kingdom in the field of Manufacturing Engineering and Operations Management. Ungul has published over 60 proceedings and journal papers; for instances, Industrial Engineering Network, Asia Pacific Industrial Engineering and Management, International Association of Science and Technology for Development, Operations and Supply Chain Management, Intelligent Manufacturing System, Business and Information, etc. He served as a program chair and a steering committee for several domestic and international conferences. He was a journal editor of International Journal of Logistics and Transport, and Thai Researchers' Consortium of Value Chain Management and Logistics Journal, and has consulted for several public organizations and industrial firms on logistics and supply chain management such as Thailand Research Fund, Phitsanulok Province, Public Warehouse Organization, Amatanakorn Industrial Estate, Wyncoast Industrial Park, Iron and Steel Institute of Thailand, Chacheongsao Province, JWD Infologistics Co., Ltd., Kerry Distribution (Thailand) Co., Ltd., TKL Logistics and Supply Chain Co., Ltd., and Ministry of Transport (Thailand).

### Associate Editor



Dr Ioannis Manikas holds a Bachelor in Agriculture and a Master of Science in the field of logistics from Cranfield University. He holds a PhD from the Department of Agricultural Economics in AUTH and his primary interest includes supply chain management, logistics and agribusiness management. Dr Manikas has conducted research for projects regarding supply chain modelling, development of IT solutions for agrifood supply chain management and traceability both in Greece and the UK. He has a wide experience in the elaboration of research proposals under FP6, FP7, and Eurostars-Eureka funding mechanisms; lifelong learning oriented programmes such as Leonardo; and Interregional development programmes such as Interreg III and Interreg IV. His work as a self employed project manager and consultant in the agrifood sector includes the design and development of regional operational programmes; analysis of regional needs and respective development policies focused on rural and food production; definition of funding areas and financing resources; definition of strategic goals for regional development and formulation of respective performance monitoring systems; and assessment (ex-ante, on-going, ex-post) of the implementation of EC and national funding mechanisms in national and regional levels.

### Guest Editor



Dr. Gilbert Nartea is an Associate Professor in the Waikato Management School, University of Waikato, New Zealand. Dr. Nartea graduated a Master's Degree from New England and a Ph.D. from Illinois, USA. He is a senior lecturer in Finance. His teaching interests are in the area of investments, futures and options, and finance, futures and options. The area of research interests area asset pricing, investment management, decision-analysis and risk management, and microfinance and poverty alleviation. He has published several papers in such journals as of Property Investment and Finance, International Journal of Managerial Finance, Asian Journal of Business and Accounting, Australian Journal of Agricultural and Resource Economics, Pacific Rim Property Research Journal, Review of Applied Economics, Review of Development Cooperation, American Journal of Agricultural Economics, and Journal of the American Society of Farm Managers and Rural Appraisers.

## Foreword

Welcome to the 2<sup>nd</sup> issue of the 12<sup>th</sup> volume of International Journal of Management, Business, and Economics (IJMBE), the Editors received a number of papers from different countries such as China and Thailand. The received papers encompassed many areas of marketing, banking, economics, insurance and risk management, industrial and operation management, strategic management, and international and global business management. After the review process, a total of ten manuscripts were selected for publication.

The first article is conducted by *Dezhang Cheng*, and is entitled “*The Empirical Research on the Resilience of Cross-border Logistics Enterprises, Based on the Competence Perspective of Dynamic Capability Theory*”. This paper discusses the connotation, essence and components of the resilience of cross-border logistics enterprises, constructing an analysis model for the study of the resilience of cross-border logistics enterprises.

The second article is authored by *Hangcheng Yan*, and named as “*A Study on the Impact of Pricing Methods on Purchasing Willingness of Nearly Expired Food, Based on Semantic Priming Theory*”. This study attempts to explore how integer and exact prices affect the psychology and behavior of consumers in this special purchasing context.

Article number third is written by *Jingqiu Zhang and Jun Jiang*, and is entitled “*The Impact of Digital Transformation Strategy on the Innovation Performance of Commercial Banks in China*”. This study explores the relationship between digital transformation strategy, organizational learning capability, and innovation performance in commercial banks.

The fourth paper is examined by *Kang Gu and Xiaowen Jie*. Their paper is entitled “*A Study on the Impact of Energy Industry Transformation on Economic Quality*”. This article defines the concepts of energy transition and economic growth quality by combining domestic and foreign research.

In the fifth article, entitled “*Quality of Work Life Affecting Organizational Commitment of Government Agencies’ Staff in Thailand*” conducted by *Praphan Chaikidurajai*. This research aimed to investigate the quality of work life affecting organizational commitment of government agencies’ staff in Thailand.

In the sixth article, entitled “*The Influencing Factors of International Marketing Strategy for IKEA Groups Products*” is conducted by *Qiao Hanbing*. This study reviewed the existing research on international corporate marketing strategies, delved into the factors that influence international marketing strategies.

The seventh article is conducted by *Qinshiyi Yan*, and is entitled “*Social Stratification of Coffee consumption Groups in Guangxi, Research on the Mechanism of Influence on Consumption Behavior: The Moderating Role of Price Sensitivity*”. The study examines how different social strata perceive and accept varying price ranges for coffee.

The eight article is authored by *Rongchang Yang*, and is entitled “*Research on the Development Model of Yunnan Ethnic Minority*”. This study proposes strategies such as increasing capital investment, strengthening talent cultivation and introduction, expanding markets, and improving policy support.

Article number nine is entitled “*A Review of the Relationship between Information Integration, Resilience, and Operational Performance Agricultural Product Supply Chains*”, and is examined by *Xian Zhang*. This article summarizes the relationship between information integration, resilience, and operational performance of agricultural product supply chains through a systematic literature review.

Last but not the least, the article entitled “*A Review of Research on the Relationship between Students’ Informal Course Time Management Tendencies, Self-Efficacy and Grades*”, is conducted by *Yuanyuan Zhang*. This study reviewed relevant literature and summarized the current research status of scholars on the relationship between students’ informal course time management tendencies, academic self-efficacy.

It is hoped that you will enjoy reading these articles and that they will generate responses and discussions that will help advance our knowledge of the field of Management, Business, and Economics. The Editors and the Editorial Board of the IJMBE would like to welcome your future submissions to make this journal your forum for sharing ideas and research work with all interested parties.

Ungul Laptaned  
Editor-In-Chief

Associate Editor  
Ioannis Manikas

Guest Editor  
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# **The Empirical Research on the Resilience of Cross-border Logistics Enterprises, Based on the Competence Perspective of Dynamic Capability Theory**

by

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## **Abstract**

With the rapid development of economic globalization and science and technology, the external environment of cross-border logistics companies changes drastically. It is an important topic with theoretical value and practical significance that how to renew enterprise capability system and form enterprise resilience in complex and turbulent environment. Based on the review of the relevant research results on the resilience of cross-border logistics enterprises, this paper discusses the connotation, essence and components of the resilience of cross-border logistics enterprises, constructing an analysis model for the study of the resilience of cross-border logistics enterprises based on the competence perspective of dynamic capability, and discusses the formation mechanism and action mechanism of the resilience of cross-border logistics enterprises. This paper studies the absorptive capability and process of dynamic evolution and transition of resilience of cross-border logistics enterprises, analyzes the micro-basis and influencing factors of resilience formation of cross-border logistics enterprises, and puts forward relevant management strategies for cultivating and improving absorptive capability of cross-border logistics enterprises. This research selects 319 import-export enterprises as the samples, and uses hierarchical regression method for data analysis. The results show that the absorptive capability of cross-border logistics enterprises has a significant positive impact on enterprise resilience. The findings of this research not only enrich the relevant theories on absorptive capability and enterprise resilience, but also can guide cross-border logistics enterprises to take relevant managerial measures to improve the absorptive capability, to promote the optimization of organizational design within the enterprise, and strengthen brand building, thus improve the resilience of the enterprise. The empirical analysis of this study verified the impact mechanism of dynamic capabilities as independent variables, network embeddedness as intermediary variables, and demonstrated the cross-border logistics enterprise resilience model. Based on the results of this research, it helps cross-border logistics companies realize resource reconstruction and capability transition, dynamically align the company's internal capabilities with the changing requirements of the external environment, and continuously improve the company's resilience.

**Keywords:** Cross-Border Logistics Enterprise, Absorptive Capability, Enterprise Resilience, Dynamic Capability, Network Embeddedness

## 1. Introduction

In recent years, cross-border logistics enterprises have encountered significant challenges due to unprecedented global disruptions. The COVID-19 epidemic that began in 2020 forced most governments to stall economic activities, triggering a global economic slowdown. In parallel, trade protectionism quickly replaced the previously dominant trend of trade liberalization. According to Global Trade Alert (GTA), China has been one of the primary targets of anti-dumping and anti-subsidy actions from 2008 to 2021. Meanwhile, China's gross manufacturing product has reached nearly 30%, underscoring its dominant position in the global manufacturing landscape. China is not only a global power in manufacturing but also the largest importer and consumer of primary products worldwide. The country's consumption of soybeans, iron ore, crude petroleum, and other primary commodities has increased rapidly, with an import dependence rate exceeding 70%. However, external shocks have profoundly disrupted trade and logistics. The outbreak of the Russia-Ukraine war has severely impacted China-Europe freight train operations, thereby altering China's import and export structure. Moreover, due to the Houthi Group's control over the Bab el-Mandeb Strait, maritime carriers have been forced to reroute around the Cape of Good Hope, extending shipping durations between the Far East and Europe by more than 20 days.

In light of these events, improving the resilience of cross-border logistics enterprises has become both a direct response to international geopolitical risks and an urgent requirement to mitigate trade fluctuations. Whether triggered by internal limitations or external uncertainties, resilience-building has become an essential aspect of the survival and development strategy for cross-border logistics firms. Despite its critical importance, enterprise resilience has rarely been the focus of prior research on cross-border logistics enterprises. Since the COVID-19 pandemic, various government-imposed control measures have had a profound impact on the operation of ports and docks, directly disrupting supply chains. This shift has prompted more scholars to explore how resilience applies to logistics enterprises operating across borders. As a globally-operated and fully market-oriented industry, the cross-border logistics sector must develop insights and secure resources based on its internal capabilities. Accordingly, the concept of dynamic capability, specifically absorptive capability, is particularly relevant.

### 1.1 Background and Importance of the Problem

The widespread disruption caused by the COVID-19 pandemic in 2020 brought significant operational challenges to the global economy, particularly within the logistics sector. Many countries imposed strict regulations, which led to the closure of ports and interruption of international supply chains. In parallel, geopolitical tensions, such as the ongoing Russia-Ukraine conflict, further exacerbated global logistics uncertainty by disrupting key freight routes. Similarly, the control of Bab el-Mandeb by the Houthi Group has forced carriers to take longer sea routes, drastically extending shipping times. China's economy, deeply integrated into global trade as a leading manufacturer and a major importer of primary products, has been severely impacted. As trade tensions and logistical obstacles continue to mount, the capacity of cross-border logistics enterprises to withstand shocks and adapt swiftly is under serious pressure.

However, most prior research has focused either on dynamic capabilities or on operational efficiency, while largely overlooking enterprise resilience, especially within the logistics context. The pandemic revealed critical gaps in enterprise preparedness and agility, emphasizing the importance of resilience not only as a reactive measure but also as a proactive strategy for long-term competitiveness. Hence, the resilience of cross-border logistics enterprises has become a subject of

urgent interest, especially in view of their essential role in maintaining international trade continuity amid global crises.

## 1.2 Research Question

This study is centered around how do dynamic capabilities influence the resilience of cross-border logistics enterprises, particularly through the mediating role of network embeddedness?

This question addresses the gap in current research by investigating the internal mechanisms that enable logistics enterprises to build resilience in the face of systemic challenges. By integrating dynamic capabilities with network relationships, this study aims to provide a more holistic understanding of how resilience is developed and sustained within the logistics industry.

## 1.3 Research Objective

To address the research gap regarding the resilience of cross-border logistics enterprises, this study aims to explore the role of dynamic capabilities and network embeddedness in enhancing organizational resilience. The specific objectives are:

- 1) To investigate how dynamic capabilities, particularly absorptive capability, influence the resilience of cross-border logistics enterprises.
- 2) To examine the mediating role of network embeddedness in the relationship between dynamic capabilities and enterprise resilience.
- 3) To develop a conceptual resilience model for cross-border logistics enterprises that integrates dynamic capabilities and network embeddedness, and to propose strategic recommendations for improving resilience.

Moreover, this research seeks to emphasize the importance of process management, digital information platforms, and customer relationship management in improving enterprise resilience. Strengthening supplier integration and enhancing the qualifications and competencies of employees are also crucial steps toward long-term success. By focusing on these internal development areas, cross-border logistics firms can generate intellectual resources necessary for sustained growth and robust risk management, ultimately advancing the development of China's cross-border logistics industry as a whole.

## 2. Literature Review

### 2.1 Related Concepts and Theories

#### 2.1.1 Organizational Absorptive Capability

Absorptive capability refers to an enterprise's ability to acquire external knowledge, assimilate it, and apply it to commercial ends. As part of dynamic capabilities, it involves learning from partners, integrating external information, and transforming it into internal knowledge (Wang & Ahmed, 2007). Especially for cross-border logistics enterprises operating in fast-changing global markets, absorptive capability plays a critical role in mitigating external shocks, adapting strategies, and updating organizational processes. As global trade evolves and uncertainties increase, this

capability enables organizations to build resilience by continuously adapting and innovating through strategic learning and knowledge application.

### *2.1.2 Relational Embeddedness*

Relational embeddedness involves the depth and quality of relationships among firms in a network, particularly those characterized by trust, shared norms, and mutual commitment. Trust within inter-organizational relationships facilitates the exchange of information, reduces uncertainty, and supports mutual adaptation. In the context of the cross-border logistics industry, relational embeddedness enhances information flow, resource sharing, and coordinated actions, factors that are vital in responding effectively to external disruptions and building enterprise resilience.

### *2.1.3 Enterprise Resilience*

Enterprise resilience refers to the organization's capacity to absorb shocks, adapt to disruptions, and continue functioning effectively. It involves both reactive and proactive strategies, including internal learning mechanisms, external relationship management, and flexible process redesign. In cross-border logistics, resilience is crucial due to high dependence on geopolitical stability, global supply chains, and infrastructure interconnectivity. These concepts are examined through the lens of Dynamic Capability Theory, which posits that a firm's ability to integrate, build, and reconfigure internal and external competencies is essential for coping with rapidly changing environments. Additionally, Social Network Theory underpins the role of relational embeddedness by highlighting the value of trust-based inter-firm networks in improving performance and reducing uncertainty.

## **2.2 Literature Surveys**

### *2.2.1 Organizational Absorptive Capability Toward Enterprise Resilience*

Absorptive capability is integral to dynamic capability and is essential for enterprises facing a volatile environment. For cross-border logistics firms, absorbing external knowledge and integrating it with internal practices supports adaptation to rapid market changes. When old knowledge becomes obsolete, absorptive capability enables strategy reorientation and process innovation. It helps in transforming individual knowledge into organizational knowledge through learning, dissemination, and application. Therefore, absorptive capability enhances the organization's overall resilience by equipping it to respond effectively to external shocks.

### *2.2.2 Organizational Absorptive Capability Toward Relational Embeddedness*

Absorptive capability also fosters relational embeddedness by enhancing the firm's ability to learn through interaction with external entities such as suppliers and customers. This process of knowledge acquisition often includes interpersonal communication, fostering trust and mutual understanding. It promotes integration and shared knowledge across organizational boundaries. Through consistent learning and cooperation, cross-border logistics firms establish stronger ties and mutual dependence with partners, thus deepening relational embeddedness.

### *2.2.3 Relational Embeddedness Toward Enterprise Resilience*

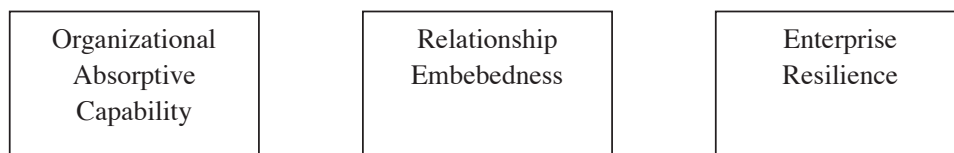
Relational embeddedness enhances enterprise resilience by cultivating trust, reducing opportunism, and facilitating information exchange. Trust leads to the willingness to share tacit

knowledge, which is often more valuable and harder to obtain. When companies are embedded in trusted networks, they can reduce transaction costs, improve decision-making quality, and adapt to changes more quickly. A high level of relational embeddedness means that firms can leverage long-term, supportive partnerships to access critical resources during times of crisis, making them more resilient to external threats.

#### 2.2.4 The Mediating Role of Relational Embeddedness

Previous studies emphasize how dynamic capabilities influence enterprise outcomes through embedded networks. In the case of cross-border logistics, firms operate in complex ecosystems with various stakeholders. Embedding into cooperative networks enhances absorptive capability, allowing firms to gain partner loyalty and reduce risks. Relational embeddedness, formed through frequent interactions and trust, serves as a channel that amplifies the effect of absorptive capability on resilience. Strong relational ties enable firms to respond more effectively to environmental uncertainties, gain access to shared knowledge, and coordinate responses. Thus, relational embeddedness functions as a critical intermediary in the development of enterprise resilience based on dynamic capabilities.

### 2.3 Conceptual Framework



**Figure 1** Conceptual Framework

### 2.4 Research Hypothesis

Based on the review of related literature, the following hypotheses are proposed:

H1: Organizational absorptive capability positively influences the enterprise resilience of cross-border logistics enterprises.

H2: Organizational absorptive capability positively influences the relational embeddedness of cross-border logistics enterprises.

H3: Relational embeddedness positively influences the enterprise resilience of cross-border logistics enterprises.

H4: Relational embeddedness plays a positive mediating role between organizational absorptive capability and enterprise resilience of cross-border logistics enterprises.

### 3. Research Methodology

#### 3.1 Research Design

This study adopted a quantitative research approach through a structured survey questionnaire to investigate the relationships between organizational absorptive capability, relational embeddedness, and enterprise resilience in the cross-border logistics industry. The research was conducted in the post-COVID-19 context, where businesses in this sector had experienced significant operational disruptions. The study focused on cross-sectional data to assess current organizational practices and perceptions.

#### 3.2 Population and Sample

The target population consisted of personnel involved in cross-border logistics operations, particularly those working for enterprises engaged in import and export activities. These included direct customer companies as well as logistics service providers. The sample involved personnel such as those from logistics departments, procurement departments, sales, marketing, operations, and customer service teams, primarily individuals engaged in the execution and oversight of outsourced logistics projects. Projects in this industry are typically short-term in duration (one week to several months), yet face highly volatile risks such as fluctuating customer demands, regulatory changes, and transport cost surges.

To obtain a representative sample, the study selected personnel from private, state-owned, and foreign-owned enterprises. Survey questionnaires were coded to identify respondents belonging to the same organizational teams, supporting accurate cross-level analysis. A total of 400 individuals were invited to participate, all of whom completed the survey. After filtering for invalid responses and ensuring only participants with a minimum of five years' experience were included, the final sample consisted of:

- 232 respondents from private enterprises.
- 75 respondents from foreign-owned enterprises.
- 60 respondents from state-owned enterprises.

**Table 1** Descriptive Statistics of Samples

Characteristics	Item	Frequency	Percentage
Corporate Type	Private Company	232	63.22
	Foreign-own Company	75	20.43
	State-Owned Company	60	16.35
Duration	≤ 5 Years	182	49.59
	5-10 Years	113	30.79
	> 10 Years	72	19.62
Annual Revenue	≤ CNY30 Million	179	48.77
	CNY30 Million ≤ Contract Amount < CNY50 Million	98	26.70
	> CNY50 Million	90	24.53



### 3.3 Research Instruments

Measurement items for the constructs were adapted from previous validated research (refer to Table 2). Since the original items were not designed specifically for the cross-border logistics sector, modifications were made to the wording to enhance contextual relevance and clarity for participants in this industry. All items were measured using a 5-point Likert scale:

- 1 = Strongly Disagree
- 5 = Strongly Agree

The constructs measured in the survey included organizational absorptive capability, relational embeddedness, and enterprise resilience. The revised indicators ensured content validity and industry-specific relevance.

### 3.4 Data Collection

Data collection was carried out over a three-month period. Questionnaires were distributed electronically and in person to relevant personnel from selected organizations across the cross-border logistics sector. Responses were tracked and coded to ensure proper matching within enterprise teams. Only data from respondents with at least five years of work experience in the sector were retained to ensure data quality and validity in cross-level comparisons. After cleaning and validation, a total of 367 complete and usable responses were included in the final analysis.

### 3.5 Statistics Used for Data Analysis

Descriptive statistics were used to analyze demographic and organizational characteristics of the respondents. Confirmatory Factor Analysis (CFA) was conducted to validate the measurement model. Structural Equation Modeling (SEM) was employed to test the hypothesized relationships among variables. Control variables such as corporate type and tenure were considered due to their known influence on enterprise resilience, while annual revenue was excluded because it had been significantly distorted by COVID-19-related transportation cost surges and no longer served as a reliable control factor in this context.

## 4. Data Analysis and Findings

### 4.1 Introduction

This chapter presents the results of the empirical analysis conducted to examine the relationships among organizational absorptive capability, relational embeddedness, and enterprise resilience in the context of cross-border logistics enterprises. The analysis aims to evaluate the reliability and validity of the measurement instruments and test the proposed hypotheses through statistical procedures. The results include aggregation appropriateness, reliability and validity assessments, and structural model evaluation.

#### 4.1.1 Aggregation Appropriateness Test

To ensure the appropriateness of the constructs used in this study, an aggregation test was performed based on established measurement models from previous research.

#### 1) Organizational Absorptive Capability

The measurement of organizational absorptive capability was based on the dynamic capability frameworks developed by Dong (2008) and Shi (2012). The instrument integrates four key dimensions: learning channel, learning mechanism, learning and practice, and learning form. These dimensions collectively assess the extent to which cross-border logistics enterprises acquire and apply external knowledge.

#### 2) Relational Embeddedness

Relational embeddedness was measured using a framework derived from the network embeddedness models proposed by Wang (2012) and Zhang (2013). The instrument consists of four dimensions: trust, communication, cooperation duration, and resource sharing. These items reflect the quality and strength of inter-organizational relationships within the cross-border logistics context.

#### 3) Enterprise Resilience

Enterprise resilience was measured using a model adapted from Duchek (2020). The construct includes four items covering the dimensions of resource integration, risk discernment, and future development. These elements reflect the capacity of enterprises to respond and adapt to environmental challenges.

All constructs were measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

### 4.1.2 Reliability and Validity Test

To assess the reliability and validity of the measurement model, confirmatory factor analysis (CFA) was conducted. Content validity was established through the adaptation of validated measurement items from prior literature, tailored appropriately to the cross-border logistics industry context.

#### 1) Reliability

All constructs exhibited high internal consistency. Cronbach's alpha values for each construct exceeded the minimum acceptable threshold of 0.6, indicating satisfactory reliability.

#### 2) Convergent Validity

Convergent validity was assessed through factor loadings, composite reliability (CR), and average variance extracted (AVE). Most items had standardized factor loadings above 0.6. All CR values were above 0.8, and all AVE values exceeded the 0.5 threshold, demonstrating adequate convergent validity (see Table 2).

**Table 2** Reliability and Validity Tests

Variable	Indicator	Factor Loading	AVE	CR	Cronbach's $\alpha$
Organizational Absorptive Capability	AC1	0.899	0.688	0.811	0.855
	AC2	0.854			
	AC3	0.862			
	AC4	0.911			
Relational Embeddedness	RE1	0.902	0.823	0.925	0.887
	RE2	0.873			
	RE3	0.891			

Corporate Resilience	RE4	0.867			
	CR1	0.932	0.808	0.917	0.834
	CR2	0.872			
	CR3	0.883			
	CR4	0.903			

**Note:** FL, Factor Loading; AVE, Average Variance Extracted; CR, Composite Reliability;  $\alpha$ , Cronbach's  $\alpha$ . All Factor Loadings are Significant at  $\alpha < 0.001$ .

### 3) Discriminant Validity

Discriminant validity was verified by comparing the square roots of the AVE values to the inter-construct correlations. The square roots of AVE ranged from 0.582 to 0.843 and were all greater than the corresponding inter-construct correlations, satisfying the Fornell-Larcker criterion and confirming discriminant validity (see Table 3).

**Table 3** Correlation Analysis of the Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12
AC1	<b>0.773</b>											
AC2	-0.026	<b>0.928</b>										
AC3	-0.057	0.732	<b>0.914</b>									
AC4	0.005	0.745	0.57**	<b>0.922</b>								
RE1	0.02	-0.065	0.115**	0.727	<b>0.863</b>							
RE2	0.029**	-0.036**	0.043	0.78**	0.678	<b>0.875</b>						
RE3	-0.016**	-0.049**	0.041**	-0.032**	0.063	-0.021*	<b>0.897</b>					
RE4	0.009**	0.015**	-0.046**	0.067	0.065	0.055**	0.722	<b>0.866</b>				
CR1	-0.007**	0.801	-0.094	-0.066**	-0.068**	-0.037*	0.756**	0.622	<b>0.796</b>			
CR2	0.073	0.481	0.054**	0.622	0.038*	0.033	0.039	0.029	0.018	<b>0.927</b>		
CR3	0.047**	0.078*	0.054**	0.464**	-0.006*	0.009**	0.054*	-0.046*	0.003**	0.768*	<b>0.836</b>	
CR4	0.045**	0.067*	0.061**	0.452**	-0.004*	0.005**	0.053*	-0.059*	0.006**	0.779*	0.735*	<b>0.847</b>

**Note:** \*\*\*p<0.001, \*\*p<0.01, \*p<0.05; Bold Numbers are AVEs' Square Roots

## 4.2 Data Analysis of the Quantitative Data

### 4.2.1 Main Effect

This study uses the hierarchical regression method to test the assumptions proposed. As a result, it is shown in Table 4. It is shown in model 2 that AC1 exhibits a positive influence on corporate resilience ( $\beta=0.183$ ,  $p<0.01$ ). AC2 exhibits a positive influence on corporate resilience ( $\beta=0.189$ ,  $p<0.001$ ). AC3 exhibits a positive influence on corporate resilience ( $\beta=0.172$ ,  $p<0.01$ ). AC4 exhibits a positive influence on customer loyalty ( $\beta=0.196$ ,  $p<0.001$ ). H1 is supported.

As indicated in model 4, AC1 exhibits a positive influence on relational embeddedness ( $\beta=0.211$ ,  $p<0.01$ ). AC2 exhibits a positive influence on relational embeddedness ( $\beta=0.177$ ,  $p<0.001$ ). AC3 exhibits a positive influence on relational embeddedness ( $\beta=0.168$ ,  $p<0.001$ ). AC4 exhibits a positive influence on relational embeddedness ( $\beta=0.174$ ,  $p<0.001$ ). H2 is supported.

As indicated in model 5, relational embeddedness exhibits a positive influence on corporate resilience ( $\beta=0.369$ ,  $p<0.001$ ). H3 is supported.

### 4.2.2 Mediating Effect

This study focuses on the mediating effect analysis. As indicated in Table 6, results show that relational embeddedness ( $\beta=0.102$ ,  $p<0.005$ ) has significant mediating effects between organizational absorptive capability and corporate resilience. After adding relational embeddedness, the adjusted R<sup>2</sup> between organizational absorptive capability and corporate resilience increases from 0.416 to 0.521, and F increases from 54.123 to 60.678, still remains significant. These results show that relational embeddedness plays partial mediating roles. H4 is supported.

**Table 4** Regression Analysis Results

Variable	Corporate Resilience		Relational Embeddedness		Corporate Resilience	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Corporate Type	0.286***	0.181***	0.147***	0.105*	0.205***	0.181***
Duration	0.384***	0.213***	0.186***	0.084*	0.288***	0.265***
Annual Revenue	0.232***	0.124***	0.107***	0.093**	0.202**	0.174**
AC1		0.183**		0.211***		0.141**
AC2		0.189***		0.177***		0.253***
AC3		0.172***		0.168***		0.171***
AC4		0.196***		0.174***		0.194**
Relational Embeddedness					0.369***	0.102*
R <sup>2</sup>	0.248	0.349	0.103	0.468	0.376	0.529
Adjusted R <sup>2</sup>	0.243	0.416	0.087	0.426	0.371	0.521
$\Delta$ R <sup>2</sup>	0.248	0.386	0.096	0.298	0.122	0.004
F	52.416***	54.123***	16.428***	55.643***	63.886***	60.678***

**Note:** \*\*\* $p<0.001$ , \*\* $p<0.01$ , \*  $p<0.05$ .

### 4.3 Summary of the Results

This study conducts empirical research on the influence of corporate resilience through the influence of cross-border logistics enterprises' organizational absorptive capability, and obtains the following results.

First of all, organizational absorptive capability has significantly positive influence on corporate resilience. From the four dimensions of the organizational capability, corporate training, knowledge sharing mechanism, and knowledge application have a significant positive impact on corporate resilience. The impact of learning channels on corporate resilience is particularly significant. This is mainly because, compared to other dimensions, learning channels is mainly manifested as an enterprise's external resources. It is to measure if the enterprise has enough resources for employees to achieve organizational learning. It is an important factors in organizational absorptive capability. It will be affected by other dimensions and affect corporate resilience.

Secondly, organizational absorptive capability has a significant positive impact on the relational embeddedness in cross-border logistics companies. In the case of corporate type, duration and annual revenue as the control variables, the organizational absorptive capability of the enterprise will affect their embeddedness level in the cooperation network to a certain extent, and verify that the view of organizational absorptive capability will be promoting the level of network embeddedness. Specifically speaking, the organization's training and guidance for employees in work will gradually form a corporate dynamic capability under the absorption of employees, and the component of this enterprise's dynamic capability will also affect the network embeddedness of the enterprise. Studies have shown that the organizational absorptive capability of cross-border logistics enterprises can establish a "learning organization", which not only makes employees aware of the importance of employees' professionalism, but also increase the unity of employees during the organization learning process. To strengthen the exchanges and discussions between employees, thereby increasing employees' recognition of enterprises, then more willing to work hard to strengthen the integration of organizations in the cooperation network. Therefore, the more the awareness of its network embedding, the stronger the company that pays attention to the organization's learning capability, to achieve the improvement of the resilience of the enterprise.

Last but not least, relational embeddedness has a significant positive impact on corporate resilience. In the case of corporate type, duration and annual revenue as the control variables, the relational embeddedness of the enterprise will affect their corporate resilience in the cooperation network to a certain extent, and verify that the view of relational embeddedness will be promoting the level of corporate resilience. Studies have shown that relational embeddedness usually means that through discussion in strong social relations, participants who closely connect with each other may form a common understanding of the effectiveness of certain behaviors and affect their behavior in return. Therefore, cross-border logistics enterprises should actively enhance the level of relational embeddedness, thereby improving customer resilience.

## **5. Conclusion, Discussion, and Recommendation**

### **5.1 Conclusion**

This study makes several important theoretical contributions to the fields of organizational capabilities and enterprise resilience within the cross-border logistics sector.

First, it reveals the influence path of organizational absorptive capability on corporate resilience. The study confirms that all dimensions of absorptive capability, learning channel, learning mechanism, learning practice, and learning form, significantly and positively affect the resilience of cross-border logistics companies. This not only enriches the body of research on dynamic capabilities but also broadens the application of these theories in the context of cross-border logistics.

Second, the findings highlight that relational embeddedness, characterized by mutual trust, effective communication, cooperation duration, and resource sharing between companies, significantly contributes to enterprise resilience. When a company maintains strong, trust-based relationships with its partners, it can access valuable information and resources, reduce transaction uncertainty, and foster deeper collaboration, all of which enhance resilience in an uncertain environment.

Lastly, the results indicate a strong link between organizational absorptive capability and relational embeddedness. Companies that actively learn and apply new knowledge tend to build stronger ties within their networks. By promoting internal learning and external collaboration, organizations improve their relational positioning, which further supports long-term adaptability and resilience.

### **5.2 Discussion**

This research presents practical insights into how cross-border logistics firms can build resilience in an increasingly complex and uncertain global environment.

From an internal capability perspective, traditional models of knowledge collection are no longer sufficient. Cross-border logistics companies must actively acquire and integrate external knowledge to transform it into innovative capabilities. This transformation process, central to organizational learning, must occur not only at the individual or team level but also at the organizational level. In particular, companies must upgrade capabilities in areas such as customs declaration, transportation, and front-end services (e.g., procurement, inventory management, and documentation), as well as adapt to emerging technologies like EDI, VMI, and CRM. Ongoing training and integration of these technologies into workflows are vital.

