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The Influence Mechanism of Partnership on Agri-food Supply Chain Performance

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Abstract

Purpose – This study investigates how strategic partnerships and supply chain collaboration influence the performance of China's agricultural supply chains, addressing challenges such as short-termism, weak collaboration, limited information exchange, and the absence of systematic performance improvement strategies.

Design/Methodology/Approach – Centering on core agricultural enterprises, the research develops a framework linking partnership dimensions (trust, commitment, power, adaptation) and collaboration mechanisms (revenue sharing, information sharing, synchronous decision-making, IT support) to financial and operational outcomes. Empirical analysis explores both direct effects and interaction mechanisms.

Findings – Strong partnerships and robust collaboration significantly enhance performance. Revenue sharing provides the structural foundation, while information sharing and synchronous decision-making are critical operational drivers. IT support strengthens systemic improvements in both areas.

Research Implications – The results offer actionable guidance for policymakers and managers: fostering trust, ensuring fair revenue distribution, and enabling efficient information flows within a systemic collaboration strategy can raise supply chain performance. Such approaches also contribute to rural development, higher farm incomes, and improved food quality and safety in China.

Keywords: partnership; supply chain collaboration; Agricultural supply chain performance; supply chain
JEL Classifications: Q13, L14, M11

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I. Introduction

As the primary industry, agriculture is closely related to people's livelihood. With the improvement of people's living standards and the change of consumption habits, the Agricultural industry has undergone great changes in the past 20 years. At the same time, it is also facing new situations and challenges, such as consumers' personalized and diversified demand for agricultural products, and stricter food quality and safety standards (Saitone and Sexton., 2017; Huggins and Valverde., 2018). At present, the competition between single enterprises has gradually evolved into the whole supply chain (Cooperetal.,1997; Kuhneetal.,2013). Agricultural Supply Chain refers to the functional network in the whole process from production to sales of agricultural products, which composed of farmers, processing enterprises, logistics enterprises, wholesalers and retailers driven by core enterprises. Through information share and close collaboration, members of the supply chain quickly respond to market demand and maximize the overall benefits of the supply chain.

This article believes that starting from supply chain collaboration, exploring the impact mechanism of partner relationships on the performance of agricultural product supply chains is of great value in promoting supply chain management. Through theoretical and empirical analysis, this study clarifies the interaction mechanism between partner relationships, supply chain collaboration, and the performance of agricultural product supply chains. It examines the direct impact paths of overall and dimensional partner relationships on the performance of agricultural product supply chains, as well as the direct impact and mediating role of supply chain collaboration. Based on the empirical analysis, this article proposes strategies to enhance agricultural product supply chain collaboration. The research conclusions of this article have important theoretical significance and practical reference value in promoting the management of agricultural product supply chains in China.

The research objectives of this paper are to explore the influence mechanism of partnership and supply chain collaboration on the Agricultural supply chain performance. Analyze the influence of partnership and supply chain collaboration on Agricultural supply chain performance, clarify the intermediary role of supply chain collaboration between them. Based on the above research, a strategy model for improving Agricultural supply chain performance is proposed from a systemic perspective to promote partnerships, ensure supply chain collaboration, and improve performance. Provide improvement suggestions for implementing supply chain collaboration and improving supply chain performance and provide theoretical support for the government to formulate Agricultural supply chain management policy.

II. Research Design

2.1 Research Model

Based on synergy view, resource-based view, relational view and research status, this article found that

based on relationship view and related research, partnership (trust, commitment, power, adaption) as a supply chain Collaboration is an important content. Strengthening partnerships is conducive to promoting supply chain members to establish stable cooperative relationships, obtain relational rents and reduce opportunistic behavior of supply chain members. Ultimately, it is conducive to promoting the improvement of Agricultural supply chain performance.

Based on resource-based view and related research, efficient supply chain collaboration (incentive alignment, information share, and synchronized decision-making) is a unique, difficult-to-imitate capability and a very important strategic resource for agricultural-related enterprises in supply chain management. It can bring competitive advantages to enterprises and help core enterprises make full use of human, financial, information, infrastructure, and other relationship resources among supply chain organizations. It can also promote information share and synchronized decision-making among supply chain members, improve the efficiency of Agricultural supply chain management and bring about performance improvements.

Based on synergy view, relational view, resource-based view, and related research, establishing long-term strategic partnerships among supply chain members and exerting supply chain collaboration can reduce information search costs, transaction negotiation costs, and supervision among Agricultural supply chain members. It can also reduce opportunistic behavior and information asymmetry problems among partners, thereby reducing transaction costs and improving supply chain performance.

Therefore, it is believed that in Agricultural supply chain management, the improvement of partnerships can promote the improvement of supply chain collaboration and promote information share and synchronous decision-making among supply chain members, thereby improving the performance (financial performance, operational performance) of the Agricultural supply chain. Specifically, the establishment of good partnerships among members of the Agricultural supply chain is conducive to promoting supply chain coordination and promoting the close connection among farmers, production enterprises, circulation enterprises, retail enterprises and consumers. It can also promote the smooth distribution of interests between upstream and downstream enterprises in the supply chain, realize information share, and solve the practical problem of being unable to form long-term stable partnerships and efficient cooperation among members of the Agricultural supply chain. This can then reduce transaction costs, improve the performance of the Agricultural supply chain, and solve cooperation problems among members of the Agricultural supply chain.

Based on the above analysis, this article believes that partnerships and supply chain collaboration have three key paths that directly and indirectly affect the performance of Agricultural supply chains The first direct path of influence is through the factors of partnership (trust, commitment, power, adaption). That is, partnership can promote supply chain members to establish trust and commitment relationships, adapt to each other, enhance supply chain stability, reduce transaction costs, give full play to the overall competitive advantage of the supply chain, and improve performance. The second direct influence path is through supply chain collaboration (incentive alignment, information share, synchronous decision-making) factors. That is, establishing an incentive mechanism in supply chain collaboration can promote information share among supply chain members, improve the level of synchronous decision-making, and improve the supply chain performance. The

third indirect path of influence is through supply chain collaboration intermediary factors. That is, improving partnerships is conducive to information share and synchronous decision-making. It can reduce delays and distortions in operational information transmission in the supply chain. It can also reduce the influence of the “bullwhip effect" and improve the performance of Agricultural supply chain.

Based on the above discussion, this article proposes an overall research framework to explain partnership (trust, commitment, rights, adaption), supply chain collaboration (incentive alignment, information share, synchronized decision-making) and Agricultural supply chain performance (financial performance, operational performance). The primary and secondary variables are closely related and influence each other. Among them, supply chain collaboration can have a direct impact on the performance of Agricultural supply chain. Partnerships can have direct and indirect impacts on Agricultural supply chain performance. Supply chain collaboration plays a key mediating path role in the relationship between partnerships and Agricultural supply chain performance. It also constructs a research model for studying the impact mechanism of partnership on Agricultural supply chain performance. As shown in Figure 1, this article studies four basic hypothesis paths (interaction paths among three first-level constructs). The three first-level constructs are partnership, supply chain collaboration and Agricultural supply chain performance. The 10 secondary constructs include 4 dimensions of partnership (trust, commitment, power and adaption), 3 dimensions of supply chain collaboration (incentive alignment, information share, and synchronized decision-making) and 2 dimensions of Agricultural supply chain performance (financial performance and operational performance). These further studies the impact of first-level variables partnership and supply chain collaboration on Agricultural supply chain performance from a holistic perspective. These impacts include the impact of partnerships on supply chain performance, the impact of supply chain collaboration on supply chain performance, the impact of partnerships on supply chain collaboration, and the mediating role played by supply chain collaboration. Focus on analyzing the hypothesis paths H1, H2, H3, and H4 to solve the practical problem of "how partnerships and supply chain collaboration jointly affect the performance of Agricultural supply chain”. The specific research model is as follows:

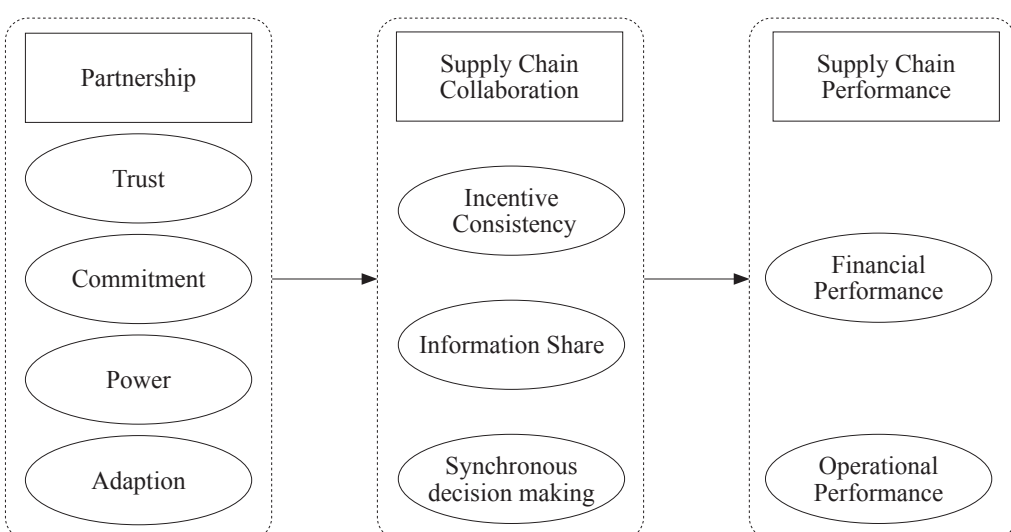

Figure 1.Research model

2.2 Research Hypothesis

2.2.1 The Impact of Partnerships on Supply Chain Collaboration

Based on the existing research foundation, this article initially clarifies the interaction between partnerships and supply chain collaboration, as well as its impact on Agricultural supply chain performance. On this basis, we comprehensively construct the concept of partnership (trust, commitment, power, adaption) and supply chain collaboration (incentive consistency, information share, synchronous decision-making) jointly affecting the performance (financial performance and operational performance) of the Agricultural supply chain. model, and hypotheses are proposed based on the relationship among factors in the model.

（1) Partnership and Agricultural supply chain performance

The improvement of supply chain collaboration can bring competitive advantages to supply chain members and improve the performance of the entire supply chain (Bahinipati and Deshmukh., 2012; Barkataki and Zeineddine., 2015). According to the Resource based view, performance differences among enterprises are determined by the number of strategic resources. When enterprises possess and can effectively integrate scarce strategic resources, enterprises can obtain sustained competitive advantages in market competition (Caoe et al., 2010). According to the Resource based view, relational assets are also a kind of strategic resources of enterprises, which have the characteristics of value, scarcity, and difficulty in complexity, and can bring competitive advantage to enterprises (Barney.,1991). For example, in supply chain collaboration, the resources and skills among enterprises can complement each other, supply chain members do not need to have all the superior resources, and some of their own resource capacity is insufficient, which can be made up through the cooperation among supply chain enterprises. In addition, the cooperation among supply chain enterprises can also make enterprises in the chain focus on their core business, so as to improve their specific skills, achieve economies of scale, and further improve supply chain performance (Barratt and Oliveira., 2001; Fawcettetal., 2015). Therefore, supply chain collaboration can complement the superior resources among enterprises, and produce economies of scale, which will ultimately promote the improvement of supply chain performance.

Therefore, this article puts forward the following hypothesis.

H1: Partnership has a positive impact on supply chain collaboration.

H1-1 Trust has a positive impact on incentive alignment.

H1-2 Trust has a positive impact on information sharing.

H1-3 Trust has a positive impact on synchronous decision-making.

H1-4 Commitment has a positive impact on motivation.

H1-5 Commitment has a positive impact on information sharing.

H1-6 Commitment has a positive impact on synchronous decision-making.

H1-7 Power has a positive impact on motivation.

H1-8 Power has a positive impact on information sharing.

H1-9 Power has a positive impact on synchronous decision-making.

H1-10 Adaption has a positive impact on motivation alignment.

H1-11 Adaption has a positive impact on information sharing.

H1-12 Adaption has a positive impact on synchronous decision-making.

2.2.2 Supply Chain Collaboration on Supply Chain Performance

Synchronous decision-making can affect the performance of the entire supply chain. Synchronous decision-making in supply chain collaboration can have a positive impact on financial performance such as corporate sales growth, sales profit margin, return on investment (ROI), and return on investment growth rate (Caoe et al., 2010; Adams et al., 2014). Synchronous decision-making can also positively affect operational performance, including reducing stockouts, ordering costs, improving inventory turnover rates, on-time delivery rates, etc. (Wiengartenetal., 2013; Li., 2012). Synchronous decision-making can affect market performance, sales growth, market share, market development, product development and customer development (Biome et al., 2014). Therefore, supply chain members make joint decisions based on information share, which may result in increased inventory turnover, on-time delivery, improved supply chain response speed, and reduced procurement costs, ultimately improving the overall performance of the supply chain. This article puts forward the following hypotheses based on the above analysis.

H2: Supply chain collaboration has a positive impact on Agricultural supply chain performance.

H2-1: Incentive consistency has a positive impact on financial performance.

H2-2: Incentive consistency has a positive impact on operational performance.

H2-3: Information share has a positive impact on financial performance.

H2-4: Information share has a positive impact on operational performance.

H2-5 Synchronous decision-making has a positive impact on financial performance.

2.3 Data Collection and Methods

2.3.1 Data Collection

This article takes managers who are familiar with supply chain operations in core enterprises of the Agricultural supply chain as the research objects. Specific research objects include. enterprise senior managers (general manager, deputy general manager, etc.), middle managers (supply chain managers, purchasing managers, sales managers, product operation managers, etc.) and grassroots managers. When answering the questionnaire, core enterprise managers are required to conduct a five-level assessment of the overall situation of their supply chain to ensure the quality of the research data. In order to ensure that the research sample is representative and quantitatively valid, this study combines online and offline methods to survey core enterprises in the Agricultural supply chain in major domestic provinces, and each agricultural-related enterprise is only allowed to fill in one questionnaire. The selection of research objects and approaches refer to

previous research (Edwards et al., 2014; Uddin., 2017; Lee and Ha., 2018).

2.3.2 Research Methods

The mathematical model of structural equation is represented by a system of linear equations, which includes a structural model and a measurement model. The structural model reflects the relationship among latent variables, and the measurement model represents the relationship among latent variables and observed variables. The latent variables are defined by the observed variables through the measurement model.

The structural equation mathematical model is as follows.

Measurement equation: $x=\lambda_x\xi+\delta$, $y=\lambda_y+\varepsilon$

Structural equation: $\eta=\Gamma\xi+\zeta$

x is a q*l vector composed of q exogenous indicators, and ξ is a q*l vector composed of n exogenous latent variables. λ_x is the q*n factor loading matrix of x on η, and δ is the q*l vector composed of q measurement errors. y is a p*l vector composed of p endogenous indicators, η is a p*l vector composed of m endogenous latent variables, λ_y is the p * m factor loading matrix of y on ξ , and ε is the p*l vector composed of p measurement errors. B is the m*m coefficient matrix of endogenous latent variables, Γ is the m*n coefficient matrix of the influence of exogenous variables on endogenous variables, and ξ is m* l Residual vector.

When applying structural equation model for empirical analysis, it is generally divided into two stages. model development stage and estimation and evaluation stage. In the model development stage, the process of theory development, model setting, and identification is to go through, with the purpose of constructing a hypothetical model that can be identified based on the theory. The estimation and evaluation stage involves processes such as sampling, parameter estimation, model fitting, and modification, with the goal of measuring and estimating a theoretical model with a relatively reasonable explanation.

Mplus, AMOS and LISREL are commonly used analysis software for structural equation model. The three operating interfaces are different, but the model settings, analysis and results are the same. Structural equation model is a confirmatory method that requires theoretical support. The hypothesis model needs to be constructed under the guidance of theory, and the model needs to be revised based on the rationality of the theory. Based on the structural equation model method, this study sets up a total of 37 observed variables (measurement items). The first-level latent variables are partnership, supply chain collaboration and Agricultural supply chain performance. The second-level latent variables are 4 categories of partnership (trust, commitment, power and adaption), supply chain collaboration is divided into three dimensions (incentive consistency, information share, synchronous decision-making) and Agricultural supply chain performance is divided into two dimensions (financial performance and operational performance). Utilizing the structural equation model method, Chapter 4 of this article conducts a detailed empirical analysis of the influence relationship between the above first level and second-level latent variables through different decomposition models and main models.

Moderation model. Moderator variables are used to explain whether a relationship changes under different conditions. The effect of moderator variables is to delineate constraints and scope for existing theories. We

enrich the original theory by studying the changes in variable relationships under different conditions and the reasons behind them, making the theory's explanation of variable relationships more refined.

III. Results and Analysis

3.1 Demographic Descriptive Statistics

Basic statistical description of initial items. A total of 204 valid samples were obtained in this research. The general statistical description of the sample is shown in Table 1. Through basic statistical analysis, it can be seen that the gender ratio in the sample is 110 males, accounting for 53.92%, and 94 females, accounting for 46.08%. Age distribution. 45 people under 30 years old, accounting for 22.06%; 89 people between 31 and 40 years old, accounting for 43.63%; 57 people between 41 and 50 years old, accounting for 27.94%; 13 people over 51 years old, accounting for 6.73%. The age distribution of the samples is mainly concentrated between 30 and 50 years old, accounting for 71.57%.

Education level. 16 people have high school or below and technical secondary school, accounting for 7.84%, 33 people have college degree, accounting for 16.18%, 77 people have bachelor's degree, accounting for 37.75%, and 78 people have master's degree or above, accounting for 38.24%. The educational level of the research objects in the sample is relatively high, and most of them are undergraduates and postgraduates, accounting for 75.99%. The above reasons are mainly related to the initial selection of research objects. This article studies the condition of Agricultural supply chain collaboration. The research objects are corporate managers. Usually, the management level of enterprises is relatively high, and the cultural level of the sample is consistent with that of the research objects.

The positions of the research objects in the interviewed companies are all management, which is basically consistent with the expected research objects. Among the research objects of this article, 79.9% of the survey subjects are senior managers and middle managers, and 20.1% are junior managers. Business managers in the Agricultural supply chain can better understand the supply chain operations of their own companies. For the working years of the survey samples in the unit, 15.2% of the survey samples were less than one year, 32.35% in 2-5 years, 32.35% in 5-10 years, 22.06% in 5-10 years, 30.39% in 10 years or more, and 84.8% of the research objects worked in enterprises for more than 2 years. It indicates that the research objects have a certain degree of understanding of the enterprise's management.

Table 1. Demographic Analysis Results (N=204)

Name	Options	Frequency	Percentage (%)
Gender	male	110	53.92
	female	94	46.08
Age	Below 30	45	22.06
	31-40	89	43.63
	41-50	57	27.94
	51-60	12	5.88
	above 60	1	0.49
Education level	High school or below	7	3.43
	Technical secondary school	9	4.41
	Junior college	33	16.18
	Undergraduate	77	37.75
	Graduate or above	78	38.24
Duties	Senior managers	96	47.06
	Middle managers	67	32.84
	First line managers	41	20.1
Enterprise nature	State-owned enterprises	91	44.61
	Collective enterprise	13	6.37
	Private enterprise	93	45.59
	Sino-foreign joint venture	7	3.43
Enterprise scale	Less than 100 people	72	35.29
	100-300 people	36	17.65
	More than 300 people	96	47.06
Working years	Less than 1 year	31	15.20
	2-5 years	66	32.35
	5-10 years	45	22.06
	More than 10 years	62	30.39

In terms of enterprise scale, small enterprises n=72, accounting for 35.29%, medium enterprises n=36, accounting for 17.65%, and large enterprises n=96, accounting for 47.06%. The sample's enterprise nature included 93 private enterprises at most; 91 state-owned enterprises; collective enterprises and joint ventures accounted for 9.8%. The sample sources are distributed in 31 provinces, autonomous regions, and municipalities across the country. Through the above basic statistical descriptive analysis, this article can see that the sample is certain representative.

3.2 Descriptive Analysis of Variables

In this study, we will use adopts method to analyze the data in accordance with the standard principles of structural equation model analysis. The maximum likelihood estimation method in the structural equation model based on the covariance matrix of variables to evaluate the relationship between the measured variables. The maximum likelihood estimation method requires that the measured variable obey the multivariate normal distribution, and the so-called multivariate normal distribution mainly refers to the distance between the peak value of the measured variable and the deviation value and zero. When both kurtosis and skewness are within 0, the measured variable follows an ideal normal distribution. However, in the analysis of practical problems, due to errors and other reasons, the collected data cannot reach the ideal state. Academics believe that the skewness and kurtosis of data can show whether the data sample obeys the normal distribution, in general, when the absolute values of kurtosis and skewness are less than 3, it means that the observed variables are basically in normal distribution, The analysis results of this study are shown in Table 4-2.

It can be seen from Table 2 that from the analysis of maximum value, minimum value, average value and standard deviation, the mean value of each variable is between 3.603 and 4.144, of which the variable with the minimum average value is " incentive consistency " and the variable with the maximum average value is " commitment ". Kline believes that the absolute values of skewness and kurtosis of the data are less than 3 and 10 respectively, indicating that the data conforms to the model to a certain extent. The results in the above table show that the absolute value of skewness is less than 3 and the absolute value of kurtosis is less than 10, indicating that each problem meets the conditions. Therefore, the data of this questionnaire can be directly used for subsequent statistical analysis.

Table 2. Descriptive Statistics of Variables

Project	N	Minimum value	Maximum value	Average value	Standard deviation	Kurtosis	Skewness
Trust	204	1.00	5.00	3.691	0.883	-1.406	1.671
Commitment	204	1.00	5.00	4.144	0.823	-0.852	0.987
Power	204	1.00	5.00	3.686	0.914	-1.681	1.234
Adaption	204	1.00	5.00	3.710	0.961	-0.860	2.412
Information share	204	1.00	5.00	3.920	0.769	-1.271	1.314
Synchronous decision-making	204	1.00	5.00	3.800	0.841	-0.673	0.365
Incentive Consistency	204	1.00	5.00	3.603	0.976	-1.251	0.654
Financial Performance	204	1.00	5.00	3.820	0.780	1.314	1.451
Operational Performance	204	1.00	5.00	3.903	0.728	-0.977	0.931

3.3 Reliability and Validity Analysis

3.3.1 Reliability Test

Reliability refers to the consistency, stability, and reliability of measurement data. Generally, internal consistency is used to express the reliability of the test. The higher the reliability coefficient is, the more consistent, stable, and reliable the test results are. This study uses multiple questions to measure, so Cronbach alpha is used as an indicator to test the reliability of the questionnaire. Generally speaking, when the Cronbach alpha value of the scale designed by the questionnaire is lower than 0.7, it means that the internal consistency of the variables of the scale is poor, and the scale needs to be re compiled; When the Cronbach alpha value of the equivalence table is higher than 0.7, it means that the internal consistency of several variables constructed by the scale is good; If the Cronbach alpha value of the scale is higher than 0.9, it means that the internal consistency of the variables designed by the scale is excellent.

Table 3. Reliability Analysis

Variables	Name	CITC	The alpha coefficient of the deleted item	Cronbach alpha coefficient
Trust	T1	0.883	0.729	0.893
	T2	0.905	0.883	
	T3	0.924	0.791	
	T4	0.884	0.896	
Commitment	C1	0.823	0.920	0.932
	C2	0.799	0.912	
	C3	0.801	0.887	
Power	P1	0.914	0.807	0.789
	P2	1.021	0.476	
	P3	0.849	0.703	
Adaption	A1	0.961	0.733	0.917
	A2	0.947	0.767	
	A3	0.910	0.795	
	A4	1.008	0.894	
Information share	IS1	0.769	0.916	0.936
	IS2	0.787	0.959	
	IS3	0.847	0.869	
	IS4	0.841	0.444	
Synchronous decision-making	DS1	0.800	0.808	0.907
	DS2	0.955	0.858	
	DS3	0.909	0.856	
	DS4	0.976	0.856	
Incentive consistency	IA1	0.970	0.783	0.880
	IA2	0.962	0.802	
	IA3	0.799	0.799	
	IA4	0.780	0.829	
Financial performance	FP1	0.776	0.848	0.938
	FP2	0.761	0.900	
	PF3	0.771	0.905	
	FP4	0.728	0.905	
Operational performance	OP1	0.749	0.821	0.897
	OP2	0.772	0.844	
	OP3	0.777	0.864	
	OP4	0.769	0.793	

Reliability analysis is used to test the consistency and stability of the results. Before model validation, the reliability of the study variables needs to be analyzed. Variable composition reliability can reflect the consistency of variable indicator content. In the study, the internal consistency was estimated and tested through Cronbach's a coefficient. Generally, it is appropriate that the reliability Cronbach's a coefficient is greater than 0.7. the Cronbach's a coefficient of all variables in this article are greater than 0.7. The results indicate that the internal consistency of the research variables is good.

In addition, this study uses the Correction Item Total Correlation (CITC) to measure the reliability of a single problem item. In the study, when the following two conditions are met, one problem item shall be deleted: (1) The overall correlation coefficient CITC of one problem item is less than 0.4; (2) The Cronbach alpha coefficient of the scale is greater than the value of the Cronbach alpha coefficient of the corresponding dimension after the problem item is excluded. The specific reliability analysis results are shown in Table 3

It can be seen from the results in the table that the Cronbach alpha coefficient value corresponding to the Trust variable is 0.893, the Cronbach alpha coefficient corresponding to the Commitment variable is 0.932, the Cronbach alpha coefficient corresponding to the Power variable is 0.789, the Cronbach alpha coefficient corresponding to the Adaption variable is 0.917, the Cronbach alpha coefficient corresponding to the Information Share variable is 0.936, and the Cronbach alpha coefficient corresponding to the Synchronous Decision-making variable is 0.907, The Cronbach alpha coefficient value corresponding to the Incentive Consistency variable is 0.880, the Cronbach alpha coefficient value corresponding to the Financial Performance variable is 0.938, the Cronbach alpha coefficient value corresponding to the Operational Performance variable is 0.938.

We can see from the table that the Cronbach alpha coefficient values of each variable are greater than 0.7, which means that the internal consistency of several variables constructed by the scale is good. At the same time, the CITC value of each scale and Cronbach alpha value of deleted items meet the research requirements, indicating that the stability of each variable in the questionnaire of this study is high, and the reliability of each variable basically passes the test.