On the relational side, embeddedness must be actively managed. The new generation of employees brings fresh thinking, digital skills, and emotional awareness. However, if not guided properly, they may overemphasize personal feelings and undervalue collective goals or conflicting viewpoints. As such, management should strike a balance between leveraging emotional intelligence and maintaining professionalism. Relational embeddedness should serve enterprise strategy, not dominate it.

Furthermore, external operational relationships, such as those with ports, customs, and transport authorities, are critical for maintaining smooth logistics flows. Poor communication with

infrastructure providers can result in unnecessary costs and operational inefficiencies (e.g., stacking fees at docks). Therefore, attention must be paid not only to strategic alliances with clients and suppliers but also to seamless cooperation with public and private infrastructure stakeholders.

### 5.3 Recommendation

Based on the study's findings, several recommendations are offered to enhance the resilience and competitiveness of cross-border logistics enterprises:

- 1) Strengthen Organizational Absorptive Capability
  - Establish systems for continuous learning, including knowledge-sharing platforms and structured employee training.
  - Encourage a culture of knowledge integration and application at the organizational level.
  - Use learning outcomes to reconfigure outdated capabilities and stimulate innovation.
- 2) Enhance Strategic Relational Embeddedness
  - Build and maintain trustworthy, long-term partnerships with clients, suppliers, and service providers.
  - Foster professional communication and knowledge exchange mechanisms to deepen cooperation and mutual support.
  - Monitor relational boundaries to ensure emotional factors do not overpower business performance metrics.
- 3) Develop Human Capital in Line with Generational Shifts
  - Provide mentoring and coaching for younger employees to align personal expression with organizational goals.
  - Promote emotional intelligence training alongside technical and operational skills.
  - Encourage open communication while reinforcing collaborative discipline.
- 4) Strengthen Inter-Organizational Coordination
  - Improve coordination with infrastructure operators such as ports, customs, and logistics hubs.
  - Assign trained personnel to manage these relationships and mitigate communication breakdowns.
  - Reduce unexpected costs and delays by proactively managing external dependencies.

These recommendations aim to ensure that cross-border logistics enterprises can respond effectively to disruptions, sustain long-term performance, and maintain a competitive edge in the global logistics landscape.



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# **A Study on the Impact of Pricing Methods on Purchasing Willingness of Nearly Expired Food, Based on Semantic Priming Theory**

by

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### **Abstract**

Food waste represents one of the most pressing global sustainability challenges, with nearly one-third of all food produced, equivalent to approximately 1.3 billion tons annually, going to waste. This issue has both economic and ethical implications, especially in regions experiencing food insecurity. One viable strategy to reduce food waste is to promote the purchase and consumption of nearly expired food. However, consumer hesitation toward such products often stems from perceptions of risk and uncertainty related to food safety and quality. This study explores how pricing strategies, specifically integer versus exact pricing, can influence consumers' willingness to buy nearly expired food, a novel context in marketing research. Drawing on theories of pricing psychology and consumer behavior, three experiments were conducted to examine the effects of price format on perceived stability and purchase intention. The findings reveal that perception of stability mediates the relationship between price format and willingness to purchase nearly expired food. Specifically, integer pricing enhances consumers' sense of stability regarding the product, which in turn increases their willingness to buy. This effect is particularly relevant in the context of nearly expired food, where consumer trust is fragile. Furthermore, the study identifies consumer knowledge as a critical moderating variable. When consumer knowledge about food safety and expiration is low, individuals rely more heavily on heuristic cues such as pricing format, making them more responsive to the stabilizing effect of integer prices. In contrast, highly knowledgeable consumers are less influenced by such cues, and their purchase intentions remain consistent regardless of the price format. By integrating price perception, psychological mediators, and individual consumer characteristics, this study offers both theoretical and practical contributions. It expands the application of integer-exact pricing theory to the underexplored domain of food waste reduction and highlights the importance of tailoring pricing strategies based on consumer knowledge levels. Marketers and retailers can leverage these insights to design more effective pricing strategies that encourage the purchase of nearly expired food, thereby contributing to global efforts to minimize food waste and improve resource sustainability.

**Keywords:** Stability Perception, Pricing Method, Consumer Knowledge, Purchase Willingness, Expired Food

## 1. Introduction

### 1.1 Background and Importance of the Problem

Food waste is a major global concern with serious economic, environmental, and ethical implications. According to the Food and Agriculture Organization (FAO, 2017), approximately one trillion US dollars' worth of food is wasted globally each year, amounting to about 1.3 billion tons (Schmidt & Matthies, 2018), equivalent to nearly one-third of all food produced annually. Despite increasing global awareness, food waste continues to grow, with the FAO (2020) estimating nearly three billion tons of wasted food each year. This wastage is particularly troubling in the context of widespread food scarcity and food insecurity in many regions (He, 2020; Aschemann-Witzel et al., 2020; FAO, 2020). Consequently, food waste has emerged as a significant social problem that calls for urgent behavioral and policy-level interventions (Aschemann-Witzel et al., 2021; Bech-Larsen et al., 2019; UNEP, 2021). One viable solution to reduce food waste is to encourage the purchase and consumption of nearly expired food. However, consumers often hesitate to buy these products due to concerns over freshness and safety. Therefore, understanding how to influence consumer behavior in this context is of growing academic and practical importance.

### 1.2 Research Question

This study is grounded in the exploration of pricing psychology, particularly the effects of integer versus exact pricing formats, on consumer behavior in the context of nearly expired food. Although previous research has examined the effects of pricing formats on convenience consumption (Wieseke et al., 2015), hedonic and utilitarian value perceptions (Wadhwa & Zhang, 2015), and product upgrades (Kim et al., 2021), the influence of these formats on purchasing nearly expired food remains underexplored. Since consumers tend to perceive nearly expired food as possessing uncertain and dynamic attributes, the psychological cues embedded in price formatting may play a crucial role in shaping purchase decisions.

Based on this context, the study seeks to answer the following research questions:

- 1) What is the impact of pricing methods (integer vs. exact pricing) on consumers' willingness to buy nearly expired foods?
- 2) Does the sense of stability mediate the relationship between pricing method and willingness to buy nearly expired foods?
- 3) Does consumer knowledge moderate the relationship between pricing method and willingness to buy nearly expired foods?

### 1.3 Research Objective

The primary objectives of this study are:

- 1) To explore how different pricing methods (integer vs. exact prices) affect consumers' willingness to purchase nearly expired food.
- 2) To examine whether perceived stability serves as a mediating factor between pricing method and consumer willingness to purchase.

3) To investigate whether consumer knowledge moderates the effect of pricing method on purchase intention.

By addressing these objectives, the study aims to contribute to both theory and practice by expanding the application of price perception theories into the under-researched area of food waste reduction. The findings can offer actionable insights for retailers and policymakers seeking to encourage more sustainable consumption behaviors.

## **2. Literature Review**

### **2.1 Related Concepts and Theories**

This study is grounded in semantic priming theory, which suggests that exposure to specific stimuli can subconsciously influence individuals' responses to subsequent stimuli. In the context of pricing, integers can serve as semantic primes that evoke a sense of completeness and stability (Yan & Peña-Marin, 2017). This cognitive cue can significantly influence consumer perceptions and behaviors, especially when product information is ambiguous or uncertain, such as with nearly expired foods.

In addition to semantic priming, the theory of price perception plays a key role in this study. Prices not only convey monetary value but also serve as informational cues, particularly when intrinsic product quality cues are absent or weak (Helmert et al., 2017). Prior studies suggest that consumers tend to perceive exact prices as more rational and accurate (Zhang & Schwarz, 2012), while integer prices are often associated with completion and simplicity (Yan & Peña-Marin, 2017), potentially increasing consumers' trust and perceived product stability.

Consumer knowledge is also a crucial moderating variable in this study. According to cognitive processing theory, individuals with high domain-specific knowledge tend to rely on internal cognitive resources and assess products based on detailed attributes (Quester & Lim, 2003). In contrast, low-knowledge consumers often depend on peripheral cues such as price format, which are easier to process (Alba & Hutchinson, 1987).

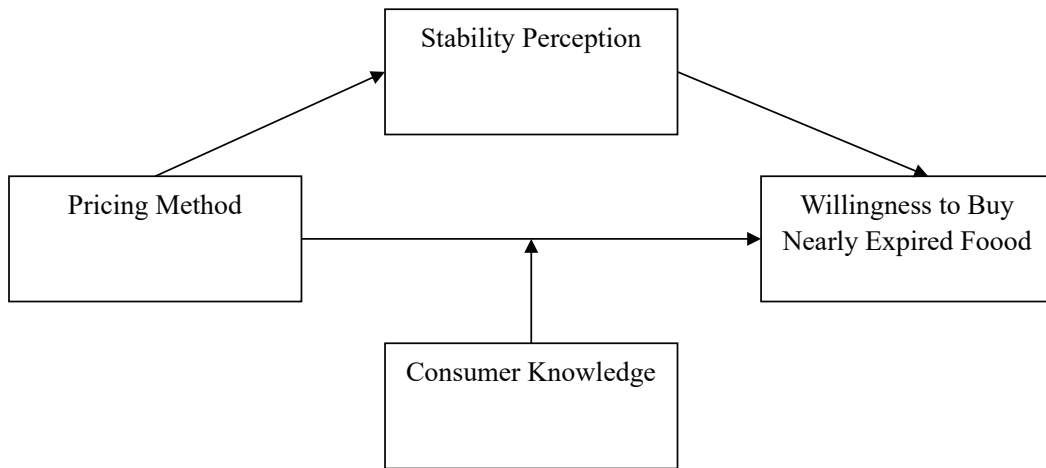
### **2.2 Literature Surveys**

Recent literature in marketing and consumer behavior has increasingly focused on how pricing cues influence decision-making. Integer pricing has been found to influence consumer behavior in various contexts, including convenience consumption (Wieseke et al., 2015), hedonic versus utilitarian purchases (Wadhwa & Zhang, 2015), and product upgrades (Kim et al., 2021). However, limited studies have addressed how these cues operate in the context of nearly expired food, where consumers typically view the product as carrying higher risks and reduced quality (Tsiros & Heilman, 2005; Newsome et al., 2014).

Most existing research on nearly expired food has emphasized macro-level pricing strategies or the impact of shelf-life labels (Scholz & Kulko, 2022; Yassin & Soares, 2020). Only a few studies have examined the psychological mechanisms, such as perceived risk or attribute inference, that influence willingness to purchase these products. There remains a gap in the literature concerning the micro-level effects of pricing format on consumer psychology in this context.

Moreover, while Peña-Marín and Bhargave (2016) argue that perceptions of product persistence influence purchase intent, few studies have tested the mediating role of perceived stability in pricing contexts. Similarly, the moderating role of consumer knowledge, well-established in decision-making research (Mitchell & Dacin, 1996), has not been sufficiently explored in relation to price formats for nearly expired products.

### 2.3 Conceptual Framework



**Figure 1** Conceptual Framework

### 2.4 Research Hypothesis

Based on the theoretical foundations and prior literature, the following hypotheses are proposed:

H1: Compared to exact pricing, integer pricing increases consumers' willingness to buy nearly expired foods.

This is based on the idea that integers communicate completion and stability (Yan & Peña-Marín, 2017), which can reduce consumer anxiety about product safety in ambiguous situations.

H2: Perception of stability mediates the effect of pricing methods on consumers' willingness to purchase nearly expired food.

This mediating pathway is proposed because semantic priming from integer prices may enhance the perceived consistency and reliability of product attributes, which in turn increases purchase intention.

H3: Consumer knowledge moderates the effect of pricing methods on the willingness to purchase nearly expired foods.

Consumers with lower knowledge are more reliant on superficial cues like price format, while those with higher knowledge assess product quality based on intrinsic or technical criteria.

H3a: When consumer knowledge is low, integer prices increase willingness to purchase compared to exact prices.



H3b: When consumer knowledge is high, the difference between integer and exact pricing methods on willingness to purchase is not significant.

This set of hypotheses forms the basis of the research model, aiming to understand the interaction between pricing formats, psychological perceptions, and individual differences in knowledge in shaping consumer behavior towards nearly expired foods.

### 3. Research Methodology

This chapter outlines the methodology used to examine the impact of pricing methods on consumers' willingness to purchase nearly expired food. The approach consists of a series of experimental designs across five studies, with variations in product stimuli and pricing conditions.

#### 3.1 Research Design

This research utilized a single-factor between-group experimental design to test the main effect of pricing methods, comparing integer prices (e.g., 60.00 yuan) with exact prices (e.g., 60.03 yuan, 19.98 yuan, or 7.01 yuan), on consumers' willingness to buy nearly expired foods. Experiment 1c also introduced a third condition (decimal pricing) to deepen the analysis. The design was further extended in Experiments 2 and 3 to test the mediating effect of perceived stability and the moderating role of consumer knowledge.

#### 3.2 Population and Sample

Participants were recruited from two sources:

- The Credamo platform, a professional online research platform in China.
- A university in Nanjing, specifically for Experiment 1b.

A total of 200–300 participants were used per experiment:

- Gender distribution was approximately balanced across all experiments (e.g., 93 males and 107 females in Experiment 2).
- The average age ranged from 31 to 37 years old.
- Random assignment was used to allocate participants into different pricing conditions.

#### 3.3 Research Instruments

The key variables were measured using validated scales from previous literature:

Willingness to buy: items adapted from Baker & Churchill (1977), Han & Newman (2021), and Newman et al. (2016), such as: “I am willing to try this product.”, “I am willing to buy this product.”, “I am willing to recommend/search for this product.”, and (7–9 point Likert scale, Cronbach's  $\alpha = 0.917$ – $0.940$ )

Additional measurements: stability perception (Pena-Marin & Bhargave, 2015): e.g., “I think the taste of this product has changed over time.”, price perception: e.g., “I think the price of this product makes people feel cheap.”, and consumer knowledge (Yao et al., 2020): e.g., “I am familiar with nearly expired food platforms.”

### 3.4 Data Collection

The experimental procedure followed these steps:

1) Participants were briefed on the general (deceptive) purpose of the experiment (e.g., studying consumer preferences).

2) They browsed images and descriptions of nearly expired food products (e.g., nuts, bread, yogurt) with different pricing manipulations.

3) Participants answered manipulation checks (e.g., identifying the discount price).

4) They rated their willingness to buy, perception of stability, price perception, and consumer knowledge.

5) Participants filled in demographic information and were later debriefed on the true experimental purpose.

### 3.5 Statistics Used for Data Analysis

Data were analyzed using:

1) ANOVA: To compare the willingness to buy between groups (e.g., F-tests for significance).

2) T-tests: For specific group comparisons in Experiment 1c.

3) Regression analysis: SPSS Model 1 was used to test moderation by consumer knowledge.

4) Bootstrapping (Hayes, 2013; Model 4): Used to verify the mediating role of perceived stability, with 5,000 samples and 95% confidence intervals.

5) Reliability analysis: Cronbach's alpha reported for all scales.

## 4. Data Analysis and Findings

### 4.1 Introduction

This chapter presents the results of the experiments conducted to investigate the influence of different pricing methods, specifically, integer prices versus exact number prices, on consumers' willingness to purchase nearly expired food. The analysis builds upon a series of experimental studies that tested various aspects of the research framework, including the main effect of pricing format, the mediating role of perceived stability, and the moderating effect of consumer knowledge. Descriptive statistics and inferential analyses were employed to assess the effects across multiple experimental groups. Key dependent variables such as purchase intention were evaluated using ANOVA, regression models, and mediation-moderation analysis, while reliability and validity of measurement instruments were verified using Cronbach's alpha. The results of these analyses provide empirical support for the proposed hypotheses and contribute to a deeper understanding of consumer behavior in contexts involving food waste reduction and price framing strategies. The chapter begins by outlining the results from Experiment 1, which tested the main effect of pricing methods. It then proceeds to Experiments 2 and 3, which examined the psychological mechanisms

underlying consumer decision-making, namely, the perception of stability and the level of consumer knowledge. Each subsection includes statistical results, interpretation, and implications of the findings in relation to the study's objectives.

## 4.2 Data Analysis of the Quantitative Data

### *Experiment 1a: Verifying the main effect of pricing method on consumers' willingness to purchase nearly expired food*

This experiment adopted a single-factor (pricing method: integer vs. exact number) between-group design. A total of 200 subjects were recruited through Credamo, comprising 79 males and 121 females, with an average age of 35 years. Participants were randomly assigned to two experimental groups and were informed that the purpose of the study was to examine consumers' preferences for nearly expired foods. They then viewed pictures and related information about nearly expired food products online. Each group was shown different information regarding the expiration timeline of the products. Next, participants were asked to identify the discount price to ensure they had carefully reviewed the questionnaire. They then rated their willingness to purchase nearly expired foods. Finally, participants provided demographic information and were debriefed on the actual purpose of the experiment.

The experimental stimulus was nuts, marketed under the virtual brand name "Excellent." Detailed product information, such as brand name, product name, flavor, specification, discount price, and the statement "the nuts will expire in 30 days", was presented. The price manipulation in this study was based on the research of Wadhwa and Zhang (2015). The integer pricing group was shown a discount price of 60.00 yuan, while the exact pricing group was shown a discount price of 60.03 yuan. Willingness to buy nearly expired food was measured using a scale adapted from Baker and Churchill (1977), rated on a 9-point Likert scale (1 = very unlikely, 9 = very likely). The items included: "I am willing to try this product," "I am willing to buy this product," and "I am willing to search for this product" ( $\alpha = 0.940$ ).

A variance analysis was conducted with willingness to buy as the dependent variable, and gender and age as control variables. The pricing method served as the independent variable. The results indicated that participants exposed to integer pricing showed significantly higher willingness to buy nearly expired food ( $M_{\text{integer}} = 5.88$ ,  $SD = 2.30$ ) than those in the exact pricing group ( $M_{\text{exact}} = 5.29$ ,  $SD = 2.32$ ),  $F(1,206) = 4.45$ ,  $p = 0.036$ . Thus, Experiment 1a provided initial support for Hypothesis H1: that integer prices increase consumers' willingness to buy nearly expired foods compared to exact prices. However, since the exact number price used in Experiment 1a was slightly higher than the integer price, the potential influence of price perception could not be completely ruled out. To address this limitation, Experiment 1b adjusted the stimuli and pricing conditions to better isolate the effect of pricing format and eliminate confounding effects related to perceived price differences.

### *Experiment 1b: Secondary verification of the main effect of pricing method on consumers' willingness to purchase nearly expired food*

To enhance the effectiveness of the experiment and eliminate potential interference from price perception, the experimental stimulus and the manipulation of the exact number price were adjusted. This experiment adopted a single-factor (pricing method: integer vs. exact number) between-group design. A total of 200 participants were recruited from a university in Nanjing, consisting of 80 males and 120 females, with an average age of 31 years. Participants were randomly

assigned to one of two experimental groups and were initially informed that the study aimed to assess consumer preferences for expired food. They were then presented with images and related information about nearly expired food, which incorporated the manipulated pricing conditions. In the second part of the experiment, participants were asked to identify the discount price to ensure they had carefully reviewed the material, followed by rating their willingness to purchase the product. Finally, they completed demographic information, including gender and age, and were debriefed about the true purpose of the study.

In reference to the study by Aschemann-Witzel et al. (2019), the product stimulus in this experiment was bread, branded under the virtual name “Youpin.” Product information included the name, flavor, specification, discount price, and a statement indicating that “the bread will expire in 30 days.” Price manipulation was based on the study by Wadhwa and Zhang (2015), with the exact number price intentionally set lower than the integer price to minimize potential price perception bias. The integer group was shown a discount price of 20.00 yuan, while the exact number group saw a price of 19.98 yuan. Willingness to purchase nearly expired food was measured using a scale adapted from Han and Newman (2021) and Zhu Huawei et al. (2021). Items included: “I am willing to buy this box of bread,” “I think this box of bread is worth buying,” and “I am willing to recommend this box of bread to others” ( $\alpha = 0.917$ ), rated on a 9-point Likert scale (1 = very unlikely, 9 = very likely). The results indicated that the willingness to buy nearly expired food in the integer pricing group was significantly higher than in the exact number group ( $M_{\text{integer}} = 4.89$ ,  $SD = 1.88$ ;  $M_{\text{exact}} = 4.22$ ,  $SD = 1.99$ ;  $F(1,198) = 3.61$ ,  $p = 0.060$ ). These findings support Hypothesis H1, suggesting that, compared to exact number pricing, integer pricing increases consumers’ willingness to buy nearly expired food. This experiment not only reinforced the robustness of Hypothesis H1 but also effectively ruled out the influence of price perception by using a lower exact price.

#### *Experiment 1c: Verify again the main effect of pricing method on consumers’ willingness to purchase nearly expired food*

The purpose of this experiment was to further confirm the superiority of integer pricing in the context of purchasing nearly expired food by introducing a third pricing condition: a decimal price. This experiment employed a single-factor between-group design with three conditions (pricing method: integer vs. exact number vs. decimal). A total of 300 subjects were recruited via the online platform Credamo, comprising 130 males and 170 females, with an average age of 37 years. Participants were randomly assigned to one of the three experimental groups. They then viewed images and related product information about nearly expired food online. Each group received different information regarding the remaining shelf life of the food items. Participants were subsequently asked to indicate their willingness to purchase the nearly expired food and then completed demographic information before being informed of the experiment’s true purpose.

The study was informed by the research of de Hooze et al. (2017), which utilized yogurt as the experimental stimulus and selected unfamiliar brands to minimize brand bias. In this experiment, product information included the product name, flavor, specifications, discount price, and a note stating “4 days left to expire.” The pricing manipulation followed Wadhwa and Zhang (2015), with the integer price set at 7.00 yuan, the decimal price at 6.99 yuan, and the exact price at 7.01 yuan. Participants rated their willingness to purchase the yogurt using a single item adapted from Newman et al. (2016): “Are you willing to buy this product?” (1 = very unwilling, 9 = very willing). The results revealed that participants in the integer pricing group ( $M = 6.77$ ,  $SD = 1.72$ ) had a significantly higher willingness to purchase nearly expired food than those in the decimal group ( $M = 6.04$ ,  $SD = 1.94$ ;  $t(138) = 2.35$ ,  $p = 0.020$ ) and the exact number group ( $M = 5.89$ ,  $SD = 2.36$ ;  $t(138) = 2.54$ ,  $p = 0.012$ ). However, there was no significant difference between the decimal and exact

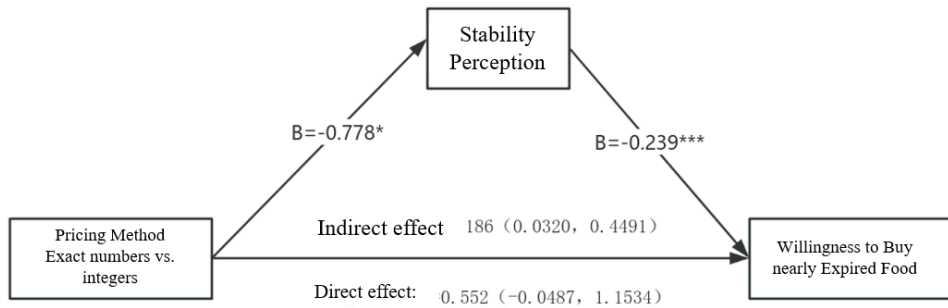
number groups ( $t(138) = 0.43$ ,  $p = 0.668$ ). Thus, Experiment 1c confirmed that consumers are more inclined to purchase nearly expired foods when prices are presented as integers compared to decimal or exact number formats.

### *Experiment 2: Verifying the mediating role of stability perception*

This experiment aimed to investigate the mechanism underlying the influence of pricing methods on consumers' willingness to purchase nearly expired foods by introducing the mediating variable of perceived stability. In addition, a measure of price perception was added to rule out its influence as a confounding variable. A single-factor between-group design (pricing method: integer vs. exact number) was employed. The study recruited 200 participants through the Credamo platform, all of whom passed the attention check (93 males and 107 females, average age = 33 years). Participants were informed that the study focused on consumer preferences for nearly expired food. They were then presented with product information and images online and asked to complete measures of purchase intention, stability perception, and price perception. Finally, demographic data were collected, and the actual purpose of the study was disclosed.

Yogurt was again used as the experimental stimulus, but the brand name was modified to "M" to maintain experimental control. Product information included the name, flavor, specifications, remaining shelf life, and discount price. The pricing manipulation presented the integer group with a discount price of 7.00 yuan and the exact group with 7.01 yuan. Purchase intention was measured using a scale from Baker and Churchill (1977): "I am willing to try this product," "I am willing to buy this product," and "I am willing to search for this product" ( $\alpha = 0.940$ ). Perceived stability was measured following Pena-Marín and Bhargava (2015) using the item: "I think the taste of this product has changed over time" (1 = strongly disagree, 9 = strongly agree). Price perception was assessed with the item: "I think the price of this product (e.g., 5.00/5.01 yuan) makes people feel it is cheap" (1 = very cheap, 9 = very expensive).

The results revealed significant differences in stability perception between the two pricing conditions. Participants in the integer pricing condition perceived the product to be more stable ( $M = 5.28$ ,  $SD = 2.33$ ) than those in the exact pricing group ( $M = 6.06$ ,  $SD = 2.16$ ),  $F(1,198) = 5.21$ ,  $p = 0.024$ . Likewise, willingness to purchase was significantly higher for the integer group ( $M = 6.32$ ,  $SD = 1.85$ ) compared to the exact number group ( $M = 5.58$ ,  $SD = 2.22$ ),  $F(1,198) = 5.67$ ,  $p = 0.018$ . To test the mediating effect of stability perception, a bootstrap analysis using Hayes' (2013) Process Model 4 was conducted with 5,000 resamples and a 95% confidence interval. The direct effect was not significant ( $LLCI = -0.0487$ ,  $ULCI = 1.1534$ ), while the indirect effect was significant ( $LLCI = 0.0320$ ,  $ULCI = 0.4491$ ), indicating a significant mediating role of stability perception. The findings suggest that integer pricing enhances perceived product stability, which in turn increases consumers' willingness to buy nearly expired food. Additionally, the non-significant differences in price perception between the groups support the conclusion that price perception did not influence the observed effects.



**Figure 2** Experiment 2: Mediating Effect Test

The results of the study show that there is no significant difference in the price perception of nearly expired foods between different pricing methods (integer vs. exact number pricing) ( $M_{\text{integer}} = 6.33$ ,  $SD = 2.04$ ;  $M_{\text{exact}} = 5.94$ ,  $SD = 2.34$ ;  $F(1,198) = 1.32$ ,  $p = 0.253$ ). This experiment further confirmed the mediating role of stability perception by verifying both the main effect and the influence of pricing methods on consumers' purchase intention toward nearly expired foods. Additionally, by including the measurement of price perception, the experiment successfully ruled out price perception as a confounding factor, thereby enhancing the credibility and robustness of the stability perception effect. Importantly, within the context of nearly expired food consumption, the mediating effect of stability perception may also be influenced by the level of consumer knowledge. This potential moderating effect will be further examined and validated in the following experiment.

### *Experiment 3: Verifying the moderating effect of consumer knowledge*

The main purpose of Experiment 3 was to confirm that consumer knowledge has a moderating effect on the influence of different pricing methods on consumers' willingness to purchase nearly expired foods. This experiment employed a between-group design (pricing method: integer vs. exact number). A total of 200 participants were recruited via the Credamo platform, consisting of 90 males and 110 females, with an average age of 35 years. Participants were randomly assigned to one of the two groups and were informed that the study aimed to assess consumer preferences regarding nearly expired foods. They were then asked to browse pictures and related product information online. Afterward, participants completed measures related to their willingness to purchase nearly expired foods and their level of consumer knowledge. Finally, they provided demographic information and were informed of the actual purpose of the study.

The experimental stimulus remained M-brand yogurt. Product details included the name, flavor, specifications, remaining shelf life, and discount price. The pricing manipulation was as follows: the exact number group was shown a price of "7.01 yuan," while the integer group was shown a price of "7.00 yuan." The measurement of willingness to purchase nearly expired food followed the same scale used in previous experiments ( $\alpha = 0.940$ ). Referring to the study by Yao et al. (2020), consumer knowledge was measured using the following items: "I often buy nearly expired food," "I am familiar with multiple nearly expired food platforms," and "When it comes to buying nearly expired food, I am confident that I can find good-quality and inexpensive options" ( $\alpha = 0.938$ ).

A variance analysis was conducted using willingness to purchase as the dependent variable. The results showed that the main effect of pricing method was significant: participants in the integer pricing group demonstrated a higher willingness to purchase nearly expired food ( $M_{\text{integer}} = 6.36$ ,



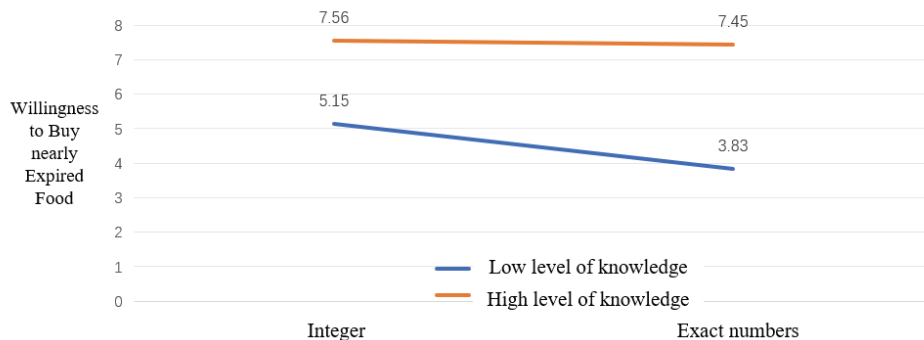
SD = 2.09) than those in the exact number group ( $M_{\text{exact}} = 5.62$ , SD = 2.51),  $F(1,198) = 4.39$ ,  $p = 0.038$ .

To test the moderating effect of consumer knowledge, SPSS Model 1 was used. The analysis showed that:

- The main effect of pricing method on willingness to purchase was significant ( $\beta = -2.25$ ,  $t = -3.09$ ,  $p = 0.002$ ),
- The main effect of consumer knowledge was also significant ( $\beta = 0.52$ ,  $t = 6.38$ ,  $p < 0.001$ ),
- The interaction effect between pricing method and consumer knowledge was significant ( $\beta = 0.26$ ,  $t = 2.26$ ,  $p = 0.025$ ).

A simple slope analysis was then conducted to explore the interaction further:

- For consumers with low knowledge, the pricing method had a significant effect on their willingness to purchase nearly expired food ( $\beta = -1.31$ ,  $t = -3.52$ ,  $p < 0.001$ ).
- For consumers with high knowledge, the effect of pricing method was not significant ( $\beta = -0.12$ ,  $t = -0.32$ ,  $p = 0.753$ ).



**Figure 3** Moderating Effect of Consumer Knowledge

Experiment 3 confirmed the moderating effect of consumer knowledge, focusing on external product cues, specifically, the impact of pricing methods on consumers' willingness to purchase nearly expired foods. It examined how integer pricing increases consumers' willingness to purchase nearly expired foods compared to exact numerical pricing.

By introducing the experimental samples, design, procedures, stimuli, and results of five experiments in detail, this study verified:

- The main effect of pricing methods on consumers' willingness to purchase nearly expired foods,
- The mediating role of perceived stability, and
- The moderating effect of consumer knowledge on the main effect.

The relevant research hypotheses were confirmed through five experiments. Experiment 2 further verified the mediating role of perceived stability and ruled out the confounding variable of price perception. Experiment 3 explored the moderating role of consumer knowledge in the effect of time frame on willingness to purchase nearly expired foods, as well as the mediating role of perceived stability. The results of the hypothesis tests are summarized in Table 1 below.

**Table 1** Summary of Hypothesis Test Results

	<b>Hypothesis</b>	<b>Test Results</b>
H1	Compared with exact prices, rounded prices increase consumers' willingness to buy nearly expired foods.	Accepted
H2	Perceived stability plays a mediating role in the effect of pricing methods on purchase intention of nearly expired food	Accepted
H3	Consumer knowledge plays a moderating role in the effect of pricing methods on consumers' willingness to purchase nearly expired food	Accepted

Based on research hypothesis H1, Experiments 1a and 1b used nuts (with a longer shelf life) and bread (with a shorter shelf life), respectively, as experimental stimuli. The results preliminarily confirmed that, compared with exact prices, integer prices increase consumers' willingness to purchase nearly expired foods.

In Study 1b, the manipulation of the exact price was adjusted to be slightly lower than the integer price. This showed that the observed difference in consumers' willingness to purchase nearly expired foods was not due to price perception, thereby ruling out the confounding effect of price perception.

Experiment 1c further changed the stimulus and added a decimal price group, which confirmed the superiority of integer pricing. That is, compared to decimal prices and exact prices, integer prices were more effective in increasing consumers' willingness to purchase nearly expired foods.

### 4.3 Summary of the Results

The experimental findings consistently support the research hypotheses across all study phases. First, the results from Experiments 1a, 1b, and 1c confirm the main effect of pricing method: consumers exhibit a significantly higher willingness to purchase nearly expired foods when the products are priced using integer values compared to exact or decimal prices. This pattern holds true across different product types (e.g., nuts, bread, yogurt), indicating the robustness of the integer pricing effect.

Second, Experiment 2 confirms the mediating role of perceived stability in the relationship between pricing method and purchase intention. Integer prices lead to higher perceptions of product stability, which in turn enhance willingness to purchase. The bootstrapped mediation analysis supports this indirect effect while ruling out price perception as a confounding factor.

Third, Experiment 3 demonstrates the moderating role of consumer knowledge. Specifically, consumers with low knowledge about nearly expired food show a stronger response to pricing methods, while those with high knowledge are less influenced by whether the price is an integer or exact. This suggests that consumer experience and familiarity moderate the effectiveness of pricing strategies.

In sum, the data provide empirical support for all three research hypotheses. Integer pricing positively influences purchase intention by enhancing perceived stability, and this effect is particularly salient among less knowledgeable consumers.



## **5. Conclusion, Discussion, and Recommendation**

### **5.1 Conclusion**

This study investigated the psychological and behavioral impacts of different pricing methods, specifically, integer versus exact prices, on consumers' willingness to buy nearly expired foods. The results confirmed that perception of stability plays a mediating role in the relationship between pricing methods and purchase intention. Compared with exact pricing, integer pricing was shown to enhance consumers' perception of product stability, which in turn increased their willingness to purchase nearly expired food items.

Furthermore, the study established that consumer knowledge significantly moderates this relationship. Consumers with lower levels of knowledge were more influenced by the format of the price, exhibiting a higher willingness to buy when prices were integers. In contrast, those with higher levels of consumer knowledge were less affected by the pricing format, showing no significant difference in purchase intention between integer and exact price formats.

### **5.2 Discussion**

The findings enrich our understanding of how subtle price cues influence consumer decisions, particularly in ambiguous or high-risk contexts such as nearly expired food. Semantic priming theory supports the idea that consumers associate integer prices with feelings of completeness and consistency, which contributes to greater perceived stability of the product. This perception mitigates concerns related to food safety and shelf-life, especially when explicit product information is lacking or unclear.

The role of consumer knowledge is critical in interpreting price cues. Low-knowledge consumers are more likely to depend on external, easily processed cues such as price formats. This group interprets integer prices as a positive signal of reliability and stability, leading to higher purchase intentions. On the other hand, high-knowledge consumers rely more on internal cognitive frameworks and detailed evaluation of product attributes, making them less susceptible to such superficial cues.

These insights extend the theoretical application of semantic priming to the pricing domain and highlight the necessity of considering consumer knowledge in behavioral pricing strategies. The research offers both theoretical implications for consumer psychology and practical value for marketers targeting products with perceived risk or uncertainty.

### **5.3 Recommendation**

From a practical perspective, retailers and marketers dealing with nearly expired food products should consider adopting integer pricing strategies to enhance consumer trust and purchase likelihood, particularly when targeting less-informed consumers. Marketing communications could also reinforce perceptions of product stability alongside integer pricing to strengthen this psychological cue.

For consumer education, increasing product knowledge can empower individuals to make more informed decisions beyond price cues. Public health agencies and retailers might collaborate to provide accessible, factual information about the safety and quality of nearly expired food, thus balancing consumer reliance on heuristic cues.

Future research could expand on these findings by exploring the interaction of price cues with other marketing elements such as packaging, labeling, or promotional framing. Cross-cultural comparisons may also provide deeper insights into how universal or context-specific these pricing effects are across different consumer populations.

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# **The Impact of Digital Transformation Strategy on the Innovation Performance of Commercial Banks in China**

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### **Abstract**

As the global financial industry rapidly digitalizes, commercial banks are under increasing pressure to adopt digital transformation strategies to stay competitive and meet evolving customer demands. In China, this shift is accelerated by strong governmental support and widespread adoption of digital technologies. This study explores the impact of digital transformation strategies on innovation performance in Chinese commercial banks, with a specific focus on the mediating role of organizational learning capability. The research finds that digital transformation positively influences innovation performance, especially in product and process innovation. Technologies such as artificial intelligence, big data analytics, and cloud computing enable banks to improve operational efficiency, develop innovative services, and enhance customer experience. However, the relationship between digital transformation and innovation is significantly mediated by organizational learning capability, the organization's ability to acquire, assimilate, and apply knowledge effectively. This capability plays a critical role in translating technological investments into meaningful innovation outcomes. Banks that cultivate a strong learning culture, invest in employee training, and implement robust knowledge management systems are better positioned to leverage digital tools for sustained innovation. The study contributes to existing literature by highlighting how internal organizational factors shape the success of digital transformation strategies. It offers practical insights for banking leaders, emphasizing the need to strategically align digital initiatives with organizational learning efforts. To maximize innovation performance, banks should integrate digital technologies with business processes, strengthen learning mechanisms, and invest in tools like AI and data analytics. These findings underscore that digital transformation, supported by strong organizational learning, is essential for driving innovation and securing long-term competitiveness in the evolving financial landscape.

**Keywords:** Digital Transformation Strategy, Innovation Performance, Organizational Learning Capability, Commercial Banks

## 1. Introduction

### 1.1 Background and Importance of the Problem

As traditional banking models face increasing competition from fintech companies and the growing demand for more personalized and efficient customer experiences, commercial banks are compelled to adopt digital transformation strategies (Zhu & Jin, 2023). These strategies encompass a wide range of initiatives, including the digitization of customer services, the integration of advanced analytics, the implementation of artificial intelligence, and the development of innovative digital products and services. Digital transformation is no longer just an option for banks, but a necessity for survival and growth in an increasingly competitive and technology-driven financial landscape (Yao & Song, 2023).

China, as one of the largest and fastest-growing economies in the world, has seen significant changes in its banking industry due to digital advancements. The Chinese government's push for financial innovation and the widespread adoption of digital payment systems have further accelerated the transformation of the banking sector (Chen, You, & Chang, 2021). Commercial banks in China are increasingly shifting their focus from traditional banking operations to digital innovation in order to stay ahead in a highly competitive market. This shift towards digitalization is not only reshaping how banks interact with customers but also influencing how they manage internal processes, structure their organizational culture, and foster innovation.

However, while the importance of digital transformation in the banking sector is clear, its impact on innovation performance remains an area of considerable interest and inquiry. Innovation performance, in the context of commercial banks, refers to the ability to create and implement new products, services, or processes that provide value to both the bank and its customers (Zhou & Xu, 2023). The successful implementation of a digital transformation strategy is expected to enhance a bank's innovation performance by facilitating the development of new business models, streamlining operations, and improving customer experiences (Li et al., 2023). Despite the growing body of research on digital transformation, the specific pathways through which digital transformation strategies lead to enhanced innovation performance in commercial banks are still not well understood.

Organizational learning capability refers to an organization's ability to acquire, assimilate, and apply knowledge, which is essential for adapting to new technologies and driving innovation (Kalmuk & Acar, 2015). As banks integrate digital technologies into their operations, the ability to learn from both internal and external sources, to experiment with new ideas, and to adapt to changing environments is crucial for fostering a culture of innovation. The connection between digital transformation and innovation performance is likely to be mediated by how well an organization learns and adapts to the changing technological landscape.

### 1.2 Research Question

This study seeks to explore the relationship between digital transformation strategies and innovation performance in commercial banks, with a particular focus on the mediating role of organizational learning capability. The central research question is: How do digital transformation strategies impact innovation performance in commercial banks? Furthermore, the study examines the role of organizational learning capability as a mediator in this relationship. In particular, the study will address the question of how well a bank's capacity to absorb, integrate, and apply new knowledge can enhance the effectiveness of digital transformation strategies in improving innovation outcomes.



### 1.3 Research Objective

The primary objective of this study is to investigate the impact of digital transformation strategies on innovation performance in commercial banks in China, focusing specifically on the mediating role of organizational learning capability. The study aims to examine how various elements of digital transformation, such as technological adoption, process innovations, and customer engagement, affect the innovation performance of commercial banks. Additionally, the study will explore how organizational learning capability mediates this relationship, particularly in terms of how a bank's ability to acquire, process, and apply new knowledge influences the success of its digital transformation efforts. By achieving these objectives, the study seeks to provide actionable insights for banking executives, helping them understand how they can strategically leverage digital transformation and organizational learning to foster innovation and improve overall performance. Ultimately, this research aims to contribute to the broader understanding of digital transformation in the banking sector, offering valuable guidance for financial institutions aiming to navigate the complexities of a rapidly evolving digital landscape.

## 2. Literature Review

### 2.1 Related Concepts and Theories

#### 2.1.1 Digital Transformation Strategy

In the context of commercial banks, a digital transformation strategy involves adopting technologies like mobile internet, big data, cloud computing, and artificial intelligence to improve operational efficiency, innovate customer services, and create new business models. The driving force behind this transformation is the need for banks to adapt to rapidly changing market conditions, rising customer expectations, and increasing competition, particularly from fintech firms. It goes beyond automating existing processes to rethinking traditional business models and customer engagement practices, requiring banks to deliver more personalized, accessible, and efficient services (Cosa, 2024; Kaondera, Chikazhe, Munyimi, & Nyagadza, 2023).

Scholars emphasize the strategic importance of integrating digital technologies into banks' core operations and cultures (Cosa, 2024). A successful digital transformation requires aligning technological advancements with business goals, creating a culture of continuous innovation, and fostering organizational agility in response to a fast-evolving digital landscape (Tuerk, 2023). This study defines digital transformation strategy as the comprehensive integration of digital technologies across all aspects of the bank's operations and business models to improve processes, products, and services.

#### 2.1.2 Innovation Performance

Innovation performance in the existing literature is generally divided into two dimensions: product innovation and process innovation. Product innovation focuses on developing new products or services that meet market demands, improve customer satisfaction, or create new opportunities, such as digital banking services or mobile payment solutions in the banking sector (Wang, Li, Li, & Wang, 2021). Process innovation, on the other hand, refers to improvements in internal operations like enhancing efficiency, reducing costs, or improving service quality, which in banking can include innovations in risk management, compliance, or the use of automation and AI in transaction processing and fraud detection (Ardito, Raby, Albino, & Bertoldi, 2021; Obeng, Opoku, Obeng, &

Afriyie, 2024). While product and process innovations are often studied separately, scholars increasingly recognize their interconnection in driving overall innovation performance. For instance, a bank may develop a new financial product that is enhanced by process innovations such as streamlined customer onboarding or AI-driven fraud detection (Rutskiy et al., 2022). This study defines innovation performance as the outcomes of innovation efforts that contribute to a bank's competitive advantage and long-term success, including the introduction of new or improved products, services, processes, or business models, all of which are crucial in the rapidly evolving banking sector.

### *2.1.3 Organizational learning capability*

Organizational learning capability is commonly understood as the ability of an organization to acquire, integrate, and apply new knowledge. This study adopts a two-dimensional framework that distinguishes between absorptive capability and transformative capability. Absorptive capability, as defined by Jerez-Gomez, Céspedes-Lorente, and Valle-Cabrera (2005), refers to the ability to recognize the value of external knowledge, assimilate it, and apply it to business goals. In the context of commercial banks, this might involve identifying and integrating emerging digital technologies or market trends to maintain a competitive edge.

Transformative capability, as described by DiBella, Nevis, and Gould (1996), emphasizes an organization's ability to continuously adapt and integrate new knowledge and technologies over time. In banking, this could involve evolving digital services, adopting innovations, and aligning processes with changing customer needs or regulatory requirements. This study defines organizational learning capability as the ability of a bank to absorb, transform, and apply external knowledge to enhance its competitive position, accelerate product development, and improve operations.

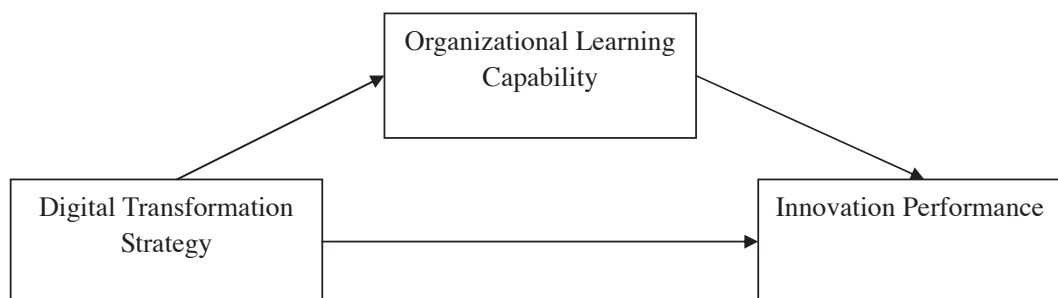
## **2.2 Literature Surveys**

Based on the conceptual framework and literature review, this study aims to explore the relationships between digital transformation strategy, organizational learning capability, and innovation performance within commercial banks. As banks increasingly adopt digital technologies such as artificial intelligence, big data, and cloud computing, they become more capable of absorbing and applying external knowledge, which is a key component of organizational learning. Digital transformation enhances the infrastructure, tools, and systems necessary for learning, thereby strengthening both absorptive and transformative capabilities. Previous research indicates that a strong digital strategy facilitates the acquisition, absorption, and innovation processes of knowledge within the organization, thereby enhancing overall learning capability (Shen, Zhang, & Liu, 2022; Valdez-Juárez, Ramos-Escobar, Hernández-Ponce, & Ruiz-Zamora, 2024).

The digital transformation of commercial banks is expected to promote innovation by developing new products, services, and business processes that meet the ever-changing demands of customers (Shen et al., 2022). By adopting digital technologies, banks can streamline operations, enhance customer experience, and create new revenue models, thereby improving their innovation performance. Previous studies have shown that digital technologies are key drivers of innovation in the banking sector, improving service delivery, enhancing customer satisfaction, and strengthening market competitiveness (Bai, Ban, & Hu, 2024). Therefore, we hypothesize that a strong digital transformation strategy directly contributes to improved innovation outcomes.

Although digital transformation strategy can directly drive innovation, its impact may be further amplified when the organization's learning capability is enhanced. As banks absorb and integrate new knowledge through their organizational learning processes, they are better able to translate digital transformation initiatives into innovative practices and outcomes (Alegre & Chiva, 2013). Organizational learning capability, including both absorptive and transformative capabilities, enables banks to effectively apply new knowledge, refine processes, and generate innovative solutions (Kalmuk & Acar, 2015). Therefore, we propose that organizational learning capability moderates the relationship between digital transformation strategy and innovation performance, thereby amplifying the positive impact of digital transformation on the bank's innovation outcomes.

## 2.3 Conceptual Framework



**Figure 1** Conceptual Framework

Based on the conceptual framework and the literature review, the following hypotheses are proposed:

H1: Digital transformation strategy has a significant positive impact on the organizational learning capability.

H2: Digital transformation strategy has a significant positive impact on the innovation performance.

H3: Organizational learning capability has a significant positive impact on the innovation performance.

H4: The Organizational learning capability plays a mediating role in the impact of digital transformation strategy on innovation performance.

## 3. Research Methodology

### 3.1 Population and Sample

The sample for this study consists of 258 employees from various commercial banks. The gender distribution is relatively balanced, with 52% female and 48% male participants. In terms of age, 36% of respondents are between 31-40 years old, followed by 32% under 30 years, 24% between 41-50 years, and 8% over 51 years. Regarding education level, 46.5% hold a college degree or below, while 53.5% have completed higher education, including 40.7% with a Master's degree and 46.1% with a Doctoral degree. The majority (46.1%) have between 5 to 10 years of experience,

followed by 51.2% with 11-20 years. A small proportion (12.8%) has less than 5 years, and only 4 participants (1.6%) have more than 20 years of experience. In terms of bank division, most respondents work in retail business (37.6%), followed by corporate business (22.7%) and interbank business (22.8%). The sample includes employees from a variety of banks, with the largest group (46.5%) working in large state-owned commercial banks, followed by 29.1% in joint-stock commercial banks, and smaller proportions in other types of banks such as city, rural, private, and foreign banks.

### 3.2 Research Instruments

#### 1) Digital transformation strategy scale

The digital transformation strategy of traditional commercial banks involves integrating emerging technologies such as mobile internet, big data, cloud computing, and artificial intelligence into their existing operations and services to drive innovation and high-quality development. This integration aims to innovate business processes, products, and business models, ultimately enhancing digital innovation performance. Drawing from Hess, Matt, Benlian, and Wiesböck (2016) and Barragan and Becker (2024), this study measures the digital transformation strategy using an 11-item scale, assessing the strategic application of digital technologies in commercial banks. A 5-point Likert scale is used, ranging from "Strongly Disagree" (1) to "Strongly Agree" (5), providing a comprehensive evaluation of the effectiveness and progress of digital transformation strategies.

#### 2) Innovation performance scale

Innovation performance is commonly defined as the advantage gained through the application of innovative technologies across products, services, business processes, and business models. However, measuring this performance solely with objective indicators may overlook subjective perceptions unique to organizations (Ardito et al., 2021; Pesch, Endres, & Bouncken, 2021). To address this, this study adopts a subjective approach, assessing innovation performance through a two-dimensional framework: process innovation performance and product innovation performance. Process innovation performance focuses on improvements in operational efficiency, service reliability, and support functions, while product innovation performance evaluates the development outcomes of new products or services, including technological advancements and customer satisfaction. Using a 5-point Likert scale, the study includes reverse-coded items to control for response biases and enhance measurement accuracy.

#### 3) Organizational learning capability scale

In this study, organizational learning capability is measured as a holistic construct that includes both absorptive capability and transformative capability. Absorptive capability refers to the firm's ability to recognize, acquire, and assimilate valuable external knowledge, as well as its capacity to predict future developments in core areas. Transformative capability, on the other hand, involves the firm's ability to apply and utilize both existing and new knowledge to address specific problems and capitalize on opportunities. This study employs a set of 7 measurement items to assess organizational learning capability, integrating both dimensions to evaluate the overall effectiveness of a firm's learning processes and its ability to adapt and innovate in the context of digital transformation.

### 3.3 Statistics Used for Data Analysis

In this study, data analysis was conducted using SPSS (Statistical Package for the Social Sciences). Reliability was assessed using Cronbach's alpha to evaluate the internal consistency of the measurement scales. Convergent validity was tested through average variance extracted (AVE),

while discriminant validity was confirmed using the Fornell-Larcker criterion to ensure the constructs were distinct. Path analysis was performed to examine the direct relationships between digital transformation strategy, organizational learning capability, and innovation performance, with path coefficients assessed for significance. Additionally, mediation analysis was conducted to test the indirect effect of organizational learning capability in the relationship between digital transformation strategy and innovation performance, using bootstrapping techniques to confirm the mediation effect. These statistical methods ensured the reliability, validity, and robustness of the study's findings.

## 4. Data Analysis and Findings

### 4.1 Data Analysis of the Quantitative Data

#### 4.1.1 Reliability and Validity

In this study, the reliability of the variables was assessed using Cronbach's alpha, which measures the internal consistency of the scales. The results indicate that all the variables exhibited satisfactory reliability. Specifically, the Cronbach's alpha for Digital Transformation Strategy was 0.837, for Organizational Learning Capability it was 0.820, and for Innovation Performance it was 0.883. These values are all above the commonly accepted threshold of 0.7, suggesting that the scales used in this study are reliable and consistent in measuring the intended constructs. The high reliability values indicate that the items within each variable are closely related, providing confidence in the accuracy and dependability of the data collected.

**Table 1** Reliability of Variables

Variable	Cronbach's Alpha
Digital Transformation Strategy	0.837
Organizational Learning Capability	0.820
Innovation Performance	0.883

The KMO (Kaiser-Meyer-Olkin) measure and Bartlett's Test of Sphericity were conducted to assess the suitability of the data for factor analysis. The KMO value was found to be 0.866, which is above the recommended threshold of 0.6, indicating that the sample size and data are appropriate for factor analysis. A higher KMO value suggests that the correlations between the variables are strong enough to proceed with the analysis. Additionally, Bartlett's Test of Sphericity yielded a significant p-value of 0.000, which indicates that the correlation matrix is not an identity matrix, further supporting the suitability of the data for factor analysis. These results confirm that the data meet the necessary assumptions for factor analysis and that the factor model is likely to produce reliable and meaningful results.

**Table 2** KMO and Bartlett Test

KMO and Bartlett Test		
KMO Value		0.866
Bartlett's Test of Sphericity	Approximate Chi-Square	3668.666
	Df	351
	p Value	0.000

The correlation analysis in this study reveals the relationships between key variables, providing insights into their interconnections. Innovation Performance (IP) shows significant positive correlations with both Digital Transformation Strategy (DTS) ( $r = 0.465$ ) and Organizational Learning Capability (OLC) ( $r = 0.426$ ), suggesting that these two factors have a meaningful impact on innovation performance in banks. DTS and OLC are also positively correlated with each other ( $r = 0.358$ ), indicating that the adoption of a digital transformation strategy may facilitate organizational learning processes. However, demographic variables such as gender (Sex), age (Age), education level (Edu), and bank division (Div) show weak or no significant correlations with the main study variables, implying that these factors have a minimal direct effect on innovation performance or the digital transformation process. Notably, years of experience (Exp) shows a significant positive correlation with education ( $r = 0.208$ ) and a strong correlation with age ( $r = 0.686$ ), reflecting that more experienced employees tend to be older, but this does not translate directly into stronger innovation performance. Overall, the analysis suggests that while some demographic factors have limited correlations, digital transformation strategy and organizational learning capability are the primary drivers of innovation performance in the context of banking.

**Table 3** Correlation Analysis

	IP	DTS	OLC	Sex	Age	Edu	Exp	Div	Type
IP	1								
DTS	0.465**	1							
OLC	0.426**	0.358*	1						
Sex	0.080	0.033	0.032	1					
Age	0.068	-0.030	0.045	0.039	1				
Edu	0.040	0.045	0.076	0.021	0.208*	1			
Exp	0.028	-0.091	-0.023	-0.009	0.686*	0.000	1		
Div	0.077	0.076	0.085	-0.029	-0.008	-0.054	-0.108	1	
Type	-0.001	0.080	0.038	0.068	0.066	-0.039	-0.029	-0.005	1

**Note:** \*\*  $p < 0.01$ , IP=Innovation Performance, DTS=Digital Transformation Strategy, OLC=Organizational Learning Capability, Edu=Education, Exp=Years of Experience, Div=Bank Division, Type=Type of Bank

Table 4, the diagonal values represent the square roots of the AVE for each variable (Innovation Performance (IP), Digital Transformation Strategy (DTS), and Organizational Learning Capability (OLC)). These values are 0.678, 0.608, and 0.646 for IP, DTS, and OLC, respectively. These values are all greater than the off-diagonal correlations between the variables, such as the correlations between IP and DTS (0.465), and between IP and OLC (0.426). Therefore, the square root of each construct's AVE exceeds the correlation values, which suggests that the constructs are sufficiently distinct from each other.

**Table 4** Convergent Validity& Discriminant Validity

	AVE	CR	IP	DTS	OLC
IP	0.369	0.852	0.678		
DTS	0.418	0.825	0.465**	0.608	
OLC	0.459	0.884	0.426**	0.358**	0.646

#### 4.1.2 Hypothesis Test

The path analysis results, conducted using SPSS, provide strong support for all three hypotheses in this study. Hypothesis 1 (H1) posits that digital transformation strategy (DTS) has a significant positive impact on organizational learning capability (OLC). The unstandardized path coefficient of 0.350, with a z-value of 6.149 and a p-value of 0.000, indicates a significant and positive relationship between DTS and OLC, supporting H1. Similarly, Hypothesis 2 (H2) suggests that DTS has a significant positive impact on innovation performance (IP). The path coefficient of 0.384, with a z-value of 6.396 and a p-value of 0.000, shows a significant and positive influence of DTS on IP, confirming H2. Lastly, Hypothesis 3 (H3) proposes that organizational learning capability (OLC) positively influences innovation performance (IP). The unstandardized path coefficient of 0.326, a z-value of 5.314, and a p-value of 0.000 further validate the significant positive impact of OLC on IP, thereby supporting H3. All path coefficients are positive and statistically significant, indicating that the hypothesized relationships hold true in this study.

**Table 5** Path Analysis

X	→	Y	Unstandardized Path Coefficients	SE	z (CR)	p	Standardized Path Coefficients
DTS	→	OLC	0.350	0.057	6.149	0.000	0.358
DTS	→	IP	0.384	0.060	6.396	0.000	0.358
OLC	→	IP	0.326	0.061	5.314	0.000	0.298

**Note:** → Path Influence Relationship

The mediation analysis, conducted using the SPSS PROCESS plugin with 5000 bootstrap samples, provides strong support for Hypothesis 4 (H4), which suggests that organizational learning capability (OLC) plays a mediating role in the impact of digital transformation strategy (DTS) on innovation performance (IP). The indirect effect of DTS → OLC → IP is 0.114, with a 95% confidence interval (CI) ranging from 0.062 to 0.157, which does not include zero, indicating a significant partial mediation. Furthermore, the direct effect of DTS on IP is 0.384, with a 95% CI between 0.266 and 0.503, also showing significance. These results suggest that while DTS directly influences IP, part of this effect is mediated through OLC. Specifically, DTS positively affects OLC,



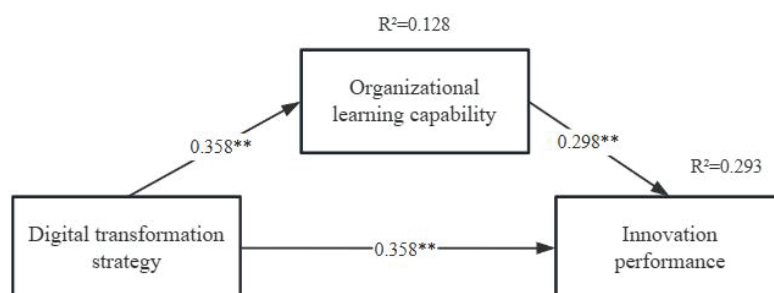
which in turn positively influences IP. The findings confirm that organizational learning capability partially mediates the relationship between digital transformation strategy and innovation performance, supporting H4.

**Table 6** Mediation Analysis

Item	Effect	95 % BootCI		SE	z Value	p Value	Result
		Lower	Upper				
DTS→OLC→IP	0.114	0.062	0.157	0.024	4.718	0.000	
DTS→OLC	0.350	0.238	0.462	0.057	6.125	0.000	Partial mediatio n
OLC→IP	0.326	0.205	0.447	0.062	5.283	0.000	
DTS→IP	0.384	0.266	0.503	0.060	6.359	0.000	
DTS→IP	0.498	0.382	0.615	0.059	8.401	0.000	

### 4.3 Summary of the Results

The data analysis results provide strong support for all four hypotheses proposed in this study. First, Hypothesis 1 (H1) posits that digital transformation strategy (DTS) has a significant positive impact on organizational learning capability (OLC), which is confirmed with a path coefficient of 0.358 and a p-value of 0.000, indicating a significant relationship. Second, Hypothesis 2 (H2) suggests that DTS positively influences innovation performance (IP), and the analysis supports this with a path coefficient of 0.358 and a p-value of 0.000, confirming the significant impact of DTS on IP. Third, Hypothesis 3 (H3) hypothesizes that OLC has a significant positive impact on IP, and the results validate this hypothesis with a path coefficient of 0.298 and a p-value of 0.000, showing that organizational learning capability is a key driver of innovation performance. Finally, the mediation analysis (H4) reveals that OLC partially mediates the relationship between DTS and IP. The indirect effect of DTS on IP through OLC is significant (0.114,  $p = 0.000$ ), further supporting the idea that organizational learning capability plays a crucial role in enhancing the effect of digital transformation strategy on innovation performance. Overall, the findings confirm the robustness of the proposed hypotheses and highlight the importance of digital transformation and organizational learning in driving innovation in commercial banks.



**Figure 1** Result Analysis



## 5. Conclusion, Discussion, and Recommendation

### 5.1 Conclusion

This study investigated the relationships between digital transformation strategy, organizational learning capability, and innovation performance in commercial banks. The analysis of the collected data confirmed that all the proposed hypotheses were supported, highlighting the significant roles of digital transformation and organizational learning in driving innovation performance.

The results show that a well-implemented digital transformation strategy has a positive impact on organizational learning capability. By adopting emerging digital technologies like artificial intelligence, big data, and cloud computing, banks can enhance their ability to absorb and transform external knowledge, which is essential for fostering innovation. Additionally, the study finds that a digital transformation strategy directly contributes to innovation performance, improving both process and product innovation in commercial banks.

Importantly, the study also revealed that organizational learning capability plays a mediating role in the relationship between digital transformation strategy and innovation performance. This means that the positive effects of digital transformation on innovation are amplified when banks are capable of absorbing and applying new knowledge effectively.

### 5.2 Discussion

The findings of this study align with and extend the existing body of research on digital transformation, organizational learning, and innovation in the banking sector. By confirming that digital transformation strategy positively impacts organizational learning capability, this study echoes previous studies that suggest digital technologies play a key role in enhancing the learning and knowledge management processes within organizations (Albukhitan, 2020). The integration of digital technologies enables commercial banks to access and apply external knowledge more effectively, thus facilitating the development of innovative solutions.

In terms of innovation performance, the study's findings provide empirical evidence that digital transformation is a significant driver of both product and process innovations in the banking sector. This is consistent with prior research that emphasizes the role of digital transformation in streamlining processes, improving service delivery, and enhancing customer satisfaction through technological advancements (Ardito et al., 2021; Ritter & Gemünden, 2004). By leveraging technologies such as artificial intelligence and cloud computing, banks can enhance operational efficiency and develop new financial products that meet customer demands.

The study also highlights the critical mediating role of organizational learning capability. This finding extends the understanding of how digital transformation leads to innovation. While digital technologies provide the tools and infrastructure for innovation, organizational learning enables banks to internalize and effectively apply the knowledge gained, making it an essential driver of sustainable innovation. The ability to absorb and apply external knowledge allows banks to adapt to market changes, respond to customer needs, and stay ahead of competitors.

However, the study's findings also raise important implications for practice. While adopting a digital transformation strategy is crucial, banks must also foster a culture of learning to ensure that the knowledge and insights gained through digital transformation are effectively utilized. This

suggests that banks should invest not only in technological infrastructure but also in developing their organizational learning capabilities to ensure that digital transformation leads to long-term innovation and competitive advantage.

Future research could expand on these findings by exploring how specific digital technologies, such as blockchain or robotic process automation, influence organizational learning and innovation performance in banks. Additionally, research could examine the role of external factors, such as regulatory pressures or market competition, in shaping the digital transformation strategies and learning capabilities of commercial banks.

### 5.3 Recommendation

First, commercial banks should enhance the overall planning of their digital transformation strategy, ensuring that the application of technologies not only focuses on product innovation but also optimizes internal processes and services. Banks should prioritize the integration of digital technologies with business models and organizational structures at the strategic level, fostering a synergistic development between technological and management innovations.

Second, improving organizational learning capability is key to driving innovation performance. Banks should focus on enhancing their ability to absorb new knowledge and technologies. This can be achieved by strengthening employee training programs, establishing knowledge management platforms, and promoting the integration of external knowledge with internal expertise, thereby boosting their innovation capacity and market competitiveness.

Lastly, banks should increase investments in data analytics and artificial intelligence to further drive product and process innovation. By leveraging big data and AI technologies, banks can optimize customer service, risk management, and operational efficiency, ultimately achieving continuous innovation and improving overall business performance.

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## **A Study on the Impact of Energy Industry Transformation on Economic Quality**

by

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## Abstract

This article defines the concepts of energy transition and economic growth quality by combining domestic and foreign research. Based on the grounded theory research method, this paper explores the specific path of China's energy transformation, including energy structure transformation aimed at promoting energy structure adjustment, energy technology transformation aimed at promoting energy technology innovation, and energy policy transformation aimed at providing institutional guarantees. On this basis, based on relevant theories, an overall research framework for improving the quality of economic growth driven by energy transformation has been constructed. Based on the differential impact of energy structure transformation, energy technology transformation, and energy policy transformation on the quality of economic growth, this study simulates and analyzes the dynamic effects of energy transformation on the quality of economic growth at the national level through different combinations of three energy transformation paths. It gradually explores and identifies more effective combinations of energy transformation paths, and provides energy transformation development directions and references for regions with different development conditions. Finally, countermeasures based on energy transformation to promote the quality improvement of economic growth were proposed from three aspects: optimizing energy structure, advancing energy technology, and ensuring energy policies.

**Keywords:** Energy Transition, Economic Growth Quality, Energy Structure

## 1. Introduction

### 1.1 Background and Importance of the Problem

China's economic growth has long been characterized by high speed and scale but has lagged in terms of quality and efficiency. In recent years, the country has entered a critical transitional phase commonly referred to as the “new normal,” marked by a slowdown in economic growth and mounting structural challenges. These include the depletion of demographic dividends, rising production costs, tightening resource constraints, and serious environmental degradation. Under these circumstances, the traditional extensive growth model driven primarily by labor and capital inputs has become unsustainable. The urgency to shift toward a development model focused on quality, sustainability, and efficiency has never been greater.