3.3.2 Exploratory Factor Analysis

Validity means that measuring tools and means can accurately measure the accuracy of the tested object. The higher the validity, the more the measurement results can reflect the real characteristics of the tested object. There are generally three types of validity: structural validity, content validity and dimensional validity. Among them, structural validity is the most commonly used indicator, which refers to the degree to which the measuring tool measures a theoretical concept or trait. This paper will use exploratory factor analysis to test the structural validity of the questionnaire data. Homoscedasticity is derived from the fact that the independent and dependent variables come from the same participants. In order to address the characteristics of the research problem, the approach used in previous studies is borrowed, and the Harman single-factor test is employed to verify whether there is homoscedasticity in the variables and samples used in the study. Before we formally

conduct factor analysis, we first need to conduct KMO test and Bartlett's spherical test to determine whether the indicators of the variables we select meet the conditions for factor analysis. Kaiser's measurement shows that, in general, when KMO is greater than 0.7, it can be considered as meeting the conditions for factor analysis.

Secondly, considering the relationship between the indicators, this study uses the principal component analysis proposed by Hotelling (1933) to extract the common factors of the original indicators to test their validity. It is generally believed that if the eigenvalue is less than 1, the interpretation of the principal component is not as strong as the average interpretation of the direct introduction of the original variable. Therefore, the inclusion criterion of eigenvalue greater than 1 can generally be used. If the cumulative variance of all public factor explanations with eigenvalues greater than 1 is greater than 60%, the questionnaire data is considered to have good construct validity.

Finally, the maximum variance rotation method is used for orthogonal rotation to obtain the rotation component matrix containing the loading value of each item factor, which is used to identify and name common factors. If the factor load of an item in the rotated component matrix on the corresponding common factor is greater than 0.5, and no item has a factor load greater than 0.4 on two or more common factors, it is the most ideal situation. Otherwise, it is necessary to consider deleting the corresponding item.

The results of exploratory factor analysis on the questionnaire data are shown in Table 4. This article conducted a one-factor test on all variables in the study (partner relationship, supply chain coordination, agricultural product supply chain performance), as shown in Table 3. The KMO value is 0.939. It was found that there are 9 factors with eigenvalues greater than 1, and the first factor only explains 16.596% of the variance of all measurement indicators. Since there is no common factor that explains most of the variance of all measurement indicators, we can consider that there is homogeneity of variance, and it does not pose a serious problem to the study.

Table 4. Results of Exploratory Factor Analysis

Scale	Dimensionality	Title	Factor loading	Eigen value	Cumulative variance explained	Barth sphericity significan	KMO
Partnership	Trust	T1	0.729	3.691	16.596%	0.000	0.939
		T2	0.883				
		T3	0.791				
		T4	0.896				
	Commitment	C1	0.920	4.144			
		C2	0.912				
		C3	0.887				
	Power	P1	0.807	3.686			
		P2	0.476				
		P3	0.703				
Supply chain collaboration	Adaption	A1	0.733	7.710			
		A2	0.810				
		A3	0.882				
		A4	0.882				
	Information Share	IS1	0.916	3.920			
		IS2	0.959				
		IS3	0.869				
	Synchronous decision-making	DS1	0.444	3.800			
		DS2	0.808				
		DS3	0.858				
		DS4	0.856				
Supply chain performance	Incentive consistency	IA1	0.856	3.603			
		IA2	0.783				
		IA3	0.802				
		IA4	0.799				
	Financial performance	FP1	0.848	3.820			
		FP2	0.900				
		PF3	0.905				
		FP4	0.905				
	Operational performance	OP1	0.821	3.820			
		OP2	0.844				
		OP3	0.864				
		OP4	0.793				

3.3.3 Confirmatory Factor Analysis

In this study, AMOS 23.0 software was used to conduct confirmatory factor analysis (CFA) on the variables involved in the Partnership Scale, the Supply chain collaboration Scale, the supply chain performance Scale, and composite reliability (CR) and mean square error extraction (AVE) were used to determine the convergence validity of each variable dimension. Convergence validity analysis is mainly used to test the positive correlation between different indicators of the same variable. The specific method is to examine the standardized factor compliance coefficient of each indicator on its corresponding variable. When most of the factor loads are greater than 0.5 and reach statistically significant or very significant levels, it indicates that there is a high convergence validity.

The specific approach is to first test the model fitting of the validation factor analysis scale. The data collected from the questionnaire are imported into AMOS23.0 software, and the model fitting parameters obtained by applying the maximum likelihood method are shown in Table 5.

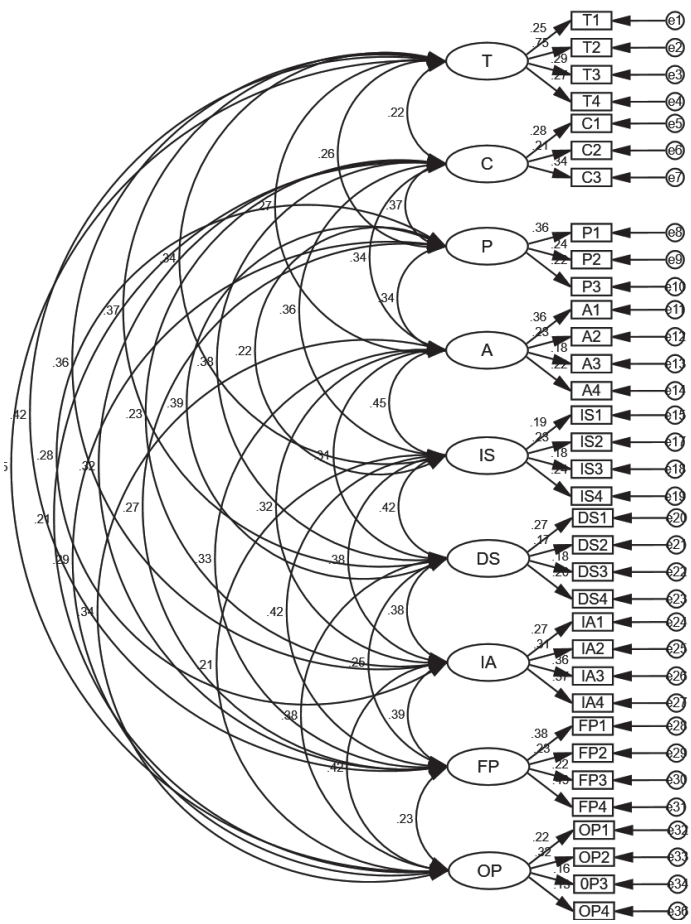

Figure 2. Confirmatory Factor Analysis Model Diagram

Table 5. Fit Indices of Measurement and Structural Model

Model Fitting	CMIN	DF	x^2/df	CFI	TLI	GFI	SRMR	RMSEA
Fitting results	1252.615	606	2.067	0.910	0.901	0.925	0.068	0.072
Recommended Value			<3	>0.9	>0.9	>0.9	>0.9	<0.08

According to the results in Table 5 above, the displayed values of each fitting parameter in the validation factor analysis are CMIN=1252.615, DF=606, x^2/df =2.067 and 1.4 < 3, TLI=0.901, CFI=0.910, GFI=0.925 and all are greater than 0.9, RMSEA=0.025 and < 0.08, which indicates that the validation factor analysis fit of the model in this study is good, and the Partnership, Supply chain collaboration, supply chain performance Scale, which indicates that the validation factor analysis fit of the model in this study is good.

Table 6. Convergent Validity Results

Variables	Title item	Estimate	S.E.	C.R.	Standardized factor loadings	CR	AVE
Trust	T1	1.000			0.729	0.900	0.633
	T2	0.761	0.065	17.325	0.883		
	T3	0.986	0.070	16.385	0.791		
	T4	0.052	0.071	20.236	0.896		
Commitment	C1	1.000			0.920	0.869	0.577
	C2	0.733	0.074	21.421	0.912		
	C3	0.954	0.076	20.311	0.887		
Power	P1	1.000			0.807	0.963	0.625
	P2	1.379	0.154	24.325	0.476		
	P3	0.956	0.157	26.310	0.703		
Adaption	A1	1.000			0.810	0.951	0.554
	A2	1.036	0.136	23.425	0.882		
	A3	0.698	0.128	22.321	0.882		
	A4	1.012	0.154	25.120	0.860		
Information share	IS1	1.000			0.916	0.951	0.522
	IS2	0.728	0.036	18.321	0.959		
	IS3	1.087	0.036	19.542	0.869		
	IS4	1.087	0.032	20.102	0.444		

Variables	Title item	Estimate	S.E.	C.R.	Standardized factor loadings	CR	AVE
Synchronous decision-making	DS1	1.000			0.808	0.925	0.621
	DS2	0.930	0.036	23.210	0.858		
	DS3	1.061	0.032	22.615	0.856		
	DS4	0.739	0.036	24.123	0.856		
Incentive consistency	IA1	1.000			0.783	0.867	0.675
	IA2	1.061	0.088	23.014	0.802		
	IA3	1.059	0.060	22.310	0.799		
	IA4	0.730	0.053	22.241	0.829		
Financial performance	FP1	1.000			0.938	0.843	0.545
	FP2	0.986	0.072	23.120	0.848		
	PF3	0.733	0.094	26.125	0.900		
	FP4	0.954	0.088	24.155	0.905		
Operational performance	OP1	1.000			0.905	0.845	0.546
	OP2	1.036	0.053	19.321	0.821		
	OP3	0.698	0.068	18.324	0.844		
	OP4	1.012	0.072	20.615	0.864		

It can be seen from Table 6 that in the factor analysis model verified in this paper, the standardization factor of each measurement value conforms to 0.645~0.903, which is greater than 0.50, and the corresponding significant p values are less than 0.05, indicating that the influence between each potential variable and the observed variable is significant. At the same time, the AVE value extracted from the mean variance is between 0.503 and 0.776, which is greater than 0.5, and the CR value of the joint reliability is between 0.765 and 0.933, which is greater than 0.7, indicating that the convergence validity of the variables in this study is good.

3.4 Correlation Analysis

In this study, Pearson correlation analysis is used to examine the significance and direction of linear correlation between two pairs of variables. Pearson correlation coefficient measures linear correlation. Therefore, when we use Pearson correlation analysis, we generally use correlation coefficient r to describe the degree of linear correlation between variables. If the value of correlation coefficient r is less than 0, it indicates that the correlation between the two variables is negative. If the value of correlation coefficient r is greater than 0, it indicates that the correlation between the two variables is positive. The greater the absolute value

of correlation coefficient, the stronger the correlation; The closer the correlation coefficient is to 1 or - 1, the stronger the correlation is. The closer the correlation coefficient is to 0, the weaker the correlation is.

When the AVE square value of the latent variable is greater than the correlation coefficient between the variable and other variables, it indicates that the variables have good discrimination. As shown in Table 4-7, the correlation coefficients between the variables in this study are less than the square root value of AVE of each potential variable, which can be used to judge that the discriminant validity of each potential variable is good. For the results obtained in this study, the marks "* *”,"* * *"or "*" in the upper right corner of the corresponding data refer to the significance levels of 1% and 5% in turn. If there is no such mark, it means that no significance test has been conducted, and each variable has no specific relationship.

Table 7. Pearson Correlation with AVE Square Root Values

	T	C	P	A	IS	DS	IA	FP	OP
T	0.802								
C	0.269**	0.720							
P	0.450**	0.595**	0.801						
A	0.576**	0.246**	0.208**	0.685					
IS	0.614**	0.236**	0.214**	0.308**	0.671				
DS	0.223**	0.221**	0.020**	0.192**	257**	0.784			
IA	0.254**	0.345**	0.344**	0.255**	0.647**	0.597**	0.792		
FP	0.208**	0.214**	0.236**	0.246**	0.260**	0.054**	0.597***	0.793	
OP	0.171*	0.185*	0.209**	0.270***	0.223***	0.354**	0.067*	0.061**	0.693

Notes: 1. Refers to Table 3-1

* refers to $p<0.05$; ** refers to $p<0.01$; *** refers to $p<0.001$

The correlation coefficient analysis results in Table 7 show that Trust is significantly and positively correlated with Information share ($r=0.614$, $p<0.01$), Synchronous decision-making ($r=0.223$, $p<0.01$), and Incentive consistency ($r=0.254$, $p<0.01$) of Supply Chain Collaboration; Commitment was positively correlated with Information share ($r=0.236$, $p<0.01$), Synchronous decision-making ($r=0.221$, $p<0.01$), and Incentive consistency ($r=0.345$, $p<0.01$); Power ($r=0.344$, $p < 0.01$), Information share ($r=0.308$, $p < 0.01$), Synchronous decision-making ($r=192$, $p < 0.01$), Incentive consistency ($r=0.255$, $p < 0.01$), and Financial performance ($r=0.260$, $p < 0.01$) were positively correlated with Supply Chain Performance, Operational performance ($r=0.223$, $p < 0.01$), Incentive consistency ($r=0.597$, $p < 0.01$), Adaption ($r=0.308$, $p < 0.01$), Financial performance ($r=0.260$, $p < 0.01$), Synchronous decision-making (0.354, $p < 0.01$) were positively correlated with behavioral identity.

3.5 Structural Equation Model Test

According to the above theories and research results, in the structural equation model of partnership and supply chain collaboration, there are seven potential variables. The four variables of partnership are trust, commitment, power, and Adaption; the three variables of the supply chain collaboration are information share, synchronous decision-making, and incentive consistency. There are two variables of supply chain performance: financial performance and operational performance. There are 40 observation variables corresponding to 7 potential variables. Among them, partnership is an independent variable, supply chain collaboration is an intermediary variable, and supply chain performance is a dependent variable. In this study, the data collected from the questionnaire is imported into AMOS23.0 software, and the maximum likelihood method is applied to establish the path relationship structure diagram between the potential variables and indicators in the research model. The model fitting parameters obtained are shown in the following figure.

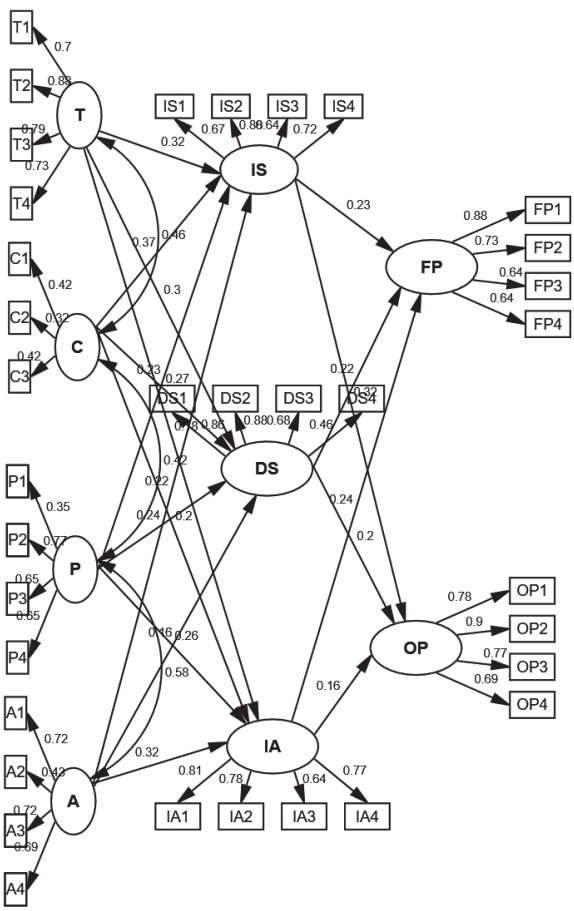

Figure 3. Structural Equation Model Result Diagram

Note: Refers to Table 3-1

Each potential variable in SEM is measured by multiple measurement items. If all potential variables with multiple indicators are sed for structural equation analysis, the mathematical and physical operations of the structural equation may be too complex, and the estimated parameters are too many, which will lead to the reduction of the fitting degree of the model. It can be seen from the previous analysis results that the confirmatory factor analysis results of each variable show that the construction validity has reached an acceptable standard, so it is reasonable to replace multiple indicators with a single indicator. In the application of structural equation model in recent years, many scholars have adopted some alternative methods to avoid the problem of unstable model estimation caused by too few samples or too many measurement items. Considering that there are many measurement items in this study, it is not enough to include all indicators in the analysis. In order to ensure the degree of freedom, the method of replacing multiple measurement indicators with a single measurement indicator is also selected in this study, and the common factor score of the measurement items is used as an explicit variable for structural equation analysis.

3.6 Path Coefficient Analysis

Before the analysis of path coefficient analysis, we first analyze the fitting of the model.

Table 8 Model Fitting for The Validated Factor Analysis

Model Fitting	CMIN	DF	x^2/df	CFI	TLI	GFI	NFI	IFI	RFI	RMSEA
Fitting results	1242.615	140	2.265	0.953	0.942	0.910	0.919	0.956	0.912	0.042
Recommended Value			<3	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9	<0.08

The fitting results in Table 8 show that the ratio x^2/df of the chi square value to the degree of freedom of the model is 2.265which is less than 3 and is a good fitting degree. The RMSEA value of the model is 0.042, which is less than 0.08, indicating that the model has a good fit; NFI, RFI, IFI, TLI, CFI, GFI are all greater than 0.9, indicating that the model has a good fit. Therefore, in general, it can be considered that the fitting degree of structural equation model is acceptable.

In order to deeply understand the path relationship between variables and verify the research hypothesis, this study further analyzes the model path. After the above analysis of fitting indicators proves the validity of the structural equation model, it shows that the relationship between potential variables in the model and the actual sample has a high degree of fit. Therefore, this study uses AMOS23.0 software to test the hypothesis relationship in the research model. See Table 9 for the specific hypothesis test result.

Table 9. Structural Equation Model Path Coefficient Test

Paths	Relationship path between variables			Estimated value	S.E.	C.R.	Standardized path coefficient	Results
H1-1	T	→	IS	0.334	0.069	5.453	0.208**	Accepted
H1-2	T	→	DS	0.351	0.074	6.377	0.214**	Accepted
H1-3	T	→	IA	0.375	0.076	5.918	0.236***	Accepted
H1-4	C	→	IS	0.284	0.064	3.920	0.258**	Accepted
H1-5	C	→	DS	0.307	0.068	5.789	0.246**	Accepted
H1-6	C	→	IA	0.333	0.069	4.176	0.171***	Accepted
H1-7	P	→	IS	0.359	0.075	2.955	0.185**	Accepted
H1-8	P	→	DS	0.368	0.076	2.858	0.209***	Accepted
H1-9	P	→	IA	0.387	0.065	8.914	0.187**	Accepted
H1-10	A	→	IS	0.327	0.069	8.203	0.270***	Accepted
H1-11	A	→	DS	0.455	0.128	5.037	0.223**	Accepted
H1-12	A	→	IA	0.715	0.154	6.722	0.221**	Accepted
H2-1	IS	→	FP	0.747	0.157	5.913	0.238**	Accepted
H2-2	IS	→	OP	0.459	0.111	6.823	0.220**	Accepted
H2-3	DS	→	FP	0.395	0.136	2.592	0.192***	Accepted
H2-4	DS	→	OP	0.527	0.069	3.701	0.223**	Accepted
H2-5	IA	→	FP	0.334	0.074	3.098	0.693*	Accepted
H2-6	IA	→	OP	0.351	0.076	5.453	0.693*	Accepted

Notes: 1. Refers to Table 3-1

* refers to $p<0.05$; ** refers to $p<0.01$; *** refers to $p<0.001$.

According to the path analysis results in Table 4-9, first of all, from the perspective of the hypothesis of two variables of partnership on supply chain collaboration, Trust has a significant positive effect on information share ($\beta=0.208$, $p<0.001$), so H1-1 is assumed to be supported; Trust has a significant positive

impact on synchronous decision-making (β=0.214, p<0.001), so it is assumed that H1-2 is supported; Trust has a significant positive impact on Incentive consistency (β=0.236, p<0.001), so it is assumed that H1-3 is supported; Commitment has a significant positive impact on Information share (β=0.258, p<0.001), so it is assumed that H1-4 is supported; Commitment has a significant positive impact on synchronous decision-making (β=0.246, p<0.001), assuming H1-5 is supported. Commitment has a significant positive impact on incentive consistency (β=0.171, p<0.001), so H1-6 is assumed to be supported; Power has a significant positive impact on information share(β=0.185, p<0.001), so it is assumed that H1-7 is supported; Power has a significant positive impact on synchronous decision-making (β=0.209, p<0.001), so it is assumed that H1-8 is supported; Power has a significant positive impact on incentive consistency(β=0.187,p<0.01), so it is assumed that H1-9 is supported; Adaption has a significant positive impact on information share (β=0.270, p<0.01), so the hypothesis H1-10 is supported. Adaption has a significant positive impact on synchronous decision-making (β=0.223, p<0.01), so the hypothesis H1-11 is supported. Adaption has a significant positive impact on incentive consistency (β=0.221, p<0.01), so the hypothesis H1-12 is supported.

From the perspective of supply chain collaboration assumption of supply chain performance, Information share has a significant positive impact on financial performance(β= 0.238, p<0.001), so suppose H2-1 is supported; Information share has a significant positive impact on operational performance (β= 0.220, p<0.001), so H2-2 is assumed to be supported; Synchronous decision-making has a significant positive impact on financial performance (β= 0.192, p<0.001), so it is assumed that H2-3 is supported; Synchronous decision-making has a significant positive impact on operational performance (β=0.223, p<0.001), so suppose H2-4 is supported; Incentive consistency has a significant positive impact on financial performance (β= 0.693, p<0.001), so H2-5 is assumed to be supported. Incentive consistency has a significant positive impact on operational performance (β=0.693, p<0.001), assuming H2-6 is supported; Through path coefficient analysis, we can conclude that hypothesis 1 and hypothesis 2 of this study are valid.

This article analyzes the main effect of partnership on supply chain performance. The empirical results show that partnership has a very significant impact on supply chain performance in Agricultural supply chains. The impact mechanism of partnership on performance is divided into two parts. direct impact and indirect impact through the intermediary effect of the supply chain collaboration part. Among them, the direct impact is that supply chain members establish a trust mechanism through cooperation, improve adaptability through equipment investment, and establish long-term cooperation with mutual commitment. Through efficient collaborative relationships, inventory costs are reduced, flexibility is increased, and profits are increased. The indirect impact is that through partnership among supply chain enterprises, the supply chain collaborative operation level of members is improved, thereby further improving the performance of the entire Agricultural supply chain.

Based on the research results, the following hypothesis are drawn

Table 10. Summary of Hypothesis Test Result

Number	Research hypothesis	Results
H1	Partnership has a significant positive impact on supply chain collaboration.	
H1-1	Trust has a positive impact on incentive alignment.	Accepted
H1-2	Trust has a positive impact on information sharing.	Accepted
H1-3	Trust has a positive impact on synchronous decision-making.	Accepted
H1-4	Commitment has a positive impact on motivation.	Accepted
H1-5	Commitment has a positive impact on information sharing.	Accepted
H1-6	Commitment has a positive impact on synchronous decision-making.	Accepted
H1-7	Power has a positive impact on motivation.	Accepted
H1-8	Power has a positive impact on information sharing.	Accepted
H1-9	Power has a positive impact on synchronous decision-making.	Accepted
H1-10	Adaption has a positive impact on motivation alignment.	Accepted
H1-11	Adaption has a positive impact on information sharing.	Accepted
H1-12	Adaption has a positive impact on synchronous decision-making.	Accepted
H2	Supply chain collaboration has a significant positive impact on Agricultural supply chain performance.	Accepted
H2-1	Incentive consistency has a positive impact on financial performance.	Accepted
H2-2	Incentive consistency has a positive impact on operational performance.	Accepted
H2-3	Information share has a positive impact on financial performance.	Accepted
H2-4	Information share has a positive impact on operational performance.	Accepted
H2-5	Synchronous decision-making has a positive impact on financial performance.	Accepted
H2-6	Synchronous decision-making has a positive impact on operational performance.	Accepted

IV. Conclusion

The coordinated development of Agricultural supply chains is of great significance to increasing farmers' income, balancing the supply and demand of agricultural food, and realizing agricultural industrialization and informatization. Based on resource-based view and relational view, this article analyzes the practical problems existing in the cooperation of members of my country's Agricultural supply chain, designs scales to collect data from core agricultural enterprises, and applies structural equation model to empirically analyze the impact of partnership and supply chain collaboration on Agricultural supply chain performance. influence mechanism. On this basis, a performance improvement strategy model of the Agricultural supply chain was constructed, and performance improvement strategies were proposed based on the model elements. This article reaches the following research conclusions through analysis.

Trust, commitment, power and adaption in partnership have a positive impact on agricultural food supply chain performance (financial performance, operational performance). The hypothesis that firms size has a positive moderating effect between partnership and agricultural food supply chain performance (financial performance, operational performance) does not hold. However, there is a negative moderating effect on the relationship between trust and agricultural food supply chain performance compared with medium and large enterprises, that is, trust is more important in small enterprises. In the relationship between power and agricultural food supply chain performance, there is a moderating effect when comparing medium-sized enterprises with small and large enterprises, that is, power is more important in medium-sized enterprises. The moderating effect of enterprise size on the relationship between adaption and commitment and agricultural food supply chain performance is not significant.

Incentive consistency has a significant positive impact on agricultural food supply chain performance (financial performance, operational performance). Incentive consistency has a significant direct impact on information share and synchronous decision-making, information share has a direct impact on synchronous decision-making, and information share and synchronous decision-making have a direct impact on supply chain performance (financial performance, operational performance). Information share and synchronous decision-making have a partial mediating effect between incentive consistency and supply chain performance (financial performance, operational performance). Information share and synchronous decision-making continuously mediate the relationship between incentive consistency and supply chain performance (financial performance, operational performance).

Partnership has a significant positive impact on the performance of Agricultural supply chain, and its total effect is divided into two parts. direct effect and indirect effect. Supply chain collaboration has a partial mediating effect between partnership and supply chain performance. Partnership has a significant positive impact on supply chain collaboration. Supply chain collaboration has a significant positive impact on agricultural food supply chain performance. The positive moderating effect of enterprise size on partnership, supply chain collaboration and agricultural food supply chain performance is not significant.

Agricultural food supply chain performance improvement strategy model, with supply chain collaboration

as the core, ensures the improvement of supply chain performance from a systemic perspective. This model aims to improve the performance of the agricultural food supply chain (financial performance, operational performance), and the influencing factors are divided into three categories. partnership (trust, commitment, power, adaption), supply chain collaboration (incentive consistency, information share, synchronous decision-making), and information technology. According to the characteristics of the model elements, the performance improvement strategy includes partnership guarantee mechanism, revenue share mechanism and information share incentive mechanism.

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Cross-Border Higher Education between the UK and China: Policy, Practice, and the Future of International Collaboration

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Abstract

Purpose – The purpose of this paper is to compare the international higher education collaboration strategies of the United Kingdom and China, with a focus on Transnational Education (TNE) and Sino-foreign cooperative education. It aims to identify key policy frameworks, institutional practices, and collaborative models shaping international engagement in both countries.

Design/Methodology/Approach – Based on a qualitative document analysis, the study systematically reviews national policy documents, institutional reports, and academic literature. Comparative case studies, including Xi'an Jiaotong-Liverpool University (XJTLU) and UK TNE initiatives, are used to evaluate the structural and strategic dimensions of international education collaborations.

Findings – This paper identifies significant differences in the two countries' approaches: the UK adopts a market-driven, institution-led model that emphasizes autonomy and diversification, while China employs a centrally planned strategy aligned with national modernization goals. Both models show strengths—such as enhanced graduate mobility and economic impact—but also face challenges, including regulatory constraints in China and financial over-reliance on international tuition in the UK.

Research Implications – In the management of international education, the findings provide critical insights for policymakers and institutions aiming to enhance cross-border collaboration. The paper offers strategic recommendations to improve regulatory efficiency, diversify markets, promote mutual recognition, and ensure quality assurance across transnational programs.

Keywords: International Education Strategy, Transnational Education, UK Higher Education, Sino-Foreign Cooperation, Quality Assurance, Legal Framework, Collaborative Education
JEL Classifications: C11, F14, L61

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I. Introduction and Literature Review

Globalization has profoundly transformed the global higher education landscape over the past several decades. Traditionally characterized by national-focused institutions catering primarily to domestic populations, higher education now increasingly operates within a global framework. As knowledge, economies emerge and labor markets evolve, countries recognize the strategic importance of internationalizing their higher education systems to meet global demands (Altbach & Knight, 2007). This shift encompasses not only the mobility of students and academic staff but also the cross-border delivery of education services, transnational partnerships, and the establishment of overseas campuses.

Transnational Education (TNE) is a popular model for higher education globalization. TNE encompasses all types of higher education study programs, sets of courses, or educational services in which the learners are located in a country different from the one where the awarding institution is based. It can take various forms; its structure varies across importing countries. In Egypt, Pakistan, and Greece, TNE fills gaps in domestic education systems, offering better infrastructure and pedagogical innovation. Student-centered learning, flexible curricula, and access to UK faculty enhance the student experience. In Egypt, TNE partnerships led to regular staff development workshops and improved institutional standards. In Pakistan, collaborations also include incubation centers and career development services.

As a significant education exporter, the UK is widely regarded as a pioneer in the internationalization of higher education. Historically rooted in prestigious institutions such as Oxford and Cambridge, the UK's higher education system has evolved to embrace global engagement as a strategic priority. According to the Higher Education Academy (2023), international students account for a significant proportion of total enrolments, contributing extensively to the UK economy through tuition fees, living expenses, and cultural exchange. The UK's International Education Strategy (IES), launched in 2019, underscores the nation's ambition to increase education exports to £35 billion annually by 2030 (UK Government, 2024). Concurrently, the UK's institutions pursue transnational education (TNE) partnerships globally, encompassing dual degrees, online learning, and franchised programs (British Council, 2024).

In contrast, China's journey toward higher education internationalization experienced a comparatively short but strategically significant development. In China, international exchange and cooperation is regarded as one of the four basic roles or functions of higher institutions(Runchi Qian, 2024). China is traditionally known as a major source of international students studying abroad, but it has become a significant importer of education in recent years, particularly in the realm of higher education and specialized training. Underpinned by national modernization policies, the Chinese government prioritizes Sino-foreign cooperative education to integrate global best practices and elevate its domestic educational standards. Regulatory frameworks such as the Regulations on Sino-Foreign Cooperative Education institutionalize this approach, encouraging joint ventures between Chinese and foreign universities (Wang et al., 2021).

Comparative studies of the UK's mature, market-driven model and China's state-directed cooperative framework are limited. Existing research often addresses country-specific strategies without juxtaposing these

distinct paradigms. This study seeks to fill that gap by providing a comparative analysis of policy frameworks, institutional practices, and collaborative models, thereby informing best practices and policy recommendations.

II. . Research Objective

This research aims to:

(1) Analyze the historical evolution and current frameworks governing international collaborative education in the UK and China.

(2) Compare the strategies and models adopted by both nations.

(3) Assess the economic, academic, and social impacts of these international collaborations.

(4) Provide policy and operational recommendations to enhance future collaborative education initiatives.

III. Methodology

A qualitative document analysis methodology is adopted, systematically reviewing national policy documents, institutional reports, and peer-reviewed academic studies. Comparative analysis techniques are employed to synthesize data from authoritative sources, including the UK Higher Education Report (2024), British Council TNE Report (2024), Chinese regulatory frameworks, and case studies such as Xi'an Jiaotong-Liverpool University (XJTLU) and various UK TNE models. Tables and figures support data visualization and comparative assessment.

IV. Findings and Analysis

4.1 UK Higher Education System

The UK's higher education system comprises 131 universities, enrolling approximately 2.4 million students, with 566,715 being international students contributing £25.8 billion to the national economy (UK Higher Education Report, 2024), as shown in table 1.

Table 1. UK Higher Education Student Demographics (2022/23)

Category	Number of Students
Total Students	2,400,000
Undergraduate Students	1,800,000
Postgraduate Students	600,000
Full-time Students	2,000,000
Part-time Students	500,000
Students Aged 30 or Older	500,000
International Students	566,715

Source:The data in the Table 1 cited from the UK Higher Education Report, 2024

Table 2. TNE Collaborative Provision by UK Institutions

Provision Type	% of Institutions Offering
Dual/Double Degrees	58%
Online/Distance Learning	43%
Franchised/Validated Degrees	35%
International Branch Campuses	19%

Source:The data in Table 2 cited from Transitional Education Partnership Report (2024)

4.2 Sino-Foreign Cooperative Education in China

China's approach involves establishing Sino-foreign cooperative universities under national policy frameworks, operating nine such institutions nationwide (Wang et al., 2021). These universities integrate foreign curricula, English-medium instruction, and joint degree programs.

Table 3. XJTLU Graduate Outcomes (2021)

Outcome	% of Graduates
Pursued Postgraduate Studies Abroad	85%
Enrolled in Top 10 Universities	33%
Enrolled in Top 100 Universities	85%

Source:The data in table 3 cited from XJTLU's 2021 annual report on careers and jobs

Case studies such as XJTLU demonstrate the success of Sino-foreign cooperation in enhancing graduate mobility and academic standards. According to XJTLU's 2021 annual report on careers and jobs, totally 85% students studied abroad are enrolled in top 100 Universities. Among them, 33% of all students were enrolled into top 10 universities to continue postgraduate studies, as shown in table 3.

V.. Discussion

The comparative analysis reveals profound structural and strategic differences between the UK and Chinese models of international higher education. The UK has liberalized; market-driven approach fosters innovation, institutional competition, and diverse international partnerships. Institutions leverage their autonomy to develop transnational education (TNE) programs, build overseas campuses, and customize collaborative models. This enables universities to diversify their revenue streams and expand global brand presence. However, a heavy reliance on international tuition fees exposes UK institutions to financial volatility in response to global crises and shifting geopolitical landscapes.

Statistical trends reveal that in 2022/23, over 566,000 international students studied in the UK, accounting for nearly 25% of total enrolments. Revenue from international student tuition reached approximately £25.8 billion, representing over 30% of higher education export value (UK Government, 2024). The UK's International Education Strategy (2019) emphasizes expanding educational exports to £35 billion by 2030, a goal nearly achieved ahead of schedule (UK Government, 2024). The strategy highlights enhancing institutional autonomy, supporting diverse TNE models, and strengthening research collaborations. The rapid growth of TNE provisions highlights the sector's strategic adaptation, with 58% of UK HEIs now offering dual/double degrees and 43% delivering online or distance learning programs. 35% of UK HEIs cooperate through providing Franchised or validated degrees, and 19% of them establish the international branch campus (IBC). 15% of them adopted different partnership models with other foreign universities. However, emerging challenges, including intensified global competition, Brexit-related uncertainties, and concerns over student experience, necessitate more strategic diversification and quality assurance reinforcement.

In contrast, China's centrally coordinated model prioritizes national modernization and capacity building through state-regulated Sino-foreign cooperative education. Regulatory oversight ensures that collaborative institutions align with national development goals while adopting international pedagogical best practices. Data from XJTLU, a leading Sino-foreign university, indicate that 85% of graduates pursue postgraduate studies abroad, reflecting successful capacity-building outcomes. Enrollments in top 10 and top 100 global universities (33% and 85%, respectively) further validate the efficacy of China's model in fostering global competencies among domestic students (XJTLU, 2022). It also exhibits the advantage of combining international curricula, English-medium instruction, and dual-degree offerings (XJTLU, 2022). Despite challenges in teaching capacity and regulatory processes (Hui, 2023).

However, the restrictive regulatory environment can constrain institutional autonomy, slow down decision-making, and hinder the scalability of collaborative initiatives. Challenges such as complex bureaucratic approvals for joint programs, limitations on foreign faculty recruitment, and barriers to cross-border research collaborations underscore the need for regulatory reform. Data indicate that research outputs from Sino-foreign institutions, while growing, remain a small proportion of national research publications, suggesting untapped potential for international collaborative research.

Overall, both systems benefit substantially from internationalization, yielding enhanced academic standards, economic contributions, and global reputational gains. Nonetheless, continuous adaptation of policy frameworks, diversification of strategies and collaborative models remains essential to address systemic limitations and sustain growth in international higher education.

VI. Recommendations

6.1 For China

To advance the effectiveness and scalability of Sino-foreign cooperative education, the following policy and operational recommendations are proposed:

Expand Cooperative Initiatives in Underdeveloped Regions: National incentives, such as financial grants and infrastructure development support, should encourage partnerships in underserved regions, promoting equitable educational access and balanced regional development.

Strengthen Collaborations with High-Ranking Foreign Institutions: Strategic selection of reputable foreign partners will enhance educational quality and global recognition. Priority should be given to collaborations with top-tier universities to ensure knowledge transfer and international credibility.

Enhance Legal and Regulatory Frameworks: Streamline bureaucratic processes, reduce approval bottlenecks, and introduce clear guidelines for joint program establishment, degree recognition, and foreign faculty recruitment. Modernizing regulatory frameworks will facilitate faster and more effective collaborative initiatives.

Promote Research Collaboration: Establish dedicated funding schemes and institutional incentives to support joint research projects with foreign partners. Data-sharing agreements and joint supervision models should be expanded to encourage co-publication and research innovation.

Establish Bilateral Mutual Recognition Agreements: Government-level negotiations should focus on establishing bilateral agreements that facilitate the mutual recognition of degrees and qualifications, easing student and faculty mobility between China and partner countries.

6.2 For the UK

To maintain global leadership in international higher education, UK policymakers and institutions should consider the following strategic actions:

Diversify TNE Markets Beyond Traditional Regions: Institutions should explore emerging markets in Africa, Southeast Asia, and Latin America to reduce reliance on traditional source countries like China and India. Market research and government-supported educational diplomacy can assist in identifying and accessing new regions.

Enhance International Student Support Services: To address retention challenges and ensure positive student experiences, universities should invest in comprehensive support systems encompassing academic advising, mental health services, career counselling, and post-study work opportunities. Data from the Higher Education Academy (2023) highlight that institution with robust student support services report higher student satisfaction and retention rates.

Promote Collaborative Research Partnerships: UK institutions should leverage their strong research capacities to establish reciprocal research collaborations with emerging economies. Joint research centres, co-publication incentives, and integrated postgraduate supervision models will enhance mutual benefits and capacity building for partner institutions.

Strengthen Quality Assurance Mechanisms: Expanding the remit and resources of the Quality Assurance Agency (QAA) to monitor TNE delivery will ensure consistent quality standards across diverse delivery models and international locations, safeguarding the reputation of UK higher education globally.

Develop Risk Mitigation Strategies: Given the reliance on international student revenue, institutions should formulate contingency plans to address potential market disruptions, including scenario planning, financial diversification, and the establishment of institutional reserves.

By implementing these recommendations, both China and the UK can enhance the sustainability, quality, and global impact of their international higher education collaborations.

VII. Conclusion

International higher education collaborations serve as strategic instruments for economic growth, academic excellence, and cultural diplomacy. The UK and China exemplify distinct but effective models in promoting cross-border education. Institutional autonomy, robust quality assurance, and synchronized policies are critical for the sustained success of international higher education partnerships.

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All Rivers Run to the Sea: A Dual-Dimension Integration Study on Technological Empowerment and Cultural Inheritance in Inclusive Design for Age-Friendly Tourism Services

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Abstract

Purpose – The purpose of this paper is to analyze the dual predicament of technological exclusion and cultural marginalization faced by elderly populations in smart tourism contexts, and to examine the ethical essence and cultural mechanisms of age-friendly tourism design through interdisciplinary perspectives.

Design/Methodology/Approach – Based on philosophical technology ethics, this research combines anthropological perspectives on cultural inheritance with sociological theories of social exclusion to construct a multidimensional analytical framework. The study deconstructs technological hegemony's impact on elderly subjectivity and provides thick descriptions of intergenerational cultural interactions as ritual practices.

Findings – This paper reveals how standardized smart guide technologies systematically marginalize elderly users by imposing cognitive barriers and dissolving their cultural agency. It reconstructs "humanistic" ethical principles centered on cognitive adaptability, cultural subjectivity, and value equality. The research identifies age-friendly guides as crucial "carriers of social memory" and demonstrates how technological exclusion creates intergenerational "memory gaps" that threaten cultural continuity.

Research Implications – In the management of cultural tourism services, this study advocates for inclusive design approaches through "intergenerational co-creation" and "memory activation" strategies. These approaches reposition elderly users as both technological subjects and cultural agents, providing dual ethical-cultural support for technology-empowered silver tourism. The findings challenge tourism organizations to move beyond superficial accessibility improvements toward deeper reconceptualizations of technology-human-culture relationships in aging societies.

Keywords: Age-friendly tourism; Technology ethics; Cultural inheritance; Inclusive design; Social memory
JEL Classifications: O32, Z13, L83

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I. Introduction

Contemporary society is experiencing an unprecedented dual process of technological transformation and demographic transition. The tourism industry can promote the prosperous development of urban commerce and society (Xulong Dai, 2024). Against this backdrop, smart guide technologies are rapidly penetrating the cultural tourism domain, reshaping cultural experience and dissemination methods with their efficient and convenient characteristics (Niu, 2023). However, this technological revolution simultaneously brings a dual predicament of "technological exclusion" and "cultural marginalization" for elderly populations, warranting deep consideration from philosophical, anthropological, and sociological multidimensional perspectives (Hu & Wang, 2023).

From a technological ethics perspective, smart guide systems generally follow "youth-oriented" technological logic, manifested in youth-oriented tendencies in touchscreen interface design, information presentation speed, and interaction methods (Yu et al., 2024). Under this design logic, elderly groups are alienated as "technological marginals" due to natural changes in physiological perception abilities and intergenerational differences in digital literacy. Heidegger (1993) in "The Question Concerning Technology" profoundly reveals that the essence of modern technology is a kind of "enframing" (Gestell), which incorporates humans and their experiential world into a calculable and controllable order. Under the domination of this "technological enframing," the subjectivity of elderly groups is dissolved, reducing them to "others" in technological system design.

From the perspective of cultural inheritance, elderly groups serve as "living carriers" of regional culture and folk traditions, and the deprivation of their cultural participation rights leads to risks of rupture in intergenerational cultural transmission (Pei, 2009). Habermas (1984) in "The Theory of Communicative Action" points out that the crisis of modernity lies in the colonization of the lifeworld by the system world, while the technology-dominated logic in smart cultural tourism is a typical manifestation of this colonization—technological systems replace traditional cultural inheritance mechanisms, weakening the role of elderly groups as subjects of cultural inheritance. When elderly groups are excluded from cultural tourism experiences by technology, the cultural memory and experiential wisdom they carry are also marginalized, obstructing channels for intergenerational cultural transmission.

Current research on age-friendly design mostly focuses on technological improvements, such as interface optimization and functional simplification, lacking philosophical-level value reflection on the relationship between technology and elderly subjectivity (Ruijie & Shan, 2024). Cultural inheritance research tends to view elderly groups as "passive carriers" of culture, ignoring their agency as "cultural actors" (Appadurai, 1996). This fragmentation in research approaches leads to disconnection between technological age-friendliness and cultural inheritance at both theoretical and practical levels.

This study attempts to bridge the gap between technological instrumentalism and cultural structuralism through the intersectional perspective of philosophy (technological ethics) × anthropology (cultural practice) × sociology (social exclusion), re-anchoring the dual identity of elderly groups as both "technological subjects" and "cultural subjects" in the contemporary context of technology embedded in cultural tourism. Through in-

depth exploration of the inclusive design ethics of age-friendly cultural tourism services, this research not only responds to the contemporary question of "how technology can be used for good," but also attempts to provide new theoretical perspectives and practical models for intergenerational cultural continuity and social harmonious coexistence in the context of an aging society.

II. Technological Ethics Controversy: The Construction of "Digital Others" in Smart Guides

1. The Paradox Between Technological Rationality and Elderly Experience

The design of smart guide systems generally follows "youth-oriented" technological logic, and there exists a profound paradox between this design orientation and the physical and mental characteristics and cultural needs of elderly groups. From a philosophical perspective, the core of this paradox lies in the rupture between technological rationality and lived experience (Yu et al., 2024). Heidegger (1993) points out that modern technology is not merely a tool, but a specific way of thinking and worldview that simplifies the world into a calculable and controllable object system. When this technological rationality dominates smart guide design, the unique perceptual modes, cognitive habits, and cultural preferences of elderly groups are excluded from design parameters, forming systematic "technological exclusion."

Specifically, this exclusion manifests in three levels of misalignment: perceptual misalignment (such as font size and color contrast not considering elderly visual characteristics), cognitive misalignment (such as information organization methods not considering elderly memory characteristics), and cultural misalignment (such as interactive metaphors not connecting with elderly cultural experience) (Lu & Jiang, 2023). Mannheim (2019) proposes that true technological ethics should respect human diversity, including differences in the age dimension. When technological design ignores this diversity, it transforms from a tool of liberation into a mechanism of exclusion.

This alienation manifests not only as barriers to tool-level usage but more profoundly as an ontological crisis of subjectivity. As Merleau-Ponty (2012) argues in "Phenomenology of Perception," human existence is first and foremost a "bodily existence," where we establish connections with the world through bodily perception and action. When smart guide system design ignores the bodily perceptual characteristics of elderly groups, it actually cuts off the ontological connection between elderly subjects and the cultural world, causing them to fall into a state of "technological absence"—physically present but unable to truly participate in cultural experience through technological mediation.

The ethical core of this paradox lies in the power inequality in technological design (Marcuse, 2013). Baudrillard (1976) in "For a Critique of the Political Economy of the Sign" proposes that contemporary society's symbolic systems have become a power structure, and digital technology interfaces are precisely the concentrated embodiment of this symbolic power. When smart guide interface design and interactive logic take

the cognitive habits of young groups as the standard, they are actually reproducing an age-discriminatory power structure at the technological level, placing elderly groups in a disadvantaged position in technology use.

2. The Ethical Paradox of the Digital Divide

From a sociological perspective, smart guide exclusion of elderly groups is essentially a new form of social exclusion in the digital age (Hu & Wang, 2023). Bauman (2000) in "Liquid Modernity" proposes that contemporary society's fluidity and rate of change have led to new forms of social stratification. In the cultural tourism domain, technological usage ability has become an "entry threshold" for participating in cultural experience, with elderly groups being systematically marginalized due to lack of "digital capital." This exclusion is not merely a barrier at the technology usage level, but an implicit denial of the "existential value" of elderly subjects.

Habermas's (1984) theory of "lifeworld colonization" provides profound insight into understanding this phenomenon: when system rationality (such as technological efficiency) penetrates and dominates the lifeworld (such as cultural experience), human subjectivity and cultural meaning are eroded. In smart guide systems, technological efficiency logic often takes priority over cultural experience logic, and elderly groups are precisely the primary "victims" of this technological colonization—their cultural participation rights are restricted by technological thresholds, and their cultural experiences are disciplined by technological standards.

The formation of this digital divide is based on a "technological determinism" mindset that views technological development as an autonomous, non-intervening process to which humans can only passively adapt (Lai, 2025). This mindset manifests in smart cultural tourism design as: viewing elderly groups' technological adaptation difficulties as results of "natural elimination" rather than failures of design ethics. As Postman (2011) warned in "Technopoly," when we view technology as a neutral tool, we have actually accepted the dominance of technological logic over humanistic values, which is precisely the core paradox of technological ethics.

From an ethical perspective, this digital divide means a violation of "technological justice." Rawls (2001) in "A Theory of Justice" proposes that the principle of "fair justice" requires that the design of social institutions should consider groups in disadvantaged positions. Applying this principle to the field of technological design, smart guide systems should guarantee the equal participation rights of elderly groups rather than creating new inequalities through the standardization of technological standards. When we use the technological usage habits of young groups as the sole standard, we are actually establishing a technological usage "single correctness" while marginalizing elderly groups' technological usage habits as "deviation" or "error," which is itself ethical misconduct.

III. Cultural Inheritance Dilemma: The Risk of "Memory Gaps" in an Aging Society

1. The Crisis of Intergenerational Transmission of Cultural Memory

From an anthropological perspective, elderly groups serve as important carriers of cultural memory, and their restricted participation in the cultural tourism domain is not merely a loss at the individual experience level, but may lead to a crisis in the intergenerational transmission of collective cultural memory (Pei, 2009). Assmann (2011) in "Cultural Memory" points out that cultural memory depends on the joint participation and continuous practice of social groups to maintain and transmit. When smart guide technology excludes elderly groups from cultural participation, it actually cuts off important channels for cultural memory transmission.

This severance causes cultural inheritance rupture at two levels: on one hand, the "bodily memory" carried by elderly groups (such as handicraft skills, living habits, emotional attitudes, etc.) is difficult to transmit through purely technological information transfer; on the other hand, ritualistic interactions in cultural inheritance (such as intergenerational joint participation, dialogue, and emotional exchange) are blocked by technological interfaces. As Giddens (1991) analyzes in "The Consequences of Modernity," modern technology often brings about the effect of time-space distanciation, while cultural inheritance precisely requires temporal continuity and spatial integrity.

It is particularly noteworthy that many forms of local knowledge and intangible cultural heritage often exist in informal, non-systematized ways within elderly groups' daily practices and oral traditions . Geertz (1973) in "The Interpretation of Cultures" emphasizes that culture is not merely a symbolic system but a network of meanings that requires vitality through participants' interpretation and practice. When smart guide systems only focus on standardized, digitizable cultural information while ignoring those difficult-to-quantify cultural experiences and emotional memories, the richness and vitality of cultural inheritance are weakened.

2. The Separation Between Symbolization and Practical Knowledge

Smart guide systems in cultural content presentation often emphasize symbolized and conceptualized knowledge expression, while those cultural knowledge rooted in bodily practice and lived experience are difficult to effectively transmit (Niu, 2023). Polanyi's (1960) concept of "tacit knowledge" provides an important perspective for understanding this dilemma: much cultural knowledge is unspeakable, existing in practice, emotion, and intuition, requiring acquisition through participation and experience.

Elderly groups, as direct witnesses to traditional cultural practices, often possess rich tacit knowledge that is difficult to transmit through purely technological information transfer. When smart guide systems simplify cultural knowledge into retrievable, quantifiable information points, the cultural essence contained in elderly groups' bodily memory and life wisdom becomes difficult to inherit. As Certeau (1984) reveals in "The Practice of Everyday Life," culture exists not only in formal discourse but also in the micro-strategies of daily practice,

and this practical knowledge is precisely what technological systems find difficult to capture.

This separation between symbolization and practical knowledge leads to a "thinning" phenomenon in the cultural inheritance process—cultural content is transmitted at the information level but loses emotional depth and practical context. When smart guides simplify traditional crafts into step-by-step instructions and folk festivals into historical introductions, the vitality and creativity of culture are weakened, potentially leading culture to become a kind of "exhibitive existence" rather than "lived practice."

3. The Risk of Dissolving Cultural Subjectivity

From the perspective of cultural subjectivity, smart guide technology's exclusion of elderly groups not only affects individual cultural rights but may also lead to the overall dissolution of cultural subjectivity (Niu, 2023). Bourdieu (1990) in "The Logic of Practice" proposes that cultural practice is an embodiment of "habitus," rooted in the historical experience and social position of specific groups. When elderly groups are marginalized in the cultural inheritance process, the specific cultural habitus they represent also loses channels for inheritance.

This dissolution of subjectivity manifests as the loss of discourse power—smart guide system content production is often dominated by technology developers and content editors, with elderly groups rarely having opportunities to participate in content selection and expression method decisions (Niu, 2023). Foucault (1972) in "The Archaeology of Knowledge" reveals the close connection between knowledge and power. In the smart cultural tourism domain, whoever masters discourse power in content production largely determines the direction and content of cultural inheritance. When elderly groups lose this discourse power, the cultural memory and values they carry find it difficult to gain full expression in technologized cultural dissemination.

The deeper risk of subjectivity dissolution lies in the weakening of cultural identity. Taylor (1989) in "Sources of the Self" emphasizes that individual self-identity largely depends on cultural identity, which needs to be maintained through active participation in cultural practice. When elderly groups are in a position of passive acceptance or exclusion in smart cultural tourism, their emotional connection and sense of identity with cultural traditions may weaken, subsequently affecting the entire society's cultural identity foundation.

In this situation, technology is no longer an auxiliary tool for cultural inheritance but becomes a key variable in the reconstruction of cultural subjectivity. How to ensure the cultural subjectivity of elderly groups in smart cultural tourism design becomes a core ethical issue that age-friendly cultural tourism services must face. This requires us to transcend purely technological improvement approaches and delve into deeper issues of cultural power distribution and subjectivity construction.

IV. Interdisciplinary Research Gap: The Academic Void in Ethical-Cultural Dual Dimensions

Current age-friendly research fields exhibit obvious disciplinary fragmentation, creating disconnections between theory and practice. This fragmentation manifests in two main aspects: on one hand, technology-oriented age-friendly research mostly focuses on tool-level adjustments such as interface improvement and functional simplification, lacking philosophical reflection on the relationship between technology and elderly subjectivity; on the other hand, cultural inheritance research tends to view elderly groups as "passive carriers" of culture, ignoring their agency as "cultural actors" (Niu, 2023).

1. The Absence of Philosophical Dimensions in Technological Age-Friendliness Research

The mainstream paradigm of technological age-friendliness research is largely built on a "functional compensation" model, viewing elderly groups' technological usage barriers as "deficiencies" that need to be compensated through technological adjustments (Nimrod, 2020). While this research orientation provides some improvement solutions at the practical level, from a philosophical perspective, it still places elderly groups in a position of "passive adaptation," failing to fundamentally question the value presuppositions and power structures implicit in technological design.