At the heart of this transformation lies the need to improve the quality of economic growth. Rather than prioritizing speed alone, China must now focus on achieving more balanced and environmentally responsible development. Energy transformation plays a pivotal role in this context,

not only as a means to reduce carbon emissions and promote environmental health but also as a strategy to sustain economic performance in the face of resource and ecological limits. However, much of the existing literature simplifies energy transition to mean merely adjusting the energy structure, such as reducing fossil fuel dependence in favor of renewable sources. This narrow view overlooks the complexity of energy transition paths and fails to fully assess how different transformation strategies can align with China's stage of economic development.

Furthermore, there is insufficient understanding of how different energy transformation approaches, such as technological innovation, institutional reforms, and policy support, can impact the economy in differentiated ways. Without this understanding, it becomes difficult to design and implement energy strategies that contribute to both economic growth and environmental sustainability. Therefore, examining the relationship between energy transformation and economic growth quality is crucial. Doing so will not only fill a gap in the literature but also inform China's long-term strategic planning in its pursuit of a green, low-carbon economy and its broader efforts toward supply-side structural reform.

## **1.2 Research Question**

Against this backdrop, the central question that this study aims to address is: how do different pathways of energy transformation affect the quality of economic growth in China, particularly during the current transition from extensive to intensive development under the “new normal”? This inquiry is driven by the recognition that not all energy transformation strategies have the same impact on economic outcomes. Some may promote technological efficiency and industrial upgrading, while others might lead to unintended costs or economic distortions.

Understanding this relationship requires identifying and evaluating the key dimensions of energy transformation and how they interact with indicators of economic growth quality, such as productivity gains, environmental sustainability, industrial competitiveness, and institutional robustness. The goal is to uncover whether certain energy strategies are more compatible with China's current stage of development and to what extent they can support long-term economic and ecological goals. By answering this question, the study aims to clarify the pathways through which energy transition can serve as a driver of high-quality development, rather than merely a reaction to environmental pressures.

## **1.3 Research Objective**

- 1) To analyze the relationship between energy transformation and the quality of economic growth in China during its transition from extensive to intensive development.
- 2) To identify and evaluate the differential impacts of three specific energy transformation paths, energy structure transformation, energy technology transformation, and energy policy transformation, on economic growth quality.
- 3) To simulate the dynamic effects of energy transformation on the quality of economic growth, providing evidence-based insights for strategic policy planning and sustainable development.



## 2. Literature Review

### 2.1 Related Concepts and Theories

The concept of energy transition, also referred to as *Energiewende*, has evolved significantly over time. Traditionally, it has been understood as the substitution or transformation of dominant energy sources within a country or region. The German Institute of Applied Ecology characterizes energy transition as the shift from reliance on oil and nuclear energy to the adoption of renewable energy sources. In a broader perspective, Robert Hefner III, in *The Great Energy Transition*, outlines the historical process of transitioning from solid fuels to liquid and then to gaseous energy. Chinese scholars such as Zhao Hongtu (2009) and Wei Wei (2018) interpret energy transition as a departure from fossil fuel-based systems toward renewable and low-carbon alternatives. Building on these definitions and contextualizing them within China's current energy development strategy, this paper defines energy transition as a systemic shift from high-carbon to low-carbon energy structures, involving changes in energy composition, technology innovation, and institutional and policy frameworks.

The economic growth theory, particularly its evolution from classical to modern endogenous growth theories, provides a theoretical foundation for analyzing how energy transition interacts with economic development. Traditional neoclassical models emphasize labor and capital as growth drivers but treat technological progress as exogenous. In contrast, the endogenous growth theory introduces human capital, innovation, and knowledge spillovers as key internal factors. This theory holds that improvements in knowledge and human capital contribute to increasing returns, sustained innovation, and long-term growth. Most importantly, it positions technological progress, notably energy technologies, as a central, endogenous factor in enhancing productivity and economic performance, which directly relates to the quality of economic growth.

The sustainable development theory complements this understanding by integrating environmental, economic, and social dimensions. It emphasizes the importance of achieving economic growth without depleting natural resources or degrading ecosystems. Sustainable development promotes a balanced, long-term approach, where economic decisions are aligned with environmental protection and social equity. This theory reinforces the need to abandon growth models that sacrifice ecological health for short-term economic gains, advocating instead for a green, inclusive, and high-quality economic transformation.

Building on these perspectives, the energy-economy-environment (3E) system theory offers an integrated framework to study the interconnections among these three domains. This approach recognizes the dynamic and nonlinear interactions between energy consumption, economic activity, and environmental impact. According to system theory, the coupling effects among energy, economy, and environment are context-dependent and vary across stages of development. In China's current transition phase, marked by slowing growth and weakening traditional industrial drivers, the quality of economic growth must be enhanced through an integrated strategy that considers all three systems holistically.

### 2.2 Literature Surveys

Scholars both domestically and internationally have contributed extensively to the understanding of energy transition and its relationship with economic growth. Early studies often treated energy transition primarily as an energy structure issue, focusing on the replacement of fossil fuels by cleaner alternatives. International literature, including the German model of *Energiewende*,

has emphasized institutional support, long-term policy frameworks, and public participation in facilitating this shift. Robert Hefner's work further expanded the understanding by illustrating how shifts in energy sources historically aligned with stages of industrial and technological development.

In China, research on energy transition has intensified in the context of climate change and economic restructuring. Zhao Hongtu (2009) emphasized the need to move away from high-carbon energy sources, while Wei Wei (2018) described the process as the progressive substitution of non-renewable with renewable energy. However, most existing studies tend to conflate energy transition with the promotion of renewable energy and overlook the differentiated roles played by structural changes, technological innovation, and policy reform. Moreover, limited research has investigated how these distinct energy transition paths align with different phases of economic development or contribute to improving economic growth quality.

Recent literature has also recognized the increasing complexity of the energy-economy-environment nexus. Studies incorporating the 3E system framework suggest that policy effectiveness varies based on development stages, industrial structure, and regional disparities. Some empirical studies have shown that energy technology innovation significantly boosts productivity, while others suggest that energy policy reform plays a crucial role in institutionalizing sustainability goals. Nonetheless, there remains a research gap in identifying and comparing the specific impacts of energy structure, technology, and policy transformations on economic growth quality in a holistic and systematic manner.

### 2.3 Conceptual Framework

Based on the review of relevant theories and literature, this study proposes a conceptual framework that links energy transformation to economic growth quality through three main pathways: energy structure transformation, energy technology transformation, and energy policy transformation. These three dimensions are treated as core components of the energy transition process, each contributing differently to the improvement of economic growth quality.

Energy structure transformation involves optimizing the proportion of clean and renewable energy in the national energy mix. It aims to reduce reliance on high-carbon fuels, thus improving environmental performance and resource efficiency.

Energy technology transformation emphasizes advancements in energy efficiency, renewable energy technologies, and smart energy systems. These innovations enhance productivity and enable more sustainable industrial practices.

Energy policy transformation encompasses institutional and regulatory reforms designed to guide and support the transition. Effective policies ensure coordination, create market incentives, and reduce systemic risks in energy development.

These three pathways interact with aspects of economic growth quality, such as innovation capacity, environmental sustainability, productivity, and structural optimization. The framework assumes that a successful energy transition will positively influence these areas and enable a shift from quantity-driven to quality-driven economic development.

## 2.4 Research Hypothesis

Based on the theoretical foundation and conceptual framework established, the following research hypotheses are proposed:

H1: Energy structure transformation has a positive and significant impact on the quality of economic growth by improving energy efficiency and reducing environmental burdens.

H2: Energy technology transformation significantly enhances economic growth quality by driving innovation, increasing productivity, and enabling sustainable industrial upgrading.

H3: Energy policy transformation plays a critical role in promoting high-quality economic growth by providing institutional support, regulatory clarity, and market-oriented incentives.

These hypotheses will be tested through empirical and simulation analyses to evaluate the differentiated and dynamic effects of each energy transformation path on China's economic growth quality.

## 3. Research Methodology

### 3.1 Research Design

This study adopts grounded theory as its qualitative research method due to its unique advantages. Unlike traditional qualitative methods, grounded theory standardizes qualitative research and builds a solid theoretical foundation by integrating practical situations and empirical data. This approach overcomes many limitations of earlier qualitative research methods and provides theoretical support closely aligned with the research content. The grounded theory method follows a systematic three-level coding process. First, open coding involves continuously comparing and classifying original data and related concepts to determine research dimensions and form initial categories. Second, axial coding deeply analyzes relationships among these initial categories to derive main categories. Finally, selective coding synthesizes the categories into a typical relationship structure model, establishing the core category related to the research question.

### 3.2 Population and Sample

The research sample includes experts and stakeholders relevant to China's energy transformation. A total of 27 valid interview records were collected for this study. Of these, 22 records were selected using stratified sampling as the initial modeling data, while the remaining 5 records served as theoretical saturation test materials to confirm data adequacy and model completeness. This approach ensures a representative and robust qualitative dataset that captures diverse perspectives related to energy transformation in China.

### 3.3 Research Instruments

Semi-structured interviews were the primary instrument for qualitative data collection. The interview protocol contained core questions such as "How to promote China's energy transformation," "Core elements of promoting China's energy transformation," and "Key and difficult points of China's energy transformation." Depending on the interview context and research theme, additional questions were extended to deepen understanding. To minimize the influence of

subjective speculation and conceptual bias from interviewees, secondary data sources, including corporate annual reports, academic articles, and public news, were also collected for triangulation. This multi-source data collection enhanced the reliability and validity of the study.

### 3.4 Data Collection

Data were collected through in-depth interviews with 27 participants directly involved in or knowledgeable about China's energy transformation. These interviews were recorded, transcribed, and prepared for qualitative coding. Out of the 27 transcripts, 22 were used to construct the grounded theory model, while the remaining 5 served to test for theoretical saturation. Secondary information was gathered from official reports and scholarly publications to supplement and verify primary interview data. This comprehensive data collection process ensured both depth and breadth of empirical material.

### 3.5 Statistics Used for Data Analysis

For quantitative analysis, the study explores the nonlinear impact of energy structure transformation on economic growth quality using threshold regression analysis. Spatial econometric methods analyze spatial spillover effects between energy technology transformation and the quality of economic growth. Energy policies are categorized into clean energy development policies, energy conservation policies, and new energy industry policies; their effectiveness and timeliness are empirically tested.

The dependent variable, quality of economic growth, is measured by an index derived via the super efficiency SBM method. Inputs include labor, capital, and ecological footprint; expected output is regional total output value; and unexpected output is carbon dioxide emissions. The core explanatory variable of energy technology transformation ( $\ln ET$ ) and its quadratic term ( $\ln ET^2$ ) capture technological innovation impacts, operationalized by patent counts related to "non-fossil energy" and "energy conservation and emission reduction" technologies, weighted using the patent quota allocation method.

Control variables incorporated to enhance model robustness include government intervention (Gov), information technology level (JCT), urbanization level (Urb), population density (People), environmental regulation (Regulation), and openness to foreign trade (Open). These controls help isolate the specific effects of energy transformation on economic growth quality.

## 4. Data Analysis and Findings

### 4.1 Introduction

This chapter presents a comprehensive analysis of the spatial econometric models used to investigate the impact of energy technology transformation on the quality of economic growth in China. Emphasizing the verification and robustness of the model selection, the analysis begins by testing whether the Spatial Durbin Model (SDM) can be simplified into alternative spatial models such as the Spatial Lag Model (SLM) or Spatial Error Model (SEM). Using Wald and Likelihood Ratio (LR) tests, the findings reject the simplification hypotheses, confirming the appropriateness of the SDM specification for this study. Further validation through Hausman and LR tests supports the choice of a fixed-effects SDM, incorporating both spatial and temporal dimensions.

The econometric results reveal a significant nonlinear "U"-shaped relationship between energy technology transformation and the quality of economic growth across different spatial weight matrices. This pattern indicates an initial inhibitory effect followed by a later promoting impact as energy technologies mature. Key control variables, including informatization level, population density, and environmental regulation, also demonstrate important influences on economic growth quality, both directly and spatially.

Beyond direct regional effects, the analysis uncovers significant spatial spillover effects, underscoring the importance of geographical and economic interconnections in shaping economic outcomes. The findings suggest that energy technology innovation not only benefits the originating region but also impacts neighboring areas, with effects strengthening as technological maturity and regional absorptive capacities improve.

This chapter further explores the reliability and validity of these results, discussing their implications in the context of policy timeliness and regional economic coordination. The nuanced understanding of short-term versus long-term effects of energy policies offers valuable insights for designing effective strategies to promote sustainable economic growth through energy transformation.

## **4.2 Data Analysis of the Quantitative Data**

### *4.2.1 Verification of Spatial Econometric Models*

Determine whether the SDM model can degrade into SLM or SEM through Wald test and LR test. The Wald test is used to determine whether SDM can degrade into SLM, while the LR test is used to determine whether SDM can degrade into SEM. The two types of tests reject the null hypothesis at the 1% significance level for all four statistical values, indicating that the model cannot degrade to SLM or SEM. The selection of spatial econometric models is extremely important, but there are also strict conditions. Only when the Wald test and LR test results are consistent with the LM test results of non spatial panel models, can SDM degrade into SLM or SEM. In addition, when both Wald test and LR test pass the significance test, it can be determined that the model setting should be SDM. The results in Table 1 show that under the three weight matrices, both types of null hypothesis results were rejected. This chapter ultimately selects the Spatial Durbin Model (SDM) for estimation. Through Hausman test and LR test, the three types of test statistics are significant at the 1% level under all three weight matrices. Therefore, the paper ultimately chooses the fixed effects spatial Durbin model and focuses on analyzing the econometric results of the time and space dual fixed effects panel model.

**Table 1** SDM Degradation Test

Matrix Type	0-1 Adjacency Distance Weight Matrix		Geographic Distance Weight Matrix		Geographic Economic Distance Weight Matrix	
Statistical Test	Statistical Value	p Value	Statistical Value	p Value	Statistical Value	p Value
Wald-SLM	43.1000	0.0000	58.3800	0.0000	35.2100	0.0000
Wald-SEM	46.6000	0.0000	57.8800	0.0000	37.4900	0.0000
LR-SLM	42.0600	0.0000	55.2500	0.0000	34.5800	0.0000
LR-SEM	45.1700	0.0000	54.2300	0.0000	36.1900	0.0000
Hausman	311.6200	0.0000	160.8500	0.0000	163.1900	0.0000
LR-ind	159.8100	0.0000	117.0500	0.0000	158.8600	0.0000
LR-time	84.1300	0.0000	110.8600	0.0000	89.4600	0.0000

Overall, the independent variables within the region under the spatial econometric model have the same direction of impact on the quality of economic growth in this region, with similar significance levels and impact coefficients, indicating that the overall establishment of the model has a certain degree of scientific validity. From a regional perspective, under the three weight matrices, the transformation of energy technology has a "U" - shaped impact on the quality of economic growth, manifested as early inhibition and later promotion. The level of informatization and population density can significantly affect the quality of economic growth within a region. From a spatial perspective, it can be concluded that the transformation of energy technology has a significant spatial impact on the quality of economic growth, as evidenced by the  $WX * lnet$  and  $WX * (lnet)$  terms. The effect exhibits a "U" - shaped variation, and under the weight matrix of geographical distance, the "U" - shaped impact coefficient of energy technology transformation on the quality of economic growth is greater. This is reflected in the stronger effect of energy technology transformation on the quality of economic growth under the influence of spatial geographical distance. It should be noted that the Moran's index test on spatial correlation in the previous text only applies to the dependent variable quality itself, while the spatial lag terms  $WX * lnet$  and  $WX * (lnet)$  2 here are both aimed at the spatial spillover effects of the core explanatory variable energy technology transformation  $lnet$  on the quality of economic growth, and there is no contradiction between the two results. In addition, in terms of controlling variables, both environmental regulation level and population density have a negative impact on the quality of external economic growth. Among them, the spatial inhibitory effect of environmental regulation level on the quality of economic growth is stronger, and under the geographical distance weight matrix, the impact coefficients of each indicator are relatively large, as shown in Table 2

**Table 2** Double Fixed Effect SDM in Different Matrices

	0-1 Adjacency Distance Weight Matrix		Geographic Distance Weight Matrix		Geographic Economic Distance Weight Matrix	
	Coef.	z	Coef.	z	Coef.	z
lnet	-0.0196**	-2.1900	-0.0189**	-2.2300	-0.0168*	-1.9600
(lnet)2	0.0020***	2.5700	0.0012*	1.7200	0.0012*	1.7000
Gov	0.1709*	1.8500	0.0530	0.6300	0.0254	0.2900
ICT	-0.0943***	-2.4000	-0.0909**	-2.3200	-0.0819**	-2.0000
Urb	-0.0033	-0.1200	0.0263	0.8800	-0.0016	-0.0600
People	-0.9268***	-4.6200	-1.6583***	-7.7500	-1.3450***	-6.3300
Regulation	-1.5354	-0.8600	-4.4696**	-2.4500	-2.9900	-1.6500
Open	-0.0072	-0.4100	-0.0241	-1.3900	-0.0011	-0.0600
Wx * lnet	-0.0504**	-2.3900	-0.1768***	-3.0800	-0.0576**	-2.3600
Wx * (lnet)2	0.0039**	2.4800	0.0181***	3.8100	0.0064***	3.3000
Wx * Gov	-0.2283	-1.4100	-0.1399	-0.2400	0.0496	0.2100
Wx * ICT	-0.0565	-0.8200	0.2727	1.3400	0.0507	0.8100
Wx * Urb	0.0417	0.6400	0.5808***	3.0500	0.0529	0.8500
Wx * People	-2.3534***	-4.1200	-8.7666***	-6.2100	-1.6284***	-4.1500
Wx * Regulation	-8.5109**	-2.1000	-34.3868***	-2.7600	-8.9452*	-1.7100
Wx * Open	-0.0144	-0.4600	-0.1993**	-1.9700	-0.0408	-1.3600
$\rho$	0.1770***	3.2300	-0.4693***	-2.6200	0.0279*	0.3500
$\sigma^2$	0.0012***	17.2200	0.0012***	17.2000	0.0013***	17.3200
Log-likelihood	1161.5649		1160.9096		1151.0245	

**Note:** \*\*\*Indicates significance at the 0.01 level, \*\*Indicating significance at the level of 0.05\*, Indicating significance at the level of 0.1

Through the results of spatial econometric models, it can be concluded that the impact of energy technology transformation on the quality of economic growth is not simply a promotion or inhibition relationship, but presents a "U" - shaped influence relationship, that is, its impact on the quality of economic growth varies at different stages of energy technology transformation, confirming the hypothesis in this chapter.

#### 4.2.2 Reliability Analysis

In terms of the direct effects of energy technology transformation, there is a significant "U-shaped" relationship between energy technology transformation and the quality of economic growth within the region, and the effect is even stronger under the influence of regional geographical adjacency. This indicates that in the short term, the level of energy technology transformation is relatively weak, whether from the perspective of energy-saving and emission reduction technology innovation or non fossil energy utilization technology innovation. Its high cost and low benefits cannot compensate for the environmental benefits brought by green innovation; In the long run, mature energy technology can play a good role in economies of scale, and through the non-equilibrium power of technology, promote the reconfiguration of factor resources, drive the development of the clean energy industry, achieve dual benefits of economy and environment, and improve the quality of economic growth.



### 4.2.3 Validity Analysis

#### 1) Analysis and Statistics

In terms of the indirect effects generated by energy technology transformation, the impact of energy technology transformation within the region on the quality of external economic growth also presents a "U" - shaped effect, and the effect is stronger under the influence of regional geographical distance. The reason for this may be that although energy technology patents are intangible assets, the positive externalities of technology and knowledge achievements promote the circulation and imitation of technological elements. When the level of energy technology is low in the short term, the technology core areas will rely on market mechanisms to absorb factor capital from neighboring regions. The transfer of factors causes a significant decrease in productivity in geographically adjacent provinces and economically disadvantaged areas. Energy technology spillover dominated by polarization effects cannot exert positive economic and environmental benefits on external regions.

#### 2) Effectiveness Analysis Results

Compared to short-term spatial effects, the spatial effects of energy technology transformation are more pronounced in the long term. In the long run, the level of energy technology transformation gradually matures, and at this time, both the diffusion ability of regional energy technology and the absorption ability of energy technology receiving areas are improved. The replication and transfer of energy technology transformation achievements between regions, as well as the development of production methods and green trade activities, will to some extent promote the transformation of green industry structure in neighboring regions, form a regional energy technology leading and driving green industry development model, and thus promote the coordinated improvement of economic growth quality.

#### 3) Verification Statistics

From the perspective of policy timeliness, on the one hand, energy conservation policies have short-term policy effects, but their sustainability is not strong, while the immediate effects of new energy industry policies are relatively poor, with more significant effects in the long term. This indicates that promoting the transformation and development of high energy consuming industries is a long process, and China should attach great importance to the dependence of industrial development on fossil energy consumption such as coal, and provide necessary support for the transformation and development of energy enterprises. On the other hand, the lagged effect of the energy policy combination is also more significant. This indicates that in the short term, the fact that China is the world's largest energy consumer and greenhouse gas emitter cannot be changed. We should fully recognize the long-term and arduous nature of the energy transformation process and energy policy transformation work, clarify the long-term strategic goals of energy policy formulation, and integrate them with social and economic activities to promote the optimization of energy resource allocation and the upgrading of consumption structure, promote the green development of industries, and thereby improve the quality of economic growth

## 4.4 Summary of the Results

The empirical findings from this study confirm that energy technology transformation has a nonlinear "U"-shaped relationship with the quality of economic growth in China. In the early stages, energy technology transformation exhibits a suppressive effect on growth quality due to high initial costs, low technological maturity, and limited diffusion capacity. However, as the transformation process matures, its effect turns positive, promoting more efficient resource allocation, driving clean energy industries, and ultimately enhancing economic growth quality. The Spatial Durbin Model (SDM), supported by robust verification through Wald, LR, and Hausman tests, proves to be the



most appropriate modeling framework. The model captures not only direct regional effects but also significant spatial spillover effects, where advancements in one region's energy technology transformation affect neighboring regions' economic performance. The strength of this spatial influence is most pronounced under the geographic distance weight matrix, suggesting the importance of physical proximity in the diffusion of technological and economic benefits.

Among the control variables, information and communication technology (ICT) levels and population density have statistically significant negative impacts on internal and external economic growth quality. Meanwhile, environmental regulation, though intended to promote sustainability, shows a negative spatial effect, indicating possible regulatory burden or inefficiencies when poorly implemented. Furthermore, the results demonstrate that policy interventions play a critical role in moderating the effects of energy transformation. Energy conservation policies are effective in the short term but lack sustainability, while new energy industry policies show delayed yet stronger long-term impacts. The combination of these policies presents the most promising pathway for sustained and coordinated regional economic development.

Overall, the study confirms the hypothesis that energy technology transformation exerts complex, dynamic, and spatially heterogeneous effects on economic growth quality. This highlights the necessity for stage-specific, regionally adaptive policy measures and long-term strategic planning in China's ongoing energy and economic transition.

## **5. Conclusion, Discussion, and Recommendation**

### **5.1 Conclusion**

Through simulation analysis, this study confirms that the future trajectory of China's economic growth quality is closely tied to the progress of its energy transformation. Among the three main pathways, energy structure transformation, energy technology transformation, and energy policy transformation, each plays a significant and complementary role in improving the quality of economic growth. The findings show that these pathways do not operate in isolation; instead, their individual and combined effects vary depending on regional conditions and developmental stages.

Notably, the transformation of the energy structure emerges as a key driver in the long term, while energy policy transformation provides the strongest influence in the short to medium term. Energy technology transformation, often led by innovation at the enterprise level, also plays an essential role, though its effectiveness is contingent on proper policy guidance and structural targets. The interaction between these pathways offers a strategic basis for regional governments to tailor energy transition strategies that align with local economic and resource conditions.

### **5.2 Discussion**

The simulation results reveal that energy transformation strategies have distinct impacts depending on their application, either individually or in combination. When examined independently, energy policy transformation shows the strongest impact on improving economic growth quality due to its broad regulatory and institutional influence. Over time, this impact becomes even more pronounced. Before 2030, energy structure and technology transformation appear to have comparable effects. However, by 2050, energy structure transformation takes precedence, suggesting that long-term growth quality benefits rely heavily on adjusting the underlying energy mix.

Interestingly, while energy technology transformation provides the innovation engine for progress, it may lead to suboptimal outcomes if pursued without supportive policy frameworks and clear structural targets. Blind technological advancement risks inefficient resource allocation and increased opportunity costs, ultimately undermining the quality of economic growth.

Moreover, combined transformation strategies reveal varying levels of effectiveness. The combination of energy policy transformation with energy structure transformation proves to be the most effective, significantly boosting economic growth quality over time. In contrast, combinations that exclude energy policy, such as energy structure and technology transformation alone, yield relatively weaker outcomes. This underscores the importance of government-led policy frameworks in coordinating and amplifying the effects of structural and technological shifts.

The study also highlights the importance of regional differentiation in energy strategy formulation. Due to disparities in basic infrastructure and economic maturity, many regions in China may struggle to implement all three transformation paths equally. Therefore, a flexible, context-specific approach, wherein local governments prioritize transformation pathways best aligned with their development status, emerges as a practical solution for achieving balanced and high-quality regional growth.

### **5.3 Recommendation**

Based on the findings, several key recommendations are proposed to guide future energy transformation strategies and ensure sustained improvement in economic growth quality:

First, greater emphasis should be placed on energy structure transformation, particularly as its benefits become more evident in the long run. This involves increasing the share of low-carbon and renewable energy in the national energy mix, while optimizing the use of China's dominant fossil energy resources, such as coal, in a cleaner and more efficient manner.

Second, energy policy transformation should remain central to the transition strategy. Institutional reforms, regulatory clarity, and government-led frameworks are essential to direct and coordinate the broader transformation efforts. Strong policy support not only ensures more effective implementation of structural and technological measures but also mitigates the risks associated with market uncertainty and innovation failures.

Third, while energy technology transformation is crucial, it must be strategically guided by national and regional policy goals. Enterprises should be encouraged to adopt advanced technologies through targeted incentives and innovation support systems, particularly those that enhance energy efficiency and reduce emissions.

Fourth, recognizing China's regional diversity, localized strategies should be developed based on each region's resource endowments, industrial base, and economic development level. Regions with mature economies and strong innovation capacity may focus more on technological advancement, while resource-dependent regions may prioritize structural optimization supported by policy reform.

Finally, achieving long-term high-quality economic growth through energy transformation requires a coordinated approach that balances energy supply and demand, fosters technological innovation, and ensures ecological sustainability. Only by integrating institutional reform, structural adjustment, and technological advancement can China construct a robust, low-carbon energy system

that supports its broader economic modernization goals.

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# **Quality of Work Life Affecting Organizational Commitment of Government Agencies' Staff in Thailand**

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### Abstract

This research investigates the relationship between quality of work life (QWL) and organizational commitment among staff in government agencies equivalent to Ministries in Thailand. In response to increasing demands for public sector efficiency, the study emphasizes the need to focus on employee well-being, satisfaction, and development as strategic components of human resource management. Drawing on Walton's (1973) framework of QWL and Allen and Meyer's (1990) three-component model of organizational commitment, the study aims to assess how specific dimensions of work life, such as compensation, safety, development opportunities, constitutionalism, social integration, work-life balance, and growth, affect employees' emotional attachment, sense of obligation, and desire to remain with their organizations. A quantitative research design was employed using a survey method. Data were collected from 390 government employees across 16 agencies using stratified random sampling. The research instrument underwent expert validation and reliability testing, and the data were analyzed using descriptive statistics and multiple regression analysis. The findings revealed that overall perceptions of QWL were at a medium level, with the highest ratings given to social integration and development of human capacities. Organizational commitment was also found at a moderate level, with normative commitment being most prominent. Regression analysis indicated that seven of the eight QWL dimensions had a statistically significant positive effect on organizational commitment, confirming the research hypothesis. In particular, development of human capacities, constitutionalism, social integration, and growth and security were among the strongest predictors. These results highlight the crucial role that well-rounded human resource policies play in fostering a committed workforce within bureaucratic settings. Based on the findings, the study recommends targeted interventions for public agencies to enhance work-life quality. These include personalized development planning, transparent performance evaluations, fostering inclusive and collaborative cultures, and adopting flexible work arrangements. Additionally, improvements in compensation fairness, health and safety standards, and communication practices are essential. Such measures not only boost organizational commitment but also contribute to improved public service delivery, staff retention, and institutional effectiveness in the long term.

**Keywords:** Quality of Work Life, Organizational Commitment, Government Agencies, Human Resource Development, Public Sector Employees

## 1. Introduction

The quality of work life (QWL) has emerged as a vital concept in human resource development, especially within public sector organizations. As the demand for more efficient, dedicated, and satisfied government employees increases, institutions must focus not only on operational effectiveness but also on the psychological and social well-being of their workforce. The concept of QWL emphasizes creating a supportive working environment that aligns with employees' personal and professional goals, contributing significantly to individual job satisfaction and, ultimately, to organizational success. In government agencies, where bureaucratic structures and job rigidity often dominate, integrating QWL initiatives can be a transformative approach to workforce development and retention.

Simultaneously, organizational commitment has been identified as a central construct in organizational behavior studies. A committed workforce ensures institutional stability and continuity, which are crucial for delivering consistent and efficient public services. Allen and Meyer's (1990) three-component model of organizational commitment, affective, continuance, and normative, provides a comprehensive framework to understand the various psychological links between employees and their organizations. In government agencies, enhancing commitment levels among staff can lead to lower turnover rates, improved morale, and increased public trust in service delivery.

This research paper explores how the concept of quality of work life influences organizational commitment in the context of government agencies. By analyzing these relationships, this study seeks to contribute meaningful insights for policy-makers, human resource practitioners, and administrators aiming to create more engaged and productive public sector organizations.

### 1.1 Background and Importance of the Problem

In recent decades, governments around the world have faced growing pressure to improve the efficiency and responsiveness of their agencies. These pressures stem from fiscal constraints, public demand for transparency, and the need to attract and retain skilled professionals. However, traditional models of workforce management in public administration often neglect the human aspects of employment, including employee satisfaction, well-being, and work-life balance.

Quality of work life, as introduced by Richard E. Walton (1973), provides a comprehensive model that addresses these concerns. Walton's eight critical dimensions, adequate and fair compensation, safe and healthy working conditions, development of human capacities, growth and security, social integration, constitutionalism, work-life balance, and social relevance, form a holistic view of what constitutes a satisfactory work environment. When these dimensions are implemented effectively in public agencies, they have the potential to improve employee morale, reduce absenteeism, and enhance overall institutional effectiveness.

Moreover, organizational commitment is a predictor of various desirable outcomes, such as job performance, organizational citizenship behaviors, and employee retention. According to Allen and Meyer (1990), affective commitment reflects an emotional attachment to the organization; continuance commitment pertains to the costs associated with leaving; and normative commitment involves a sense of moral obligation to remain. In the public sector, where employee motivation may differ from that in private enterprises, understanding these components becomes crucial in designing retention and engagement strategies.



Despite the acknowledged importance of QWL and organizational commitment, limited empirical research has been conducted in the context of government agencies, particularly in developing countries, where bureaucratic inertia and rigid job structures still prevail. There is a growing need to explore how improving the quality of work life can strengthen organizational commitment, thus enhancing employee performance and public service outcomes.

## **1.2 Research Question**

This research is guided by the overarching question:

- 1) What are the current perceptions of quality of work life among government employees?
- 2) How do the various dimensions of QWL, such as compensation, working conditions, and work-life balance, relate to different types of organizational commitment?
- 3) Are there significant differences in organizational commitment based on demographic or job-related factors such as age, tenure, or department?

By addressing these questions, the research aims to uncover meaningful patterns and relationships that can inform better management practices within government agencies.

## **1.3 Research Objective**

The primary objective of this study is to examine the relationship between quality of work life (QWL) and organizational commitment among staff in government agencies. To achieve this, the study sets out the following specific objectives:

- 1) To assess the current state of quality of work life in selected government agencies.
- 2) To examine the influence of quality of work life on the three components of organizational commitment.
- 3) To provide practical recommendations for enhancing employee satisfaction and organizational commitment in the public sector.

## **2. Literature Review**

### **2.1 Related Concepts and Theories**

Quality of work life (QWL) refers to the level of satisfaction individuals experience from their work and work environment. It addresses both physical and psychological aspects of well-being and is closely tied to how well the organization supports its employees' personal and professional needs. According to Richard E. Walton (1973), QWL comprises eight key dimensions: adequate and fair compensation, safe and healthy working conditions, development of human capacities, growth and security, social integration, constitutionalism, work-life balance, and social relevance. These dimensions collectively define the work environment and determine the extent to which employees feel supported, valued, and motivated.

Adequate and fair compensation implies that employees should receive wages and benefits that are both sufficient to support a decent standard of living and equitable when compared to others performing similar roles. Safe and healthy working conditions emphasize the importance of maintaining a work environment that promotes physical and mental well-being, including controlling noise, lighting, ventilation, and overall workplace safety. Development of human capacities refers to providing opportunities for employees to use and grow their skills and knowledge, which can increase their sense of self-worth and job satisfaction.

Growth and security relate to the potential for career progression and long-term job stability, while social integration focuses on fostering a sense of belonging, teamwork, and mutual respect among colleagues. Constitutionalism is concerned with protecting employees' rights and ensuring fairness in organizational policies and practices, including the right to voice concerns and privacy. Work-life balance is achieved when employees can effectively balance their professional responsibilities with their personal and family lives. Lastly, social relevance refers to how employees perceive the organization's role in contributing to broader societal goals, including environmental responsibility and community involvement.

Organizational commitment is defined as an employee's emotional attachment, loyalty, and obligation to remain with their organization. According to Allen and Meyer (1990), organizational commitment comprises three components: affective, continuance, and normative commitment. Affective commitment reflects an emotional connection and identification with the organization, where employees stay because they genuinely want to. Continuance commitment involves a recognition of the costs associated with leaving the organization, prompting employees to stay because they need to. Normative commitment is driven by a sense of moral obligation or loyalty, where employees remain because they feel they ought to, often influenced by social norms and ethical considerations.

Understanding the interplay between QWL and organizational commitment is essential for improving employee satisfaction and organizational performance, especially in government agencies, where motivation may not always be driven by financial incentives but by meaningful work, job security, and alignment with public service values.

## 2.2 Literature Surveys

Several empirical studies have been conducted to examine the relationship between quality of work life and organizational commitment across various sectors. For instance, Ekkarat Isaro, Phamorn Khanthahat, and Tanisorn Yeunyong (2022) studied personnel from subdistrict administrative organizations in Mueang Phra Nakhon Si Ayutthaya District. Their research, based on a sample of 266 individuals out of a population of 794, found that social integration, constitutionalism, and work-life balance significantly influenced organizational commitment. This suggests that a supportive and fair work environment, along with a healthy work-life balance, plays a critical role in fostering commitment among public sector employees.

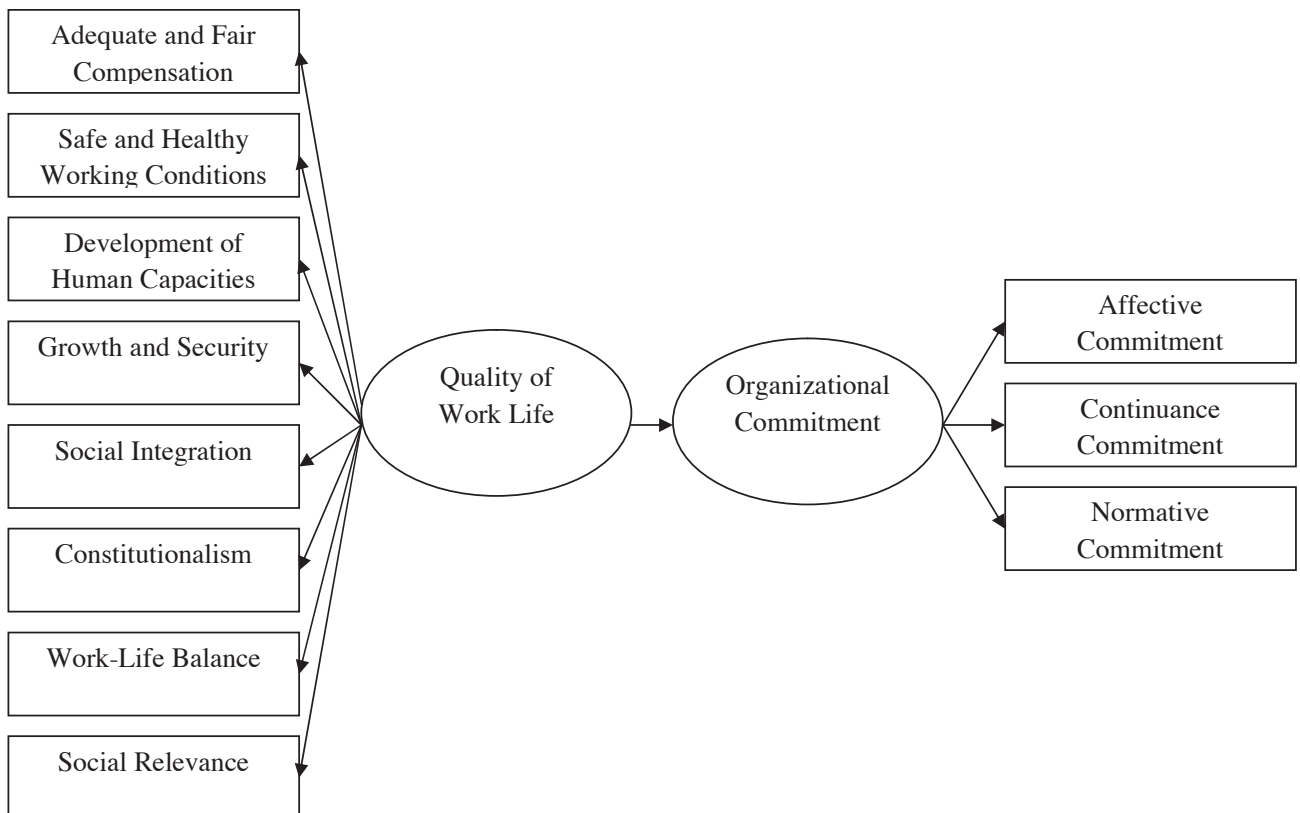
Similarly, Achara Phanusant and Akkawan Sangwipak (2022) conducted a study on employees at the operational level in the oil refinery industry located in the Laem Chabang Industrial Estate. Their sample of 330 participants revealed that adequate compensation, opportunities for advancement, work-life balance, and development of employee abilities had a significant impact on organizational commitment. These findings emphasize the importance of financial security, personal growth, and balanced workloads in retaining skilled employees in industrial settings.

In another study, Zhactita Geatjinda and Chinnaso Visitnitikija (2022) examined employees at Eternity Grand Logistics Public Co., Ltd. Their results demonstrated that constitutionalism, social integration, and work-life balance were key QWL factors that contributed positively to organizational commitment. The study highlights that employees' perception of fairness, inclusion, and manageable work-life responsibilities influence their loyalty and willingness to stay with the organization.

Additionally, Siriporn Moonmuang (2021) researched staff at the Saimai District Office in Bangkok, with a sample size of 245 personnel. The study found that the development of human capacities and social relevance were significantly associated with organizational commitment. These findings indicate that employees who are given the chance to grow and who believe their work has a positive societal impact are more likely to feel committed to their organization.

These studies collectively support the notion that various dimensions of quality of work life have a measurable effect on the different forms of organizational commitment. Although the specific factors that influence commitment may vary across sectors, common themes such as fairness, growth opportunities, social support, and work-life balance consistently emerge as critical determinants.

### 2.3 Conceptual Framework



**Figure 1** Conceptual Framework

## 2.4 Research Hypotheses

Based on the review of related theories and previous research findings, the following hypotheses are proposed to guide the current study:

H1: There is a significant relationship between the perceived quality of work life and affective commitment among government employees.

H2: There is a significant relationship between the perceived quality of work life and continuance commitment among government employees.

H3: There is a significant relationship between the perceived quality of work life and normative commitment among government employees.

These hypotheses aim to explore how employees' perceptions of their work environment influence different aspects of their psychological attachment to the organization. Testing these hypotheses will provide insight into which elements of QWL are most influential in shaping organizational commitment in the context of government agencies.

## 3. Research Methodology

### 3.1 Research Design

This study employs a quantitative research methodology using a survey research design. The purpose is to collect standardized data from a large sample of staff in government agencies equivalent to Ministries in Thailand to analyze relationships between quality of work life and organizational commitment.

### 3.2 Population and Sample

The population of the study consists of 9,421 staff members across 16 government agencies equivalent to Ministries in Thailand, according to data provided by the Office of the Civil Service Commission (2021).

The appropriate sample size was determined using Taro Yamane's formula (Silpjaru, T., 2007) with a confidence level of 95% and a margin of error of 0.05:

$$n = \frac{N}{1 + Ne^2}$$

when n = Sample size  
 N = Total amount of population using for this study  
 e = Acceptable error value is equal to 0.05

stand for formula

$$n = \frac{9,421}{1 + (9,421 \times 0.05^2)}$$

$$n = 383.71$$

Thus, the final sample size was rounded to 390 respondents.

**Sampling Method:** The study used probability sampling with a proportional stratified random sampling technique. Each agency's sample size was proportionate to its population. See Table 1 for details:

### 3.3 Research Instruments

The research instruments used were questionnaires, which were developed based on theoretical concepts, prior research, and related literature to cover key study variables, objectives, and hypotheses.

- Content Validity: Assessed by five experts, yielding a content validity index of 0.94.
- Pilot Testing: Conducted with 30 government staff members.
- Reliability: Tested using Cronbach's Alpha Coefficient. Items with Alpha values  $\geq 0.70$  were considered reliable.

### 3.4 Data Collection

Data were collected using the validated and reliable questionnaire, distributed to a stratified random sample of 390 respondents across the 16 government agencies. Ethical considerations, such as informed consent and anonymity, were adhered to throughout the process.

### 3.5 Statistics Used for Data Analysis

The following statistical methods were applied to analyze the collected data:

1) Frequency and Percentage: To describe general demographic information of the respondents.

2) Mean ( $\bar{x}$ ) and Standard Deviation (S.D.): For assessing quality of work life and organizational commitment.

3) Multiple Regression Analysis: To examine the influence of quality of work life on organizational commitment among government agency staff in Thailand.

## 4.4 Data Analysis and Findings

### 4.1 Introduction

There were 390 staff or 100.00 % of sample size, who completed the questionnaire, responded the questionnaire back from 16 agencies. Most of the respondents are 239 female or 61.28%. 117 staff or 30% are in the age between 41 and less than 50 years old. 251 staff or 64.36% graduated in the bachelor degree. 138 staff or 35.38% of most respondents have experienced in their agencies about 5-10 years of government agencies in Thailand

## 4.2 Data Analysis of the Quantitative Data

**Table 2** Mean ( $\bar{x}$ ) and Standard Deviation (S.D.) of Quality of Work Life and Organizational Commitment

Quality of Work Life	$\bar{x}$	S.D.	Interpretation
<b>Adequate and Fair Compensation</b>			
1. You received all forms of adequate compensation in your company in order to pay costs of your living in the current economy.	2.83	.954	Medium
2. You received all forms of proper and fair compensation compared to other company in the same job and industry.	3.17	.796	Medium
<b>Safety and Healthy Working Conditions</b>	3.15	.832	Medium
3. Your work has taken care of the environment in order to provide safety, clean, no pollution and healthy working conditions always.			
4. Your workplace has the clear rules or the measures on the working conditions, safety, accident prevention and environment to promote healthy.	3.23	.769	Medium
<b>Development of Human Capacities</b>	3.58	.648	High
5. Your work is the interesting and challenging job to give you the opportunity to develop the knowledge and skills to work.			
6. Your work can use your skills to work and feel challenged and valued in the work.	3.47	.693	Medium
<b>Growth and Security</b>	3.23	.799	Medium
7. You feel that your work, your company and your revenue are stable.			
8. You are supported from your supervisor to the progressive career.	3.33	.768	Medium
<b>Social Integration</b>	3.70	.599	High
9. You have a good relationship with colleagues at all times.			
10. You can get help from your colleagues always.	3.64	.609	High
<b>Constitutionalism</b>	3.23	.805	Medium
11. You feel that the evaluation of your performance related to the fair compensation.			
12. You think that promotion process of employees in your company is transparent and fair.	3.03	.926	Medium
<b>Work-Life Balance</b>	3.15	.880	Medium
13. You feel satisfied with your work time, personal and family time.			
<b>Social Relevance</b>			
15. You get a chance to participate in the activities of your company that are beneficial to your community or society.	3.39	.766	Medium
16. Your company made a part of social responsibility such as waste disposal or reduction or other relevant in	3.37	.752	Medium

your manufacturing.

Quality of Work Life	$\bar{x}$	S.D.	Interpretation
1. Adequate and fair compensation	3.00	.875	Medium
2. Safety and healthy working conditions	3.19	.801	Medium
3. Development of human capacities	3.53	.671	High
4. Growth and security	3.28	.784	Medium
5. Social integration	3.67	.604	High
6. Constitutionalism	3.13	.866	Medium
7. Work-life balance	3.24	.812	Medium
8. Social relevance	3.38	.759	Medium
<b>Quality of Work Life</b>	<b>3.30</b>	<b>.772</b>	Medium

Organizational Commitment	$\bar{x}$	S.D.	Interpretation
<b>Affective Commitment</b>			
1. You are willing to work in this organization for your lifetime.	3.29	.853	Medium
2. You feel involved in this organization and dedicated effort in working for this organization.	3.53	.724	High
3. Although other organizations have to offer a higher compensation than this organization but you do not think to leave this organization.	3.18	.882	Medium
4. You will not leave this organization because you feel a sense of obligation to employees and executive in this organization.	3.13	.881	Medium
<b>Continuance Commitment</b>			
5. You feel that the problem of your organization is your problem.	3.28	.759	Medium
6. You continue to work every day as this organization, this is your second home.	3.56	.704	High
7. You try to work for this organization fully without thinking about leaving this organization.	3.18	.882	Medium
<b>Normative Commitment</b>	3.47	.738	Medium
8. You feel that you are a part of this organization.			
9. This organization has meant a lot to you without changing to the other organizations.	3.27	.801	Medium
10. You have the loyalty of this organization and willing to dedicate yourselves to this organization.	3.31	.766	Medium

Organizational Commitment	$\bar{x}$	S.D.	Interpretation
1. Affective commitment	3.28	.835	Medium
2. Continuance commitment	3.34	.781	Medium
3. Normative commitment	3.35	.768	Medium
<b>Organizational Commitment</b>	<b>3.23</b>	<b>.795</b>	Medium

From Table 2, it was found out that the respondents have the opinion towards quality of work life at medium level of the average  $\bar{x} = 3.30$ , S.D.= .772. When analyzing each aspect, it was found out that there are some aspects having high level of the average as follows: social integration has the maximum average at  $\bar{x} = 3.67$ , S.D.= .604 and the second level is development of human capacities at  $\bar{x} = 3.53$ , S.D.= .671 accordingly. Other aspects are in the medium level as follows: social relevance at  $\bar{x} = 3.38$ , S.D.= .759; growth and security at  $\bar{x} = 3.28$ , S.D.= .784; work-life balance at  $\bar{x} = 3.24$ , S.D.= .812; safe and healthy working conditions at  $\bar{x} = 3.19$ , S.D.= .801; constitutionalism and adequate and fair compensation are at  $\bar{x} = 3.13$ , S.D.= .866. and 3.00, S.D.= .875. accordingly. Moreover, it was found out that the respondents have the opinion towards organizational commitment at the medium level of the average  $\bar{x} = 3.23$ , S.D.= .795. When analyzing each aspect, it was found out that there are some aspects having medium level of the average as follows: normative commitment has the maximum average at  $\bar{x} = 3.35$ , S.D.= .768; the second level is continuance commitment at  $\bar{x} = 3.34$ , S.D.= .781 and affective commitment is  $\bar{x} = 3.28$ , S.D.= .835 accordingly.

**Table 3** Results of Multiple Regression Analysis between Quality of Work Life and Organizational Commitment

Variables		
	$\beta$	$p$
Constant		.000*
Adequate and Fair Compensation	.120	.001*
Safe and Healthy Working Conditions	.110	.003*
Development of Human Capacities	.207	.000*
Growth and Security	.128	.001*
Social Integration	.140	.000*
Constitutionalism	.185	.000*
Work-Life Balance	.109	.003*
Social Relevance	.045	.226
$R^2$	.427	
Adjusted $R^2$	.419	
F-value	51.054	

**Note:** \* Significant at the level 0.05

From Table 3, as seen from the coefficient of determination, adjusted  $R^2$ , accounted for 41.9 % of organizational commitment; development of human capacities:  $\beta = .207$ ,  $p < .05$ ; constitutionalism:  $\beta = .185$ ,  $p < .05$ ; social integration:  $\beta = .140$ ,  $p < .05$ ; growth and security:  $\beta = .128$ ,  $p < .05$ ; adequate and fair compensation:  $\beta = .120$ ,  $p < .05$ ; safe and healthy working conditions :  $\beta = .110$ ,  $p < .05$  and work life balance:  $\beta = .109$ ,  $p < .050$ . It shows that support Hypothesis quality of work life in terms of development of human capacities, constitutionalism, social integration, growth and security, adequate and fair compensation, safe and healthy working conditions and work life balance have an effect towards organizational commitment with significantly at 0.05.



### 4.3 Summary of the Results

The analysis revealed that staff in government agencies equivalent to Ministries in Thailand perceived their overall quality of work life at a medium level. Among the various dimensions, social integration and development of human capacities were rated the highest, indicating that staff enjoy good relationships with colleagues and have opportunities to apply and develop their skills. Other aspects such as work-life balance, growth and security, and compensation were viewed positively but at a more moderate level. Organizational commitment was also found to be at a medium level, with staff expressing a moderate sense of loyalty, involvement, and obligation to remain with their organizations. Normative commitment emerged as the most prominent aspect, followed closely by continuance and affective commitment. The findings confirmed that several dimensions of quality of work life, particularly development of human capacities, constitutionalism, social integration, growth and security, fair compensation, safe working conditions, and work-life balance, play a significant role in influencing organizational commitment. This supports the research hypothesis and highlights the importance of investing in quality of work life to strengthen staff commitment within government agencies in Thailand.

## 5. Conclusion, Discussion, and Recommendation

### 5.1 Conclusion

This study concludes that the quality of work life significantly influences the organizational commitment of staff working in government agencies equivalent to Ministries in Thailand. The dimensions of quality of work life, namely development of human capacities, constitutionalism, social integration, growth and security, adequate and fair compensation, safe and healthy working conditions, and work-life balance, all contribute positively to enhancing the commitment of personnel. When these factors are present and well-managed within the organization, employees are more likely to develop a strong emotional connection, remain loyal to the organization, and be motivated to contribute to its success.

### 5.2 Discussion

The impact of quality of work life on organizational commitment among government personnel in Thailand can be explained through several interrelated factors. First, job satisfaction plays a foundational role. Employees who experience fair treatment, career growth opportunities, and supportive working conditions tend to report higher satisfaction levels, which strengthen their organizational commitment. A positive working environment also gives personnel a sense of value, making them feel like important and appreciated members of the organization. Furthermore, promoting work-life balance reduces stress, enhances well-being, and encourages a deeper connection with the workplace.

Opportunities for personal development, such as training and education, directly contribute to staff's professional growth and long-term commitment. An organizational culture that prioritizes quality of life reflects an atmosphere of care and mutual respect, fostering a strong sense of belonging. In Thailand, cultural values such as respect, harmony, and mutual support amplify this effect. Additionally, job security, which is particularly valued in Thai government institutions, reinforces employees' long-term dedication. Participation in decision-making increases employees' sense of ownership, while improved work efficiency, supported by a good quality of life, further strengthens their loyalty and motivation. These findings are consistent with previous studies

conducted by Ekkarat Isaro, Phamorn Khanthahat, and Tanisorn Yeunyong (2022), Achara Phanasant and Akkawan Sangwipak (2022), and Zhactita Geatjinda and Chinnaso Visitnitikija (2022), which confirmed the positive correlation between quality of work life and organizational commitment in both public and private sectors.

### 5.3 Recommendation

Based on the findings, several practical recommendations are proposed to enhance quality of work life and thereby strengthen organizational commitment among government agency staff in Thailand. Firstly, in the area of development of human capacities, organizations should implement Individual Development Plans (IDPs), support both internal and external training, and encourage a learning culture through mentoring, knowledge-sharing sessions, and the use of e-learning platforms. Assigning challenging tasks, rotating job roles, and promoting participation in conferences will provide meaningful growth opportunities. Internal learning centers and performance-linked evaluation systems should also be established, along with modern technologies such as AI and big data to personalize staff development plans.

In terms of constitutionalism, organizations should build and maintain a transparent and fair work environment by defining and reinforcing core organizational values, ensuring fairness in performance evaluations, and establishing inclusive policies. Encouraging staff participation in decision-making, maintaining consistent communication, and continuously improving policies based on feedback are essential actions to increase trust and organizational commitment.

For social integration, executives should create an open and friendly work culture that emphasizes equality and inclusion. Team-building activities, mentoring systems, open communication channels, shared workspaces, and diversity training should be prioritized. Strengthening team collaboration, conflict resolution, and rewarding strong team performance will further integrate personnel into the organizational community.

To improve growth and security, the organization should establish clear and communicated career paths, fair and transparent evaluation systems, and internal opportunities for advancement such as involvement in key projects or job rotation. Promoting job stability, aligning rewards with performance, and offering flexible benefits to meet staff needs are also vital. Clear communication of organizational vision and long-term goals will help employees see their role in the broader mission, increasing their engagement.

In addressing adequate and fair compensation, agencies should regularly review their compensation policies and benchmark them against both public and private sector standards. Providing income-generating opportunities, transparently communicating compensation criteria, implementing reward systems, and offering financial counseling will all contribute to a more motivated and committed workforce. Staff feedback should be used to refine these policies over time.

Improving safe and healthy working conditions involves maintaining well-ventilated and well-lit environments, ensuring access to safety equipment, and promoting employee health through wellness programs, stress-relief spaces, and safety training. Organizations should use staff feedback to regularly assess and improve working conditions, and implement technology to minimize job-related risks.

Finally, promoting work-life balance should be a strategic priority. This can be achieved through flexible work arrangements, minimizing unnecessary overtime, encouraging the use of annual leave, and offering family-friendly policies such as on-site childcare. Training in time and stress management, respecting personal time, organizing recreational activities, and using technology to improve efficiency are all important steps. By implementing these measures, government agencies will not only improve staff satisfaction and well-being but also strengthen long-term organizational commitment and performance.

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# **The Influencing Factors of International Marketing Strategy for IKEA Groups Products**

by

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### **Abstract**

With the rapid advancement of global economic integration, the importance of international marketing has garnered significant attention in both academic and business spheres. As enterprises increasingly seek opportunities in foreign markets, thorough market research and well-formulated marketing strategies have become essential steps before launching overseas operations. Effective international marketing strategies not only enhance a company's sales performance and profitability but also contribute to building a strong global brand image. Conversely, poorly planned strategies can lead to the failure of subsidiaries in target markets, damage the reputation of the parent company, and even result in financial losses and substantial debt. IKEA, a globally recognized multinational home furnishing retailer, provides a compelling case study of successful international marketing. With a product distribution network covering more than half of the world's regions and populations, IKEA's ability to expand internationally is largely attributed to its distinctive and adaptable marketing strategies. This study aims to analyze the effectiveness of IKEA's global marketing by examining four key components: product strategy, pricing strategy, place (distribution) strategy, and promotion strategy. Drawing on existing literature and adopting a quantitative research approach, the study collected data through 400 questionnaires, of which 336 were valid, resulting in an effective response rate of 84.0%. The research findings indicate that all four factors significantly impact IKEA's international marketing success. Based on these insights, the study proposes several targeted recommendations: strengthen professional expertise and invest in product research and development; improve pricing strategies to ensure competitiveness and local market alignment; adopt modern advertising techniques and leverage e-commerce platforms; and innovate promotional methods through personalized, culturally relevant marketing campaigns. These strategies not only support sustained growth in international markets but also offer valuable lessons for other multinational companies pursuing global expansion.

**Keywords:** International Marketing, Global Expansion, Marketing Strategy, Multinational Enterprises, IKEA

## **1. Introduction**

### **1.1 Background and Importance of the Problem**

With the accelerating pace of economic globalization, numerous countries and regions have initiated cooperative efforts to pursue shared economic growth, making international trade and marketing critical channels for the cross-border flow of capital. Multinational enterprises, as the main drivers of international marketing, have not only emerged from globalization but have also actively contributed to its progress. The growing influence of these corporations reflects the deepening of globalization and marks an irreversible trend in global commerce. In today's open and inclusive international marketing environment, the rise of diverse and personalized consumer demands offers significant growth opportunities for multinational enterprises. To capture market share and fuel expansion, many of these enterprises have fast-tracked large-scale overseas ventures. However, in executing international marketing strategies, they face a host of new challenges and complexities (Alexis, 2021). In the era of Marketing 4.0, driven by the rapid evolution of internet technologies and e-commerce platforms, traditional multinational companies must swiftly adapt to seize emerging opportunities and respond to these new challenges. Developing effective marketing strategies that align with changing customer behaviors, market dynamics, and technological advancements has become essential to long-term success in international markets.

### **1.2 Research Question**

This study seeks to address the following key research questions:

- 1) How do product, price, place (distribution), and promotion strategies affect the effectiveness of IKEA's international marketing efforts?
- 2) What challenges does IKEA encounter when implementing its marketing strategies in diverse global markets, particularly in the era of Marketing 4.0?
- 3) What improvements or adjustments can be made to IKEA's current international marketing strategies to enhance its competitiveness and responsiveness to evolving consumer demands worldwide?

### **1.3 Research Objective**

This study aims to explore and evaluate the international marketing strategy of IKEA by focusing on key elements that influence its global success. The specific research objectives are as follows:

- 1) To analyze the impact of product, price, place (distribution), and promotion strategies on IKEA's international marketing performance and how these elements contribute to the company's global competitiveness.
- 2) To identify the challenges and opportunities IKEA faces in the context of Marketing 4.0, particularly with the rise of internet technologies, digital platforms, and changing consumer behavior in international markets.



3) To propose strategic recommendations for enhancing IKEA's international marketing practices, with the goal of improving adaptability, customer engagement, and long-term profitability in diverse global environments.

## **2. Literature Review**

### **2.1 Related Concepts and Theories**

Marketing theory has evolved significantly over time, adapting to changes in consumer behavior, technology, and global commerce. The American Marketing Association (2013) defines marketing as a set of activities focused on creating value for specific target groups within a particular environment. Philip Kotler elaborates that marketing serves the purpose of satisfying consumer needs while maximizing profit, highlighting the importance of managing customer relationships for sustained business success. Jerome McCarthy's 4Ps theory, Product, Price, Place, and Promotion, remains a cornerstone of marketing strategy.

- Product Strategy involves designing offerings that meet customer needs through differentiation and variety.
- Price Strategy includes cost-based, demand-based, and competition-based approaches.
- Place Strategy focuses on efficient distribution to maximize reach.
- Promotion Strategy leverages both traditional and digital communication to engage with target customers.

Philip Kotler also contributed the STP framework (Segmentation, Targeting, Positioning), which emphasizes precise audience segmentation and strategic positioning. Slater (2020) modernized McCarthy's model to align with digital trends, while scholars like Banerjee & Bhardwaj (2019) stressed efficient resource use and uncovering untapped market segments. In addition, Vilkaite-Vaitone & Skackauskiene (2020) introduced green marketing as a core strategy that integrates sustainability into marketing frameworks to align with consumer values and environmental concerns.

### **2.2 Literature Surveys**

The literature highlights various advancements in both general and international marketing strategies. Kuria (2024) noted that social media serves dual roles, fulfilling demand and enhancing operational efficiency. In the global context, Faisal (2022) emphasized the necessity of a global market orientation for firms of all sizes to compete effectively. Earlier models, such as Volcker's (2009), promoted standardized product strategies assuming global homogeneity. However, modern research rejects this assumption, incorporating legal, cultural, and technological variables into strategic planning.

Bagozzi et al. (2021) advised firms to look beyond domestic boundaries and analyze foreign market dynamics deeply. Fregidou-Malama and Hyder (2021) pointed out that increased foreign investment enhances marketing adaptability, while Katsikeas et al. (2020) emphasized how digital transformation refines international strategy. The current consensus suggests that international marketing should strike a balance between global standardization and local adaptation. Dragičević (2020) defines international marketing as a value-driven cross-border exchange, while Alexis (2021) and Samiee (2020) warned of complex barriers, economic, political, and cultural, that can hinder successful strategy implementation.

Each of the 4Ps has been explored in-depth within the literature:

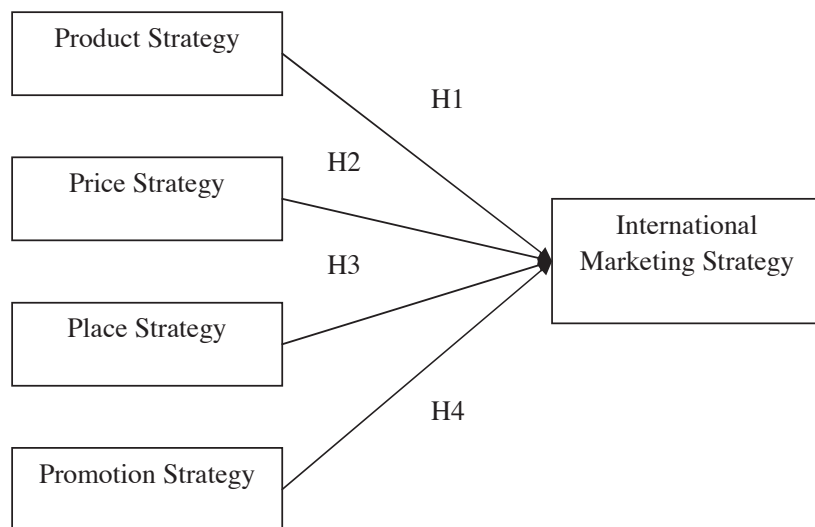
Product Strategy is at the core of marketing value, with consumer perception influenced by design, functionality, and service (Petty, 2017; Cant et al., 2015).

Price Strategy, as discussed by Johnsen (2020) and Chen & Zhu (2018), must balance cost, demand, and competition through flexible methods like installment terms or dynamic pricing.

Place Strategy emphasizes the importance of diversified distribution channels. IKEA, for example, combines physical retail stores with e-commerce platforms such as Amazon and Tao Bao (Katsikeas et al., 2020; Dragičević, 2020).

Promotion Strategy involves media engagement, where companies like IKEA use both traditional and digital platforms to connect with target demographics (Gasovic, 2021; Anderson, 2017).

## 2.3 Conceptual Framework



**Figure 1** Conceptual Framework

## 2.4 Research Hypothesis

Based on the reviewed literature and theoretical frameworks, this study proposes the following hypotheses to examine the relationships between key marketing components and IKEA's international marketing strategy:

H1: Product strategy has a significant effect on the international marketing strategy for IKEA Group's products.

H2: Price strategy has a significant effect on the international marketing strategy for IKEA Group's products.

H3: Place strategy has a significant effect on the international marketing strategy for IKEA Group's products.

H4: Promotion strategy has a significant effect on the international marketing strategy for IKEA Group's products.

### **3. Research Methodology**

#### **3.1 Research Design**

This study employs a quantitative research design to investigate the influence of marketing mix elements, product, price, place, and promotion strategies, on IKEA Group's international marketing strategy. The design is grounded in Marketing Theory and aims to test predefined hypotheses using structured data collected from participants. A cross-sectional survey method was adopted to collect data at a single point in time, allowing for statistical analysis of relationships among variables. This approach ensures objectivity, replicability, and the ability to generalize findings to a broader population.

#### **3.2 Population and Sample**

The target population for this study consists of members of the IKEA product membership group. These individuals were selected due to their familiarity with the brand and engagement with its products and services. The population includes a diverse range of individuals in terms of gender, age, income, and education levels. The study employed a simple random sampling method to ensure each member had an equal chance of selection, thereby enhancing the representativeness of the sample.

The required sample size was determined using the standard formula for sample size calculation at a 95% confidence level. Applying Yamane's formula with a 5% margin of error, the final calculated sample size was 420 respondents. A total of 420 questionnaires were distributed, and 336 valid responses were received, resulting in a response rate of 80%.

#### **3.3 Research Instruments**

The primary research instrument was a structured questionnaire designed to measure the impact of the 4Ps, product, price, place, and promotion strategies, on IKEA's international marketing strategy. Each item was assessed using a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), allowing respondents to express varying levels of agreement. The questionnaire included demographic questions and items aligned with the study's conceptual framework to ensure construct validity and relevance to the research objectives.

#### **3.4 Data Collection**

Data collection was conducted through direct distribution of questionnaires to selected IKEA members at various store locations, with support from store personnel. The selection process ensured

a random and unbiased representation of the target population. Participants were briefed on the purpose of the study and assured that their responses would remain confidential and used solely for academic purposes. Of the 420 questionnaires distributed, 336 were completed and returned in usable form, reflecting a high response rate and providing a robust dataset for analysis.