Particularly noteworthy is that current technological age-friendliness research often ignores the intrinsic connection between technology and culture. Ihde (2001) in "Technology and the Lifeworld" points out that technology is not value-neutral tools but material expressions that embody specific cultural values and lifestyles. Smart guide systems are not merely tools for information transmission but materialized forms of specific cultural concepts and experiential methods. When we only focus on technological functional adaptation while ignoring its cultural connotations, age-friendly design can hardly touch the core of the problem.

Meanwhile, technological age-friendliness research also exhibits obvious methodological limitations. Mainstream research mostly adopts empirical methods such as laboratory testing or questionnaire surveys. While these methods can capture surface-level usage behaviors, they find it difficult to deeply understand elderly groups' technological experiences and cultural needs (Connelly et al., 2014). Gadamer (1975) in "Truth and Method" emphasizes that understanding is always understanding with pre-understanding, requiring dialogue and horizon fusion to achieve true understanding. This suggests that age-friendly research needs to adopt more participatory and dialogical research methods, making elderly groups true subjects rather than objects of research.

2. The Absence of Technological Dimensions in Cultural Inheritance Research

Traditional cultural inheritance research mostly approaches from the macro perspective of socio-cultural continuity, rarely focusing on the special role of technological media in cultural transmission processes. The

widespread application of contemporary intelligent technology has profoundly changed the methods and pathways of cultural inheritance, yet existing research has not sufficiently attended to this change (Wang, 2021).

Particularly crucial is the prevalent stereotypical understanding of elderly groups' roles in cultural inheritance research. Traditional research tends to view elderly groups as "passive carriers" or "transmitters" of culture, ignoring their potential as active subjects of cultural creation and interpretation (Niu, 2023). Lévi-Strauss (1961) in "Tristes Tropiques" reminds us that no culture is a static "thing" but a dynamic "process," with each participant continuously creating and reinterpreting culture in cultural practice. Elderly groups should not be viewed merely as "repositories" of cultural memory but understood as active constructors of cultural meaning.

Furthermore, cultural inheritance research has insufficient attention to the transformation of intergenerational cultural interaction patterns brought by technological change. With the popularization of intelligent technology, intergenerational cultural interaction is no longer limited to traditional face-to-face instruction but is increasingly realized through technological mediation. This transformation not only affects the form of communication but profoundly changes the content and logic of cultural inheritance. Current research has not sufficiently explored new patterns of intergenerational cultural interaction under technological mediation, leading to obvious gaps in understanding age-friendly cultural tourism services (Wang, 2021).

3. The Urgent Need for Interdisciplinary Integration

Facing the above research gaps, this study advocates constructing an integrative theoretical framework for age-friendly cultural tourism services through the intersectional perspective of philosophy (technological ethics) × anthropology (cultural practice) × sociology (social exclusion). This interdisciplinary integration is not a simple compilation of viewpoints but achieves more comprehensive and in-depth understanding of age-friendly cultural tourism services through dialogue and fusion of different disciplinary perspectives.

The philosophical perspective provides ontological and ethical reflection on the relationship between technology and humans, revealing value presuppositions and power structures in technological design; the anthropological perspective focuses on specific forms and meaning construction processes of cultural practice, helping us understand the special role of elderly groups as cultural actors; the sociological perspective focuses on structural factors of social exclusion and inclusion, exploring social institutional conditions for age-friendly services. Through the intersection and fusion of these three perspectives, we can more comprehensively grasp the ethical essence and cultural mechanisms of age-friendly cultural tourism services.

The significance of this interdisciplinary integration lies in its ability to bridge the gap between technological instrumentalism and cultural structuralism, re-anchoring the dual identity of elderly groups as both "technological subjects" and "cultural subjects" in the contemporary context of technology embedded in cultural tourism. Only by simultaneously attending to technological adaptability and cultural inheritance can we design age-friendly cultural tourism services that truly respect elderly subjectivity and promote intergenerational cultural dialogue.

V. Philosophical Deconstruction: The Return of Subjectivity from a Technological Ethics Perspective

1. Sociological Manifestations of Technological Hegemony: New Forms of Social Exclusion in the Digital Age

The "techno-centrism" design orientation in smart guide systems, such as mandatory registration and complex gesture interactions, is essentially a sociological manifestation of technological hegemony. This technological hegemony not only creates practical barriers to usage but also constitutes a new form of social exclusion in the digital age (Marcuse, 2013). Bauman's (2000) theory of "liquid modernity" provides an important perspective for understanding this exclusion: in the rapidly changing liquid modern society, technological capability has become an important basis for social stratification, with elderly groups being systematically marginalized due to lack of "digital capital."

From the perspective of social exclusion theory, this technological exclusion manifests as multi-dimensional deprivation. Sen's (1999) concept of "capability deprivation" in "Development as Freedom" helps understand this phenomenon: smart guide technology's exclusion of elderly groups is not only a restriction on usage functions but a systematic deprivation of their cultural participation capabilities and social interaction capabilities. This deprivation directly affects elderly groups' social participation rights and cultural experience rights, constituting a form of technologized social injustice (Niu, 2023).

More profoundly, this technological exclusion reflects the "lifeworld colonization" phenomenon criticized by Habermas (1984)—technological system logic invades and reconstructs the lifeworld of cultural experience, making cultural experience increasingly disciplined by technological rationality. In smart guide systems, this colonization manifests as technological standards' presuppositional regulation of cultural experience, with elderly groups' cultural experience methods (such as slow-paced appreciation and emotional understanding) being marginalized as "inefficient."

As Bourdieu (1990) analyzes in "Distinction," each social field has specific capital distribution structures and game rules. In the contemporary cultural tourism field, technological usage capability has become an important form of cultural capital, with elderly groups in obvious disadvantage in this capital distribution. The youth-oriented tendency of technological design further reinforces this inequality, institutionally consolidating elderly groups' marginal position in the cultural field.

The essence of this technological exclusion is an implicit denial of the "existential value" of elderly subjects (Marcuse, 2013). Heidegger (1993) reminds us that the essence of technology lies not in its instrumental use but in how it frames the relational modes between humans and the world. When smart guide systems exclude elderly groups from design considerations, they are actually denying their status as legitimate participants in the cultural world, constituting an ontological-level ethical crisis.

2. Philosophical Reconstruction of Humanistic Ethics: From "Instrumental Rationality" to "Communicative Rationality"

Facing the ethical crisis of technological exclusion, age-friendly cultural tourism services need philosophical-level ethical reconstruction, with the core being a shift from "instrumental rationality" to "communicative rationality" (Habermas, 1984). Habermas's (1984) theory of communicative action provides important theoretical resources for this shift: true ethical relationships are not instrumental subject-object relationships but equal dialogical intersubjective relationships. Age-friendly design should transcend purely functional improvements to construct an "intersubjective" technological ethics.

This intersubjective technological ethics contains at least three core dimensions:

First, cognitive adaptability. This is not merely technical adjustment of interface design but philosophical respect for elderly cognitive rhythms and methods. Merleau-Ponty's (2012) bodily phenomenology reminds us that cognition is first a bodily way of being, with elderly groups' unique cognitive rhythms reflecting their distinctive ways of engaging with the world. Age-friendly design should respect these cognitive characteristics, such as guide speed gradient settings and layered information presentation, breaking the "efficiency-first" technological tyranny.

Second, cultural subjectivity. Age-friendly design should not view elderly groups as abstract "users" but understand them as carriers and practitioners of specific cultural traditions with cultural subjectivity. Ricoeur (2004) in "Memory, History, Forgetting" points out that memory is not only storage of the past but a constituent element of subject identity. Age-friendly guides should respect elderly groups' cultural memory, embedding cultural symbols familiar to them (such as dialect guidance and traditional pattern interfaces), making technology an extension rather than replacement of cultural expression.

Third, value equality. Value orientations in technological design should not be determined by a single group but should reflect the joint participation of diverse groups. Rawls's (2001) theory of justice reminds us that fair social institutions should consider the circumstances of the least advantaged. Age-friendly design should grant elderly groups discourse power in technological design, achieving democratic cultural tourism practices through participatory design methods (such as community participatory guide development), ensuring that elderly groups' values and needs are fully expressed in design.

The deeper significance of this humanistic ethical reconstruction is that it is not only an adjustment of technological usage methods but a fundamental reflection on the relationship between technology and humans. As Arendt (1958) warned in "The Human Condition," the crisis facing modern society lies in instrumental rationality's erosion of human subjectivity. The ethical reconstruction of age-friendly cultural tourism services is precisely to resist this erosion and rebuild elderly groups' subject status in technological culture.

VI. Anthropological Thick Description: Cultural Inheritance Mechanisms in Age-Friendly Guides

1. Rerecognition of Elderly Groups' Role as "Cultural Actors"

In traditional anthropological research, elderly groups are often simplified as "carriers" or "transmitters" of culture, a simplification that ignores their agency as cultural actors. This study advocates breaking through this stereotypical narrative and rerecognizing elderly groups' multiple roles as "subjects of cultural agency."

Geertz's (1973) "thick description" theory provides a methodological foundation for this rerecognition. He points out that culture is not a static symbolic system but a dynamic process of meaning construction that requires "thick description" of actors' interpretive activities to be understood. Elderly groups are not merely carriers of cultural information but active interpreters and re-creators of cultural meaning. In age-friendly guide design, full attention should be paid to elderly groups' understanding and interpretation of culture, viewing them as important subjects of cultural production.

Elderly groups' role as cultural actors manifests in at least three levels: first, they are direct witnesses of cultural experience, carrying much informal, non-textual cultural knowledge through bodily memory and lived practice; second, they are interpreters of cultural meaning, able to understand multiple layers of meaning in cultural phenomena from historical depth; finally, they are innovators of cultural tradition, able to creatively transform traditional culture in contemporary contexts.

Polanyi's (1960) theory of "tacit knowledge" is particularly helpful for understanding the unique value of elderly groups as cultural actors. Much core knowledge in traditional crafts and folk practices is tacit, unable to be completely transmitted through pure linguistic description, requiring acquisition through practical demonstration and bodily participation. Elderly groups often possess rich tacit knowledge that is difficult to transmit completely in purely digitized texts. Age-friendly guides should attend to these tacit knowledge transmission mechanisms, designing interactive methods that support elderly groups in demonstrating and transmitting tacit knowledge.

From the perspective of cultural agency, elderly groups also have the important role of "cultural translators." Benjamin (2016) in "The Task of the Translator" points out that translation is not only linguistic conversion but a bridge for cultural understanding. Elderly groups can perform cultural translation between tradition and modernity, past and present, helping younger generations understand the contemporary significance of cultural traditions. Age-friendly guides should support this cultural translation function, transforming elderly groups from "cultural containers" to "cultural producers."

2. The "Ritualized" Cultural Function of Age-Friendly Guides

From an anthropological perspective, age-friendly guides are not merely tools for information transmission but can become a modern form of cultural ritual (Niu, 2023). Van Gennep's (2019) theory of "rites of passage"

provides an analytical framework for understanding this function: cultural inheritance often occurs through ritualized processes that contain three stages: separation, transition, and reintegration. Age-friendly guides can be designed as "transitional spaces" for intergenerational cultural interaction, promoting cultural flow and reconstruction between generations.

Specifically, the ritualized function of age-friendly guides can be embodied in three stages:

Separation stage: Breaking the intergenerational isolation of traditional technology usage rights. Age-friendly guides can design special segments that showcase elderly groups' traditional guide skills or cultural storytelling abilities, making younger generations aware that valuable cultural transmission methods exist beyond digital guides. The key to this stage lies in breaking young people's monopolistic imagination of "digital technology," creating preconditions for intergenerational dialogue.

Transition stage: Constructing collaborative spaces for intergenerational co-creation. Eliade (1959) in "The Sacred and the Profane" points out that transitional states are a creative disorder where new cultural forms may emerge. Age-friendly guides can design intergenerational collaboration segments, such as grandparents and grandchildren jointly recording intangible cultural heritage story audio, with elderly narrating craft history and young people adding modern artistic elements, transforming intergenerational differences into drivers of cultural innovation through such cooperation.

Reintegration stage: Forming new cultural identity bonds. Turner (2017) in "The Ritual Process" emphasizes that the ultimate purpose of rituals is to form new social connections and cultural identity. Age-friendly guides can design shared achievement display segments, transforming intergenerational collaborative cultural products into new cultural identity carriers. For example, family stories provided by elderly residents combined with digital recreations designed by young people become emotional bonds and cultural bridges connecting generations.

The core value of this ritualized function lies in transforming technology from simple information tools into media for cultural practice, making age-friendly guides not only transmit cultural content but become domains for cultural production and cultural experience. As Turner (2017) points out, rituals are not only ways of expressing culture but processes of creating culture. The ritualized design of age-friendly guides can promote the living renewal and creative transformation of culture in intergenerational inheritance.

3. The Logic of Intergenerational Reproduction of Social Memory

From the perspective of social memory theory, age-friendly guides not only undertake information transmission functions but can become important media for the intergenerational reproduction of social memory (Assmann, 2011). Habermas's (1984) theory of "collective memory" points out that memory is not only an individual psychological phenomenon but a socially constructed product that needs to be maintained and renewed through social interaction and collective practice. Age-friendly guides can serve as a modern form of such social memory practice, promoting memory transmission and reconstruction between generations.

This intergenerational reproduction of social memory follows the basic logic of "memory triggering-

narrative reconstruction-identity reinforcement": first, age-friendly guides trigger elderly groups' memory retrieval through specific cultural symbols, sounds, or images; second, these triggered memories are expressed and reconstructed through elderly groups' narrative activities; finally, these narratives are received and understood by younger generations, forming new cultural identity foundations.

Assmann (2011) in "Cultural Memory" distinguishes between "communicative memory" and "cultural memory": the former exists in daily communication with temporality; the latter is preserved long-term in institutionalized forms. The unique value of age-friendly guides lies in their ability to build bridges connecting these two forms of memory, transforming elderly groups' communicative memory into more durable forms of cultural memory through technological means while preserving the personal emotional dimensions of memory.

The deeper significance of this memory reproduction process lies in its ability to elevate individual memory to collective memory, strengthening the intergenerational bonds of cultural identity. Ricoeur (2004) in "Memory, History, Forgetting" emphasizes that narrative is the key link between memory and identity formation. Through memory narrative activities in age-friendly guides, elderly groups' personal memories dialogue with public history, individual experience interweaves with collective identity, achieving continuous reproduction of cultural identity in intergenerational interaction.

VII. Practical Pathways: Ethical-Cultural Dual-Dimension Inclusive Design Innovation

1. Intergenerational Co-Creative Design: Breaking Through Technological Intergenerational Barriers

The first practical pathway for age-friendly cultural tourism services is establishing an "intergenerational co-creative design" mechanism, with the core being breaking the intergenerational barriers between technological development and cultural experience (Niu, 2023). Simonsen (2013) in "Participatory Design" emphasizes that design should not be unidirectional output from experts to users but a co-creative process among multiple stakeholders. Age-friendly cultural tourism services particularly need this co-creative thinking, transforming elderly groups from passive users into active design participants.

Specifically, intergenerational co-creative design can construct a collaborative mechanism of "elderly cultural think tank + youth technology workshop." The core of this mechanism is achieving bidirectional flow between cultural experience and technological innovation: elderly groups provide cultural content and experiential wisdom, young groups provide technological implementation and innovative ideas, and both jointly complete age-friendly guide design through structured collaborative processes. Schön's (2017) concept of "knowledge dialogue" in "The Reflective Practitioner" helps understand this process: different types of knowledge (such as elderly groups' experiential knowledge and young designers' technical knowledge) generate new design wisdom through dialogical exchange.

This intergenerational co-creative mechanism should be built on three basic principles: the principle of equal participation, ensuring elderly groups have substantive decision-making power rather than merely serving as information providers; the principle of capability complementarity, fully leveraging elderly groups' advantages in cultural experience and young groups' advantages in technological innovation; the principle of iterative development, continuously optimizing design solutions through cycles of "cultural materials-digital translation-user testing."

The deeper value of intergenerational co-creative design lies not only in improving the age-friendliness of technological products but in promoting intergenerational dialogue and cultural inheritance through the design process itself. As Latour (2005) points out in "Reassembling the Social," technological design not only creates material products but reconstructs social relationship networks. When elderly groups participate in smart guide design processes, technology transforms from a "digital divide" separating generations into a "cultural bond" connecting generations, with the design process itself becoming a domain for cultural dialogue.

2. Memory Activation Technology: Awakening Emotional-Cultural Resonance

The second practical pathway for age-friendly cultural tourism services is developing "memory activation technology," with the core being awakening elderly groups' cultural memory and emotional experience through technological means, promoting emotional-cultural resonance between generations. Proust (2011) in "In Search of Lost Time" profoundly reveals the close connection between sensory memory and deep emotional experience, providing important insights for designing memory activation technology.

The basic design approach of memory activation technology is "contextual awareness + memory triggering": by sensing elderly users' spatial location, behavioral characteristics, and other contextual information, intelligently pushing content that can trigger specific cultural memories, such as traditional music, folk ritual sounds, dialect narration, etc., thereby awakening elderly groups' cultural memory and emotional resonance. This design approach is based on the theory proposed by Nora (1996) in "Realms of Memory": specific places, sounds, and images can activate related collective memories.

After memory activation, the technology system should support elderly groups in memory narration and emotional expression, such as providing oral history recording functions and encouraging elderly users to share personal memories and emotional experiences related to specific cultural places. These personalized memories, after processing, can become organic components of the guide system, forming dual cultural expression of "official narrative" and "folk memory." Ricoeur (2004) emphasizes that narrative is the core way humans understand their own experience and construct identity. By supporting elderly groups' memory narration, technology systems not only transmit cultural information but promote the formation and reinforcement of cultural identity.

The deeper value of memory activation technology lies in making technology a unity of "memory probe" and "inheritance medium." On one hand, technology activates cultural resources sleeping in elderly groups' memories; on the other hand, technology transforms these activated memories into forms that can be received

and understood by younger generations. This bidirectional function makes technology no longer a cold information carrier but a cultural medium connecting intergenerational memory, like the "storyteller" mentioned by Benjamin (2016), building bridges for dialogue between tradition and modernity.

3. Multi-Actor Governance Network: Institutional Guarantee for Ethical Practice

The third practical pathway for age-friendly cultural tourism services is constructing a "multi-actor governance network," with the core being providing systematic guarantees for ethical practice through institutional innovation (Habermas, 1984). Foucault's (1972) theory of governmentality reminds us that the effective implementation of any practice depends on specific power-knowledge structures and institutional arrangements. For the ethical concepts of age-friendly cultural tourism services to be effectively implemented, corresponding governance networks must be established as institutional support.

This governance network should integrate multiple actors including government, cultural tourism institutions, community organizations, and elderly groups, forming an inclusive governance system that integrates "technology-culture-institution." Government should provide policy support and resource guarantee, such as establishing age-friendly technology standards and providing R&D subsidies; cultural tourism institutions should provide scenario resources and professional knowledge, supporting the development and implementation of age-friendly guide projects; community organizations should play organizational mobilization functions, promoting effective participation of elderly groups; elderly groups should participate in the entire process as subjective participants rather than passive service objects.

Giddens's (1991) structuration theory emphasizes that social structures both constrain action and provide possibilities for action. The core value of multi-actor governance networks lies in their ability to provide institutional frameworks and resource support for age-friendly practices while ensuring respect for elderly groups' subjectivity through participatory mechanisms. This governance network is not simple administrative management but empowering governance that ensures the transformation of age-friendly ethics from conceptual level to practical mechanisms through reconstructing power relations and decision-making mechanisms.

Multi-actor governance networks should follow three core principles: the inclusiveness principle, ensuring effective participation of elderly groups and other stakeholders; the synergy principle, promoting resource integration and functional complementarity among different actors; the sustainability principle, establishing long-term mechanisms rather than one-time projects, ensuring sustainable development of age-friendly services. Only by following these principles can the ethical practice of age-friendly cultural tourism services transform from individual case innovation to systematic change, truly achieving synergistic development of technological progress and cultural inheritance.

VIII. Conclusion: The Mutual Construction and Symbiosis of Technological Ethics and Cultural Inheritance

Through multidimensional exploration of the inclusive design ethics of age-friendly cultural tourism services, this study reaches the following core conclusions: the essence of age-friendly cultural tourism design is the mutual construction practice of technological ethics (humanistic values) and cultural inheritance (intergenerational interaction) (Marcuse, 2013). This mutual construction and symbiotic relationship manifests at three levels:

First, philosophical-dimension ethical reflection demarcates "humanistic boundaries" for technology, preventing technological rationality from consuming elderly subjectivity (Heidegger, 1993; Marcuse, 2013). Heidegger (1993) reminds us that the essence of technology lies not in its instrumentality but in how it frames the relationship between humans and the world. The philosophical significance of age-friendly design lies in redefining the relationship between technology and elderly subjects, shifting from technology dominating humans to humans mastering technology, ensuring elderly groups' subject status and dignity in technological experience.

Second, anthropological-dimension cultural thick description injects "inheritance dynamics" into practice, activating elderly groups' cultural agency. Geertz's (1973) thick description theory points out that culture is not a static symbolic system but a dynamic process of meaning construction. The anthropological significance of age-friendly guides lies in transforming elderly groups from "passive carriers" of culture to "active producers," promoting culture's creative transformation in inheritance by supporting their cultural narration and intergenerational dialogue.

Finally, sociological-dimension social integration provides "institutional guarantee" for pathways, constructing a governance ecology of multi-actor collaboration. Bourdieu's (1990) field theory reminds us that any practice is embedded in specific social structures and power relations. The sociological significance of age-friendly services lies in reconstructing power structures for technological design and cultural participation, establishing more inclusive and just cultural participation mechanisms, ensuring institutional guarantee for elderly groups' cultural rights and technological rights.

This interdisciplinary reflection not only responds to the contemporary question of "how technology can be used for good" but also provides new theoretical perspectives and practical paradigms for intergenerational cultural continuity and social harmonious coexistence in the context of an aging society. The inclusive design ethics of age-friendly cultural tourism services essentially explores the fusion of technology and humanities in specific domains, seeking balance points between technological progress and cultural inheritance. By reconstructing elderly groups' subject status in technological culture, we can make technology a cultural bond connecting generations rather than a digital divide separating generations, thereby promoting synergistic development of technological progress and cultural continuity.

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Analysis and Research on Mobile Phone Addiction among College Students: A Case Study of Five Universities in Shaanxi Province

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Abstract

Purpose – The purpose of this paper is to investigate the prevalence and influencing factors of mobile phone addiction (MPA) among college students in Shaanxi Province, China, identifying key demographic and background variables associated with this phenomenon.

Design/Methodology/Approach – Based on a cross-sectional survey design, this study utilized the Mobile Phone Addiction Index (MPAI) scale. Data was collected via online questionnaires from 2,395 undergraduate students across five universities in Shaanxi Province using random sampling.

Findings – The study found that 17.62% of students met the diagnostic criteria for MPA, with an overall moderate-low addiction level. Key findings include: Rural students scored significantly higher than urban students on MPA; Students with excellent academic performance and those with at least one college-educated parent scored lower; Significant differences existed across universities and majors (Humanities/Social Sciences highest, Arts/Sports lowest); Addiction levels increased with grade level (freshmen lowest, juniors highest). Gender differences manifested in specific dimensions (males higher in uncontrollability, females higher in avoidance). Factors like only-child status, relationship status, and single-parent family showed no significant effect.

Research Implications – This study provides empirical evidence for universities and policymakers to develop targeted interventions considering the identified risk factors (e.g., rural background, lower parental education, specific majors, upper grades). The findings highlight the need for comprehensive strategies promoting healthy phone use, particularly for high-risk groups. It contributes valuable regional data to the global understanding of MPA determinants in higher education settings and offers a foundation for future comparative research.

Keywords: Mobile Phone Addiction; College Students; Higher Education; Shaanxi Province
JEL Classifications: C11, F14, L61

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I. Introduction

According to Sohn, S. Y et al. (2021), 38.9% of 18-30 year olds reported symptoms of Mobile Phone Addiction.

As an important tool of Mobile Phone Addiction, smartphones have greatly facilitated people's daily life and enriched the spiritual world with their powerful functions of communication, socialization, and entertainment, but they have also triggered the negative effects of Smartphone Addiction (Zhang Yuping et al., 2020). People's dependence on it is getting deeper and deeper, and some inappropriate users have become addicted to it, which seriously affects physical and mental health as well as study, work and life, so smartphone addiction, too, has received more and more attention (Yu Tingting and Liu Yanli, 2019).

College students are in the stage of physical and mental development, with a strong demand for socialization and entertainment, coupled with low life pressure and limited social activities, leading to excessive reliance on smartphones and the formation of Mobile Phone Addiction (Li & Long Sulan, 2022). With the popularization of smartphones, Mobile Phone Addiction has become one of the important threat factors affecting college students' academic performance and physical and mental health (Chen et al., 2021; Yuan, Wenping & Ma, Lei, 2024). Because college students have more time for self-management and less supervision from others, they are more likely to be at high risk for Mobile Phone Addiction (Yu Sha et al., 2021).

In Hainan, China, the rate of Mobile Phone Addiction among college students is 40.5% (Zou Yan et al., 2017). And the study by Ma Yonghong et al. (2018) indicated that the rate of Mobile Phone Addiction among college students in China in recent years ranged from 15.3% to 28.9%. It can be seen that the state of Mobile Phone Addiction among college students is worrying.

II. Literature review

2.1 The Current Situation of College Students' Mobile Phone Addiction

Mobile Phone Addiction has become the most prevalent type of addiction in the world today (Xiong Sicheng et al., 2021).

In the United States, in a study by N. Ahmed (2019) with a sample of Generation Z students at the State University of New York, it was found that more than half of Generation Z students spend nine or more hours a day on smartphones and social media, with 70% admitting to being addicted to the Internet and 3% admitting to being addicted to social media. Adolescents who are addicted to cell phone use tend to have lower academic performance, and they also spend long hours using social media and multitasking with media (S. Domoff et al., 2019).

In Japan, M. Tateno et al (2019) found that 22.8% of males and 28.0% of females screened for Mobile Phone Addiction among Japanese university students through the Japanese version of the Smartphone Addiction

Scale-Short Version (SAS-SV). Some studies have shown that Internet addiction and smartphone addiction are associated with severe social withdrawal among Japanese young people, with males avidly engaging in gaming and females using the Internet for social networking (Tateno, M. et al., 2019).

C. Y. Fook et al (2020) stated that moderate Mobile Phone Addiction is common among Malaysian undergraduates who have a positive attitude towards smartphones and focus mainly on social media, phone calls and photos/videos. Problematic smartphone use (PSU) is common (60.7%) among Malaysian undergraduate students, and factors such as longer daily use, age of first smartphone use, and depression increase the risk of developing PSU (N. S. Nasser et al., 2020).