### **3.5 Statistics Used for Data Analysis**

The data collected were analyzed using both descriptive and inferential statistical methods. Descriptive statistics were used to summarize demographic information and provide an overview of respondents' general perceptions. Inferential statistics, including correlation analysis and multiple regression analysis, were employed to test the hypotheses and determine the strength and direction of the relationships between independent variables (product, price, place, promotion) and the dependent variable (international marketing strategy). Data analysis was performed using statistical software such as SPSS to ensure accuracy and reliability in the results.

## **4. Data Analysis and Findings**

### **4.1 Introduction**

In this study, Cronbach's Alpha was used to measure the reliability of the questionnaire. A value greater than 0.8 indicates good reliability, with values closer to 1 reflecting higher reliability and smaller measurement error. The Cronbach's Alpha values for the factors of product strategy, price strategy, place strategy, promotion strategy, and international marketing strategy were 0.858, 0.841, 0.887, 0.838, and 0.857, respectively. These results demonstrate that the questionnaire used in this study has high reliability.

### **4.2 Data Analysis of the Quantitative Data**

The KMO (Kaiser-Meyer-Olkin value) compares the simple correlation coefficients and partial correlation coefficients between variables, ranging from 0 to 1. The KMO value should be greater than 0.7, and a KMO value of 0.9 or above indicates that the data on the scale is "very suitable" for factor analysis. Survey data shows that the overall KMO value is 0.836, with a significance level of 0.000, which is less than 0.05 and reaches a significant level, indicating that factor analysis can be conducted. This study employs Confirmatory Factor Analysis (CFA). According to the factor analysis results of the variables, the cumulative explanatory rates of the influencing factors of product strategy, price strategy, place strategy, promotion strategy, and international marketing strategy are 86.324%, with significance levels greater than 0.5. This indicates their suitability for factor analysis. The factor analysis yields four valid factors: product strategy, price strategy, place strategy, and promotion strategy. The factor loadings of each measurement item in the questionnaire are all greater than 0.5, and the discriminant validity between dimensions is good, indicating good independence among the dimensions. This suggests that the overall validity of the questionnaire is good.

**Table1** Correlation between Variables

	<b>Product Strategy</b>	<b>Price Strategy</b>	<b>Place Strategy</b>	<b>Promotion Strategy</b>	<b>International Marketing Strategy</b>
Product Strategy	1				
Price Strategy	.643**	1			
Place Strategy	.665**	.753**	1		
Promotion Strategy	.642**	.754**	.736**	1	
International Marketing Strategy	.643**	.725**	.764**	.742**	1

**Note:** \*Correlation is Significant at the 0.05 Level (2-tailed). \*\*Correlation is Significant at the 0.01 Level (2-tailed).

The correlation between product strategy and international marketing strategy is 0.643, indicating a high degree of correlation between them. Product strategy serves as the foundation for international marketing strategy, as factors such as product adaptability and localization can influence its acceptance in international markets.

The correlation between price strategy and international marketing strategy is 0.725, indicating a high degree of correlation. Price strategy is particularly crucial in international marketing, as economic levels, consumption habits, and competitive environments in different countries and regions can affect pricing strategies.

The correlation between place strategy and international marketing strategy is 0.764, reflecting a high degree of correlation. Place strategy plays a role in international marketing, as distribution systems and logistics conditions in different countries and regions can impact product sales and distribution.

The correlation between promotion strategy and international marketing strategy is 0.742, demonstrating a high degree of correlation. Promotion strategy is an essential component of international marketing strategy, as promotional activities can help increase brand awareness, promote sales growth, and enhance consumer trust and loyalty towards the product. IKEA Group's product strategy, price strategy, place strategy, and promotion strategy are highly correlated with international marketing strategy. This suggests that when formulating an international marketing strategy, it is necessary to comprehensively consider the mutual influence and synergistic effects among these strategies.

**Table 2** Model Summary

Item	Unstd. B	Std. Beta	t	Sig.	VIF	F
C	0.765		7.163	0.000		
Product Strategy	0.720	0.731	6.650	0.000	1.124	43.54 ***
Price Strategy	0.645	0.628	6.691	0.000	1.353	
Place Strategy	0.673	0.634	6.624	0.000	1.251	
Promotion Strategy	0.635	0.642	6.687	0.000	1.343	
R Square			0.761			
Adjusted R Square			0.772			

Note: \*P<0.05, \*\*P<0.01, \*\*\*P<0.001

The standardized regression coefficient (Std. Beta) for product strategy is 0.731, indicating a significant positive impact of product strategy on international marketing strategy. The standardized regression coefficient for price strategy is 0.628, suggesting that price strategy is also an important positive influencing factor. The standardized regression coefficient for place strategy is 0.634, showing a positive impact of place strategy on international marketing strategy. The standardized regression coefficient for promotion strategy is 0.642, indicating that promotion strategy similarly has a positive impact on international marketing strategy.

The significance levels of all independent variables are 0.000, far below the usual significance level, suggesting that the effects of these independent variables on international marketing strategy are statistically significant. The Variance Inflation Factor (VIF) values for all independent variables are less than 2, indicating that there is no serious multicollinearity among the independent variables. The R Square (coefficient of determination) is 0.761, indicating that the independent variables in the model can explain 76.1% of the variability in the dependent variable. The Adjusted R Square (adjusted coefficient of determination), which considers the impact of the number of independent variables on the model's explanatory power, is 0.772, still relatively high, suggesting that the model has a good fit.

In summary, product strategy, price strategy, place strategy, and promotion strategy are important factors influencing IKEA Group's international marketing strategy. These factors all have significant positive impacts on international marketing strategy, and the model overall has good explanatory power and fit. To improve the international marketing strategy, the company can focus on these aspects.

### 4.3 Summary of the Results

The analysis of the data collected in this study confirms that IKEA Group's international marketing strategy is significantly influenced by the four key marketing mix elements: product strategy, price strategy, place strategy, and promotion strategy. The reliability and validity tests demonstrated that the questionnaire used to measure these constructs was both reliable and valid, with Cronbach's Alpha values exceeding 0.8 and factor loadings above 0.5, confirming strong internal consistency and construct validity. Correlation analysis revealed strong positive relationships between each of the four strategies and the international marketing strategy. Notably, place strategy showed the highest correlation (0.764), followed closely by promotion (0.742), price (0.725), and product strategy (0.643). These results highlight the critical role of distribution channels,

promotional activities, pricing policies, and product adaptation in shaping IKEA's success in global markets. Regression analysis further supported these findings, with all four independent variables exerting statistically significant positive effects on international marketing strategy. The standardized regression coefficients indicated that product strategy had the strongest influence, followed closely by promotion, place, and price strategies. The model explained approximately 76% of the variance in the international marketing strategy, suggesting a strong explanatory power and model fit. Overall, these findings emphasize the importance of integrating and balancing product development, competitive pricing, effective distribution, and innovative promotion to enhance IKEA's international marketing performance. This comprehensive approach enables the company to adapt to diverse market demands, optimize customer engagement, and maintain a competitive edge in the global home furnishing industry.

## **5. Conclusion, Discussion, and Recommendation**

### **5.1 Conclusion**

This study confirms that product, pricing, place, and promotion strategies significantly impact IKEA's international marketing strategy:

- 1) Product Strategy ensures market adaptability and strengthens brand image, enhancing competitiveness across diverse markets.
- 2) Price Strategy influences market share, profitability, and brand perception, requiring flexible adjustments to local economic conditions and consumer behavior.
- 3) Place Strategy determines market reach and operational efficiency by selecting and optimizing distribution channels to meet regional needs.
- 4) Promotion Strategy boosts brand awareness, consumer engagement, and loyalty through targeted marketing and incentives.

By effectively integrating these strategies, IKEA enhances its global presence, responds to market changes, and sustains competitive advantages. This research provides practical insights for other multinational companies aiming to optimize their international marketing strategies.

### **5.2 Discussion**

1) Product strategy plays a significant role in shaping IKEA Group's international marketing strategy. It includes product design, functionality, quality, branding, packaging, positioning, and product lines. For IKEA, ensuring that products meet the preferences of different countries is essential for international success. Localization is a key aspect when entering new markets, directly guided by product strategy. A clear and consistent product strategy enhances brand image, strengthens consumer loyalty, and influences purchasing decisions (Johnsen, 2020). Moreover, product strategy affects other marketing decisions, including branding, pricing, distribution, and promotion (Cant et al., 2015). Therefore, IKEA must continuously adjust its product strategy to adapt to diverse international markets and maintain competitiveness.



2) Price strategy is vital to IKEA Group's international marketing, affecting competitiveness, profitability, and consumer decisions. By adjusting prices to local economies and consumer needs, IKEA attracts more customers and expands its market share. It shapes IKEA's brand image as high-quality and cost-effective while helping the company respond to market changes. To stay competitive, IKEA considers costs, tariffs, and currency fluctuations when setting prices. Price strategy is essential for strengthening market position, brand image, and profitability (Dragičević, 2020; Katsikeas et al., 2020).

3) Place strategy is crucial to IKEA's international marketing, as it determines how products reach consumers and influences market reach and brand image. By choosing direct sales, distributors, or online platforms based on local conditions, IKEA maximizes coverage and builds consumer trust. Optimizing channels also reduces costs and improves efficiency, supporting better sales and profitability in global markets (Dragičević, 2020).

4) Promotion strategy is crucial to IKEA's international marketing, using advertising, discounts, giveaways, and events to increase brand awareness, attract consumers, and boost sales. Through social media and targeted promotions, IKEA enhances its global profile and differentiates itself from competitors. Promotions like special offers and incentives encourage purchases and improve consumer loyalty by providing a better shopping experience and after-sales service (Faisal, 2022).

Although existing research emphasizes the importance of product, pricing, place, and promotion strategies in shaping international marketing strategies, there is still a need to explore how these elements interact and adapt to dynamic global markets. For a multinational corporation like IKEA, understanding how to balance global standardization with local market adaptation is crucial for maintaining competitiveness. This study addresses the knowledge gap by analyzing how IKEA's marketing mix (4Ps) influences its international marketing strategy, providing insights into how firms can optimize these strategies to enhance market performance, brand image, and consumer loyalty.

### 5.3 Recommendation

Strengthening professional expertise and product R&D is crucial. This involves regular training for product managers and R&D personnel in market analysis, product design, and supply chain management. IKEA should foster a culture of innovation through incentive mechanisms and cross-departmental collaboration. IKEA must understand consumer needs across regions, adjusting product design and functionality accordingly while maintaining its signature style of simplicity and practicality.

Price management and reasonable pricing strategies are essential. IKEA should establish a comprehensive price monitoring system to track market fluctuations and competitor pricing and optimize supply chain management to control costs. A cost-plus pricing model, adjusted based on market demand and product value enhancement, can be employed.

Adopting trendy advertising and keeping abreast of e-commerce channels is vital. IKEA should leverage emerging media channels like social media and short video platforms for creative advertising, collaborate with influencers, and integrate social responsibility into its brand image. Enhancing e-commerce platforms with immersive technologies like VR/AR and expanding online sales channels through partnerships are also important.



Innovating promotional methods and developing personalized plans can boost brand influence. IKEA should integrate online and offline promotions, create thematic activities, and utilize social media for interactive campaigns. Collaborations with other brands and optimizing membership systems for personalized services can also attract more consumers.

By focusing on these areas, professional expertise, price management, trendy advertising, and innovative promotions, IKEA can strengthen its international market position and meet evolving consumer demands.

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**Social Stratification of Coffee consumption Groups in Guangxi,  
Research on the Mechanism of Influence on Consumption  
Behavior: The Moderating Role of Price Sensitivity**

by

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### **Abstract**

With the rapid growth of China's coffee market and the increasing popularity of coffee in regions like Guangxi, understanding consumer behavior has become essential for both researchers and practitioners. While existing studies often emphasize the health benefits, cultivation processes, or emotional motivations for coffee consumption, the role of socio-economic factors remains underexplored. This study aims to investigate the influence of social stratification on coffee purchasing behavior, with price sensitivity examined as a moderating variable. Grounded in the theories of Karl Marx and Max Weber, and supported by domestic research on social stratification, the study identifies education level, occupation, income, and vehicle ownership as indicators of social class. Lewin's behavior model provides the theoretical framework, positioning consumer behavior as the dependent variable and price sensitivity as a moderating factor. Data were collected through a survey of 412 coffee consumers in Guangxi and analyzed using correlation analysis, cross-tabulation, and regression models. The findings reveal that while social stratification alone does not significantly impact coffee purchasing behavior, price sensitivity plays a significant moderating role. Individuals with high price sensitivity demonstrate clearer behavioral differences across social classes. Age and income were found to significantly influence coffee preferences and price tolerance, while occupation and education showed more limited effects. Interestingly, consumers with greater coffee awareness tend to be more price-sensitive, reflecting a higher level of evaluative involvement. This research contributes to the literature by linking social stratification with price sensitivity in shaping consumer decisions. It provides practical insights for coffee brands in terms of market segmentation, branding strategies, and ethical pricing. Recognizing the nuanced role of price perception can help brands engage more effectively with diverse consumer groups in China's evolving coffee culture.

**Keywords:** Social Stratification, Consumer Behavior, Price Sensitivity, Coffee Consumption, Market Segmentation

## **1. Introduction**

### **1.1 Background and Importance of the Problem**

Since the introduction of coffee into the Chinese market over a century ago, the industry has experienced substantial growth, and coffee consumption has become a fashionable trend avidly embraced by consumers. According to data from iResearch, the market size of China's coffee industry reached 381.7 billion RMB in 2021. During the first half of 2022, the growth rate of coffee shops in Guangxi surged by 265%, with a total of 7,993 coffee-related businesses registered across 14 cities in the region. Influenced by Western lifestyles, coffee, as an imported product, has long been regarded as a symbol of a refined, high-quality lifestyle. Over time, coffee consumption has evolved into a means of savoring the moment. From the early sentiment of "No matter how busy, let's share a coffee together" to the contemporary humor of "Coffee is the cure for the daily grind, a cup of cold brew to get by," coffee has transitioned into a habitual consumer product, often placing a notable financial demand on consumers. Despite the popularity and growth of coffee consumption in Guangxi and the consistent interest from industry and academia alike, most research on coffee has focused on health impacts, both positive and negative, as well as agricultural aspects like cultivation, preservation, sorting, and roasting, or on consumer behavior issues such as motives and emotional responses. This study aims to fill a gap by investigating the relationship between social stratification and purchasing behavior among coffee consumers in Guangxi, assessing the moderating role of price sensitivity, supplementing prior research findings, and contributing new insights into consumer behavior analysis.

### **1.2 Research Question**

The study seeks to address two core questions: first, how to model the social stratification profile of coffee consumers in Guangxi; and second, how different social strata perceive and accept varying price ranges for coffee. Additionally, it examines the moderating effect of price sensitivity on the relationship between social stratification and purchasing behavior within coffee consumer groups.

### **1.3 Research Objective**

This study aims to investigate the influence of social stratification on coffee purchasing behavior among consumers in Guangxi, while also assessing how price sensitivity moderates this relationship. The objective is to provide valuable insights for consumer behavior research and market segmentation in the Guangxi region, supplementing existing research by exploring the underlying social and economic drivers of coffee consumption patterns.

## **2. Literature Review**

### **2.1 Related Concepts and Theories**

#### *2.1.1 Social Stratification*

Social stratification refers to the hierarchical ordering of social relationships, categorized into various levels across different eras based on diverse criteria. The theoretical foundations trace back to Karl Marx's class theory and Max Weber's multidimensional stratification theory. Lu Xueyi

proposed a social stratification system for China based on occupational classification, dividing society into ten tiers across five levels. Li Li simplified social stratification into three broad classes (upper, middle, and lower) using occupation, education, and income scores. Other scholars, such as Xie Jianshe and Huang Jiangquan, focus on household registration emphasizing the rural-urban divide, especially concerning migrant workers. With societal changes, stratification criteria have diversified, incorporating social and cultural influences. This study adopts education level, occupation, income, and household vehicle ownership as variables for stratification.

### *2.1.2 Consumer Behavior*

Consumer behavior is shaped by individual cognitive patterns, which can vary with different situations, making a single model difficult to apply universally. Following Watson's stimulus-response (S-R) theory, Kurt Lewin introduced the behavioral formula  $B = f(P, E)$ , where behavior (B) results from the interaction between the person (P) and environment (E). Personal factors such as age, education, occupation, and income significantly influence consumer behavior. Products' attributes are categorized as internal (usability, quality, functionality) and external (price, packaging, brand, reputation).

### *2.1.3 Price Sensitivity*

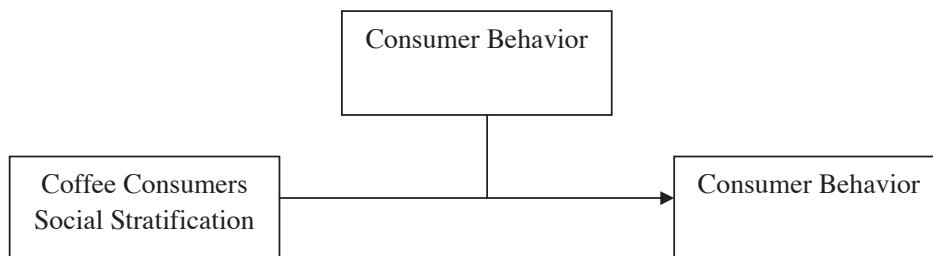
Price sensitivity refers to how consumers perceive and respond to price changes or differences. Factors affecting price sensitivity are divided into consumer factors (age, product familiarity, product cost proportion in budget, price expectations, perceived value) and product factors (availability of substitutes, product significance, uniqueness, usability, switching costs). Marketers may tailor strategies based on different consumer price sensitivities.

## **2.2 Literature Surveys**

Previous research indicates a positive correlation between price sensitivity and the proportion of product cost within consumer groups, showing that higher-income groups tend to have lower price sensitivity, while lower-income groups exhibit higher sensitivity. Coffee, originally valued mainly for its stimulating effects, has evolved into a product with unique emotional significance and daily life importance.

Studies also highlight that social stratification influences consumption patterns, and that price sensitivity plays a moderating role in how social strata engage with consumer products. These findings suggest that consumer behavior, especially in the coffee market, is shaped by both social hierarchy and economic factors, with price sensitivity acting as a key variable.

## 2.3 Conceptual Framework



**Figure 1** Conceptual Framework

## 2.4 Research Hypothesis

Based on the reviewed theories and literature, the study proposes the following hypotheses:

H1: There is a positive correlation between social stratification and consumer behavior.

H2: Social stratification positively influences consumer behavior through price sensitivity.

H3: Price sensitivity negatively moderates the role of coffee's importance within consumer group stratification.

**Table 1** Relationship between Price Sensitivity and Consumer-Related Factors

Consumer Factor	Age	Product Familiarity	Price Proportion	Price Change Expectation	Value Perception
Price Sensitivity	Negative	Positive	Positive	Negative	Negative

**Table 2** Relationship between Price Sensitivity and Product-Related Factors

Product Factor	Substitutes	Importance	Uniqueness	Usability Attributes	Switching Costs
Price Sensitivity	Positive	Negative	Negative	Positive	Negative



### **3. Research Methodology**

#### **3.1 Research Design**

This study employs a quantitative research design using a structured questionnaire developed based on established scales and surveys. The questionnaire was customized to reflect the developmental level of the Guangxi region and the current status of the coffee industry. Measurement variables include nominal, ordinal, and ratio types, with responses recorded on a five-point Likert scale where 1 represents “strongly disagree” and 5 represents “strongly agree.” To ensure the reliability and validity of the instrument, a pilot survey was conducted with 10 randomly selected coffee consumers. Feedback from this pilot was analyzed and used to refine the questionnaire, resulting in the finalized version used for the formal survey.

#### **3.2 Population and Sample**

The target population for this study comprises coffee consumers in the Guangxi region. The formal survey was distributed online via Wenjuanxing, a widely used survey platform in China. A total of 413 questionnaires were issued, with 412 deemed valid after excluding one response due to significant logical inconsistencies. This resulted in a valid response rate of 99.76%. Among the respondents, 39.8% were male and 60.2% were female. Regarding educational background, 5.1% had attained a high school education or below, 74.5% had a college degree or equivalent, and 20.4% held graduate degrees or higher. Occupational classifications followed standards set by the Ministry of Human Resources and Social Security, with respondents distributed across various professions including government agency heads, professionals, clerical staff, service workers, students, and retirees. The annual personal income levels of respondents varied widely, ranging from below 10,000 RMB to above 200,000 RMB. Compared to the general population of Guangxi, this sample reflects relatively higher education and income levels, indicating a strong purchasing power that aligns well with the typical profile of coffee consumers.

#### **3.3 Research Instruments**

The research instrument consisted of a questionnaire that measured social stratification and consumer behavior variables. Social stratification was assessed using criteria such as education level, occupation, income, economic source, employment status, and household vehicle ownership. Consumer behavior was measured through variables including purchasing frequency, reasons for purchase, product characteristics, purchasing context, product price, and factors influencing consumption decisions. All items were scored on a five-point Likert scale to capture the degree of agreement or importance. The reliability of the questionnaire items was tested using Cronbach’s alpha, and the validity of the scale was examined through the Kaiser-Meyer-Olkin (KMO) test and Bartlett’s test of sphericity to ensure the appropriateness of factor analysis.

#### **3.4 Data Collection**

Data collection was conducted through an online survey distributed via the Wenjuanxing platform. The survey was designed to be user-friendly to encourage honest and accurate responses. A pilot test preceded the formal data collection to verify and improve the questionnaire’s clarity and reliability. After the pilot adjustments, the formal survey collected 412 valid responses, providing a robust dataset suitable for analysis of consumer behavior and social stratification in Guangxi’s coffee market.

### 3.5 Statistics Used for Data Analysis

The data analysis included reliability testing using Cronbach's alpha to assess the internal consistency of the measurement scales. Validity was confirmed through the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity, which evaluated the adequacy of the data for factor analysis. Descriptive statistics were used to summarize demographic information, while inferential statistics, including correlation and moderation analyses, were applied to examine the relationships among social stratification, price sensitivity, and consumer behavior. These statistical methods allowed for a rigorous evaluation of the study's hypotheses and research questions.

## 4. Data Analysis and Findings

### 4.1 Introduction

**Reliability Testing:** Cronbach's alpha was used to assess the reliability of the scales employed in this study. The Cronbach's alpha values for social stratification, consumer behavior, and price sensitivity ranged from 0.74 to 0.82, all exceeding the threshold of 0.7, indicating satisfactory reliability.

**Validity Testing:** Convergent validity was assessed using standardized factor loadings, with all loadings exceeding 0.5 and p-values less than 0.001. The t-values were above 2, and the Average Variance Extracted (AVE) values exceeded 0.5, with AVE square root values ranging from 0.817 to 0.986 and Composite Reliability (CR) values from 0.855 to 0.991. These results indicate strong convergent validity for the scales used.

**Table 3** Reliability and Validity Testing

Variable	Measurement Item	Standardized Factor Loading	p-value	t-value	AVE	AVE Square Root	CR
Social Stratification Cronbach's $\alpha=0.739$	Q11	0.86	0.000***	12.189	0.667	0.817	0.855
	Q12	0.923	0.000***	14.237			
	Q13	0.641	0.000***	29.431			
Consumer Behavior Cronbach's $\alpha=0.982$	Q19	0.692	0.000***	6.91	0.860	0.927	0.991
	Q32	0.798	0.000***	6.425			
	Q3101	0.914	0.000***	7.780			
	Q3102	0.911	0.000***	6.452			
	Q3103	0.92	0.000***	5.239			
	Q3104	0.915	0.000***	4.434			
	Q3105	0.946	0.000***	7.784			
	Q3106	0.946	0.000***	7.784			
	Q3107	0.966	0.000***	9.874			
	Q3108	0.957	0.000***	3.808			
	Q3109	0.917	0.000***	3.784			
	Q31010	0.979	0.000***	9.422			

	Q31011	0.953	0.000***	8.483			
	Q31012	0.985	0.000***	9.344			
	Q31013	0.987	0.000***	8.943			
	Q31014	0.976	0.000***	3.843			
	Q31015	0.950	0.000***	3.234			
	Q31016	0.933	0.000***	8.700			
Price Sensitivity Cronbach's $\alpha=0.963$	q3301	0.945	0.001***	3.422	0.971	0.986	0.872
	q3302	0.945	0.000***	9.629			
	q3303	0.959	0.000***	12.236			
	q3304	0.891	0.000***	6.015			
	q3305	0.927	0.000***	10.349			

**Note:** \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ , same applies below.

## 4.2 Data Analysis of the Quantitative Data

### 4.2.1 Correlation Analysis

The correlations among key variables are presented in Table 4. Spearman's correlation analysis indicates a significant positive correlation between social stratification and price sensitivity ( $r = 0.124$ ,  $0.01 < p < 0.05$ ), showing a one-star level of significance. Additionally, a strong positive correlation is observed between consumer behavior and price sensitivity ( $r = 0.915$ ,  $p < 0.01$ ), with a two-star level of significance. These results provide preliminary support for the hypotheses proposed in this study.

**Table 4** Correlation Analysis among Key Variables

Variable	Social Stratification	Consumer Behavior	Price Sensitivity
<b>Social Stratification</b>	1	.129**	.124*
		0.009	0.012
<b>Social Stratification</b>		1	.915**
			0.000
<b>Price Sensitivity</b>			1

**Note:** \*Pearson Correlation, Significant Level. (Two-Tailed)

From the perspective of social stratification, this study uses age, educational level, occupation, and individual and household annual income as independent variables. A cross-tabulation analysis was conducted for these variables against six coffee purchasing factors: personal preference, coffee price, coffee quality, tendency to purchase coffee at regular price, tendency to purchase coffee at promotional price, and acceptable coffee price range. Table 5 presents the results of the Pearson Chi-square values and p-values for these associations.

The results in Table 5 indicate significant differences across age groups concerning the six coffee purchasing factors, suggesting notable variance in purchasing considerations and acceptable price ranges among different age groups. Educational level shows a one-star significance with personal preference, indicating a difference between the two. Occupation displays a two-star

significance with regard to coffee price consideration, implying a relatively significant difference. Individual annual income shows a one-star significance for personal preference and regular price purchase tendency, suggesting discernible differences for both factors. Furthermore, both individual and household annual income exhibit three-star significance with acceptable coffee price range, underscoring substantial differences in coffee price acceptability based on income levels.

**Table 5** Correlation Analysis of Social Stratification Variables

Variable	Age Group	Educational Level	Occupation	Individual Income	Household Income
Personal Preference	87.640***	38.108*	53.313	44.544*	30.478
Price	66.329***	29.717	67.564**	28.030	34.634
Quality	51.174*	18.905	37.360	21.452	15.600
Tendency to Buy at Regular Price	55.130**	21.461	51.520	44.364*	26.977
Tendency to Buy at Promotional Price	55.719***	20.624	36.563	23.418	24.962
Acceptable Coffee Price Range	77.373*	42.291	82.612	87.366***	89.594***

#### 4.2.2 Hypothesis Testing Analysis

**Main Effect Test:** Models 1 and 2 in Table 6 were used as the tools for hypothesis testing. Model 1 is the baseline model, including only control variables for the dependent variable, while Model 2 builds on Model 1 by incorporating the independent variable, social stratification. In Model 2, the coefficient  $\beta_1 = 0.033$ , with  $p > 0.1$ , indicating that H1 is not supported.

**Moderating Effect Test:** Model 3 extends Model 2 by adding the moderating variable, price sensitivity. Here, the coefficient  $\beta_2 = 0.916$ , with  $p < 0.001$ , indicating significant regression and supporting H2. This result suggests that higher price sensitivity strengthens the positive relationship between consumer social stratification and consumer behavior.

**Table 6** Main Effect Test Results and Moderating Role of Price Sensitivity

Variable	Consumer Behavior		
	Model 1	Model 2	Model 3
Control Variables			
Gender	.042	.033	.033
Age	-.159	-.143	.002
Education	.046	.054	-.066
Years of Employment	-.073	-.069	.041
Individual Annual Income	-.063	-.179	-.017
Household Annual Income	.093	-.079*	.016
Independent Variable	.042		
Social Stratification		.033	.015
Moderating Variable			

Price Sensitivity			.916***
R <sup>2</sup>	.031	.049	.842
ΔR <sup>2</sup>	.031	.018	.793
F	2.134	2.965	267.619***
ΔF	2.134	7.741	2016.648***

### 4.3 Summary of the Results

The results of this study provide important insights into the relationship between social stratification and consumer behavior in coffee consumption, with price sensitivity acting as a key moderating factor. Reliability and validity testing confirmed that all measurement scales used in the study were statistically sound and met established thresholds. Correlation analysis revealed a weak but statistically significant relationship between social stratification and price sensitivity, and a strong, highly significant relationship between consumer behavior and price sensitivity. These results suggest that consumers' sensitivity to price is closely tied to their behavioral choices, and to a lesser extent, their social status. Cross-tabulation analysis highlighted age and income as the most influential social stratification variables, showing significant associations with all six coffee purchasing factors, including acceptable price range and preference for promotional pricing. Educational level and occupation had limited but notable effects on specific factors like personal preference and coffee price considerations. Hypothesis testing showed that social stratification alone does not have a significant direct effect on consumer behavior. However, the inclusion of price sensitivity as a moderating variable revealed a strong and significant positive effect, indicating that individuals from different social strata exhibit varied consumer behaviors when price sensitivity is high. These findings underscore the importance of considering both socioeconomic characteristics and psychological price perceptions in understanding consumer decision-making in the coffee market.

## 5. Conclusion, Discussion, and Recommendation

### 5.1 Conclusion

This study identifies that age significantly impacts coffee consumption, with older individuals, who generally have higher income, being more willing to accept higher-priced coffee and placing greater importance on quality and personal preference. Education level and occupation do not strongly correlate with coffee consumption behavior, though occupational differences influence consumers' perceptions of coffee and their price sensitivity. Notably, consumers with higher coffee awareness tend to be more price-sensitive. Despite demographic differences, coffee remains a popular stimulant and emotional value source in modern social and professional life, leading to generally low price sensitivity toward coffee. While social stratification alone does not significantly affect coffee consumer behavior, price sensitivity positively moderates this relationship.

### 5.2 Discussion

Building on Marx's and Weber's theories of social stratification, along with domestic research post-reform, this study used educational attainment, occupation, income, and vehicle ownership as indicators of social stratification. Lewin's behavior formula guided the framework by treating consumer behavior as dependent on both individual and environmental factors, with price sensitivity as a moderating variable. The empirical analysis based on 412 coffee consumers revealed

that social stratification does not directly influence coffee consumption behavior but interacts with price sensitivity to affect outcomes. The positive correlation between price sensitivity and consumer awareness suggests that knowledge plays a crucial role in shaping price responses. The results highlight coffee's multifaceted role beyond mere consumption, as a stimulant and social symbol, explaining the overall low sensitivity to price despite stratification differences.

### 5.3 Recommendation

Coffee brands should recognize the moderating role of price sensitivity and tailor marketing strategies to accommodate consumers with varying price sensitivities.

Brands are encouraged to enhance product uniqueness through specialty products, quality improvements, innovative formats, and enriched brand meaning, while fostering a strong corporate culture and positive industry environment.

Ethical practices are essential: brands should set fair prices, avoid exploiting information asymmetry to justify high prices, and build a reputable corporate image to gain consumer trust.

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## **Research on the Development Model of Yunnan Ethnic Minority**

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### Abstract

Yunnan's ethnic minority themed films represent a unique and culturally rich genre within China's diverse film industry, reflecting the spiritual and cultural lives of numerous ethnic communities while promoting national unity and cultural diversity. However, the rapid commercialization and globalization of China's film market have introduced significant challenges for these films. They must compete against high-budget domestic and international productions that dominate the box office, while navigating increasingly diversified and evolving audience expectations. This situation creates a dilemma for filmmakers who seek to maintain cultural authenticity without sacrificing commercial appeal. Consequently, many ethnic-themed films face difficulties in achieving mainstream recognition, market success, and consistent production. This study investigates the development model of Yunnan's ethnic minority themed film industry, focusing on its unique characteristics, advantages, and obstacles. It examines how this genre can adapt to and thrive in a competitive media environment, balancing cultural representation with market competitiveness. Key challenges include funding shortages, talent scarcity, limited policy support, and narrow market access. Conversely, opportunities arise from technological innovations, diversified audience demands, and increasing international exposure. By analyzing the industry's current market dynamics and strategic positioning, this research proposes sustainable growth models that integrate technological advancements, targeted market segmentation, brand building, talent cultivation, and policy enhancement. It highlights the importance of expanding funding sources, fostering professional talent, leveraging digital and virtual reality technologies, and engaging in global film festivals to broaden market reach. Ultimately, the study offers valuable theoretical and practical insights to support the sustainable development of Yunnan's ethnic minority themed films, contributing to the preservation of cultural heritage and enhancing their economic and artistic viability within China's evolving film industry.

**Keywords:** Yunnan, Ethnic Minority Films, Film Industry Development, Cultural Representation, Market Competitiveness

## **1. Introduction**

### **1.1 Background and Importance of the Problem**

Yunnan, a border province in southwestern China, is home to a diverse range of ethnic minority groups, each with distinct languages, customs, and cultural practices. This rich cultural landscape has long provided filmmakers with abundant creative material, enabling the emergence of a unique genre: Yunnan ethnic minority themed films. These films not only document and express the spiritual and cultural lives of ethnic communities but also serve as important mediums for promoting national unity and cultural diversity.

However, with the rapid commercialization and globalization of China's film industry, these culturally rich films face growing challenges. They must now compete with high-budget domestic and international productions that dominate the market, while also responding to increasingly diversified and evolving audience expectations. The pressure to balance cultural authenticity with commercial appeal poses a significant dilemma for filmmakers. As a result, many ethnic-themed films struggle to achieve mainstream recognition, market success, or sustained production cycles.

In this context, it is crucial to study the development model of Yunnan's ethnic minority film industry. Such research can uncover the specific characteristics, advantages, and barriers that define this genre, offering valuable insights into how these films can adapt and thrive in a competitive media environment. Understanding these dynamics is essential not only for preserving cultural heritage but also for enhancing the economic and artistic viability of the genre.

### **1.2 Research Question**

What are the current challenges and opportunities faced by Yunnan ethnic minority themed films in a commercialized film industry?

How can these films achieve a balance between cultural representation and market competitiveness?

### **1.3 Research Objective**

The objective of this study is to analyze the development process, current market dynamics, and strategic positioning of Yunnan ethnic minority themed films. It aims to explore feasible models for sustainable growth, offering theoretical and practical guidance for improving their cultural influence and market success in the evolving film industry landscape.

## **2. Literature Review**

### **2.1 Related Concepts and Theories**

The study of the film industry, especially within culturally rich regions like Yunnan, involves several interrelated concepts, including cultural representation, industrial development models, and market positioning. The concept of ethnic minority themed films refers to cinematic works that center on the lives, customs, and cultural values of ethnic minority communities. These films often serve dual purposes: cultural preservation and artistic expression. In terms of theoretical underpinning, this research draws upon cultural industry theory, which explores how cultural products operate within commercial frameworks, and regional cultural development theory, which

examines how local identities can be leveraged in creative industries. Together, these concepts form the foundation for analyzing how Yunnan's unique ethnic characteristics can be both represented and commercialized in film.

## **2.2 Literature Surveys**

Scholarly attention to the development model of the film industry has been extensive, particularly in examining policy impacts, industrial chains, market dynamics, and global competitiveness. However, most studies focus on macro-level trends and national or international perspectives, with limited emphasis on localized, culturally-specific sub-sectors. Research related to Yunnan's ethnic minority themed films remains scarce. While some domestic scholars have acknowledged the artistic value of such films, few have explored their industrial development pathways. In contrast, foreign literature—particularly from Hollywood and European film studies—has made significant strides in industrial analysis, offering detailed models for production, distribution, and market optimization. Nonetheless, due to cultural and systemic differences, these models are not directly transferable to the Yunnan context, underscoring the need for indigenous research.

## **2.3 Conceptual Framework**

Based on the gaps identified in the literature and the unique socio-cultural context of Yunnan, this study proposes a conceptual framework integrating both cultural and industrial dimensions. The framework centers on the intersection of cultural heritage (ethnic representation) and industrial factors (market positioning, policy support, production and distribution structures). It examines how these two forces interact to shape the development trajectory of ethnic minority themed films. The model also considers external pressures such as market competition and internal dynamics like audience preferences and local policy initiatives, forming a comprehensive analytical lens for evaluating the industry.

## **2.4 Research Hypothesis**

Drawing on the conceptual framework and existing research, the study proposes the following hypotheses:

H1: The unique ethnic cultural resources of Yunnan provide a sustainable content advantage for the region's film industry.

H2: The lack of targeted industrial strategies and commercialization models limits the market competitiveness of ethnic minority themed films in Yunnan.

H3: Strengthened policy support and market-oriented innovation can significantly enhance the development prospects of Yunnan's ethnic film industry.

## **3. Research Methodology**

### **3.1 Research Design**

This study adopts a qualitative research design that integrates literature analysis, case studies, and interdisciplinary theoretical frameworks to explore the development model of Yunnan's ethnic

minority themed film industry. The research design emphasizes a contextual and interpretative approach, focusing on understanding the specific characteristics of ethnic minority film development through real-world cases and scholarly discourse. The design aims to systematically identify challenges, cultural advantages, and industrial dynamics, thereby generating theoretical insights and practical strategies relevant to both academia and the film industry.

### **3.2 Population and Sample**

The population targeted by this study includes stakeholders involved in Yunnan's ethnic minority themed film industry, such as filmmakers, producers, cultural officials, distributors, scholars, and local audience groups. The sample is drawn purposively and includes representative case studies of notable ethnic-themed films produced in Yunnan, key industry figures with extensive experience, and cultural institutions promoting ethnic film content. Selection criteria focus on relevance, influence, and cultural representation to ensure diversity and depth in the analysis.

### **3.3 Research Instruments**

The study employs several instruments for data gathering and analysis:

- 1) Literature review matrix for organizing existing academic findings.
- 2) Case study protocol to guide systematic examination of selected films and production entities.
- 3) Interview outlines for semi-structured expert interviews with industry practitioners and cultural experts.
- 4) Observation guides to assess promotional events, film festivals, and community-based screenings relevant to ethnic films in Yunnan.

### **3.4 Data Collection**

Data were collected through:

- 1) Extensive literature review of both Chinese and international sources on film industry development and cultural economy.
- 2) In-depth case analysis of selected Yunnan ethnic-themed films including production background, reception, and market performance.
- 3) Semi-structured interviews with key informants such as filmmakers, producers, and scholars to gain insider perspectives.
- 4) Field observation and secondary data from government reports, film festival archives, and cultural policy documents.

### **3.5 Statistics Used for Data Analysis**

Given the qualitative nature of the research, data analysis primarily uses content analysis and thematic coding to identify patterns, trends, and emerging themes within the case studies and

interviews. However, where applicable, descriptive statistics (e.g., box office figures, audience demographics, production budgets) are integrated to support the qualitative findings with empirical context. Analytical software such as NVivo or MAXQDA may be used to manage and code qualitative data systematically.

## **4. Data Analysis and Findings**

### **4.1 Introduction**

This section presents a comprehensive analysis of the qualitative data gathered on the development of Yunnan's ethnic minority themed film industry. Through careful examination of industry practices, market dynamics, branding efforts, challenges, and strategic responses, the analysis reveals the unique characteristics and operational models that define this niche sector. The findings highlight how cultural resources are effectively integrated, how the industry adapts to market demands both domestically and internationally, and how brand identity is cultivated to enhance cultural recognition and competitive advantage. The analysis further identifies critical challenges impeding industry growth, including funding constraints, talent shortages, limited market reach, and insufficient policy support. These obstacles underline the complexity of sustaining and expanding the ethnic minority themed film sector in a highly competitive and commercialized environment. Finally, the section discusses strategic approaches proposed by stakeholders to overcome these challenges. Emphasis is placed on increasing capital investment, enhancing talent development, broadening market access, and strengthening governmental policy frameworks. These insights provide a foundational understanding of the current state and future prospects of Yunnan's ethnic minority themed film industry, offering valuable guidance for filmmakers, policymakers, and cultural promoters aiming to foster sustainable and innovative industry growth.

### **4.2 Data Analysis of the Qualitative Data**

#### *4.2.1 Resource Utilization Model of Yunnan Ethnic Minority Themed Film Industry*

The Yunnan ethnic minority themed film industry has unique strategies in resource integration. This strategy not only involves the integration of material resources, but also includes in-depth exploration and innovative application of ethnic cultural connotations. On the one hand, producers, directors, screenwriters, and other professionals in the industry actively collaborate with ethnic cultural researchers and local communities to ensure that film content can truly and vividly reflect the cultural essence of ethnic minorities. This cooperation model not only enhances the cultural heritage of the film, but also promotes the inheritance and development of national culture. In terms of scene selection, Yunnan's natural scenery provides a stunning backdrop for the movie. From majestic snow capped mountains to mysterious primitive forests, from unique dwellings to quaint villages, these natural landscapes not only add visual layers to the film, but also allow the audience to appreciate the regional charm of Yunnan while enjoying the plot. Producers usually collaborate with local tourism departments to select the most representative natural landscapes as filming locations, further promoting the development of local tourism industry.

#### *4.2.2 Market Development Model of Yunnan Ethnic Minority Theme Film Industry*

The exploration of market development in Yunnan's ethnic minority themed film industry has demonstrated its unique wisdom and strategies. In order to promote film works more effectively, the industry has not only turned its attention to the vast domestic and international markets, but also

gradually expanded its market share and influence through diversified channels and refined marketing strategies. In terms of targeting domestic and international markets, Yunnan's ethnic minority themed film industry actively participates in major film festivals and exhibitions, such as the Cannes Film Festival and the Shanghai International Film Festival. Through exchanges and cooperation with the international film industry, it showcases Yunnan's unique ethnic culture and film art charm to the world. This "going global" strategy not only enhances the industry's visibility and influence, but also wins broader development space for Yunnan ethnic minority themed films. In terms of expanding online and offline channels, the industry has made full use of the advantages of the Internet platform to promote and promote film works through social media, video websites and other channels. Online promotion can quickly reach a wide audience and increase the exposure and attention of movies; Offline activities can enhance the interactive experience between audiences and movies, further narrowing the distance between audiences and movies. This online and offline collaborative promotion model effectively broadens sales channels and expands the audience.

#### *4.2.3 Brand Building Model of Yunnan Ethnic Minority Themed Film Industry*

The Yunnan ethnic minority themed film industry is unique in brand building, committed to creating a unique brand that embodies regional characteristics and ethnic charm. This brand building model not only helps to enhance the competitiveness and influence of the industry, but also deepens the audience's understanding and recognition of Yunnan's ethnic minority culture. In terms of brand planning and marketing, the Yunnan ethnic minority themed film industry carefully conceptualizes brand stories and shapes distinct brand images. By excavating touching stories from ethnic history, legends, and real life, film works can convey profound cultural connotations and emotional values, thereby enhancing the attractiveness and infectiousness of the brand. At the same time, utilizing diversified promotional methods such as social media, film festivals, cultural exchange activities, etc., to expand brand influence and awareness, and attract more audience attention and love.

#### *4.2.4 Problems in the Development of Yunnan's Ethnic Minority Theme Film Industry*

The shortage of funds has become particularly prominent in the development of Yunnan's ethnic minority themed film industry. Film creation and production require a significant amount of capital investment, including script development, actor compensation, filming equipment rental, post production, and multiple other aspects. However, due to the fact that the industry is still in the development stage and has limited profitability, coupled with poor financing channels, the supply of funds is difficult to meet the high investment demand. This issue has greatly constrained the rapid development of the industry and the enhancement of innovation capabilities. In addition to funding issues, the shortage of talent is also a major bottleneck facing the development of Yunnan's ethnic minority themed film industry. Although Yunnan region has abundant ethnic cultural resources, film talents with innovative thinking and artistic talent are relatively scarce. This is mainly reflected in the core aspects of script creation, directing, actors, etc. Due to the lack of professional talents, it is difficult to create high-quality and market competitive film works. At the same time, the lagging mechanism of talent cultivation has exacerbated the current situation of talent shortage, making the talent foundation for industrial development appear weak. The narrow market is another challenge in the development of Yunnan's ethnic minority themed film industry. Although the demand for ethnic minority themed films from domestic and foreign audiences is increasing, market competition is also becoming increasingly fierce. On the one hand, the domestic film market has been dominated by numerous blockbusters and commercial films, making it difficult for minority themed films to make breakthroughs in market share; On the other hand, although the international film market has vast development space, cultural differences and language barriers also increase the difficulty of market development. Therefore, how to stand out in the fierce market competition has become an urgent



problem to be solved in the Yunnan ethnic minority themed film industry. Insufficient policy support is also an important factor restricting the development of Yunnan's ethnic minority themed film industry. Although the national and local governments have provided certain policy support for the cultural industry in recent years, the special policies for the film industry with ethnic minority themes still appear to be incomplete and specific. The lack of policy support not only affects the confidence of industrial investors, but also limits the improvement of industrial innovation capabilities and market competitiveness. Therefore, it is particularly important to strengthen policy guidance and support to create a better external environment for industrial development.

#### *4.2.5 Development Strategies for Yunnan Ethnic Minority Theme Film Industry*

In the development process of the ethnic minority themed film industry in Yunnan, facing many challenges and problems, we must adopt practical and effective response strategies.

The top priority is to solve the problem of funding shortage. The film industry is a capital intensive industry, requiring significant investment in every aspect from script creation, filming and production to post production promotion and distribution. Therefore, we must raise funds through various channels. Government subsidies are an important source of funding that can encourage and support the production of ethnic minority themed films through the establishment of special funds and the provision of tax incentives. At the same time, we can actively seek social financing to attract more investors to participate in film production and share the fruits of industry development.

Talent is the core element of the development of the film industry. At present, the film industry of ethnic minority themes in Yunnan is facing the dilemma of talent shortage, especially the lack of film talents with innovative thinking and artistic talent. To address this issue, we need to establish a comprehensive talent training system, including setting up film schools, conducting professional training, providing practical opportunities, etc., to cultivate more film talents with professional qualities and innovative abilities. At the same time, we should actively introduce outstanding talents from home and abroad, injecting new vitality and creativity into the development of the industry.

Market expansion is also a key factor in promoting the development of Yunnan's ethnic minority themed film industry. Faced with fierce competition in domestic and international markets, it is necessary to strengthen market research and analysis, and gain a deeper understanding of the needs and preferences of different audience groups. Based on the characteristics of different audience groups, diversified film works can be launched to meet the diverse needs of the market. In addition, by participating in international film festivals, hosting film exhibitions and other activities, the industry's visibility and influence can also be enhanced, further expanding the international market.

Policy support is crucial for the development of the film industry. The government should formulate targeted policy measures to provide strong guarantees and support for industrial development. This includes but is not limited to providing tax incentives, simplifying approval processes, and strengthening copyright protection. Through government guidance and support, a better development environment can be created for the Yunnan ethnic minority themed film industry, promoting its sustained and healthy development.

By increasing capital investment, strengthening talent cultivation and introduction, expanding the market, and improving policy support, we can effectively address the problems and challenges in the development of Yunnan's ethnic minority themed film industry. The implementation of these strategies will help enhance the competitiveness and influence of the industry, further promoting the prosperous development of Yunnan's ethnic minority themed film industry.

### 4.3 Summary of the Results

The analysis reveals that the Yunnan ethnic minority themed film industry employs a distinctive resource utilization model, combining rich ethnic cultural elements with the province's natural landscapes to create authentic and visually captivating films. Collaboration with local communities and cultural experts ensures cultural accuracy and promotes heritage preservation. Market development strategies show a dual focus on expanding domestic and international reach through participation in major film festivals and leveraging online and offline promotional channels. This hybrid marketing approach effectively broadens audience engagement and enhances industry visibility. Brand building efforts emphasize the creation of unique regional identities by integrating ethnic history and stories into film narratives, which strengthens audience connection and cultural recognition. Diverse promotional activities further amplify brand influence. However, several challenges persist, including severe funding shortages, a scarcity of innovative and skilled talent, limited market share amid fierce competition, and inadequate policy support. These constraints restrict the industry's growth potential and innovation capacity. To address these issues, the study highlights key development strategies such as securing diversified funding sources, establishing robust talent cultivation systems, expanding market research and outreach, and advocating for stronger, targeted government policies. These strategies aim to foster a sustainable and competitive ethnic minority themed film industry in Yunnan, preserving its cultural uniqueness while meeting commercial demands.

## 5. Conclusion, Discussion, and Recommendation

### 5.1 Conclusion

After a thorough analysis of the development model of Yunnan's ethnic minority themed film industry, several important conclusions emerge. The industry has shown a positive trend in market development, gradually expanding its market influence through diversified strategies such as participating in international film festivals and strengthening online and offline promotion. This not only enhances the industry's visibility but also lays a solid foundation for sustainable growth.

Brand building plays a crucial role in the development of the industry. By creating film brands with distinct regional and ethnic characteristics, the industry enhances its cultural value and strengthens market competitiveness. Representative films like *Five Golden Flowers* and *Ashima* have become vital cultural ambassadors for Yunnan, helping to promote ethnic culture and attract wider audiences.

Despite these successes, challenges remain. The shortage of funds and talent constitute major bottlenecks. The capital-intensive nature of film production, combined with limited profitability and financing difficulties, restricts rapid growth and innovation. Likewise, a lack of professional talents in scriptwriting, directing, and acting hampers the creation of high-quality, competitive films. Policy support is also insufficient, limiting industrial innovation and investor confidence.

Nevertheless, the future prospects of the industry are promising. Technological advancements and improvements in the market environment provide fertile ground for growth. The industry is expected to embrace technological innovations that will revolutionize film creation and production, enhance artistic expression, and enrich audience experience. Additionally, diversification of market demand will create new growth points, with Yunnan ethnic minority themed films expanding into broader markets and serving as important carriers of Chinese cultural diversity.

## 5.2 Discussion

The development trend of Yunnan's ethnic minority themed film industry is becoming increasingly clear, shaped by continuous technological progress, evolving market dynamics, and internationalization. Technological innovation, particularly in digital and virtual reality technologies, promises transformative changes. These technologies enhance visual realism and immersion while reducing production costs and increasing efficiency, leading to films with more stunning effects and deeper emotional resonance.

Market diversification is another key driver. Audiences now have increasingly varied aesthetic preferences and personalized demands. To respond effectively, the industry must engage in detailed market segmentation and audience positioning, developing targeted works that highlight the unique ethnic cultures of Yunnan. This approach will better meet audience needs and increase engagement.

International development is poised to become a crucial growth area. As globalization deepens and China's cultural soft power rises, Yunnan ethnic minority themed films have the opportunity to claim a place on the global stage. Participation in major international film festivals and enhanced cooperation with the global film industry will increase visibility and influence, showcasing the richness of Chinese ethnic culture to a worldwide audience.

Together, technological innovation, diversified market demand, and international development form the triad of future growth for the Yunnan ethnic minority themed film industry. The industry must proactively embrace change, continuously innovate development models, and contribute meaningfully to the prosperity of China's film sector and its cultural influence.

## 5.3 Recommendation

To overcome challenges and seize future opportunities, the following strategic recommendations are proposed:

1) Increase funding: Address the critical funding shortage through diversified channels. Government subsidies, including the establishment of special funds and tax incentives, should be prioritized to encourage production of ethnic minority themed films. Simultaneously, social financing initiatives should attract private investors to support industry growth.

2) Talent development: Establish a comprehensive talent cultivation system. This includes founding film schools, providing specialized training, and offering practical production opportunities to nurture innovative and skilled professionals. Additionally, attracting outstanding talent both domestically and internationally will inject fresh creativity into the industry.

3) Market expansion: Strengthen market research and audience analysis to better understand diverse preferences. Based on these insights, develop diversified film products that cater to segmented audiences. Further, actively participate in international film festivals, exhibitions, and cultural exchange activities to broaden market reach and enhance industry visibility.

4) Policy support: Governments at national and local levels should formulate targeted policies to create a supportive environment for the ethnic minority themed film industry. Measures such as tax incentives, streamlined approval processes, and enhanced copyright protections are essential to boost investor confidence and industrial innovation.

5) Embrace technology and innovation: Integrate advanced digital and VR technologies to enhance film production quality and audience experience, reducing costs and increasing competitiveness.

Implementing these strategies will address the core challenges of funding, talent, market development, and policy support, ultimately strengthening the competitiveness and cultural influence of Yunnan's ethnic minority themed film industry and promoting its sustainable growth.

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# **A Review of the Relationship between Information Integration, Resilience, and Operational Performance Agricultural Product Supply Chains**

by

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### **Abstract**

In an era of increasing global uncertainty marked by trade protectionism, pandemics, and geopolitical conflicts, the resilience and efficiency of agricultural product supply chains have become critical to national food security and economic stability. This study investigates the impact of supply chain information integration and supply chain resilience on the operational performance of businesses in the agricultural sector, with a specific focus on China. Given agriculture's foundational role in national development, improving the robustness of agricultural supply chains is essential for ensuring continuity, competitiveness, and adaptability in response to external shocks. The findings demonstrate that effective supply chain information integration significantly enhances coordination, communication, and real-time decision-making, thereby reducing information asymmetries and operational delays. This integration plays a pivotal role in strengthening supply chain resilience by enabling better risk identification, rapid emergency response, and efficient resource reallocation. Moreover, a resilient supply chain fosters operational flexibility and market responsiveness, helping firms maintain product availability, improve customer satisfaction, and gain competitive advantages. Despite the growing body of literature, most existing research focuses on isolated factors affecting supply chain resilience, with limited exploration of the combined effect of multiple factors and their interaction with information integration. This study highlights the strategic value of integrating information technologies in agricultural supply chain management and calls for more comprehensive, empirically grounded analyses. In conclusion, businesses and policymakers should prioritize investments in digital technologies and the development of integrated platforms that support information sharing and supply chain adaptability. These efforts are essential for enhancing the resilience, security, and sustainability of agricultural product supply chains in China and beyond. Future research should continue to explore optimization strategies and empirical models to guide effective resilience-building initiatives.

**Keywords:** Supply Chain Resilience, Information Integration, Agricultural Product Supply Chain, Operational Performance, Supply Chain Management

## **1. Introduction**

### **1.1 Background and Importance of the Problem**

This study aims to explore the impact of supply chain information integration and supply chain resilience on business operational performance, highlighting the necessity of developing agricultural product supply chain resilience and improving supply chain security. Agriculture, as the foundation of national survival and development, is highly valued by many countries. China, in particular, emphasizes the development of agricultural industry supply chains and the enhancement of supply chain resilience. Currently, the international situation is unpredictable, with rising trade protectionism and anti-globalization trends affecting the global agricultural supply chain. Events such as the COVID-19 pandemic impacting agricultural production and international conflicts affecting food prices pose significant challenges to the resilience of China's agricultural industry chain. Whether from the perspective of maintaining national security or actively engaging in international competition, enhancing the resilience of the agricultural industry chain is a critical and urgent issue.

### **1.2 Research Question**

What is the impact of supply chain information integration and supply chain resilience on the operational performance of businesses in the agricultural sector? How can enhancing supply chain resilience improve the security and sustainability of China's agricultural product supply chain amid global uncertainties?

### **1.3 Research Objective**

The objective of this study is to analyze how supply chain information integration and supply chain resilience affect business operational performance in the agricultural sector. It aims to clarify the importance of strengthening agricultural product supply chain resilience and provide strategies to improve the security and sustainability of agricultural supply chains in China under challenging international conditions.

## **2. Literature Review**

### **2.1 Related Concepts and Theories**

This article provides detailed definitions of three core concepts central to the research: agricultural product supply chain, agricultural product supply chain information integration, and agricultural product supply chain resilience. It first defines the scope and composition of the agricultural product supply chain, encompassing various stages from production to consumption, and analyzes its critical role in the agricultural industry. Next, the concept of information integration within agricultural product supply chains is explored, highlighting the importance of information technology in enhancing supply chain efficiency and transparency. Lastly, the resilience of agricultural supply chains is defined, focusing on their capacity to adapt to and recover from various risks and uncertainties.



## **2.2 Literature Surveys**

A systematic review of scholarly research related to agricultural product supply chains, information integration, and supply chain resilience is conducted. This review examines research methods, findings, and their practical implications for agricultural production and supply chain management. The literature survey showcases a wealth of academic achievements and identifies the strengths and gaps in current research, serving as a valuable resource for guiding future investigations.

## **2.3 Conceptual Framework**

Based on the analysis of related concepts and literature, this study constructs a conceptual framework that illustrates the relationships between agricultural product supply chain information integration, supply chain resilience, and business operational performance. The framework serves as a foundation for understanding how integrated information systems and resilient supply chain capabilities can contribute to improved efficiency, risk management, and sustainability in agricultural supply chains.

## **2.4 Research Hypothesis**

Building on the conceptual framework and literature review, the study proposes hypotheses to test the impact of supply chain information integration and supply chain resilience on the operational performance of agricultural businesses. The hypotheses aim to clarify the direct and indirect effects of these factors, providing a structured basis for empirical analysis.

## **3. Research Methodology**

### **3.1 Research Design**

This study employs a mixed-methods research design, combining qualitative literature review and quantitative empirical analysis. The initial phase involves a thorough review and synthesis of existing literature related to agricultural product supply chains, information integration, and supply chain resilience. This foundational work informs the development of research hypotheses and guides the subsequent data collection and analysis stages aimed at examining the relationships between these variables and business operational performance.

### **3.2 Population and Sample**

The target population for this study includes agricultural businesses involved in various stages of the supply chain, ranging from producers to distributors. A representative sample is selected using stratified random sampling to ensure diversity in business size, geographic location, and supply chain roles. This approach enhances the generalizability of the findings across different segments of the agricultural supply chain.

### **3.3 Research Instruments**

Data collection instruments include structured questionnaires designed to measure levels of information integration, supply chain resilience, and operational performance. The questionnaire

items are developed based on validated scales from previous studies, adapted to fit the agricultural context. The instrument is pilot-tested to ensure reliability and validity before full deployment.

### **3.4 Data Collection**

Data is collected through a combination of online surveys and face-to-face interviews. The survey targets managers and key personnel responsible for supply chain operations within agricultural businesses. The interviews provide qualitative insights to complement and contextualize quantitative findings, enabling a comprehensive understanding of supply chain dynamics.

### **3.5 Statistics Used for Data Analysis**

The collected data is analyzed using descriptive statistics, correlation analysis, and multiple regression techniques to test the proposed hypotheses. Structural equation modeling (SEM) may be employed to examine complex relationships between information integration, supply chain resilience, and operational performance. Statistical software such as SPSS and AMOS is used to ensure rigorous and accurate analysis.

## **4. Data Analysis and Findings**

### **4.1 Introduction**

This chapter presents the results of the data analysis conducted to examine the relationships between information integration, supply chain resilience, and operational performance within the context of agricultural product supply chains. Based on data collected from agricultural enterprises, cooperatives, and supply chain stakeholders, the analysis aims to validate the conceptual framework developed in the previous chapters and provide empirical support for the proposed hypotheses. Given the increasing complexity and volatility in agricultural markets, understanding the dynamic interactions among these variables is essential for enhancing supply chain effectiveness. The analysis utilizes both descriptive and inferential statistical methods to explore the level of information integration across supply chain partners, the degree of resilience demonstrated in response to disruptions, and the resulting impact on operational performance indicators such as efficiency, flexibility, customer satisfaction, and profitability. The findings presented in this chapter contribute to the broader understanding of how digital transformation and collaborative practices can serve as strategic enablers for building resilient and high-performing agricultural supply chains. The results also offer practical insights for supply chain managers and policymakers seeking to strengthen supply chain systems in response to ongoing market and environmental uncertainties.

### **4.2 Data Analysis of the Qualitative Data**

#### ***4.2.1 Agricultural Product Supply Chain***

The agricultural supply chain refers to a network formed through the cooperation of various channels and participants involved in the production of fresh agricultural products or processed foods and their delivery to end consumers to meet market demand. This network simultaneously generates product flow (logistics), capital flow, and information flow (Aramyan et al., 2005; Bijman, 2002; Folkerts & Koehorst, 1997; Van der Vorst, 2005). Simply put, it encompasses the production and distribution processes of agricultural products from farm to table.

For fresh agricultural products (e.g., fresh vegetables, flowers, fruits), the supply chain includes growers, wholesalers, importers, exporters, retailers, and specialty stores. These participants engage in processes such as processing, storage, packaging, transportation, and trade. Processed foods (e.g., snacks, desserts, canned goods, alcoholic beverages) are also part of the agricultural supply chain, used as raw materials in the production of high-value consumer goods. Storage and processing can help extend the shelf life of these products.

These concepts indicate that agricultural product supply chains are generally similar in structure to other supply chains. Both are complex network systems formed through the interactions among supply chain members such as suppliers, processors, distributors, sellers, and end consumers. Leng Zhijie (2005) categorized agricultural product supply chains into four organizational models: (1) a supply chain integration model centered on agricultural enterprises; (2) a model centered on processing enterprises; (3) an integration model with a logistics center as the core; and (4) a model led by marketing enterprises.

Compared to other types of supply chains, agricultural product supply chains have distinct characteristics and face higher risks, particularly regarding product quality and safety (Manzini et al., 2014; Maruchek et al., 2011; Prakash et al., 2017; Rijpkema et al., 2014; Salin, 1998). These risks are a major factor driving changes in relationships among core members in the supply chain (Fearne, 1999).

Firstly, agricultural products are biologically based and inherently perishable, which makes improper processing potentially harmful to consumers (Akkerman et al., 2010; Aramyan et al., 2005). Secondly, the agricultural supply chain is long and spans multiple industries, resulting in strong interdependence among partners. With the growing trend of globalization, this structure is subject to heightened risks, evolving from a simple food production function to a complex supply chain system (Roth et al., 2008; Trienekens & Zuurbier, 2008; Whipple et al., 2009; Zhong, Xu, & Wang, 2017).

Thirdly, the agricultural supply chain is characterized by a short shelf life, strict transportation requirements, and fluctuating and diverse demand and pricing. These factors increase the likelihood that external environmental uncertainties will cause rapid changes in the supply and quality of food and agricultural products (Ahumada & Villalobos, 2009; Aiello et al., 2012; Akkerman et al., 2010; Blackburn & Scudder, 2009). For perishable products in particular, such complexities make supply chain management especially challenging (Siddh et al., 2017).

#### *4.2.2 Integration of Agricultural Product Supply Chain Information*

The integration of the agricultural product supply chain refers to the process by which the core enterprise and its partners (e.g., farmers, cooperatives, wholesalers, retailers) restructure the supply chain in terms of organizational, informational, and resource integration to achieve added value. Effective integration between departments requires sufficient communication and interaction to ensure the accurate flow of information. While each department performs its own duties, seamless information exchange enhances the coherence of traceability systems, encompassing design, production, and service. This not only mitigates the negative effects of information asymmetry but also reduces transaction costs for enterprises.

The goal of information integration in the agricultural product supply chain is to ensure the smooth, efficient, and standardized transmission of data across the supply chain. This allows for seamless coordination among various transaction processes and helps meet the interests and demands of all parties involved.

#### 4.2.3 Resilience of Agricultural Product Supply Chains

The concept of "supply chain resilience" was initially proposed by Rice and Caniato (2003), with its formal definition later provided by Christopher and Peck (2004). It is defined as the capacity of a supply chain to return to its original or an improved state after experiencing disruptions. A widely accepted definition states that supply chain resilience is "the ability of a supply chain to prepare in advance for potential emergencies, respond quickly to disruptions, and recover effectively" (Ponomarov & Holcomb, 2009). This definition encompasses three stages: preparation, response, and recovery.

As research has progressed, scholars have increasingly focused on how to measure supply chain resilience effectively. Unlike industrial supply chains, agricultural production is characterized by dispersion, seasonality, and regionality, resulting in a lower capacity to withstand external shocks (Qin & Zhang, 2021). Liao, Hu, and Liu (2021) similarly defined supply chain resilience as the ability to recover from disruption, describing it as the capacity to resist interference and restore operations across production, circulation, and sales processes.

Recent studies have emphasized identifying and evaluating the factors that affect resilience and transforming supply chain models using resilience-based thinking. While it may be difficult to measure all influencing factors from a macro perspective, some scholars suggest that resilience can be analyzed by examining trade flows of raw materials, semi-finished goods, and intermediates, as well as the supply chain's recovery time (Liao et al., 2021). Maintaining safety stock and redundancy can significantly reduce losses and preserve resilience during disruptions (Chang & Ellinger, 2015).

Zhang, Jiang, and Peng (2022) found that factors such as the level of agricultural product processing, supply chain knowledge, government support, and farmers' influence within the supply chain positively affect farmers' willingness to integrate, while higher annual income has a negative effect. Glickman and White (2006) introduced the concept of visibility in supply chains, and Robert and Niklas (1998) suggested that practices like revenue sharing can mitigate disruptions and promote the development of adaptive agricultural supply chains.

In addition, scholars have proposed models that combine emerging technologies to enhance resilience. For instance, as online transactions surge in China, some researchers have explored supply chain reconstruction using Internet finance, live e-commerce, and blockchain technologies. Zhang and Liu (2021) proposed a "double H" architecture comprising information transmission, security systems, and e-commerce services. Huo, Jia, Jiang, and Xu (2022) noted that a challenge in agricultural supply chain finance is the lack of consideration for the financial vulnerabilities of farmers. They proposed enhancing resilience by strengthening insurance mechanisms and enterprise risk-sharing systems.