A. Said et al (2022) found that the prevalence of Smartphone Addiction among Malaysian preclinical medical and dental students was high at 47.9% Factors such as males, social media use and depressive symptoms increased the risk of developing the disease.

J. Mathews et al (2020) found through a study of students in RUB colleges and universities in Russia that students showed a tendency to be addicted to smartphones or were already addicted to smartphones, making it impossible for them to lead a normal life without them.

It can be said that the problem of Mobile Phone Addiction has become more common among college students all over the world, and the current situation of college students' Mobile Phone Addiction needs to attract serious attention from teachers, parents and society.

2.2 Related Research on College Students' Mobile Phone Addiction

As people pay more attention to the behavior of Mobile Phone Addiction, the research on Mobile Phone Addiction is getting richer and richer. Several studies have pointed out the complexity of the reasons behind Mobile Phone Addiction among college students (Sheng Dongfeng et al., 2019).The study of V. Sheinov et al (2021) found that Smartphone Addiction is positively correlated with negative factors such as depression, anxiety, stress, decreased self-esteem, sleep and health problems, poor quality of life, family problems, poor academic performance, and cyberbullying. In China, family relationships (Wang, Dongfang et al., 2019), boredom tendency (Huang, Yongmei, 2022), and depression and anxiety (Ou, Zixin et al., 2023) may lead to Internet dependence such as Mobile Phone Addiction among college students.

In addition, the results of a large number of studies have shown that Mobile Phone Addiction negatively affects the physical and mental health of individuals (Xu Ziqi et al., 2023). For example, it leads to decreased sleep quality (Herrell, C., & Foster, S., 2024; Huang, Jian et al., 2024), inhibits control (Liu, Qinxue et al., 2021), predisposes to loneliness (Cao, Yunfei, et al., 2023), and negatively correlates with academic performance (Oluwafemi Sunday et al., 2021).

Moreover, the severity of Mobile Phone Addiction varies among college students possessing different personality traits (Chen Xia et al., 2022), and college students pursuing novelty, avoiding harm, self-transcendence, low perseverance, and high self-direction are more likely to develop smartphone addictive behaviors (A. Kheradmand et al., 2023).

Yuan Wenping and Ma Lei (2024) stated that individuals with a high level of smartphone addiction are prone to self-denial and low self-esteem, and that mobile phones attract and interfere with an individual's attention in a variety of ways, and that Mobile Phone Addiction consumes one's own limited psychological resources, and when the consumed psychological resources reach a certain level, it induces a failure of the individual's self-control, and that Mobile Phone Addicts show low self-control, which, in turn, may lead to the individual's lower self-evaluation of their own ability and value.

In summary, Mobile Phone Addiction among college students has become an important public health issue, affecting their decision-making ability, psychological health and academic performance, and should be paid attention to and emphasized.

III. Research Objective and Methodology

3.1 Research Subjects

The first to fourth year undergraduate students of five universities in Shaanxi Province (Northwest University of Political Science and Law, Xi'an University of Architecture and Technology, Xi'an University of Posts and Telecommunications, Xi'an University of Technology and Weinan Teachers' College) were used as the research subjects, and the samples were drawn using random sampling method. Before distributing the questionnaires, the researcher contacted the relevant persons or school organizers by phone to explain the purpose and content of the study and to obtain their consent and assistance. Subsequently, questionnaires and data were collected from undergraduate students of the university using the Questionnaire Star online platform, with the coordination and cooperation of classroom teachers and counselors.

A total of 2,500 questionnaires were distributed and 2,500 were recovered, of which 2,395 were valid questionnaires, with a questionnaire validity rate of 95.8%.

3.2 Research Tools

The Mobile Phone Addiction Index (MPAI) compiled by Leung Wing-kit (2008), a Hong Kong, China-based scholar, was selected for this study, which consists of 17 questions and contains four dimensions. Uncontrollability, Withdrawal, Avoidance and Ineffectiveness were reflected respectively. A 5-point Likert scale was used, with 1 representing “never”, 2 representing “occasionally”, 3 representing “sometimes”, 4 representing “often”, and 5 representing “often”. The higher the score, the higher the degree of cell phone dependence. If the subjects answered “often” or “always” in 8 or more of the 17 questions, they were defined as “always” or “never”. If the subject answered “often” or “always” in 8 or more of the 17 questions, it was defined as Mobile Phone Addiction. In previous studies, the Cronbachs α coefficient of this scale was 0.91, and that of Uncontrollability, Withdrawal, Avoidance, and Ineffectiveness dimensions were 0.81, 0.86, 0.72,

and 0.74, respectively, with high reliability, so that it has been widely used in multiple disciplines, and it has become the most frequently used scale in China in the study of college students. The scale with the highest frequency of use.

3.3 Statistical analysis

SPSS27.0 was used to analyze the data for reliability and validity, descriptive statistical analysis, independent samples t-test, and one-way ANOVA to explore the differences in demographic variables of Mobile Phone Addiction.

IV. Results and Discussion

4.1 Reliability test of the scale

Table 1. Reliability analysis table of Mobile Phone Addiction among college students

Reliability Statistics Variables	Dimension	Cronbach's Alpha	N of Items
Mobile Phone Addiction		.927	17
	Uncontrollability	.870	7
	Withdrawal	.843	5
	Avoidance	.856	3
	Ineffectiveness	.880	2

As can be seen from Table 1, in this study, the internal consistency coefficients of Mobile Phone Addiction and its sub-dimensions are above 0.7, and the scale has good reliability and can be used for the next data analysis.

4.2 Demographics

Table 2. Table of basic information of subjects' population (N=2395)

Demographic	categories	Number	Percent
Gender	Male	1272	53.1%
	Female	1123	46.9%
Only child or not	Yes	784	32.7%
	No	1611	67.3%
In love or not	Yes	511	21.3%
	No	1884	78.7%
Single Parent Family	Yes	231	9.6%
	No	2164	90.4%
Home location	Rural	1686	70.4%
	Urban	709	29.6%
Achievement Level	Excellent (ranked in the top 35% of majors)	1234	51.5%
	Fair (ranked outside the top 35% of majors)	1161	48.5%
Parents' education	At least one parent graduated from college	579	24.2%
	Neither parent attended college	1816	75.8%
School	Weinan Normal University (WNU)	431	18%
	Xi'an University of Architecture and Technology (XAUAT)	782	32.6%
	Xi'an University of Technology (XAUT)	261	10.9%
	Xi'an University of Posts and Telecommunications (XUPT)	533	22.3%
	Northwest University of Political Science and Law (NWUPL)	388	16.2%
Specialty Category	Natural Sciences	1462	61.1%
	Humanities and Social Sciences	707	29.5%
	Arts and Sports	226	9.4%
Grade Levels	Freshman	1201	50.1%
	Sophomore	368	15.4%
	Junior	356	14.9%
	Senior	470	19.6%

4.3 Descriptive Analysis of the Overall Situation of Mobile Phone Addiction among College Students

As shown in Table 3, among the 2,395 students surveyed, 422 met the diagnostic definition of Mobile Phone Addiction, accounting for 17.62% of the number of surveyed, which shows that the situation of Mobile Phone Addiction among the students of the five universities in Shaanxi is relatively serious, which has brought about a certain impact on their life and study.

Table 3. Basic situation of Mobile Phone Addiction among college students in five universities in Shaanxi Province

School	Total number	Number of mobile phone addiction	Number of non-mobile phone addiction	Percentage of mobile phone addiction
Weinan Normal University	431	77	354	17.87%
Xi'an University of Architecture and Technology	782	143	639	18.29%
Xi'an University of Technology	261	29	232	11.11%
Xi'an University of Posts and Telecommunications	533	88	445	16.51%
Northwest University of Political Science and Law	388	85	303	21.91%
Total	2395	422	1973	17.62%

Table 4. Basic situation of Mobile Phone Addiction among college students of different major categories

Specialty Category	Total number	Number of mobile phone addiction	Number of non-mobile phone addiction	Percentage of mobile phone addiction
Natural Sciences	1462	259	1203	17.70%
Humanities and Social Sciences	707	141	566	19.90%
Arts and Sports	226	22	204	9.70%
Total	2395	422	1973	17.62%

As shown in Table 4, among the 2,395 students surveyed, 19.90% of students majoring in humanities and social sciences meet the diagnostic definition of Mobile Phone Addiction, accounting for the highest proportion, 17.70% of students majoring in natural sciences meet the diagnostic definition of Mobile Phone Addiction,

while only 9.70% of students majoring in arts and sports meet the diagnostic definition of Mobile Phone Addiction, which is significantly lower than the average level. It can be seen that the differences in disciplinary specialties make college students have certain differences in the status of Mobile Phone Addiction, and this needs to be verified by the subsequent difference analysis.

Table 5. Basic situation of Mobile Phone Addiction among college students of different grades

Grade Levels	Total number	Number of mobile phone addiction	Number of non-mobile phone addiction	Percentage of mobile phone addiction
Freshman	1201	175	1026	14.57%
Sophomore	368	70	298	19.02%
Junior	356	78	278	21.91%
Senior	470	99	371	21.06%
Total	2395	422	1973	17.62%

As shown in Table 5, only 14.57% of the 2,395 students surveyed in the freshman year met the diagnostic definition of Mobile Phone Addiction and had the lowest probability of Mobile Phone Addiction. The level of Mobile Phone Addiction is also increasing, 19.02% of sophomores meet the diagnostic definition of Mobile Phone Addiction, 21.91% of juniors meet the diagnostic definition of Mobile Phone Addiction, and 21.06% of seniors meet the diagnostic definition of Mobile Phone Addiction. It can be seen that with the increase of grade level, college students in the Mobile Phone Addiction situation is also getting serious, the specific situation needs to be verified by the subsequent difference analysis.

Table 6. Descriptive statistical analysis table of Mobile Phone Addiction and each dimension

Variables(Dimension)	N	M	Median	Mode	SD	Variance	Min	Max
Mobile Phone Addiction	2395	2.629	2.706	3	0.735	0.540	1	5
Uncontrollability	2395	2.474	2.571	3	0.771	0.595	1	5
Withdrawal	2395	2.617	2.800	3	0.895	0.801	1	5
Avoidance	2395	2.919	3.000	3	0.981	0.963	1	5
Ineffectiveness	2395	2.765	3.000	3	1.002	1.004	1	5

As shown in Table 6, the mean value of Mobile Phone Addiction of the subject college students, M=2.6288, and the median is 2.7059, which are lower than the theoretical median value of 3, indicating that the mobile

phone addiction of the subject college students is in the middle to lower level. In the 2 dimensions of Avoidance and Ineffectiveness, only the mean value is lower than the theoretical median value of 3, and the median is 3, indicating that half of the college students may utilize the cell phone in order to avoid the real problems, and the excessive use of the cell phone thus affects the efficiency of daily study and life; however, in the 2 dimensions of Avoidance and Withdrawal, the mean and median are smaller than the theoretical median value of 3, reflecting that those college students who spend a great deal of time using the cell phone without self-control, and who cannot use the cell phone, have no control of their own. The proportion of college students who experience frustration with their cell phones is relatively small.

4.4 Analysis of differences in Mobile Phone Addiction among college students with different background variables

Using independent samples t-test, we analyzed the differences in Mobile Phone Addiction and its dimensions among college students of different genders, different family locations, different levels of academic achievement, and different levels of parental education.

One-way ANOVA was used to test the differences in Mobile Phone Addiction total score and each dimension among college students of different universities, different major categories, and different grades.

4.4.1 Analysis of differences in Mobile Phone Addiction among college students of different genders and different home locations

The results show that there is no significant difference between male and female students in Mobile Phone Addiction. Among the specific dimensions, male students scored significantly higher than female students on the Uncontrollability dimension, while female students scored significantly higher than male students on the Avoidance dimension (see Table 7).

The results showed that college students whose home location was rural had significantly higher scores on Mobile Phone Addiction than those whose home location was urban. Among the specific dimensions, college students whose home location is rural scored significantly higher than college students whose home location is urban on the 2 dimensions of Uncontrollability and Ineffectiveness (see Table 7).

Table 7. Analysis of differences in Mobile Phone Addiction among college students of different genders and different home locations

Variables (Dimension)	Gender				t	Home location				t
	Male (N=1272)		Female (N=1123)			Rural (N=1686)		Urban (N=709)		
	M	SD	M	SD		M	SD	M	SD	
Mobile Phone Addiction	2.65	0.75	2.60	0.72	1.82	2.65	0.74	2.58	0.73	2.18*
Uncontrollability	2.55	0.79	2.39	0.75	5.03***	2.51	0.77	2.38	0.76	3.76***
Withdrawal	2.63	0.90	2.60	0.89	0.61	2.62	0.90	2.62	0.89	0.05
Avoidance	2.86	0.97	2.99	0.99	-3.29***	2.92	0.97	2.91	1.00	0.16
Ineffectiveness	2.79	0.99	2.74	1.01	1.33	2.81	0.99	2.67	1.01	3.14**

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

4.4.2 Analysis of Differences in Mobile Phone Addiction among College Students with Different Achievement Levels and Different Levels of Parental Education

Table 8. Analysis of differences in Mobile Phone Addiction among college students with different Achievement Levels and different levels of parental education

Variables (Dimension)	Achievement Level				t	Parents' education				t
	Excellent (N=1234)		Fair (N=1161)			At least one parent graduated from college (N=579)		Neither parent attended college (N=1816)		
	M	SD	M	SD		M	SD	M	SD	
Mobile Phone Addiction	2.58	0.76	2.68	0.71	-3.04**	2.53	0.75	2.66	0.73	-3.90***
Uncontrollability	2.41	0.79	2.54	0.75	-4.13***	2.37	0.80	2.51	0.76	-3.72***
Withdrawal	2.58	0.93	2.65	0.86	-1.88	2.55	0.89	2.64	0.90	-1.92
Avoidance	2.90	1.01	2.94	0.95	-0.87	2.81	1.01	2.95	0.97	-3.13**
Ineffectiveness	2.72	1.04	2.81	0.96	-2.35*	2.58	0.99	2.82	1.00	-5.03***

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

The results show that college students with excellent Achievement Level score significantly lower on Mobile

Phone Addiction than those with average Achievement Level. Among the specific dimensions, college students with excellent Achievement Level scored significantly lower on Uncontrollability dimension than college students with average Achievement Level (see Table 8).

The results showed that college students with at least one parent attending college scored significantly lower on Mobile Phone Addiction than college students with neither parent attending college. In each of the specific dimensions, college students with at least one parent who had attended college scored significantly lower on the three dimensions of Uncontrollability, Avoidance, and Ineffectiveness than college students with neither parent having attended college (see Table 8).

4.4.3 Analysis of Differences in Mobile Phone Addiction among College Students in Different Schools

Table 9. Analysis of differences in Mobile Phone Addiction among college students from different schools

Variables (Dimension)	School										F
	XAUAT (N=782)		XAUAT (N=261)		XUPT (N=533)		NWUPL (N=388)		WNU (N=431)		
	M	SD	M	SD	M	SD	M	SD	M	SD	
Mobile Phone Addiction	2.70	0.75	2.48	0.67	2.59	0.75	2.63	0.76	2.65	0.70	4.89***
Uncontrollability	2.57	0.80	2.27	0.72	2.45	0.76	2.41	0.77	2.50	0.75	8.97***
Withdrawal	2.67	0.89	2.47	0.87	2.56	0.89	2.66	0.92	2.63	0.88	3.26*
Avoidance	2.92	0.97	2.99	0.97	2.84	0.98	2.92	1.03	2.96	0.95	1.49
Ineffectiveness	2.84	0.99	2.46	0.94	2.74	1.01	2.85	1.08	2.77	0.94	7.96***

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

As shown in Table 9, there were significant differences in the total Mobile Phone Addiction scores of students from the five universities, as well as in the dimensions of Uncontrollability, Withdrawal, and Ineffectiveness. Further two-by-two comparisons using the LSD method showed that the total Mobile Phone Addiction scores of students at Xi'an University of Technology were significantly lower than those of students at Xi'an University of Architecture and Technology, Northwestern University of Political Science and Law, and Weinan Teachers College, and in addition, the total Mobile Phone Addiction scores of students at Xi'an University of Architecture and Technology were significantly higher than those of students at Xi'an University of Posts and Telecommunications, and there was no significant difference between the other two-by-two comparisons. In terms of specific dimensions, the performance of Withdrawal dimension was completely consistent with the total Mobile Phone Addiction score. As for the 2 dimensions of Uncontrollability and

Ineffectiveness, the scores of the students of Xi'an University of Technology were significantly lower than those of all other schools, while the scores of the students of Northwest University of Political Science and Law and Xi'an University of Posts and Telecommunications were significantly lower than those of the students of Xi'an University of Architecture and Technology.

4.4.4 Analysis of Differences in Mobile Phone Addiction among College Students in Different Specialty Categories

As shown in Table 10, there are significant differences in the total Mobile Phone Addiction scores of students in different Specialty Categories, as well as in the dimensions of Uncontrollability, Withdrawal and Ineffectiveness. Students majoring in natural sciences had the highest Mobile Phone Addiction scores and students majoring in arts and sports had the lowest Mobile Phone Addiction scores. Further two-by-two comparisons using the LSD method showed that the total Mobile Phone Addiction scores of students majoring in natural sciences and humanities and social sciences were significantly higher than those of students majoring in arts and sports. In specific dimensions, the performance of Withdrawal and Ineffectiveness dimensions was completely consistent with the total Mobile Phone Addiction score. And on the Uncontrollability dimension, there is a significant difference between the scores of students majoring in natural sciences and those majoring in humanities and social sciences and arts and sports between the two, with natural sciences > humanities and social sciences > arts and sports.

Table 10. Analysis of differences in Mobile Phone Addiction among college students in different Specialty Categories

Variables (Dimension)	Specialty Category						F
	Natural Sciences (N=1462)		Humanities and Social Sciences (N=707)		Arts and Sports (N=226)		
	M	SD	M	SD	M	SD	
Mobile Phone Addiction	2.66	0.75	2.62	0.72	2.47	0.67	6.42**
Uncontrollability	2.52	0.79	2.43	0.74	2.27	0.74	11.97***
Withdrawal	2.63	0.89	2.63	0.90	2.48	0.87	3.04*
Avoidance	2.90	0.98	2.95	1.00	2.96	0.95	0.94
Ineffectiveness	2.81	1.00	2.79	1.01	2.39	0.92	17.47***

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

4.4.5 Analysis of Differences in Mobile Phone Addiction among College Students of Different Grades

Table 11. Analysis of differences in Mobile Phone Addiction among college students of different grades

Variables (Dimension)	Grade Levels								F
	Freshman (N=1201)		Sophomore (N=368)		Junior (N=356)		Senior (N=470)		
	M	SD	M	SD	M	SD	M	SD	
Mobile Phone Addiction	2.54	0.70	2.71	0.75	2.77	0.79	2.68	0.75	12.42***
Uncontrollability	2.39	0.73	2.54	0.78	2.63	0.84	2.51	0.78	10.584***
Withdrawal	2.49	0.87	2.77	0.89	2.78	0.93	2.70	0.90	17.486***
Avoidance	2.91	0.98	2.91	0.97	2.98	1.01	2.91	0.96	0.51
Ineffectiveness	2.64	0.97	2.88	0.98	2.88	1.01	2.91	1.04	13.229***

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

As shown in Table 11, there are significant differences in the total Mobile Phone Addiction scores of students in different grades, as well as in the dimensions of Uncontrollability, Withdrawal, and Ineffectiveness. Freshmen students had the lowest Mobile Phone Addiction scores and juniors had the highest Mobile Phone Addiction scores. Further two-by-two comparisons using the LSD method showed that the total Mobile Phone Addiction scores of freshmen students were significantly lower than those of the other three grades, while there was no significant difference between the two-by-two between sophomores, juniors, and seniors. On the specific dimensions, the performance of Withdrawal and Ineffectiveness dimensions was completely consistent with the total Mobile Phone Addiction score. As for the Uncontrollability dimension, the scores of the junior students were significantly higher than those of the senior students, except that the scores of the freshmen students were significantly lower than those of the students of the other three grades.

In addition to this, this study also analyzed the differences in Mobile Phone Addiction and the dimensions among college students who are only child, in a relationship or not, and from a single-parent family by using independent samples t-test, and found that none of them were significantly different from each other.

V. Conclusion

There is a certain severity of Mobile Phone Addiction status of students in five universities in Shaanxi Province, and 17.62% meet the diagnostic definition of Mobile Phone Addiction, but overall the level of Mobile

Phone Addiction is in the middle to lower range. From the perspective of different background variables, college students show a certain degree of variability in Mobile Phone Addiction.

5.1 Gender

There is no significant difference between male and female students on Mobile Phone Addiction, but they differ on specific dimensions. Male students scored higher on Uncontrollability and may be more inclined to spend a lot of time using their cell phones without self-control, while female students scored higher on Avoidance and may be more inclined to use their cell phones to avoid real problems. This is basically consistent with the findings of Huang Mengru (2021) and Zhang Guilin (2021).

5.2 Family Location

College students whose home location is rural have significantly higher scores on Mobile Phone Addiction than those whose home location is urban, especially on the Uncontrollability and Ineffectiveness dimensions, reflecting that rural college students are more likely to spend a great deal of time using their mobile phones without being able to control themselves, and that excessive use of their mobile phones affects their daily studies, life, and so on. This may be related to the fact that rural college students may face more pressure or lack of effective supervision.

5.3 Academic Achievement Level

College students with excellent academic performance scored significantly lower on Mobile Phone Addiction than those with average academic performance, especially on the Uncontrollability dimension. This suggests that students with better academic performance may be better at controlling their cell phone usage time.

5.4 Parents' education level

College students whose at least one parent had attended college scored significantly lower on Mobile Phone Addiction than those whose neither parent had attended college, and there were significant differences in the Uncontrollability, Avoidance, and Ineffectiveness dimensions. This reflects the influence of family educational background on college students' Mobile Phone Addiction behavior.

5.5 School

There are significant differences in the total Mobile Phone Addiction scores and specific dimensions among students from different schools. The total Mobile Phone Addiction scores of students from Xi'an University

of Technology were significantly lower than those of several other schools, while students from Northwest University of Political Science and Law, Xi'an University of Architecture and Technology, and Weinan Teachers College scored higher. This may be related to factors such as campus culture and learning atmosphere in different schools.

5.6 Specialty Categories

There were also significant differences in Mobile Phone Addiction scores among students in different Specialty Categories, with students majoring in Natural Sciences having the highest scores and students majoring in Arts and Sports having the lowest scores. In terms of meeting the diagnostic definition of Mobile Phone Addiction, students majoring in humanities and social sciences had the highest probability of Mobile Phone Addiction at 19.9%, and students majoring in arts and sports had only 9.7% Mobile Phone Addiction, which may be related to the learning styles and stress levels of students in different majors.

5.7 Grade Level

There were also significant differences in total Mobile Phone Addiction scores and specific dimensions among students of different grades. Freshman students had the lowest scores and juniors had the highest scores. In line with the diagnostic definition of Mobile Phone Addiction, also consistent with the performance of the total score of Mobile Phone Addiction, freshmen students have only 14.57% can be diagnosed as Mobile Phone Addiction, with the increase of grade, college students in the Mobile Phone Addiction situation is also increasingly serious, to the third and fourth year when the probability of Mobile Phone Addiction reached 21.91%, 21.06%, respectively. This may be related to the first-year students' discomfort with the new environment when they first enrolled in school and the more academic and employment pressures faced by junior and senior students. The results of Yu Sha et al. (2021) and Huang Mengru (2021) showed that the degree of Mobile Phone Addiction was the most serious among the fourth-year students, which is slightly different from the present study, probably due to the sample, but both of them can prove that the probability of Mobile Phone Addiction is gradually increasing with the advancement of grades.

5.8 Other Factors

Factors such as whether or not they are only child, whether or not they are in a relationship, and whether or not they come from a single-parent family do not have a significant effect on Mobile Phone Addiction among college students. This suggests that Mobile Phone Addiction behavior may be more related to personal traits, study pressure, family background and other factors, and less related to these social factors.

In summary, college students' Mobile Phone Addiction behavior is influenced by a variety of factors, including gender, home location, academic performance, parents' education level, school and major categories,

and grade level. In order to effectively prevent and intervene in college students' Mobile Phone Addiction behavior, it is necessary to consider these factors comprehensively and take corresponding measures to guide college students to use mobile phones reasonably and improve their self-control ability.

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The Development and Practice of Management of Technology in China under the Context of Digital Economy

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Abstract

Purpose – This paper examines the evolution, current practices, and future directions of Management of Technology (MOT) in China within the digital economy, highlighting the impact of digital transformation on innovation, organizational design, and strategic decision-making.

Design/Methodology/Approach – Using literature review, policy analysis, and case studies of leading enterprises, the study investigates how emerging digital technologies reshape MOT models and operational frameworks.

Findings – China's MOT has shifted from manufacturing-focused approaches to innovation-driven, data-enabled, and ecosystem-oriented models. Significant opportunities arise from artificial intelligence, big data, blockchain, and the industrial internet. However, major challenges persist, including shortages of interdisciplinary talent, complex data governance, and geopolitical technology decoupling.

Research Implications – Effective MOT in the digital era requires integrated strategies that align technological capabilities with managerial innovation and societal needs. The findings offer practical guidance for policymakers, enterprises, and academic institutions on strengthening MOT capacity through coordinated policy support, talent development, and cross-industry collaboration to sustain global competitiveness.

Keywords: Management of Technology, Digital Economy, China, Innovation Management, Industry 4.0
JEL Classifications: O3,O5,L8,P3

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I. Introduction

The 21st century has been marked by the emergence of a global digital economy, characterized by the integration of advanced digital technologies—such as artificial intelligence (AI), big data analytics, blockchain, cloud computing, and the Internet of Things (IoT)—into nearly all sectors of production and services. These technologies are not merely auxiliary tools; they are redefining the logic of competition, the structure of industries, and the way organizations generate value.

In China, the digital economy has grown into a critical driver of national economic development. According to the China Academy of Information and Communications Technology (CAICT, 2024), the digital economy contributed over 40% of China's GDP in 2023, a proportion that is expected to rise steadily in the coming decade. This transformation has not only accelerated industrial upgrading but also reshaped the strategic priorities of both private enterprises and public institutions.

The Management of Technology (MOT)—broadly defined as the discipline and practice of managing technological resources and capabilities to achieve competitive advantage—has consequently undergone a profound evolution. Traditionally focused on R&D management, manufacturing optimization, and technology assimilation, MOT in the digital era encompasses new dimensions such as data-driven innovation, platform governance, digital ecosystem coordination, and cybersecurity management.

The purpose of this paper is threefold:

Historical Analysis – To examine how MOT in China has evolved over the past four decades, especially in response to globalization, industrial policy, and technological change.

Current Practices – To explore how Chinese enterprises manage technology under the influence of digital economy forces.

Future Prospects – To assess challenges, opportunities, and strategic directions for MOT in the next phase of China's economic transformation

II. Theoretical Framework and Literature Review

2.1 Conceptualizing Management of Technology

The concept of Management of Technology (MOT) has undergone substantial theoretical and practical evolution since it first emerged as a formalized discipline in the late 20th century. While technology management practices existed in various forms prior to the 1980s, the term "MOT" was explicitly institutionalized following the publication of the National Research Council's seminal definition in 1987, which framed MOT as "the integration of engineering, science, and management disciplines to plan, develop, and implement technological capabilities to shape and accomplish the strategic and operational objectives of an organization" (National Research Council, 1987, p. 3). This definition emphasized technology primarily as a

tangible and codifiable resource—machinery, physical infrastructure, patents, and manufacturing processes—reflecting the industrial manufacturing emphasis of that era.

However, by the early 1990s, scholars began to recognize that technological capability extends beyond physical artifacts to encompass organizational routines, human expertise, and knowledge flows. Gregory (1995) advanced a process-oriented conceptualization, framing MOT as an iterative and cyclical process comprising five interdependent stages:

Technology Identification – recognizing emerging technologies with potential strategic value.

Technology Acquisition – obtaining technological assets through internal R&D, licensing, partnerships, or acquisitions.

Technology Development – adapting, improving, and tailoring technologies to fit organizational needs.

Technology Exploitation – deploying and commercializing technologies to create value.

Technology Protection – safeguarding intellectual property and competitive advantage through legal, technical, and strategic measures.

In the pre-digital era, these stages followed relatively predictable timelines, often spanning years or even decades, and were primarily driven by corporate R&D labs and hierarchical decision-making structures. The role of managers was to ensure alignment between technology strategy and corporate goals, while minimizing risks associated with large-scale investments.

The rise of the digital economy, however, has fundamentally altered the conceptual foundation of MOT. Technology is now increasingly seen as an intangible, knowledge-intensive capability embedded in networks of data, algorithms, and human expertise (Teece, 2018). Digitalization has blurred the boundaries between technology development and business operations, as new capabilities—such as real-time data analytics, cloud computing, and artificial intelligence—continuously reshape the way organizations innovate and compete. MOT, therefore, is no longer a static function but a dynamic orchestration process in which technology, business models, and market ecosystems evolve simultaneously.

Modern conceptualizations also emphasize ecosystem thinking. Adner (2017) highlights that in interconnected environments, technological success depends on the alignment of multiple actors—suppliers, complementors, regulators, and end-users—making MOT a systemic coordination challenge. Similarly, Ghezzi and Cavallo (2020) argue that digital transformation requires MOT to be deeply integrated into strategic agility frameworks, enabling firms to reconfigure technological capabilities in response to fast-changing environments.

2.2 Digital Economy's Impact on MOT

The digital economy—defined by the OECD (2020) as "economic activity that relies on digital inputs, including digital technologies, digital infrastructure, services, and data"—has introduced structural changes that directly reshape MOT practices. These changes can be grouped into three interrelated domains:

(1) Acceleration of Innovation Cycles

Traditionally, the innovation cycle followed a linear "stage-gate" model, progressing from idea generation to

prototyping, testing, and market launch over extended periods. In the digital economy, however, innovation has become continuous and iterative.

Data-Driven Experimentation: Organizations can now test and refine products in real-time using A/B testing, predictive analytics, and customer feedback loops (Yoo et al., 2010).

Rapid Prototyping: Technologies like 3D printing and low-code development platforms reduce the time and cost of iteration, enabling "fail-fast, learn-fast" approaches.

Shortened Time-to-Market: Digital tools allow companies to compress R&D timelines, as illustrated by the pharmaceutical industry's use of AI to accelerate drug discovery during the COVID-19 pandemic (Zhavoronkov, 2020).

The implication for MOT is that managers must adopt agile governance structures capable of making quick investment and resource allocation decisions, while maintaining long-term strategic coherence.

(2) Platform-Based Collaboration

Digital platforms—such as Amazon Web Services, Alibaba Cloud, and Microsoft Azure—have transformed the economics of technology access and collaboration. Cusumano et al. (2019) identify two key mechanisms through which platforms reshape MOT:

Lowering Entry Barriers: Small and medium-sized enterprises (SMEs) can leverage shared infrastructure for computing, AI, and big data without massive capital expenditures.

Enabling Open Innovation: Platforms serve as neutral spaces for multi-party co-creation, where knowledge and technology are shared across organizational boundaries.

In the Chinese context, Alibaba's Taobao and Ant Group ecosystems exemplify how platform-based MOT extends beyond infrastructure provision to actively curate innovation ecosystems, connecting merchants, developers, logistics providers, and financial services.

(3) Data as a Strategic Asset

The shift to data-centric business models has elevated data governance to a core MOT function. Data is now widely recognized as a factor of production on par with capital and labor (Brynjolfsson & McAfee, 2014). The implications for MOT include:

Data-Driven Decision-Making: Integrating data analytics into all stages of technology management—from identification to protection—enables evidence-based strategy formulation.

New Valuation Frameworks: Organizations must develop capabilities to assess the economic value of data assets, incorporating considerations of quality, timeliness, and exclusivity.

Ethics and Regulation: Data usage is increasingly subject to stringent regulations, such as China's Personal Information Protection Law (2021) and the EU's GDPR, requiring MOT managers to incorporate compliance into technology strategies.

2.3 China's Digital Transformation Context

China's digital transformation has unfolded within a state-guided market economy, where government policy

plays a pivotal role in shaping MOT trajectories. Since the mid-2010s, three national strategies have set the direction:

Internet Plus (2015): Integrating internet technologies with traditional industries to enhance productivity, foster innovation, and create new business models.

Made in China 2025 (2015): Upgrading manufacturing capabilities through advanced technologies such as robotics, AI, and the industrial internet.

Digital China (2017): Building nationwide digital infrastructure, promoting e-governance, and accelerating the integration of digital technologies into all sectors.

Scholars such as Liu and Liang (2018) note that these strategies mark a decisive shift from a reliance on technology importation and assimilation—dominant in the 1980s and 1990s—to indigenous innovation and global technology leadership. The transformation is evident in several areas:

Innovation Ecosystems: The rise of hubs such as Shenzhen, Zhongguancun, and Hangzhou has created fertile environments for start-ups, research institutions, and multinational corporations to collaborate.

Digital-First Enterprises: Companies like Alibaba, Tencent, and ByteDance have leveraged data analytics, AI, and platform models to compete on a global scale, influencing not only consumer markets but also MOT best practices.

Industry Upgrading: Manufacturing giants, including Haier and SANY, have deployed IoT-enabled platforms to transition from product-centric to service-oriented business models.

Policy-Driven Open Innovation: Government programs, such as the National Artificial Intelligence Development Plan (2017), provide funding, regulatory support, and talent development to align MOT with strategic national priorities.

Despite these advances, challenges remain. The digital divide between coastal and inland regions persists, limiting the diffusion of advanced MOT practices. Moreover, regulatory tightening on data security and platform governance since 2021 has introduced new compliance complexities for technology managers.

In summary, China's MOT in the digital era operates within a complex interplay of market dynamics, policy directives, and global competitive pressures. The ability to align technological capability development with national strategies, while remaining agile and responsive to digital disruption, will be a defining factor in China's pursuit of technological leadership in the coming decades.

III. The Development and Practice of Technology Management in China in the Context of the Digital Economy

3.1 Early Stage (1980s–1990s): Technology Introduction

The inception of China's Management of Technology (MOT) framework during the early stages of the Reform and Opening policy (initiated in 1978) was fundamentally shaped by the country's urgent need to

modernize its industrial base. At this time, China was transitioning from a centrally planned economy to one that embraced market mechanisms, yet its technological infrastructure lagged far behind advanced economies such as Japan, the United States, and major European nations. Consequently, the primary strategy for MOT in the 1980s and 1990s centered on technology introduction through transfer and assimilation.

Technology transfer during this stage took several forms:

Importation of Machinery and Production Lines: Chinese enterprises imported turnkey manufacturing systems, particularly in high-value sectors such as automotive manufacturing, consumer electronics, and petrochemicals. These imports were often facilitated through government-to-government agreements or through foreign direct investment. For example, Shanghai Automotive Industry Corporation's partnership with Volkswagen in 1984 marked a pivotal moment in the automotive sector.

Joint Ventures with Foreign Firms: To accelerate learning, the Chinese government encouraged joint venture (JV) formations with established multinational corporations. Through JVs, domestic firms gained access not only to advanced machinery but also to managerial expertise, quality control systems, and after-sales service models.

Foundation for Technical Standardization: China began adopting international industrial standards, especially in electronics, telecommunications, and machine tools, to ensure compatibility and to prepare domestic firms for future participation in global supply chains.

Despite these efforts, the innovation process in this era was largely passive. Imported technologies were adapted to fit local production environments rather than being fundamentally improved or reengineered. This adaptation often involved minor modifications in equipment settings or localized sourcing of non-critical components. While such assimilation shortened the learning curve for domestic industries, it also entrenched a dependency on foreign technology providers. MOT functions during this period were primarily administrative—focused on project coordination, technical training, and quality assurance—rather than strategic innovation management. As a result, the capacity for indigenous research and development (R&D) remained weak.

3.2 Growth Stage (2000s): Capability Building

China's accession to the World Trade Organization (WTO) in 2001 marked the beginning of a transformative phase for MOT. The integration into global trade networks not only opened vast export markets but also subjected domestic enterprises to heightened competition from foreign firms. In response, MOT practices began to emphasize capability building over mere technology assimilation.

Key developments in this stage included:

National Science and Technology Programs: Government-led initiatives such as the "863 Program" (National High-Tech R&D Program, launched in 1986) and the "973 Program" (National Basic Research Program, launched in 1997) reached maturity in the 2000s. These programs focused on strategically critical technologies in aerospace, advanced materials, information technology, and biotechnology. MOT in this era required

project managers and policymakers to coordinate multi-year, multi-institutional research efforts, with clear performance benchmarks.

Innovation Demonstration Zones: The creation of National Innovation Demonstration Zones, such as Zhongguancun Science Park in Beijing, promoted triple-helix collaboration between enterprises, universities, and government agencies. This collaboration model required a more complex form of MOT—balancing intellectual property rights, joint funding arrangements, and cross-sectoral knowledge sharing.

Rise of Domestic R&D Leaders: Firms like Huawei, ZTE, and Lenovo emerged as R&D-intensive corporations, investing significant portions of their revenue into proprietary technology development. MOT expanded to encompass intellectual property (IP) portfolio management, technology commercialization strategies, and process innovation frameworks.

Quality Management and Process Upgrades: In line with global standards such as ISO 9001, many Chinese firms adopted systematic quality management processes. This required MOT professionals to integrate technology management with operational excellence methodologies such as Six Sigma and Lean Production.

During this decade, MOT evolved from a primarily operational task into a strategic capability for competitive differentiation. Domestic firms began to selectively import technology not for direct replication, but as a foundation for iterative innovation. Intellectual property rights became a focal point, prompting both legal reforms and corporate strategy shifts toward patent creation and protection.

3.3 Digital Transformation Stage (2015–Present)

From 2015 onwards, the widespread integration of artificial intelligence (AI), cloud computing, blockchain, big data analytics, and the industrial internet has redefined the boundaries of MOT in China. This period coincides with the implementation of national initiatives such as “Made in China 2025” and the 14th Five-Year Plan’s Digital Economy Development Strategy, which explicitly position technology management as a core driver of sustainable economic growth.

Key characteristics of this stage include:

Rise of Digital-Native Enterprises: Companies like Alibaba, Tencent, and ByteDance have pioneered platform-based MOT models, where technological innovation is intertwined with ecosystem governance. These enterprises leverage AI-driven recommendation engines, scalable cloud architectures, and integrated payment solutions to build digital marketplaces with global reach. MOT in such contexts involves managing not just internal R&D, but also partner integration, developer ecosystems, and platform rule enforcement.

Smart Manufacturing Integration: Manufacturing leaders such as Haier have transitioned to IoT-enabled, user-driven production models. Haier’s COSMOPlat platform exemplifies the fusion of cloud-based design, user co-creation, and mass customization, where consumers can influence product configurations in real time. MOT in this paradigm must coordinate hardware, software, and service innovation simultaneously.

Government-Led Open Innovation Ecosystems: The Chinese government has established “national new-generation AI innovation platforms” in collaboration with industry leaders (e.g., Baidu for autonomous driving,

iFlytek for voice recognition). These initiatives foster collaboration between research institutions, startups, and established corporations, requiring MOT to manage multi-stakeholder governance structures and ensure alignment with policy objectives.

Data as a Strategic Asset: Data governance, cybersecurity compliance, and ethical AI deployment have emerged as central MOT challenges. Enterprises are increasingly required to implement frameworks for secure data sharing, cross-border data flow management, and algorithmic transparency.

Overall, the digital transformation stage represents the shift of MOT from a discipline focused on technology deployment to one emphasizing innovation orchestration in complex, data-intensive environments. The speed of technological cycles has accelerated dramatically, requiring MOT frameworks to incorporate agile project management, rapid prototyping, and continuous ecosystem adaptation.

3.4 Digital Innovation Management

In the digital era, innovation management has undergone a fundamental transformation. Traditionally, innovation followed a linear R&D process, often referred to as the "technology push" model, where scientific research generated technological outputs that were subsequently commercialized. However, as digital technologies became ubiquitous, innovation processes have shifted toward data-driven, user-centered, and ecosystem-oriented approaches (Chesbrough, 2003; Yoo et al., 2010).

The data-driven paradigm in innovation management relies heavily on the continuous collection, analysis, and application of large-scale datasets. This approach enables firms to detect subtle shifts in consumer behavior, anticipate market demand, and accelerate iterative product development cycles. Data analytics tools—combined with AI algorithms—allow companies to run rapid A/B testing, optimize product features, and forecast user needs with high precision (Brynjolfsson & McAfee, 2014).

A prominent example of this paradigm is Huawei's "1+8+N" ecosystem strategy. In this model, the "1" represents the smartphone as the central control device; "8" refers to key categories of peripheral devices such as tablets, PCs, wearables, smart TVs, smart audio systems, AR/VR devices, smart speakers, and in-vehicle systems; and "N" stands for a virtually unlimited range of IoT applications and third-party devices. This ecosystem is supported by Huawei's HarmonyOS operating system, Huawei Cloud, and integrated AI capabilities. Through seamless device interconnectivity, the ecosystem ensures that users experience consistent services across devices, while developers gain access to a unified platform for application deployment.

Huawei's innovation management approach is notable for its ecosystem governance model, in which third-party developers, component suppliers, and service providers participate in co-innovation. The firm maintains strategic control over core technologies such as chip design (HiSilicon) and telecommunications infrastructure, while fostering open collaboration on application layers. This dual approach—control over the core and openness at the periphery—allows Huawei to balance proprietary advantages with network effects (Gawer & Cusumano, 2014).

Another example of digital innovation management in China is Baidu Apollo, an open-source autonomous

driving platform launched in 2017. Unlike traditional closed R&D models in the automotive industry, Apollo invites automotive OEMs, parts manufacturers, software developers, and regulators into a collaborative innovation environment. Participants can access open APIs, simulation tools, and sensor data frameworks to develop their own autonomous driving solutions. This approach not only accelerates technological development but also builds an industrial alliance that shares both risk and reward. Baidu leverages its strength in AI algorithms, high-definition mapping, and cloud computing to provide the technological backbone of Apollo, while partners contribute expertise in hardware, vehicle integration, and market deployment.

In both Huawei and Baidu's cases, digital innovation management is no longer confined to internal R&D labs. Instead, it thrives within platform ecosystems that blend in-house capabilities with external contributions, driven by continuous data exchange and collective learning.

3.5 Platform-Based Technology Management

The platform economy represents one of the most significant shifts in technology management under the digital economy. Platforms are not merely intermediaries connecting supply and demand; they function as technological and governance infrastructures that facilitate resource allocation, innovation, and market access (Cusumano et al., 2019).

For small and medium-sized enterprises (SMEs), one of the greatest barriers to adopting advanced technologies—such as AI, big data analytics, and IoT—is the upfront investment in infrastructure and the shortage of specialized technical personnel. Platform-based technology management addresses this problem by democratizing access to capabilities that were once exclusive to large corporations.

Alibaba Cloud (Aliyun) is a prime example of this phenomenon. As the largest cloud service provider in China, Alibaba Cloud offers an extensive suite of tools including Elastic Compute Service (ECS), MaxCompute for big data processing, and PaaS solutions for AI model deployment. SMEs can subscribe to these services on a pay-as-you-go basis, avoiding heavy capital expenditures. Moreover, Alibaba Cloud's AI PAI platform allows businesses with no in-house AI expertise to train and deploy models using pre-built templates.

This "technology-as-a-service" model not only reduces barriers to technology adoption but also creates a positive feedback loop: the more SMEs join the platform, the richer the data pool becomes, enhancing the AI models' predictive power, which in turn attracts more participants. From a technology management perspective, Alibaba operates as both a technology provider and a platform orchestrator, setting standards, ensuring interoperability, and fostering trust among participants.

Another illustrative case is Pinduoduo, a social commerce platform that integrates AI-driven recommendation algorithms into its business model. By analyzing consumer interaction data in real-time, Pinduoduo tailors product suggestions to individual preferences, maximizing conversion rates. This approach extends beyond retail into agricultural supply chains: farmers can use Pinduoduo's platform to directly sell produce to consumers, bypassing intermediaries. AI analytics help predict market demand, optimize pricing strategies, and reduce food waste.

Through such platform-based technology management, the value creation process becomes distributed, with participants across the supply chain contributing to and benefiting from shared technological resources.

3.6 Integration of Emerging Technologies

The integration of multiple emerging technologies—AI, IoT, blockchain, robotics—marks the latest frontier in MOT practice. This integration is not merely a matter of technological layering; it involves strategic orchestration so that each technology complements and enhances the others (Porter & Heppelmann, 2014).

Haier's COSMOPlat exemplifies this integration. Initially launched as an industrial internet platform for manufacturing, COSMOPlat allows customers to customize products in real time. By linking IoT-enabled manufacturing equipment with customer interfaces, the platform ensures that production lines can switch configurations rapidly based on incoming orders. AI algorithms optimize scheduling and resource allocation, while blockchain ensures data integrity and traceability across the supply chain. This approach significantly reduces lead time, enhances customer satisfaction, and strengthens Haier's competitive position in global markets.

JD Logistics offers another case study in technology integration. To meet the demands of rapid e-commerce growth, JD has implemented AI-based demand forecasting, autonomous delivery robots, and blockchain-enabled tracking systems. AI models process vast amounts of sales and inventory data to predict regional demand patterns, enabling pre-positioning of goods in strategically located warehouses. Robotics handle high-volume sorting tasks, increasing throughput and reducing labor costs. Blockchain records every transaction and movement of goods, providing end-to-end transparency that is especially valuable in industries like pharmaceuticals and luxury goods, where authenticity is critical.

In both Haier and JD's cases, the integration of emerging technologies requires sophisticated MOT capabilities:

Cross-functional coordination among engineering, IT, operations, and marketing teams.

Vendor and partner management to ensure interoperability of hardware and software components.

Continuous skill upgrading to keep pace with technological advances.

Ultimately, the competitive advantage lies not in any single technology but in the ability to orchestrate multiple technologies into a coherent, value-generating system.

IV. Challenges in China's MOT under the Digital Economy

While China's Management of Technology (MOT) framework has evolved rapidly in response to the opportunities of the digital economy, a range of complex and interrelated challenges constrain its sustainable development and global competitiveness. These challenges are not only technical but also institutional, cultural, and geopolitical, requiring a multi-dimensional approach to policy formulation, organizational strategy, and

talent development. The key issues can be grouped into four main categories: shortage of interdisciplinary talent; balancing data governance with innovation; navigating geopolitical tensions and technology decoupling; and addressing uneven digitalization between large enterprises and small and medium-sized enterprises (SMEs).

1. Shortage of Interdisciplinary Talent

One of the most persistent barriers to effective MOT in China's digital economy is the shortage of interdisciplinary talent capable of integrating engineering, business strategy, and digital technologies. The digital economy increasingly demands professionals who possess hybrid skill sets—proficiency in areas such as artificial intelligence (AI), blockchain, data analytics, as well as strategic management, organizational change, and cross-cultural communication (Li & Wang, 2021). However, the traditional education system in China remains largely compartmentalized, with engineering and management disciplines often taught in isolation (Zhang & Liu, 2020).

This structural separation results in a talent pool that is either highly technically skilled but lacking business acumen, or strategically competent but technologically underqualified. For example, while China produces a large number of STEM graduates annually, only a fraction have hands-on experience in applying emerging technologies to business scenarios (Chen, 2022). Furthermore, interdisciplinary programs such as MOT master's degrees, though growing in number, have yet to achieve widespread recognition among employers, limiting their ability to attract top-tier candidates.

Global competition exacerbates the problem, as multinational corporations and technology hubs in the United States, Europe, and Southeast Asia often offer more attractive compensation packages, research freedom, and international exposure. This "brain drain" phenomenon further reduces the availability of qualified personnel within China's MOT ecosystem. In the long term, addressing this challenge will require reforms in higher education, increased industry-academia collaboration, and the creation of career pathways that reward interdisciplinary expertise.

2. Balancing Data Governance with Innovation

In the digital economy, data has emerged as a strategic resource comparable to capital and labor (Brynjolfsson & McAfee, 2014). However, managing data effectively within China's MOT framework presents a difficult balance between ensuring robust governance and enabling innovation. On one hand, the government has introduced comprehensive regulations such as the Cybersecurity Law (2017), the Data Security Law (2021), and the Personal Information Protection Law (2021), which aim to protect national security, prevent data misuse, and safeguard individual privacy. These frameworks have been critical in establishing trust in digital systems and mitigating risks related to cyberattacks, fraud, and unauthorized surveillance (Liu & Huang, 2022).

On the other hand, overly restrictive data controls can hinder the free flow of information necessary for innovation, particularly in fields like AI model training, cross-border research collaboration, and platform-based business models. For instance, start-ups and SMEs often lack the resources to comply fully with complex regulatory requirements, which can delay product launches and reduce competitiveness (Sun, 2022).

Moreover, China's approach to data localization—requiring certain categories of data to be stored and processed domestically—creates additional operational complexity for multinational firms operating in China,

potentially discouraging foreign investment and technology transfer (Xie & Zhang, 2021). The tension between security and openness thus represents an ongoing policy challenge: finding a governance model that protects critical interests while fostering an environment conducive to rapid technological experimentation and cross-sector collaboration.

3. Navigating Geopolitical Tensions and Technology Decoupling

Geopolitical dynamics—particularly the escalating competition between China and the United States—pose significant risks to China's MOT under the digital economy. Since 2018, the United States has implemented a series of export controls, investment restrictions, and sanctions targeting Chinese technology companies, most notably in sectors such as semiconductors, telecommunications, and AI (Friedman, 2021). These measures have restricted Chinese firms' access to critical technologies, components, and design software, forcing them to accelerate self-reliance strategies in core technology areas.

For example, the inclusion of Huawei and other firms on the U.S. "Entity List" has disrupted global supply chains and pushed Chinese enterprises to develop indigenous chipsets, operating systems, and enterprise software (Tan, 2022). While this has stimulated domestic R&D investment, it also presents immediate challenges in terms of performance gaps, increased costs, and slower time-to-market compared to competitors with unrestricted global supply chain access.

The broader trend of technology decoupling—fragmenting the global technology ecosystem into competing spheres of influence—threatens the very premise of globalized innovation networks that have historically fueled China's rapid MOT development. Chinese firms may find themselves excluded from certain international standards-setting bodies, joint research initiatives, and overseas markets. As a countermeasure, China has intensified efforts in international cooperation with Belt and Road Initiative (BRI) partner countries, particularly in areas such as 5G infrastructure, e-commerce, and smart manufacturing (Xu, 2023). Nevertheless, the uncertainty created by geopolitical rivalry complicates long-term strategic planning and increases the risk profile for both domestic and foreign stakeholders in China's technology sectors.

4. Uneven Digitalization between Large Enterprises and SMEs

While China's leading technology companies—such as Alibaba, Tencent, and Huawei—are recognized globally for their advanced digital capabilities, the digital transformation of SMEs remains uneven and fragmented. According to a 2022 report by the China Academy of Information and Communications Technology (CAICT), less than 30% of SMEs had adopted advanced digital tools such as cloud computing, industrial IoT, or AI-driven analytics (CAICT, 2022).

The barriers are multifaceted. First, SMEs often face financial constraints that limit their ability to invest in cutting-edge technologies or hire specialized talent. Second, there is a significant knowledge gap, as many SME owners lack awareness of how digital technologies can enhance efficiency, market reach, and customer engagement (Yang, 2022). Third, the return on investment (ROI) for digital transformation projects in SMEs can be uncertain, especially in traditional industries with low margins and long product cycles.

Government initiatives—such as the "SME Digital Empowerment" program launched by the Ministry of Industry and Information Technology (MIIT) in 2021—have sought to close this gap by providing subsidies,

training programs, and access to shared digital platforms. However, implementation challenges persist, including low participation rates in rural and underdeveloped regions, as well as a lack of tailored solutions for sector-specific needs (Li, 2023). Without addressing this digital divide, the broader MOT ecosystem risks becoming polarized, with a handful of highly advanced firms driving national metrics while a vast majority of smaller enterprises lag behind, thereby constraining inclusive economic growth.

The challenges facing China's MOT under the digital economy are multi-layered, spanning talent development, regulatory balance, geopolitical strategy, and equitable digital transformation. Addressing these issues requires coordinated action from policymakers, industry leaders, academic institutions, and international partners. Interdisciplinary education reform, nuanced data governance frameworks, diversified technology partnerships, and targeted SME support programs are all critical for ensuring that China's MOT continues to evolve in a way that is both globally competitive and domestically inclusive.

V. Opportunities and Strategic Recommendations

With the rapid development of the digital economy, China's Management of Technology (MOT) is facing unprecedented opportunities. Effectively seizing these opportunities can not only enhance enterprises' competitiveness but also help achieve the national goals of independent scientific and technological innovation and high-quality economic development. This article puts forward specific strategic suggestions from three levels: policy, enterprise, and academia, aiming to promote the comprehensive upgrading and continuous optimization of China's MOT system.