Zhao and Tan (2022) introduced a four-end agricultural product live-streaming model, "supply-live streaming-platform-consumption", based on traditional e-commerce operations. Similarly, Cheng and Yan (2021) incorporated the "Internet Plus" concept into the SCOR (Supply Chain Operations Reference) model. They constructed a highly resilient fresh agricultural product supply chain with integrated information sharing, security, and traceability, structured across process, configuration, and process element layers.

The inherent complexity of the agricultural product supply chain necessitates ongoing and dynamic management (Liu & Liu, 2019). Consequently, some scholars have explored the mechanisms through which supply chain resilience can be enhanced, particularly from the

perspective of dynamic collaborative innovation. Prajogo and Olhager (2012) argued that relationship capital enables supply chain nodes to establish long-term trust with customers, stabilize market demand, and strengthen overall supply chain resilience. Levy (2013) asserted that resilience is grounded in both information sharing and corporate commitment, emphasizing that only through consistent information exchange and adherence to commitments can firms sustain resilient supply chains.

Empirical analysis by Liu (2018) demonstrated that communication and information sharing among participants in the agricultural product supply chain significantly enhance resilience. Furthermore, Han (2020) highlighted that knowledge is the core element of collaborative innovation in supply chains, and the processes of sharing and exchanging knowledge are essential for improving the resilience of the entire agricultural supply chain.

#### *4.2.4 The Impact of Information Integration in Agricultural Product Supply Chains on Resilience*

Amid globalization and rising market uncertainty, agricultural supply chains are increasingly exposed to challenges such as natural disasters, market volatility, and policy shifts. These conditions highlight the critical importance of enhancing both information integration and supply chain resilience. Numerous studies have confirmed that information integration within agricultural product supply chains has a significantly positive effect on resilience.

Information integration plays a pivotal role in improving risk identification and assessment capabilities. By facilitating real-time access to data, supply chain members can more effectively detect and respond to potential disruptions. Siagian et al. (2021) emphasized that technologies such as the Internet of Things (IoT) enable real-time monitoring of key variables, including weather changes, transportation conditions, and market demand. Similarly, Cui et al. (2023) found that sensors placed on farms and transport vehicles can monitor temperature and humidity, ensuring optimal conditions for the storage and transport of agricultural products.

Furthermore, data analytics and predictive modeling are key components of information integration. Lu et al. (2024) highlighted the role of big data tools in identifying risk trends and supporting proactive decision-making. By analyzing historical sales and market data, firms can forecast demand fluctuations and adjust production and inventory accordingly.

Information integration also fosters collaboration and information sharing among supply chain participants. Siagian et al. (2021) and Lu et al. (2024) found that increased transparency improves coordination across the supply chain, enabling all nodes, from suppliers to retailers, to align emergency response efforts effectively. This leads to the development of robust contingency plans. Shishodia et al. (2023) argued that accurate, integrated data allows companies to create comprehensive emergency strategies, which cover everything from risk detection to recovery. Ivanov and Dolgui (2020) noted that big data and AI technologies enable businesses to predict disruptions and implement preemptive solutions.

In terms of coordination, information integration enhances supply chain transparency and visibility. Zhong et al. (2017) reported that real-time monitoring of production, inventory, and logistics significantly increases visibility across the supply chain. Aung and Chang (2014) demonstrated that IoT technology helps farmers track crop development and allows companies to monitor transport routes and storage environments, thus facilitating timely strategic adjustments.

Information integration also promotes collaborative planning and resource optimization. When various supply chain actors share market demand data and production forecasts, joint planning

becomes possible. Ivanov and Dolgui (2020) indicated that shared information can reduce both stockouts and excess inventory, leading to greater efficiency. After a disruption, coordinated resource allocation ensures that critical goods and services are prioritized. Huang et al. (2020) found that such practices improve resource utilization and reduce waste.

In addition to enhancing planning and coordination, information integration significantly improves communication efficiency. Traditional information transfer methods, such as manual recording and verbal messaging, are prone to delays and errors. Electronic data interchange (EDI) and traceability systems offer faster and more accurate communication (Trienikens et al., 2012). This also strengthens trust and cooperation among supply chain members. Ahumada and Villalobos (2009) noted that transparency and shared information build trust, while Scholten and Schilder (2015) identified information sharing as a crucial element of supply chain resilience, helping systems recover quickly from disruptions.

Information integration is also instrumental in emergency responsiveness. It enables firms to rapidly access the latest data and make timely adjustments to production and logistics plans. Hendrickson et al. (2016) emphasized that integrated systems facilitate quick adaptation to demand changes, minimizing the negative effects of crises. Christopher and Peck (2004) asserted that real-time feedback loops help supply chains address diverse risks and challenges. Moreover, integration supports process reengineering, allowing enterprises to refine operations and organizational structures in response to a dynamic environment. Sheffi and Rice (2005) explained that supply chains with strong integration can resume normal operations more quickly after a disruption. Kamilaris et al. (2019) added that blockchain technology enhances the authenticity and traceability of supply chain data, further increasing transparency and security.

Several empirical studies have validated the positive impact of information integration on supply chain resilience. Wang et al. (2022), through a survey of 216 Chinese agricultural enterprises, found that digital transformation significantly boosts resilience by enabling the effective integration of information, material, and capital flows. Similarly, Zhang et al. (2021) analyzed 470 survey responses and found that information integration enhances resilience by promoting flexibility and innovation across the supply chain. These capabilities allow supply chain participants to respond quickly to market shifts and unexpected events, thereby reinforcing the system's adaptability and stability.

#### *4.2.5 The impact of Resilience in the Agricultural Supply Chain on the Operational Performance of Enterprises*

In the context of increasing globalization and market uncertainty, supply chain resilience has become a critical capability for enterprises to manage various emergencies and risks. Supply chain resilience not only enhances adaptability but also has a significant positive impact on an enterprise's financial performance. In today's volatile environment, resilience is essential for maintaining business continuity and achieving competitive advantage. Sheffi and Rice (2005) demonstrated that highly resilient supply chains can mitigate the negative impacts of disruptions, improve responsiveness and flexibility, and help organizations resume operations quickly. This, in turn, increases customer satisfaction and strengthens financial stability and market competitiveness.

Enterprise operational performance refers to the outcomes achieved through an organization's production and service activities. According to Venkatraman and Ramanujam (1986), operational performance typically includes two key dimensions: financial performance (e.g., profit margins and return on assets) and market performance (e.g., market share and customer satisfaction). Kaplan and Norton (1996) emphasized that high-level operational performance is essential for sustainable



business development. By enhancing operational performance, organizations can maintain a competitive edge and improve their long-term survivability and growth.

Empirical evidence supports the positive relationship between supply chain resilience and financial performance. Fanay et al. (2000) found that resilient supply chains significantly reduce the negative financial impacts of disruptions, improve profitability, and promote financial stability. Such supply chains are able to restore operations rapidly, minimizing revenue losses and controlling cost increases caused by unexpected events. Sheffi and Rice (2005) further emphasized the importance of resilience in risk management, noting that resilient supply chains can predict, prepare for, and effectively manage disruptions, thereby reducing losses and improving profitability.

Jin et al. (2014) demonstrated through empirical research that supply chain adaptability and resilience enhance an organization's competitiveness in dynamic markets by improving response speed and flexibility. A highly adaptable supply chain can quickly modify production and delivery strategies to match changing market demands, which in turn drives sales growth and increases profits. Christopher and Peck (2004) similarly argued that proactive resilience, where firms anticipate and manage potential risks before they occur, can optimize resource allocation, reduce unnecessary expenditures, and enhance financial performance.

From a mechanisms perspective, supply chain resilience contributes to improved enterprise performance through several pathways. First, it increases the ability to respond to emergencies and recover from unexpected disruptions, thereby reducing operational losses. It also improves responsiveness to changes in customer demand, ensuring continuous product and service availability, which boosts customer satisfaction and market share. Ponomarov and Holcomb (2009) noted that resilient supply chains can identify emergencies early and implement effective response strategies to ensure continuity and minimize financial losses.

Second, resilience enhances the flexibility and adaptability of the supply chain. Tukamuhabwa et al. (2015) found that resilient supply chains are more capable of adjusting their operations, optimizing production and service processes, and aligning more effectively with shifting market demands. This ultimately strengthens both market and financial performance.

Third, resilience improves resource allocation and decision-making efficiency. Effective information sharing and collaboration, enabled by resilient systems, allow enterprises to optimize resource use and reduce operational costs and waste. Wieland and Wallenburg (2013) highlighted that integrating supply chain information leads to more accurate resource scheduling and faster decision-making, thereby improving overall operational efficiency and performance.

### **4.3 Summary of the Results**

The results of the data analysis revealed several key insights into the relationships among information integration, supply chain resilience, and operational performance within agricultural product supply chains. First, the findings confirmed that a high level of information integration significantly contributes to the enhancement of supply chain resilience. This integration, characterized by real-time data sharing, collaborative communication, and coordinated planning, enabled supply chain actors to respond more effectively to disruptions and maintain system continuity.

Second, the analysis demonstrated that supply chain resilience has a direct and positive impact on enterprise operational performance. Organizations with stronger resilience capabilities

were found to be more adaptive and responsive to unexpected events, leading to improved efficiency, reduced operational losses, higher customer satisfaction, and better financial outcomes. These findings are consistent with prior literature emphasizing the role of resilience as a strategic capability in uncertain environments.

Third, the results indicated a mediating role of resilience in the relationship between information integration and operational performance. Information integration alone does not fully translate into improved performance unless it is accompanied by the ability to absorb, adapt to, and recover from disturbances. Thus, the path from digital and informational connectivity to enhanced performance is largely enabled by resilience mechanisms.

In summary, the empirical evidence supports the theoretical model that posits information integration as a critical enabler of supply chain resilience, which in turn leads to superior operational performance in agricultural enterprises. These findings underscore the importance of investing in digital infrastructure, collaborative systems, and proactive risk management to strengthen supply chain competitiveness in increasingly volatile market conditions.

## **5. Conclusion, Discussion, and Recommendation**

### **5.1 Conclusion**

This article explores the impact of supply chain resilience on business operational performance, emphasizing its positive role in improving financial and market outcomes. Research indicates that a highly resilient supply chain can effectively respond to emergencies, reducing the negative impact of operational disruptions. Moreover, resilience enables companies to flexibly adjust operational strategies and optimize resource allocation, thereby enhancing profitability and market competitiveness. In an increasingly globalized and uncertain market environment, supply chain resilience is a critical factor for enterprises to achieve sustainable development. The integration of information within agricultural product supply chains plays a vital role in enhancing resilience by improving risk identification, emergency response, and recovery capabilities.

### **5.2 Discussion**

Information integration is fundamental to agricultural product supply chain management, as it enhances coordination and communication efficiency across various supply chain links. By minimizing delays and errors caused by information asymmetry, information integration boosts the supply chain's flexibility and resilience. This capability enables the supply chain to rapidly recover from disruptions, ensuring continuous operation and stability through optimized resource allocation and process reengineering. Modern information technologies provide essential technical support for these improvements, facilitating efficient management and stable operation.

The importance of supply chain resilience is increasingly recognized as enterprises face market uncertainties and unexpected disruptions. Resilience significantly influences market performance, an important measure of competitiveness and operational efficiency. A resilient supply chain allows businesses to swiftly adapt to market changes and customer demands, maintaining product and service continuity, which in turn increases market share and enhances brand loyalty. By improving information sharing and collaborative efficiency, supply chain resilience strengthens competitive advantage and drives better market outcomes.



Scholarly research on agricultural supply chain resilience is growing, covering diverse factors such as product types, processing methods, supply and demand dynamics, customer relationships, and financial considerations. Emerging elements like online marketing and live streaming sales are also gaining attention. However, most studies focus on isolated factors, with limited analysis on the combined influence of multiple factors. The integration of agricultural supply chain information stands out as an effective approach to unify these factors and enhance overall resilience.

### 5.3 Recommendation

Future research should focus on a comprehensive analysis of the various factors influencing the resilience of agricultural supply chains and explore their interrelationships. Emphasis should be placed on understanding how the integration of supply chain information can serve as a strategic tool to strengthen resilience by facilitating better coordination among diverse factors. Additionally, empirical studies need to be expanded and standardized to clarify the strength and consistency of these influences.

Practically, enterprises should invest in modern information technologies and systems that enhance real-time data sharing and communication across the agricultural supply chain. Developing robust information integration platforms can improve risk management, emergency response, and recovery processes, ultimately boosting supply chain flexibility and stability. Finally, managers should consider adopting dynamic resource allocation and process reengineering strategies informed by integrated supply chain information to improve operational performance and competitiveness in volatile markets.

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# **A Review of Research on the Relationship between Students' Informal Course Time Management Tendencies, Self-Efficacy and Grades**

by

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### **Abstract**

In today's competitive academic environment, the ability to manage time effectively is a critical factor influencing student success, particularly for vocational college students who must balance formal coursework with skill-based training and career preparation. This study investigates the relationship between informal course time management tendencies and academic performance, with a specific focus on the mediating role of academic self-efficacy. While extensive research has addressed general time management and academic outcomes, limited attention has been given to how students manage their informal learning time outside the classroom, an area that may significantly impact confidence and learning outcomes. A quantitative research design was employed, utilizing structured questionnaires to collect data from 400 vocational college students across multiple institutions. The data were analyzed using descriptive statistics, correlation coefficients, and regression models. The findings reveal a strong and statistically significant relationship between informal time management tendencies and academic self-efficacy, and between self-efficacy and academic performance. Additionally, academic self-efficacy was found to partially mediate the relationship between time management tendencies and academic achievement. The study concludes that vocational students with higher informal time management skills tend to exhibit stronger academic self-efficacy, which positively influences academic performance. These findings suggest that educational institutions should develop targeted interventions, such as structured time management training programs and self-efficacy enhancement workshops, especially tailored to vocational education settings. The results also encourage future research to explore the development of customized time management models that account for the unique characteristics and challenges of vocational students. Enhancing students' time use awareness and self-discipline can lead to improved academic outcomes and support the long-term goal of preparing students for lifelong learning and professional success.

**Keywords:** Academic Self-Efficacy, Time Management, Informal Learning, Vocational Education, Academic Performance

## **1. Introduction**

### **1.1 Background and Importance of the Problem**

In the context of increasingly demanding academic environments, students are expected to manage not only their formal coursework but also a wide range of informal learning activities. These include reviewing materials outside of class, preparing for assessments, and engaging in self-directed learning. For vocational college students in particular, the challenge is intensified by the need to balance academic responsibilities with practical skill development and job readiness. Despite growing research into time management and self-efficacy, informal course time management, a critical but often overlooked component of student success, remains underexplored. Numerous studies have demonstrated a strong connection between effective time management and improved academic performance, as well as the mediating role of academic self-efficacy. However, little research has focused on how vocational students manage their informal study time and how this affects their confidence and learning outcomes. Understanding these relationships is essential for designing supportive interventions that not only enhance academic achievement but also promote mental well-being and lifelong learning habits.

### **1.2 Research Question**

This study seeks to answer the following main research question is how do informal course time management tendencies affect the academic performance of vocational college students, and does academic self-efficacy mediate this relationship?

### **1.3 Research Objective**

The primary objective of this study is to investigate the relationship between informal course time management tendencies and academic performance among vocational college students. Specifically, the study aims to:

- 1) Analyze the current state of students' informal time management behaviors.
- 2) Examine the direct relationship between time management tendencies and academic self-efficacy.
- 3) Determine whether academic self-efficacy serves as a mediating factor between time management and academic performance.
- 4) Provide insights and recommendations to support educational institutions in enhancing student outcomes through targeted interventions focused on time management and self-efficacy development.

## **2. Literature Review**

### **2.1 Related Concepts and Theories**

Time Management Tendencies refer to individual attitudes, behaviors, and cognitive strategies related to the planning, monitoring, and execution of time-related tasks. Britton and Tesser (1991) developed the Time Management Questionnaire (TMQ), which assesses three core



components: short-term planning, time attitudes, and long-term planning. Macan et al. (1990) also introduced the Time Management Behavior Scale (TMB) to measure essential behaviors such as prioritizing, scheduling, and allocating time.

Academic Self-Efficacy is derived from Bandura's (1997) social cognitive theory, referring to a student's belief in their capacity to successfully perform academic tasks. Zimmerman (2000) emphasized its role in motivating students, guiding learning strategies, and ultimately improving academic outcomes.

Academic Performance typically includes grades, exam scores, coursework completion, and class participation. It is not only a reflection of academic capability but also of students' attitudes, self-regulatory skills, and psychological factors such as self-efficacy.

Bandura's theory (1997) and Zimmerman's research (2000) confirm that students with higher self-efficacy tend to set challenging goals, persist in the face of difficulties, and achieve better results.

## 2.2 Literature Surveys

### 2.2.1 *Relationship between Time Management Tendencies in Informal Courses and Academic Self-Efficacy*

Yanfang et al. (2008) identified a significant positive correlation between time management tendencies and academic self-efficacy among vocational college students. Similarly, Luan Guoxia (2009) reported that higher-achieving students have better time management skills and higher academic self-efficacy than their lower-achieving peers. Gao Lina et al. (2009) found a significant correlation between time monitoring and general self-efficacy.

Xiaohong (2014) and Tingting (2014) emphasized that various dimensions of time management tendencies predict self-efficacy and that training in time management improves vocational students' academic self-efficacy. Studies by Bao Huanke (2016), Yuan Shuang (2017), and Chen Xiaopu (2016) reaffirmed the positive link between time management, academic emotions, and self-efficacy. Other scholars, such as Ma Yimeng and Meng Yong (2013), Dou Gaidi (2020), and Suya (2020), extended these findings to other student populations, such as rural or left-behind students.

Qing (2019) revealed a partial mediating effect of self-efficacy between learning motivation and time management. Huo Hongxia (2018) demonstrated that academic self-efficacy mediates the relationship between time management tendencies and academic performance.

### 2.2.2 *Relationship between Time Management Tendencies in Informal Courses and Academic Performance*

A strong body of research supports the idea that effective time management significantly enhances academic performance. Early work by Bond and Festher (1988) initiated research into time attitudes, while Britton and Glynn (1989) and Britton and Tesser (1991) further developed theoretical models. Macan et al. (1990) clarified behavioral indicators such as task prioritization and time allocation.

Metcalf (2002) proposed the “zone of proximal learning” theory, suggesting that students allocate more time to tasks within their learning zone. Cyril (2015) found that learning time management skills positively influence academic performance and that female students perform better than males in time management.

In China, researchers like Hui (2003), Ruan Kunliang et al. (2004), and Zhang Yonghong (2003) found that time value, monitoring, and management differ significantly between high and low achievers. The correlation between time management and academic success is also linked to achievement motivation and self-esteem (Chen Benyou & Deng Ling, 2006).

Yu and Xiaohong (2004) highlighted the role of self-efficacy and academic satisfaction in effective time use. Yu and Yun (2012) connected time values with autonomy and social personality development. Zhang Ting et al. concluded that extracurricular learning positively affects academic outcomes, while leisure time negatively impacts them.

### *2.2.3 Relationship between Academic Self-Efficacy and Academic Performance*

The correlation between academic self-efficacy and academic performance is well-established. Chemers, Hu, and Garcia (2001) confirmed that students with higher self-efficacy often perform better academically. However, discrepancies exist based on demographic variables.

Pajares (1993) found no significant difference in self-efficacy between male and female students but reported better academic outcomes for females. Conversely, Huang (2013) reported that gender does not significantly impact either variable. Grade level may influence performance; Pintrich and De Groot (1990) suggested older students have better learning strategies and self-efficacy, though Schunk and Pajares (2007) noted no consistent effect. Eccles and Barber (2002) indicated that student leaders exhibit higher self-efficacy, but Tinto (1993) found no significant impact from leadership roles.

## **2.3 Conceptual Framework**

This study proposes a conceptual framework in which Time Management Tendencies in Informal Courses influence Academic Performance both directly and indirectly through Academic Self-Efficacy as a mediating variable. This framework integrates cognitive-behavioral and motivational theories, emphasizing the mediating role of academic self-efficacy in the relationship between informal time management and performance outcomes.

## **2.4 Research Hypothesis**

Based on the literature reviewed, the following hypotheses are proposed:

H1: There is a significant positive relationship between time management tendencies in informal courses and academic self-efficacy.

H2: There is a significant positive relationship between time management tendencies in informal courses and academic performance.

H3: There is a significant positive relationship between academic self-efficacy and academic performance.

H4: Academic self-efficacy mediates the relationship between time management tendencies in informal courses and academic performance.

### **3. Research Methodology**

#### **3.1 Research Design**

This study employed a quantitative research approach using a descriptive correlational design to explore the relationships among time management tendencies in informal courses, academic self-efficacy, and academic performance among vocational college students. The research design is appropriate for examining both the strength and direction of associations between variables. A survey method was utilized to collect standardized data from the sample population, allowing for statistical analysis and hypothesis testing.

#### **3.2 Population and Sample**

The population for this study comprised vocational college students enrolled in various programs across multiple institutions in Thailand during the academic year 2024–2025. A stratified random sampling technique was used to ensure representation from different academic years and majors. The sample size was calculated using Krejcie and Morgan's (1970) sample size table, resulting in a total of 400 participants. Stratification ensured proportionate representation across gender, academic year, and field of study.

#### **3.3 Research Instruments**

The primary tool for data collection was a structured questionnaire divided into four sections:

Section 1: Demographic Information, including gender, academic year, major, and whether the respondent holds a student leadership position.

Section 2: Time Management Tendencies Scale, adapted from Britton and Tesser (1991), measured aspects such as time monitoring, time efficiency, and planning.

Section 3: Academic Self-Efficacy Scale, adapted from Chemers et al. (2001), assessed confidence in academic tasks.

Section 4: Academic Performance, self-reported by students using their cumulative GPA and perceived learning achievement.

The questionnaire was validated by three academic experts in educational psychology and measurement. A pilot test was conducted with 30 students outside the sample group, and Cronbach's alpha coefficient was calculated to ensure reliability, resulting in alpha values of 0.82 for time management, 0.85 for academic self-efficacy, and 0.78 for the overall instrument.

#### **3.4 Data Collection**

Data were collected over a one-month period in February 2025. The questionnaires were distributed both in paper format and online via Google Forms. Before distribution, participants were briefed on the research objectives and assured of confidentiality and anonymity. Participation was

voluntary, and informed consent was obtained from all respondents. To enhance response rates, follow-up reminders were sent one week after the initial distribution.

### **3.5 Statistics Used for Data Analysis**

The data were coded and analyzed using SPSS version 28. The following statistical methods were employed:

- 1) Descriptive statistics (means, standard deviations, frequencies, and percentages) to summarize demographic data and variable distributions.
- 2) Pearson's correlation coefficient to examine relationships among time management tendencies, academic self-efficacy, and academic performance.
- 3) Independent t-tests and ANOVA to test for differences based on demographic variables such as gender, grade level, and student leadership roles.
- 4) Multiple regression analysis to determine the predictive power of time management and self-efficacy on academic performance.

## **4. Data Analysis and Findings**

### **4.1 Introduction**

This chapter presents the results of the data analysis conducted to examine the relationships among time management tendencies in informal courses, academic self-efficacy, and academic performance among vocational college students. The data were collected through a structured questionnaire distributed to a sample of 400 students from various vocational colleges. The analysis was carried out using SPSS version 28, and the findings are presented in accordance with the research objectives and hypotheses. This chapter is organized into two main sections: (1) analysis of the quantitative data and (2) a summary of the findings in relation to the research questions.

### **4.2 Data Analysis of the Quantitative Data**

#### *4.2.1 Descriptive Statistics*

The descriptive statistics revealed that most respondents were female (58.3%), with the majority enrolled in second-year programs (44.0%). Approximately 29.5% held student leadership positions. The average GPA reported was 3.06 (SD = 0.42).

**Time Management Tendencies:** Students reported moderate to high levels of time management tendencies ( $M = 3.78$ ,  $SD = 0.53$ ), with the highest scores in the sub-domain of time monitoring.

**Academic Self-Efficacy:** Respondents indicated a high level of academic self-efficacy ( $M = 3.85$ ,  $SD = 0.47$ ), especially in their perceived capability to complete assignments on time and prepare for exams.

**Academic Performance:** GPA served as the main indicator for academic performance, complemented by self-assessment items in the questionnaire.

#### 4.2.2 Correlation Analysis

A Pearson correlation analysis was performed to explore the relationships among the three main variables.

There was a strong and significant positive correlation between time management tendencies and academic self-efficacy ( $r = 0.68, p < .01$ ).

Time management tendencies were moderately correlated with academic performance ( $r = 0.51, p < .01$ ).

A significant positive relationship was also found between academic self-efficacy and academic performance ( $r = 0.57, p < .01$ ).

These results support the research hypothesis that better time management tendencies, particularly in informal learning contexts, are associated with higher levels of self-efficacy and improved academic performance.

#### 4.2.3 Group Comparisons

Independent sample t-tests and one-way ANOVA were used to examine differences in the key variables based on gender, academic year, and leadership status.

Gender: Female students scored significantly higher in both time management tendencies and academic self-efficacy compared to male students ( $p < .05$ ).

Academic Year: Seniors scored higher in academic self-efficacy and time efficiency than freshmen ( $p < .05$ ).

Leadership Role: Student leaders exhibited higher academic self-efficacy than non-leaders ( $p < .01$ ), but there were no significant differences in GPA between the two groups.

#### 4.2.4 Regression Analysis

Multiple regression analysis was conducted to determine the predictive power of time management tendencies and academic self-efficacy on academic performance.

The model was statistically significant ( $R^2 = 0.41, F(2,397) = 72.88, p < .001$ ).

Time management tendencies ( $\beta = .31, p < .001$ ) and academic self-efficacy ( $\beta = .45, p < .001$ ) both significantly predicted academic performance.

Academic self-efficacy was the stronger predictor of the two, accounting for more variance in students' academic outcomes.

### 4.3 Summary of the Results

The quantitative analysis confirmed the proposed hypotheses and highlighted several key findings:

- 1) Time management tendencies, particularly in informal learning contexts, are significantly and positively associated with academic self-efficacy.
- 2) Both time management tendencies and academic self-efficacy significantly influence academic performance, with self-efficacy showing a slightly stronger effect.
- 3) Student demographics, such as gender, academic year, and leadership status, are associated with differences in self-efficacy and time management, though not always with academic performance.
- 4) The results suggest that interventions targeting time management skills and self-efficacy enhancement may be effective in promoting academic achievement, particularly among vocational college students.

## 5. Conclusion, Discussion, and Recommendation

### 5.1 Conclusion

The findings from this study confirm a strong and significant relationship between academic self-efficacy and time management tendencies. Specifically, students who exhibit a high level of time management tendency tend to demonstrate higher academic self-efficacy and, in turn, better academic performance. Time management training has been shown to effectively enhance students' confidence in their academic abilities. Among various student populations, vocational college students exhibit distinct characteristics that make this relationship particularly relevant and meaningful. The analysis indicates that informal course time management, a commonly overlooked aspect of student life, plays a vital role in fostering self-efficacy and improving learning outcomes. Therefore, understanding and improving students' ability to manage their informal learning time can provide a practical avenue for supporting academic success.

### 5.2 Discussion

The current research supports existing literature asserting the positive correlation between time management tendencies and academic self-efficacy. While the fundamental relationship remains consistent, different student populations show variation in outcomes, highlighting the importance of contextual analysis. For vocational college students, the dual pressures of academic achievement and employment readiness make time management a critical skill. Moreover, this group often experiences challenges in effectively utilizing informal learning time, which influences both psychological and academic outcomes. As the literature suggests, student time management has been explored across disciplines, particularly in management, education, and psychology, with a focus on improving methods and exploring influencing factors such as achievement motivation and procrastination. However, the vocational education setting introduces unique developmental and psychological dimensions that necessitate tailored strategies. Thus, deeper insight into students' use of informal time and their perceived barriers to time management can significantly enrich both academic theory and practical interventions.

### 5.3 Recommendation

In light of the conclusions drawn and existing scholarly work, several recommendations can be proposed. Firstly, educational institutions, particularly vocational colleges, should implement structured time management training programs that emphasize both formal and informal learning periods. These programs should aim to enhance students' awareness of time use, promote self-discipline, and strengthen academic self-efficacy. Secondly, research methods such as questionnaire surveys, observations, and interviews should continue to be used to gather detailed data on students' time management behavior and challenges. This mixed-methods approach provides a more comprehensive understanding of students' experiences. Lastly, it is recommended that future studies explore the development of personalized time management models tailored to the specific needs of vocational students. Such interventions can serve as practical tools not only to improve academic performance but also to support students in balancing study with career preparation and personal growth.

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Manuscripts should be written in a manner that is interesting and readable to both practitioners and academics. It is beneficial to include a section regarding managerial implications and discussion of the consequences of applying the proposed ideas. Technical terms should be defined.

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The sections of the manuscript should be placed in the following order: Cover page, Title page, Authors, Abstract (on a page by itself) and Body, Illustrations, Citation, References, and Appendices.

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The cover page should include the title of the manuscript and the authors' name(s) in the order in which they will be printed. The following information should be provided for each co-author: name, title, university/company name, mailing address, telephone number, facsimile number, and e-mail address. Please indicate which co-author will serve as the primary contact for the Journal.

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U-on, V. (2015), "Marketing Logistics in the Asean Economics Community: A Conceptual Model," In *Proceedings of the International Conference on Management, Business, and Economics & the 3<sup>rd</sup> International Conference on Tourism, Transport, and Logistics*, February 12-14, 2015, Rydges Sydney Central, Sydney, Australia.

Lukason, O. and Hoffman, R. C. (2014), "Firm Bankruptcy Probability and Causes: An Integrated Study," *International Journal of Business and Management*, Vol. 9, No. 11, p. 80-91.

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Morden, T. (2007), "*Principles of Strategic Management*" (3 Eds.), Ashgate Publishing: Burlington, USA.

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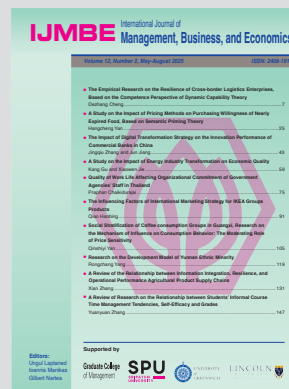
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## Sripatum University, Thailand

Sripatum University is one of the oldest and most prestigious private universities in Bangkok, Thailand. Dr. Sook Pookayaporn established the university in 1970 under the name of "Thai Suriya College" in order to create opportunities for Thai youths to develop their potential. In 1987, the college was promoted to university status by the Ministry of University Affairs, and has since been known as Sripatum University. "Sripatum" means the "Source of Knowledge Blooming Like a Lotus" and was graciously conferred on the college by Her Royal Highness, the late Princess Mother Srinagarindra (Somdet Phra Srinagarindra Baromarajan). She presided over the official opening ceremony of SPU and awarded vocational certificates to the first three graduating classes. Sripatum University is therefore one of the first five private universities of Thailand. The university's main goal is to create well-rounded students who can develop themselves to their chosen fields of study and to instill students with correct attitudes towards education so that they are enthusiastic in their pursuit of knowledge and self-development. This will provide students with a firm foundation for the future after graduation. The university's philosophy is "Education develops human resources who enrich the nation" which focuses on characteristics of Wisdom, Skills, Cheerfulness and Morality.

## University of Greenwich, United Kingdom

The University of Greenwich is a British university with campuses in south-east London and north Kent. These include the Greenwich Campus, located in the grounds of the Old Royal Naval College in the Royal Borough of Greenwich, London, England. It is the largest university in London by student numbers and the greenest in the UK as assessed by The People & Planet Green League. The university's wide range of subjects includes architecture, business, computing, education, engineering, humanities, natural sciences, pharmacy and social sciences. It has a strong research focus and well-established links to the scientific community.

## Lincoln University, New Zealand

Lincoln is New Zealand's third oldest university. Founded in 1878 as a School of Agriculture, the organisation was linked to Canterbury College, welcoming its first intake of students in 1880. In 1896, with agriculture now well established as the mainstay of New Zealand's exports, the School of Agriculture separated from Canterbury College and became Canterbury Agricultural College, with its own governing body and the ability to award degrees through the University of New Zealand. In 1961, the university was officially renamed Lincoln College, becoming a constituent college of the University of Canterbury. In 1990 Lincoln University formally separated from the University of Canterbury and became the self-governing national university that it is today. Internationally Lincoln University has academic alliances with complementary institutions in Asia, the Middle East, Europe and the Americas. These alliances support academic relationships and enhance educational opportunities for teaching staff, students and those undertaking advanced research.



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