5.1 Policy Level

At the national level, policymakers should focus on popularizing and optimizing digital infrastructure, especially in relatively underdeveloped economic regions, and promoting fiscal incentive measures for cross-industry collaboration to help form a diversified, open, and win-win innovation ecosystem.

Balanced Regional Development of Digital Infrastructure. Currently, the construction of digital infrastructure in China's eastern coastal areas has achieved remarkable results. Technical conditions such as high-speed broadband networks, 5G network coverage, and data center construction are relatively complete, but there is still a large gap in central and western regions and rural areas (China Academy of Information and Communications Technology, 2024). The existence of the digital divide restricts the digital transformation of small and medium-sized enterprises in these regions and the improvement of their technological innovation capabilities. At the policy level, guidance for investment in digital infrastructure should be strengthened, and social capital should be encouraged to participate in network construction in underdeveloped areas.

One of the core characteristics of the digital economy is the blurring of industrial boundaries and cross-border integration. The government should encourage technical cooperation and innovation experiments

between traditional manufacturing, internet, big data, artificial intelligence and other industries through policies such as financial subsidies and tax incentives. Establish special funds to support cross-industry innovation projects, with priority given to the in-depth integration of digital technology with key fields such as manufacturing, medical care, and finance.Provide tax reductions and exemptions for enterprises participating in innovation alliances, technology transfer, and the construction of sharing platforms. Establish a multi-level innovation voucher system to lower the threshold for small and medium-sized enterprises to obtain technical services and encourage them to participate in open innovation networks. In addition, policymakers need to improve data governance regulations, promote the open sharing of data resources while ensuring security and compliance, and build a healthy legal environment for the digital economy.

5.2 Enterprise Level

As the main body of technological innovation, enterprises need to improve their own MOT capabilities, actively embrace digital transformation, build an agile and flexible management mechanism, and enhance employees' digital skills through internal training to ensure the effective transformation and commercialization of technical achievements.

(1) Adopting Agile Management Frameworks to Improve the Efficiency of Technology Commercialization

In the digital economy, the speed of technological updating is extremely fast, and traditional waterfall-style R&D management can hardly meet market demands. Enterprises should promote agile MOT frameworks to achieve cross-departmental collaboration and rapid iteration. Establish an innovation process centered on customer needs, adopt short-cycle development and continuous feedback mechanisms to ensure the rapid implementation of technical achievements. Apply data-driven decision-making tools to monitor R&D progress and market dynamics in real-time and optimize resource allocation. Cultivate cross-functional teams to promote close cooperation between technology, market, production, and finance departments and eliminate information silos.

(2) Building an Internal Digital Skills Training System for Enterprises

The ability of technical management talents is the key to the success of enterprise MOT. To fill the talent gap, enterprises should establish digital training academies or learning platforms to systematically improve employees' digital literacy and innovation capabilities. Design training courses covering cutting-edge technologies such as artificial intelligence, big data analysis, and cloud computing. Encourage employees to participate in online open courses, industry certifications, and internal enterprise innovation projects. Promote the combination of "mentorship system" and "project-driven learning" to facilitate the in-depth integration of theory and practice. In addition, enterprises should strengthen cooperation with universities and research institutions to jointly cultivate compound talents and improve the level of technological R&D and management.

5.3 Academic Level

The academic community plays an irreplaceable role in cultivating future MOT talents and promoting theoretical innovation. Universities and research institutions should reform the education system around the development needs of the digital economy and build interdisciplinary comprehensive MOT courses and research platforms.

(1) Building an Interdisciplinary MOT Curriculum System.

Traditional engineering management, information technology, and business management courses have strong disciplinary barriers, which are difficult to meet the needs of compound talents in the digital economy. Universities need to integrate engineering, data science, artificial intelligence, business strategy, and innovation management to form a systematic and modular MOT curriculum system.Offer basic courses on digital technology, such as big data processing, machine learning, and cloud computing principles.Add core management content such as technology strategy, innovation management, and data governance.Promote case teaching, experimental training, and school-enterprise joint projects to enhance practical capabilities.

(2) Promoting In-depth Integration of Industry, Education, and Research

Universities should actively build collaborative innovation platforms with enterprises and the government to promote the two-way transformation of technology management theory and practice.Establish MOT joint laboratories to carry out research on smart manufacturing, digital platforms, and innovation ecosystems.Set up technology transfer offices to support the industrialization of scientific research achievements and promote student entrepreneurship and enterprise innovation.Encourage teachers and students to participate in enterprise projects to realize the connection between theory and market demand.

(3) Conducting Cutting-Edge Research to Lead MOT Theoretical Innovation

The continuous evolution of the digital economy brings new challenges to technology management. Universities and research institutions should deepen theoretical discussions on issues such as platform governance, algorithm ethics, and data property rights, and enhance China's academic influence in MOT. Support interdisciplinary research projects focusing on hot directions such as digital ecosystems and open innovation models.Organize international academic exchanges to absorb and integrate the latest global research results.Promote the application of research results in government policy formulation and enterprise practice.

VI .Conclusion

The evolution of Management of Technology (MOT) in China has been remarkable, tracing a path from the initial phases of passive technology absorption in the late 20th century to its current position as a prominent player in global innovation ecosystems. This transformation has been propelled by a unique confluence of government policy, rapid economic development, and increasing integration into the global digital economy. Today, China is not only a major adopter of advanced technologies but also a leading innovator in areas such as

artificial intelligence, industrial internet, and digital platform ecosystems. The trajectory of China's MOT offers important lessons and insights for emerging economies navigating the complexities of digital transformation.

(1) The Historical Transformation of China's MOT

Historically, China's MOT framework was characterized by a focus on technology transfer and assimilation. During the early reform and opening period, the main objective was to bridge the technological gap with developed countries by importing machinery, equipment, and production techniques. The challenge at this stage was predominantly organizational and managerial—how to adapt and integrate foreign technologies within domestic production systems. Despite limitations in indigenous innovation capacity, this period laid the essential groundwork for more advanced technological management capabilities.

With China's accession to the World Trade Organization (WTO) in 2001 and subsequent policy initiatives such as the 863 and 973 Programs, the focus shifted to building domestic capabilities in core scientific and technological domains. Enterprises began investing heavily in research and development, and the MOT discipline expanded to incorporate intellectual property management, process innovation, and collaborative innovation models. This stage witnessed the rise of Chinese multinational enterprises like Huawei, Tencent, and Alibaba, who not only absorbed technology but also started generating proprietary innovations.

The ongoing digital transformation phase, starting around 2015, represents a fundamental redefinition of MOT in China. Emerging digital technologies—AI, cloud computing, blockchain, and IoT—have reconfigured the production and innovation landscape. The concept of MOT has expanded to encompass ecosystem governance, platform strategies, and data-centric innovation. Digital-native companies have become key drivers of this change, pioneering new models of technology management that emphasize openness, agility, and real-time responsiveness. Government-led initiatives further support the creation of innovation clusters and cross-sector partnerships, helping to accelerate technology diffusion and commercialization.

(2) Integrating Technological, Managerial, and Societal Dimensions

The sustained success of China's MOT in the digital economy requires a holistic integration of technological innovation, managerial capacity, and societal considerations. Technologically, the ability to develop and apply frontier technologies remains crucial. This includes not only core technological breakthroughs but also the capability to integrate diverse technologies into coherent solutions tailored to market needs.

From a managerial perspective, MOT demands agility, strategic foresight, and cross-functional coordination. The rapid pace of digital innovation means that traditional hierarchical decision-making processes are often too slow to respond effectively. Agile methodologies, data-driven decision frameworks, and ecosystem collaboration have become essential components of effective MOT. Moreover, enterprises need to foster a culture of continuous learning and adaptability to keep pace with technological disruptions.

Societal dimensions involve the ethical, legal, and social implications of technology deployment. Data governance, privacy protection, cybersecurity, and equitable access to digital resources are areas where MOT strategies must align with societal values and regulatory frameworks. Failure to address these aspects can lead to public distrust, regulatory backlash, and reputational damage, undermining technological progress.

(3) The Role of Policy, Enterprise, and Academia

Policy support remains a fundamental enabler of China's MOT development. National strategies such as "Internet Plus," "Made in China 2025," and "Digital China" have provided clear direction and resources to guide digital transformation efforts. Investment in digital infrastructure, regulatory frameworks for data security, and incentives for innovation collaboration have created a fertile environment for MOT advancement. However, policymakers must continue to balance innovation encouragement with risk mitigation, particularly regarding data governance and international technology cooperation.

Enterprises are the frontline agents of MOT execution. Their ability to embrace agile innovation models, cultivate interdisciplinary talent, and adopt digital tools determines the practical effectiveness of MOT frameworks. Leading Chinese firms have demonstrated that combining entrepreneurial vigor with strategic management can create world-class innovation capabilities. SMEs, however, need targeted support to overcome resource and knowledge constraints, ensuring inclusive technological progress across the economy.

Academic institutions play a dual role of talent development and theoretical advancement. Expanding interdisciplinary MOT education that integrates engineering, data science, and business strategy is essential to supply the skilled professionals required by enterprises and governments. Furthermore, academia must engage in cutting-edge research on digital innovation management, ecosystem governance, and the socio-technical implications of emerging technologies, informing evidence-based policy and corporate strategies.

VII. Future Prospects and Challenges

Looking forward, the trajectory of China's MOT is promising but also faces significant challenges. The ongoing geopolitical tensions and global technology decoupling pose risks to supply chain security and international cooperation. Developing robust indigenous technologies, while maintaining openness to global innovation networks, will be a delicate balancing act.

Talent development remains a priority, especially in cultivating interdisciplinary professionals who can bridge technical and managerial domains. Addressing regional disparities in digital infrastructure and SME digitalization will also be critical to avoid exacerbating economic inequalities.

Finally, as digital technologies become increasingly pervasive, MOT strategies must prioritize responsible innovation that incorporates ethical considerations, data privacy, and social inclusiveness. This will require stronger collaboration between technologists, managers, policymakers, and civil society.

In sum, China's MOT has undergone a profound transformation from technology absorption to innovation leadership under the impetus of the digital economy. This evolution reflects China's ability to integrate policy guidance, enterprise dynamism, and academic support into a coherent framework for managing technological change. The future success of China's MOT depends on continuing this integrative approach, balancing rapid technological advancement with sound management practices and societal responsibility. By doing so, China is well-positioned to sustain its role as a global leader in technology innovation and contribute meaningfully to

shaping the digital economy worldwide.

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A Study on Strategies for "Top Leaders" to Fulfill Their Responsibilities in Compliance with the Law

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Abstract

Purpose – The purpose of this paper is, in response to the complexity of governance scenarios in the new era, the lack of precision in the legal methods of the "top leader" and the need to improve the adaptability of decision-making procedures, this study explores legal performance strategies that define the boundaries of the rule of law, balance effectiveness and procedures, and transform legal thinking into practical effectiveness in complex situations.

Design/Methodology/Approach – Based on the comprehensive rule of law, responsibility theory, and power balance theory, combined with domestic and international research trends and local practices, this study conducts research from four dimensions: institutional optimization, supervision innovation, cultural reconstruction, and localization of international experience.

Findings – This paper studies clear lists of rights and responsibilities, diverse supervision, digital empowerment, and other key paths have reference value for domestic and foreign experiences in empowering legal decision-making and collaborative participation through technology. Local practices have formed a pattern of institutional construction and local innovation support.

Research Implications – In the management responding to the higher requirements of rule of law construction, promoting the formation of a scientific power operation system, meeting the expectations of the masses for high-quality governance, and providing practical support for the construction of a rule of law government and the modernization of national governance.

Keywords: "top leader", perform its functions in accordance with the law, Power constraint, government by law
JEL Classifications: M1, K2,D2

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I. Introduction

1. Research Background and Problem Proposal

In the context of the new era, the strategy of comprehensively governing the country according to law is being deeply promoted. The report of the 20th National Congress of the Communist Party of China clearly deployed the important task of "solidly promoting administration according to law", and the "Implementation Outline for the Construction of a Rule of Law Government (2021-2025)" listed "regulating the operation of administrative power" as the core content of the construction of a rule of law government. As the core leader of governance units at all levels, the level of legal performance of the "top leader" has become a core indicator for measuring the quality and effectiveness of the construction of a rule of law government. In the process of accelerating the modernization of the national governance system and governance capacity, the depth of the rule of law thinking and the degree of standardized performance of the "top leaders" directly affect the actual effectiveness of policy implementation, the rigidity of institutional execution, and the quality of public service supply. At present, various regions have taken measures such as systematic legal training and refined institutional constraints to promote the "top leaders" to take the lead in respecting, abiding by, and using the law, continuously improving the transparency and credibility of power operation, and laying a solid legal foundation for high-quality economic and social development(Ma Jijia,2024).

With the increasing complexity of governance scenarios and the comprehensive deepening of digital transformation, the performance of "top leaders" is facing more refined legal requirements. In practice, there are situations in some regions where the precision of the application of legal methods is insufficient, and the adaptability between decision-making procedures and governance practice needs to be enhanced. How to accurately define the boundaries of the rule of law in complex governance situations, how to achieve an organic balance between efficiently advancing governance tasks and strictly following legal procedures, and how to effectively transform legal thinking into practical effectiveness in solving people's pain points have become important topics that urgently need to be explored. In depth research on the legal performance strategies of the "top leaders" is not only an inevitable choice to respond to the higher requirements of the rule of law construction in the new era, but also to promote the formation of a power operation system with scientific decision-making, resolute execution, and strong supervision, and better meet the practical needs of the people's expectations for high-quality governance services.

2. Research Review

2.1 Domestic research trends

In the context of the new era, the strategy of comprehensively governing the country according to law is advancing in depth. The report of the 20th National Congress of the Communist Party of China clearly

deploys the important task of "solidly promoting administration according to law", and the "Implementation Outline for the Construction of a Rule of Law Government (2021-2025)" lists "regulating the operation of administrative power" as the core content of the construction of a rule of law government. As the core leader of governance units at all levels, the legal performance level of the "top leader" has become a core indicator for measuring the quality and effectiveness of the construction of a rule of law government. In the process of accelerating the modernization of the national governance system and governance capacity, the depth of its rule of law thinking and the degree of its performance standards are directly related to the actual effectiveness of policy implementation, the rigidity of institutional execution, and the quality of public service supply. At present, various regions have taken practical measures such as systematic legal training and refined institutional constraints to promote the "top leaders" to take the lead in respecting, abiding by, and using the law, continuously improving the transparency and credibility of power operation, and laying a solid foundation of the rule of law for high-quality economic and social development.

With the increasing complexity of governance scenarios and the comprehensive deepening of digital transformation, the performance of "top leaders" is facing more refined legal requirements. In practice, there are some areas where the precision of the application of legal methods needs to be improved, and the adaptability of decision-making procedures to governance practice needs to be further optimized. How to accurately define the boundaries of the rule of law in complex governance situations, how to achieve an organic balance between efficiently advancing governance tasks and strictly following legal procedures, and how to effectively transform legal thinking into practical effectiveness in solving people's pain points have become important topics that urgently need to be explored. In depth research on the legal performance strategies of the "top leaders" is not only an inevitable choice to respond to the higher requirements of the rule of law construction in the new era, but also to promote the formation of a power operation system with scientific decision-making, resolute execution, and strong supervision, and better meet the practical needs of the people's expectations for high-quality governance services.

2.2 Research Trends Abroad

The research on the lawful performance of core leaders in public governance by foreign academia has long focused on the synergistic optimization of legal framework and governance effectiveness, forming a research framework that combines theoretical depth and practical value. Against the backdrop of the continuous deepening of the New Public Management movement, European and American countries attach great importance to regulating the exercise of power by core leaders through institutionalized design. For example, the UK's Ministerial Code of Conduct clearly defines the statutory responsibilities of cabinet members, and New Zealand's Public Service Act establishes a statutory responsibility list system for leadership performance, embedding the rule of law requirements into the entire decision-making process. At the same time, some countries focus on ensuring the standardization of performance through independent supervision mechanisms. Sweden's parliamentary supervisory commissioner system and Canada's administrative judicial review system

provide regular external constraints for core leaders to exercise their power in accordance with the law, and relevant practices provide important references for the legalization of power operation.

In recent years, foreign research has shown a new trend of technological empowerment and diverse collaboration. In response to the demand for digital governance transformation, Singapore's "Smart Nation" strategy has incorporated the rule of law decisions of core leaders into the digital government platform. Through blockchain technology, the decision-making process is tracked and compliance is automatically verified, effectively enhancing the transparency of job performance. Nordic countries have explored a collaborative model of "rule of law+public participation", while Norway has adopted an open decision-making system that allows core leaders to fully incorporate public legal opinions in major decision-making, strengthening the foundation of the rule of law and enhancing governance recognition. Currently, foreign research is expanding from a single power constraint to a three-dimensional goal of "standardization efficiency recognition". Its experience in the refined use of legal tools and the empowerment of legal decision-making through technology provides useful references for improving the legal performance system of "leaders".

2.3 Review of Domestic and Foreign Research

The research in the domestic academic community on the lawful performance of duties by the "top leader" presents distinct policy guidance and practical innovation characteristics, forming a research pattern of mutual support between institutional construction and local exploration. The research closely follows the strategic deployment of comprehensively governing the country by law, deeply elaborates on the leading role of the "key few" in the construction of the rule of law, and constructs a closed-loop system for implementing responsibilities through analyzing mechanisms such as legal evaluation, assessment, and accountability. In local practice, the on-site legal mechanism in Xinjiang and Guangxi, as well as the digital decision-making reconstruction in Zhejiang, have provided fresh samples for theoretical research, especially in the cultivation of legal thinking and the transformation of governance efficiency, which have made breakthrough progress(Ma Zhimin,2024). Existing research focuses on translating policy requirements into actionable practical paths, providing systematic local solutions for "leaders" to perform their duties in accordance with the law. However, there is still room for further research on the adaptability of the rule of law in complex governance scenarios.

Foreign research focuses on the legal framework and technological empowerment for core leaders to fulfill their duties, forming a research tradition that emphasizes both institutional constraints and diverse collaboration. The legal responsibility lists and independent supervision mechanisms in European and American countries have established rigid norms for the exercise of power; The digital government platform in Singapore and the public participation model in Northern Europe demonstrate the innovative application of technology empowerment and democratic consultation in the performance of the rule of law. These studies focus on optimizing the performance system from the three dimensions of "standardization efficiency recognition", accumulating valuable experience in refining legal tools and making decision-making processes transparent. Although there are differences in governance contexts between China and foreign countries, the exploration of

technology empowering legal decision-making and multi-party collaborative participation abroad provides an important cross domain reference for the strategic innovation of China's "top leaders" to fulfill their duties in accordance with the law.

II. Theoretical sorting

1. Comprehensive Theory of Rule of Law

The report of the 20th National Congress of the Communist Party of China clearly proposes to comprehensively build a socialist modernized country on the track of the rule of law, elevating the comprehensive rule of law to the strategic height of modernizing the national governance system and governance capacity(Zhang Xiangjun,2025). This theory is fundamentally guided by the Constitution and carried out through the socialist legal system with Chinese characteristics. Through the organic unity of scientific legislation, strict law enforcement, fair judiciary, and universal compliance, it constructs a three-dimensional governance framework of "Party leadership, people's subjectivity, institutional guarantee, and practical innovation".

The core essence of comprehensively governing the country by law is to incorporate the entire field and process of national governance into the track of the rule of law, regulate the exercise of power, safeguard people's rights and interests, and maintain social order through the rule of law. This has fundamental guiding significance for the "top leaders" to perform their duties in accordance with the law(Chen Xinyong,2023). Its connotation is reflected in the "Three Adherences": adhering to the path of socialist rule of law with Chinese characteristics, emphasizing the unity of the leadership of the Party and the status of the people as the main body, and requiring the "top leaders" to not only inherit the excellent traditional legal culture of China based on the national conditions, but also draw on the achievements of modern rule of law civilization to form a practical model of rule of law practice that is in line with reality; Around the protection and promotion of social fairness and justice, by improving the legal system, regulating law enforcement and judicial procedures, ensuring equal rights and obligations, and balancing opportunities and resources, the "top leaders" need to use this as a guideline to make the rule of law the "ballast stone" for maintaining social harmony and stability; Adhere to the integrated construction of a rule of law country, a rule of law government, and a rule of law society, and form a governance loop of "scientific legislation leading reform, strict law enforcement guaranteeing implementation, fair judicial division and dispute resolution, and consensus building for the whole nation to abide by the law"(Wang Yang,2024). As stated in the Implementation Outline for the Construction of a Rule of Law Government (2021-2025), government actions should be fully incorporated into the rule of law track, and the "top leaders" should take the lead in implementing the list of rights and responsibilities system, deepening the reform of "streamlining administration, delegating powers, and improving services", and transforming the concept of rule of law into practical governance effectiveness.

The systematic and collaborative nature of the theory of comprehensive rule of law emphasizes the joint promotion of rule of law, governance by law, and administration by law, and the coordinated development of various rule of law systems. The Third Plenary Session of the 20th Central Committee of the Communist Party of China deployed the improvement of the socialist rule of law system with Chinese characteristics, requiring the strengthening of the linkage and coordination of various links, and the "top leader" needs to coordinate the efforts of various links. Its practicality and innovation are guided by solving practical problems and addressing development challenges through the rule of law. The relevant systems proposed in the "Plan for Building a Rule of Law China (2020-2025)" provide guidance for the "top leaders" to solve difficult problems. Its people-oriented and inclusive requirements require the "top leader" to bring the benefits of the rule of law to the masses, and the practice of Daicun in Linyi, Shandong is an example.

Comprehensively governing the country according to law provides institutional guarantees for reform and development, and the "top leaders" should implement relevant regulations to build a solid legal foundation for the business environment; In enhancing the efficiency of national governance, the "top leader" needs to regulate the exercise of power and transform the rule of law into effective conflict resolution; To promote the modernization of governance capacity, the "top leaders" should learn from successful mechanism experiences and integrate legal thinking throughout the entire process of work; To assist in the great rejuvenation of the Chinese nation, the "top leaders" need to implement relevant arrangements and take proactive actions in areas such as foreign-related rule of law.

The theory of comprehensive rule of law provides fundamental guidance for the "top leaders" to perform their duties in accordance with the law, and its value lies not only in institutional construction, but also in shaping a consensus on the rule of law culture. From the practice of various reforms and legal implementation, the rule of law is the optimal choice for governing the country. As the "key minority" of rule of law construction, "top leaders" need to deeply understand the essence of theory, run the rule of law thinking through governance, and promote the implementation of "good law and good governance" by performing their duties in accordance with the law, so as to inject legal impetus into Chinese path to modernization.

2. Responsibility Theory

The theory of responsibility, as the core support of modern rule of law governance system, has the core meaning of the equal unity of power and responsibility, which deeply interprets the governance logic of "where there is power, there is responsibility, where power is supervised, and where dereliction of duty is held accountable"(Si Qin,2024). In the context of the era of comprehensive rule of law, this theory puts forward fundamental requirements for the "top leader" to perform their duties - while mastering important decision-making, command, and overall planning powers in their respective regions and fields, they must simultaneously assume corresponding legal, political, and performance responsibilities. Through precise matching of responsibilities and powers, a closed-loop constraint of the entire process of power operation is formed to ensure that power always operates in a standardized manner on the track of the rule of law(Liu Lingguang,

Zhou Yichen.,2021)

Its connotation can be refined into three dimensions: firstly, the rigid constraint of legal responsibility, that is, the performance of duties by the "top leader" must strictly follow the clear provisions of the Constitution, laws, and administrative regulations, as required by the "Implementation Outline for the Construction of a Rule of Law Government (2021-2025)". Through the system of rights and responsibilities list, the responsibility boundaries, scope of performance, and exercise of power of the "top leader" are institutionalized, achieving the goal of "not authorized by law, and must fulfill legal responsibilities"; The second is the comprehensive coverage of job responsibilities, covering the entire governance process of scientific decision-making, effective supervision of execution, and public evaluation of results. For example, the composite mechanism of "legitimacy review+democratic decision-making+risk assessment" is a systematic regulation of decision-making responsibilities(Song Quanhao,2023); The third is the value orientation of people's livelihood responsibility, which requires the "top leader" to take the satisfaction of the masses as the fundamental criterion for fulfilling responsibility. Daicun in Linyi, Shandong, has implemented the "step-by-step work method" to provide legal services and compacted governance responsibilities through "microgrids", achieving a continuous practice of "zero petitions" for 20 years, which is a vivid portrayal of the implementation of people's livelihood responsibility.

The theory of responsibility has distinct characteristics: the unity of legality and politics, which not only clarifies the boundaries of responsibility through legal provisions, but also strengthens political responsibility under the leadership of the Party. For example, the report of the 20th National Congress of the Communist Party of China emphasizes the organic unity of "governing the country according to law and governing the Party according to rules", providing political guidance for the fulfillment of responsibilities; The combination of comprehensiveness and precision not only covers the decision-making, execution, and supervision of power operation in all areas, but also achieves accountability through mechanisms such as "dual responsibility for one position" and "hierarchical responsibility", avoiding the virtualization and idling of responsibilities; The connection between dynamism and long-term effectiveness, with the iterative upgrading of policy documents such as the "Plan for Building a Rule of Law China (2020-2025)" and the "Report of the 20th National Congress of the Communist Party of China", the responsibility system continues to adapt to governance needs, forming a normalized responsibility management mechanism.

The practical role of this theory is to construct a scientific power constraint mechanism. By clarifying the list of responsibilities, improving the accountability procedures, and strengthening the application of results, it guides the "top leaders" to actively integrate legal thinking into the entire process of fulfilling their duties. In 2024, the high completion rate of 82.1% of administrative reconsideration cases and 90.3% of mediation cases nationwide were achieved, which is the effective regulation of administrative behavior by the responsibility supervision mechanism. Its deep significance lies in consolidating the responsibility foundation of rule of law governance, promoting the transformation of "top leaders" from "power oriented" governance to "responsibility oriented" governance, ensuring compliance of decision-making, effective implementation and effective supervision by performing responsibilities, and providing a solid responsible governance support for promoting

the modernization of the national governance system and governance capability and realizing Chinese path to modernization.

3. Theory of checks and balances of power

The theory of checks and balances of power is an important cornerstone of the governance system of modern rule of law countries. Its core meaning is to scientifically allocate power subjects, standardize the process of power operation, and construct a diversified supervision mechanism, forming a governance pattern in which different power subjects both constrain and cooperate with each other, ensuring that power operates in a standardized manner on the track of the rule of law(Wu Fengrong,2024). In the context of comprehensive rule of law, this theory provides important institutional design logic for the "top leader" to perform their duties in accordance with the law, emphasizing the use of systematic mechanisms to prevent excessive concentration of power and ensure scientific decision-making and standardized execution.

Its connotation can be developed from three dimensions: first, the reasonable division of power structure, under the governance framework of party committee leadership, government responsibility, and social coordination, clarifying the boundaries of the rights and responsibilities of the "top leader" in the decision-making, execution, and supervision links, such as the mechanism of "division of powers, division of positions, and hierarchical authorization" required by the Implementation Outline of the Rule of Law Government Construction (2021-2025)(Chen Wu,2023); The second is the rigid constraint of procedural justice, which regards public participation, expert argumentation, risk assessment, legitimacy review, and collective discussion and decision-making as necessary procedures for major decisions. The "legitimacy review+democratic decision-making" mechanism established in Linyi City is a typical practice(Jin Xiaoyan,Chen Huixian,2023); The third is the coordinated efforts of the supervision system, integrating multiple forces such as intra party supervision, people's congress supervision, judicial supervision, and mass supervision, forming a comprehensive power supervision network. The high completion rate of 82.1% of administrative reconsideration cases nationwide in 2024 confirms the effectiveness of the supervision mechanism.

The theory of checks and balances of power has distinct characteristics: firstly, it unifies systematicity and holism, emphasizing both the internal constraints of a single power subject and the external coordination of different power systems; Secondly, combining legality with practicality, clarifying the rules of checks and balances based on constitutional laws, and dynamically optimizing the checks and balances mechanism through practical reforms such as "streamlining administration, delegating powers, and improving services"; Thirdly, the integration of constraints and guarantees ensures that while regulating the exercise of power, the "top leader" can efficiently perform their duties in accordance with the law, avoiding excessive constraints that may affect governance effectiveness.

The function of this theory is to construct a scientific power operation mechanism, by clarifying the list of rights and responsibilities, improving decision-making procedures, strengthening supervision and accountability, guiding the "top leader" to exercise power within the framework of the rule of law, and

enhancing the scientificity and credibility of decision-making. Its profound significance lies in consolidating the institutional foundation of modernization of national governance, promoting the transformation of the "top leader" from "individual led" to "institutional led", and using power balance to ensure that power is used for the people. This is not only the specific practice of implementing the deployment of the Third Plenary Session of the 20th CPC Central Committee to "improve the socialist system of rule of law with Chinese characteristics", but also can provide a stable and orderly power governance environment for Chinese path to modernization and highlight the fundamental guarantee role of the rule of law in national governance.

III. Governance strategy

1. System optimization

Institutional optimization is the core support for ensuring that the "top leader" performs their duties in accordance with the law. By scientifically designing the power operation mechanism, a rigid constraint is formed to standardize the performance of duties, which is highly consistent with the policy orientation of comprehensively governing the party strictly and strengthening power constraints.

Improving the system of power allocation is the foundation, and it is necessary to accurately define the boundaries of the rights and responsibilities of the "top leader". On the one hand, the mechanism of "deputy head in charge, chief supervisor, and collective decision-making" is implemented. In key stages such as major project approval, the deputy head in charge is responsible for preliminary research and plan formulation, while the "top leader" focuses on review and supervision. Ultimately, consensus is formed through collective decision-making by the team to avoid excessive concentration of power(Yu Hao,2024). On the other hand, in accordance with the requirements of the Implementation Outline for the Construction of a Rule of Law Government (2021-2025), a refined list of powers and responsibilities should be formulated, clarifying the power matters, operational processes, and corresponding responsibilities of the "top leader", and stipulating that they do not directly manage high-frequency risk areas such as personnel and finance, achieving equal rights and responsibilities and bounded performance of duties.

Establishing a sound collaborative supervision system is crucial, and it is necessary to build a diverse and interconnected supervision network. Strengthen the independence of intra party supervision, grant direct supervision authority to discipline inspection commissions at the same level, establish a dual reporting system to ensure smooth information flow; Enhance the targeted supervision of the National People's Congress, focusing on monitoring the use of financial funds, the promotion of major projects, and other performance through special inquiries, inspections, and other methods(Sun Jun,2023); Smooth the channels for social supervision, improve the mechanisms for reporting and feedback as well as public opinion supervision, implement dedicated personnel supervision and time limited response to public feedback clues, and form a comprehensive supervisory force(Yang Yunbo,Zhang Yaoyao,2024).

Strengthening the standardized accountability system is a guarantee, and it is necessary to establish a

closed-loop responsibility implementation mechanism(He Wanrong,2022). Strictly standardize accountability procedures, clarify accountability subjects, situations, and operational processes, and ensure precise and standardized accountability; Implement the requirement of "double investigation of one case", and hold both direct responsibility and leadership responsibility accountable for improper performance of duties; Except for confidential matters, publicly disclose the results of accountability and rectification, and play a warning and educational role.

Refine the power decomposition system in key areas, and improve the process separation mechanism in key areas such as personnel appointment and removal, and fund approval. The personnel appointment and removal process is separated from the "nomination inspection voting" stage, and the approval of major projects is decentralized throughout the entire process of "project initiation bidding acceptance". The "top leader" focuses on supervising the compliance of the process and ensuring the standardized operation of power from the perspective of institutional design.

2. Supervising Innovation

Supervising innovation is a standardized approach that requires the integration of technological empowerment and mechanism innovation, the construction of a comprehensive performance guarantee system, and a high degree of alignment with policy requirements such as digital government construction and deepening government transparency.

Using big data technology to achieve dynamic monitoring, laying a solid foundation for precise supervision. Build a digital monitoring platform for the exercise of power by the "top leader", integrate core performance data such as personnel appointment and removal, fund approval, etc., and track the trajectory of power exercise in real time. Relying on intelligent algorithm models to identify abnormal fund associations, overdue approval processes, and other performance deviations, and automatically push warning information; Build a risk assessment model based on historical performance data, accurately target key areas such as engineering bidding and land transfer, enhance supervision targeting, and respond to the development direction of "data empowered governance" in digital government construction.

Promoting transparent government affairs is a core measure to enhance the transparency of job performance. Except for confidential matters, major decisions and financial allocations led by the "top leader" are timely made public through government websites and government apps, and a visualized system for the entire process of power operation is constructed to achieve traceable decision-making and approval processes(Wang Xiangtao,2024). Improve the mechanism for public participation, implement an online response system for decision-making in the field of people's livelihood, promote standardization through openness, and implement the requirements of the "Regulations on the Disclosure of Government Information" to deepen government transparency(Yu Hao,2024).

Cross departmental collaborative supervision needs to break down barriers and form a joint force. Led by the Discipline Inspection Commission and the Supervisory Commission, a collaborative supervision group

has been established in conjunction with the National People's Congress, auditing and other departments to strengthen linkage through monthly clue notifications and quarterly joint assessments; Establish a supervision information sharing platform to achieve real-time data exchange for property declaration, petition feedback, and other related matters; Every year, we focus on key areas such as development zone construction and state-owned enterprise reform to carry out penetrating inspections and improve the effectiveness of supervision.

Build a "Financial Government Data Collaborative Monitoring" system to strengthen compliance checks for job performance. Breaking down departmental data barriers, establishing cross disciplinary platforms in collaboration with the central bank, taxation and other systems, incorporating information on financial transactions and asset holdings of "top leaders" and close relatives into compliance monitoring scope, identifying abnormal transaction clues through intelligent models, and using a "manual review+intelligent warning" mechanism to verify high-frequency risk behaviors, providing data support for standardized performance.

3. Cultural Reconstruction

Cultural reconstruction, as a fundamental project to regulate the performance of the "top leaders", needs to be guided by values and nurtured by ecology to establish a solid ideological foundation for the use of power in accordance with the law, and to respond to the policy requirements of building a clean culture in the new era.

Building a precise legal education system is the core lever for cultural reconstruction. Implementing hierarchical and classified education for the "top leaders": conducting special training on power boundaries and legal responsibilities in the early stages of employment, clarifying the list of rights and responsibilities and the bottom line of performance; During his term of office, he organized a seminar on Party discipline and laws every six months to interpret and strengthen the sense of awe of the system in combination with the newly revised Regulations of the CPC on Disciplinary Punishment. Innovate educational forms, adopt immersive legal practice teaching, enhance educational effectiveness through typical case analysis, performance scenario simulation, etc; Integrating the study of red rule of law culture with the presentation of excellent governance cases, deepening the education of the power concept of "power for the people and benefits for the people", and internalizing the spirit of rule of law into conscious performance of duties(Li Huolin,2024).

Building a comprehensive and collaborative legal culture ecosystem is an important support. Promote the four-dimensional linkage of "government agencies, enterprises, communities, and families": government agencies create "demonstration departments for rule of law performance" and incorporate legal decision-making into performance evaluations; Enterprises implement a "compliant business partner" admission mechanism and strengthen the consensus of market entities on the rule of law; The community disseminates the concept of rule of law governance through the legal culture corridor and themed activities; The family carries out the "Clean Wind Passing on the Family" activity, signs a commitment letter to help maintain integrity, creates a strong atmosphere of respecting laws and regulations throughout society, and creates a favorable external environment for the "top leader" to perform their duties in accordance with the law.

Eliminating negative cultural tendencies in the performance of duties is a key step. Focusing on standardizing the use of power and deepening cultural reform: analyzing cases of performance deviation in the form of "interpreting laws through cases", and specifically rectifying tendencies such as "emphasizing experience over system" and "emphasizing efficiency over procedure" at democratic life meetings; Include "adhering to collective decision-making and not engaging in individual autocracy" as the assessment indicators for "top leaders", and implement "one vote veto" for behaviors such as nepotism and forming small circles; Strictly implement the principle of "equality before the system", demonstrate the authority of the rule of law through fair discipline, guide the formation of a cultural ecology of respecting the law, abiding by the law, and using it to perform duties, and provide deep cultural support for performing duties in accordance with the law.

4. Localization of International Experience

The international advanced governance experience provides useful reference for optimizing the performance mechanism of the "top leader". Based on China's national conditions, localized innovation can be carried out to build a more effective performance guarantee system, which is in line with the requirements of the reform of the disciplinary inspection and supervision system in the new era.

In terms of optimizing institutional functions, we will draw on the international independent supervision model to strengthen performance guarantees. Improve the supervision mechanism of disciplinary inspection and supervision organs over the "top leaders", implement a vertical management model for personnel, property, and finances, and reduce interference with local performance of duties; Establish a cross regional collaboration mechanism, and for major performance matters involving multiple regions, coordinate and coordinate with higher-level disciplinary inspection and supervision commissions to break down regional barriers; Pilot the establishment of dedicated performance supervision commissioners in key areas such as pilot free trade zones, granting direct supervision over the performance of the "top leaders" in the areas, ensuring the independence and authority of supervision, and building a mechanism barrier for lawful performance.

In terms of information management for job performance, we will refer to international transparency practices to enhance the level of standardization. Expand the scope of information declaration related to the performance of the "top leader", covering personal and family members' real estate, financial assets, overseas investments, etc., and add important matters such as marital changes and employment of close relatives for declaration, realizing the linkage management of "family" and "official" information. Implement the "double random and one open" verification mechanism, conduct random inspections at a rate of 30% annually, achieve full coverage verification of high-risk personnel, and incorporate the verification results into the performance evaluation system. Build a cross departmental data sharing platform to achieve real-time data comparison with institutions such as finance and real estate registration, automatically identify information declaration anomalies, and enhance transparency in job performance.

In terms of risk prevention and control, we will absorb international risk management concepts and build a localized system. Establish a risk indicator library for the performance of the "top leader" position, and set

quantitative scoring standards around core elements such as power concentration and discretionary space; Implement differentiated management based on risk levels, and implement mechanisms such as "double check" and "regular rotation" for key positions in finance, engineering, and other fields; Develop an intelligent warning system for performance behavior, which automatically prompts for high-frequency non official contacts, abnormal approval processes, and other situations. The supervisory department will intervene in a timely manner to guide and standardize, embedding risk prevention and control into the entire performance process.

In practice, it is necessary to always adhere to the leadership of the Party, ensure that international experience is compatible with China's political system, deepen international cooperation, rely on relevant international conventions to carry out standardized exchanges of performance, build an internal and external collaborative performance guarantee pattern, and provide diversified support for the "top leaders" to perform their duties in accordance with the law.

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Moral Boundaries in Sports Governance: Ethical Reflections on Manipulation, Commercial Interests, and Institutional Accountability

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Abstract

Purpose– This paper applies a qualitative, critical-ethical analysis using multiple case studies, including court arbitration documents and regulatory reports. The framework integrates moral theory and institutional critique.
Design/Methodology/Approach – Match-fixing is not only an individual moral failure but is also deeply rooted in flawed institutional governance, athlete vulnerability, and commercial conflicts, particularly involving the gambling industry. The paper emphasizes the need for structurally independent ethical oversight.
Findings – The purpose of this paper is to critically examine the ethical issues surrounding match-fixing within modern sports governance systems, with a particular focus on the underlying institutional vulnerabilities and conflicts of interest that exacerbate manipulation risks.
Research Implications – The study contributes to the ethics and governance literature by proposing reform strategies that integrate integrity education, governance transparency, and structural support for vulnerable athletes. It provides actionable insights for sports policymakers and regulatory bodies.

Keywords: Match-fixing, Sports governance, Athlete vulnerability, Gambling industry, Ethics, Institutional reform
JEL Classifications:L83, M14, Z28, K42

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I. Introduction

The core values of sport are rooted in fair competition, integrity, and the embodiment of the sporting spirit. The establishment of modern sports governance systems aims to safeguard these principles. However, with the increasing commercialization and globalization of the sports industry, a range of ethical challenges has emerged, with match-fixing being one of the most notable and concerning examples. Such practices not only undermine the fairness of competition but can also affect athletes' careers, public trust, and the interests of sponsors.

In recent years, match-fixing has received growing attention from both researchers and policymakers. Documented cases include instances where tennis players have deliberately lost a set for financial gain, football goalkeepers have accepted payments to concede goals, and entire teams have collaborated to achieve a specific score for betting purposes. These cases involve individual ethical decisions and also highlight potential limitations in governance mechanisms for prevention, investigation, and enforcement. Furthermore, the governance of match-fixing often operates at the intersection of ethics and law. On one hand, sports organizations have internal "sports justice" systems that address violations through their statutes and disciplinary procedures; on the other, national legal systems may impose criminal sanctions for certain forms of misconduct.

The complexity of the match-fixing problem extends beyond the breach of rules and touches on the vulnerabilities of athletes. Literature in areas such as "Duty of Care" and "Eating Disorders in Elite Sport" suggests that many professional athletes—particularly younger athletes, women, and those in lower-income sports—may face considerable psychological, financial, and identity-related pressures. These factors could increase susceptibility to external influence or coercion. In contexts where social support and governance oversight are limited, athletes may encounter difficult choices that could conflict with ethical or legal standards. Determining intent and responsibility in such situations can be challenging. This raises a broader question: to what extent should the system provide stronger support structures to protect those in more precarious positions?

In summary, match-fixing should be understood not only as a legal matter but also as an ethical challenge within the broader sports governance framework. This article will examine match-fixing from a governance perspective, outlining its main forms and associated sanctioning mechanisms, exploring the vulnerabilities of the athlete community and their position within governance systems, and analysing the tensions between gambling-related commercial interests and regulatory objectives. It will conclude by offering proposals intended to inform governance practices and contribute to policy development and theoretical discussion.

II. Definition and Governance Dilemma of Match Rigging

Within the sports governance framework, match-fixing is widely regarded as a significant ethical challenge. It not only affects the integrity of competition but can also influence confidence in the governance structure as

a whole. While it may appear to be primarily an issue of individual misconduct, it also raises questions about the design and operation of governance and sanctioning mechanisms. Match-fixing is generally defined as the intentional interference by individuals or groups involved in sport in the process or outcome of a competition, with the purpose of obtaining undue advantage. Such interference can take forms such as accepting payments, making deliberate errors, coordinating outcomes in secret, or manipulating scores. Although both legal systems and sporting regulations typically classify such conduct as a serious violation, the operational definition of "manipulation" can sometimes be ambiguous—particularly in distinguishing between "intent" and the available "evidence"—creating challenges for governance bodies in decision-making.

One challenge concerns the limited investigative authority of sports governance organizations. Unlike judicial bodies, they may not have the same ability to collect and verify evidence, which sometimes requires them to reach decisions based on a lower evidentiary threshold (Pielke, 2016). While such an approach can facilitate timely resolution, it may also result in reliance on indirect evidence or inferences rather than comprehensive investigative findings, which can raise concerns about procedural fairness. For example, in the Pobeda case (CAS 2009/A/1920), the team was disqualified after abnormal betting patterns coincided with unexpected match outcomes, despite the absence of direct evidence of bribery involving the players. As McNamee (2020) notes, when judgments rely heavily on statistical indicators and assumptions about human behaviour, the boundaries of "fairness" can become difficult to define. Such situations highlight the importance of ensuring both the integrity of sport and the protection of the rights of those involved, particularly individuals in more vulnerable positions.

Another critical dilemma is the ambiguity of governance responsibilities and authority. Manipulating matches often involves violations of internal sports regulations as well as issues of fraud and corruption at the level of national criminal law. However, in most cases, sports organizations tend to keep investigations within their internal systems, avoiding the introduction of criminal justice procedures. This approach of "sports justice first" has its efficiency and professional considerations, but it can also easily lead to conflicts of interest and lack of transparency. For example, some organizations worry that public criminal investigations could damage their image, and thus tend to resolve issues internally or impose low-profile penalties (Forster, 2010).The most serious ethical flaw lies in the lack of sufficient transparency and appeal mechanisms during the governance process. In most cases, the accused cannot effectively obtain all the evidence of the case, the investigation process is not public, and legal assistance is insufficient. The absence of procedural justice makes the manipulation of sports governance not only morally problematic but also legally fragile. As Young (2011) stated, "Institutional justice is not only reflected in the correctness of outcomes, but should pay more attention to the fairness of the process. If the voices of vulnerable groups are systematically excluded during decision-making or governance, even if the outcomes are reasonable, it is difficult to call it true justice."These dilemmas affect the effectiveness of governance. If reforms are not carried out at a structural level, the manipulation of matches will be difficult to truly curb, and governance itself will become a mere performance.

III. The Vulnerability of Athletes and Ethical Dilemmas

Economic factors can be an important background condition influencing athletes' involvement in match manipulation. Kihl et al. (2017) observe that athletes facing limited income and financial insecurity may be more vulnerable to monetary inducements. In some lower-profile sports, athletes often need to self-fund participation and may have minimal sponsorship support. Those ranked outside the top tier sometimes struggle to cover basic travel and training costs. In 2011, Austrian tennis player Köllerer received a lifetime ban for accepting payments to manipulate match outcomes. During his appeal, he remarked that "even covering travel expenses is a challenge" for athletes in his position. While this does not excuse the misconduct, it illustrates how broader financial pressures can intersect with individual ethical risk (CAS 2011/A/2490).

The inherent instability of an athletic career can also heighten decision-making vulnerabilities. Many sports have relatively short peak performance periods, with a high risk of injury. The Grey-Thompson report (2017) highlights that "a lack of support during transition periods" can contribute to psychological strain and, in some cases, increase susceptibility to unethical influences. When facing career decline or prolonged exclusion from competition, some athletes may be approached by individuals seeking to exploit these circumstances. For example, football goalkeeper Labuts was accused of "intentionally making mistakes" late in his career; although the case did not result in a conviction due to insufficient evidence (CAS 2018/A/6075), it demonstrates the potential challenges athletes face when their income opportunities diminish.

Another relevant consideration is the limited representation and influence athletes often have within governance structures, which can make it more difficult to defend their interests. By contrast, clubs, referee committees, or other institutional stakeholders may have access to legal counsel, media channels, and political resources. This imbalance can leave athletes with fewer avenues to respond to allegations. For example, in the Pobeda case (CAS 2009/A/1920), the club was sanctioned for match manipulation, but the decision did not fully explore the possible role of organizational dynamics in the athletes' actions, and responsibility was attributed primarily to individuals. McNamee et al. (2020) note that in sport ethics governance, organisational and individual responsibilities are not always addressed in equal measure, which can raise questions about proportionality.

From an ethical standpoint, scholars such as Young (2011) have argued that when individual actions are shaped or constrained by structural conditions, accountability considerations may benefit from examining the broader institutional context. In match-fixing cases, overlooking the situational pressures athletes face could mean that governance efforts remain focused on retrospective sanctions rather than preventive measures. Strengthening the ethical legitimacy of governance frameworks may involve both procedural safeguards—such as whistleblower protections, transparent investigation processes, and accessible appeal mechanisms—and measures that address underlying conditions, such as improving career support and financial security for athletes. Examples include establishing an independent Athlete Integrity Protection Office, similar to the Athlete Ombudsman in the anti-doping system, to offer psychological and legal assistance, as well as developing policies such as minimum salary standards, retirement security funds, and legal aid initiatives at the national level.

IV. The conflict between commercial interests and ethics in the gambling industry

The rapid expansion of the gambling industry has provided sport with a significant new source of funding and public engagement. While this has contributed to the commercial growth of many sports, it has also introduced complex ethical considerations. In the current governance landscape, sports organisations can occupy a dual role—both benefiting from the gambling industry and overseeing the regulation of match-fixing. This intersection can present challenges in maintaining public trust. The integration of betting interests into the sports economy is well documented; for example, data from the European Gaming and Betting Association (EGBA, 2022) indicate that over 65% of top clubs in Europe's five major football leagues have betting-related sponsorships, including shirt advertising, training kit branding, and official partnerships. Such commercial arrangements provide substantial revenue streams but can also raise questions about dependence on a particular industry.

Complicating this relationship is the role of betting operators in the detection of suspicious activity. Many cases of match-fixing have relied on information from bookmakers' abnormal betting monitoring systems, with reports from third-party organisations such as Sportradar forming a significant basis for some CAS proceedings (McLaren, 2016). While these systems can be effective in identifying irregularities, they are primarily designed to protect the commercial interests of betting operators. As such, governance processes relying exclusively on this form of evidence may face challenges in demonstrating full independence and neutrality.

Manoli & Antonopoulos (2015) describe this as a structural moral tension: gambling companies, in pursuing regulatory legitimacy, also operate under a business model that inherently seeks to maximise profit, which can in turn create opportunities for behaviours at the margins of ethical standards. Without robust public-interest safeguards, there is a risk that governance norms could gradually shift away from sport's core values. This is of particular relevance for athletes, who may be subject to significant oversight and sanctioning but have limited influence over institutional rule-making. As Pielke (2013) notes, long-term partnerships between regulators and commercial actors can shape governance frameworks in ways that may affect their perceived alignment with public values.

Addressing these challenges may involve clarifying the boundaries between sports governance and the gambling industry. This could include the creation of independent integrity oversight bodies with funding, staffing, and decision-making structures that are demonstrably separate from gambling sector interests. In addition, clearer ethical guidelines could be established—such as restrictions on athletes betting on related competitions and policies to limit the proportion of sponsorship derived from gambling sources. Finally, further research and public discussion may be warranted regarding the cultural effects of what some scholars term the "gamblification" of sport, where competitions are increasingly framed through betting odds rather than athletic performance. Understanding these dynamics is important in supporting governance approaches that protect both the integrity and the public value of sport.

V. A Critical Analysis of the Guangdong University of Technology Match-Fixing Scandal: Ethical and Institutional Failures in University Sports Governance

In 2019, a Chinese university basketball game drew public attention after a widely shared video showed a series of unusual plays. In the Chinese University Basketball League, the men's team from Guangdong University of Technology made several noticeable errors—such as missed open shots, uncollected passes, and minimal defensive pressure—which prompted discussion among spectators and online audiences. The Chinese University Sports Association (CUA) later described the incident as "unsportsmanlike conduct" and issued disciplinary measures to the university. While this may be interpreted as a matter of tactical or technical decisions, it also offers an opportunity to reflect on aspects of governance, oversight, and values education in university sport.

In this match, the outcome determined the next stage's pairings, with the winners potentially meeting a stronger opponent. The discussion surrounding the incident centred not on gambling, but on whether the result might have been influenced by considerations unrelated to performance. From a behavioural perspective, some of the plays could be viewed as coordinated rather than accidental, which aligns with general frameworks for identifying manipulation based on both actions and intent. As McNamee et al. (2020) observe, even without financial motives, perceived deliberate losses may affect audience expectations, influence opponents, and raise questions about fairness.

The case also highlights possible areas for further development in university sports governance. For example, in-match officials and technical representatives did not intervene when atypical patterns of play occurred, suggesting a potential area for review in real-time oversight protocols. In addition, post-match communications focused on team-level outcomes, with limited public information regarding the roles of different stakeholders. Governance in sport involves not only enforcing rules but also providing clear guidance on acceptable conduct. In this instance, the CUA's response was primarily disciplinary, without an accompanying broader policy discussion.

Similar circumstances have been discussed in other contexts, where teams might adopt strategic approaches to influence tournament progression. In such situations, student-athletes may feel limited in their ability to make independent choices. As Young (2011) notes, when certain behaviours become part of established practice, responsibility may be understood as both individual and collective.

From an educational perspective, the incident raises questions about how competitive goals align with value-based teaching. In its response, Guangdong University of Technology stated that it "respects the tactical arrangements of students," which affirms student decision-making while also potentially reducing emphasis on competitive integrity. In university sport, the pursuit of competitive performance can be combined with broader educational aims such as promoting integrity and respect, thereby supporting the overall development of student-athletes.

At the governance level, preventive measures could complement disciplinary actions. These might include ethics training for athletes, coaches, and administrators, as well as clearer guidance for decision-making in

competition settings. Establishing an independent oversight function for university sport, with responsibilities for match observation, early risk alerts, and investigative processes, could support transparency. In addition, representation mechanisms for student-athletes could provide a channel for raising concerns and receiving institutional support in situations where integrity might be at risk.

VI. Ethical Reform Path and Future Governance Suggestions

The current sports governance framework faces ongoing challenges in strengthening ethical standards, refining institutional design, and ensuring effective implementation. If governance responses remain primarily focused on post-event sanctions and incremental adjustments, it may be difficult to address the evolving nature of manipulative behaviours. From an ethical governance perspective, there is value in exploring forward-looking and systematic approaches to reform.

One possible direction is the establishment of an independent and trusted integrity oversight mechanism. Drawing on the experience of systems such as the World Anti-Doping Agency (WADA), a "Competition Integrity Bureau" or "Anti-Manipulation Alliance" could be considered, with clearly defined investigative and sanctioning powers. To safeguard impartiality, it would be important to ensure that such a body's funding is independent of event organisers and the gambling industry.

Enhancing the ethical awareness and risk recognition of athletes and other stakeholders is equally important. Integrity education could be embedded into athlete development pathways, including regular training, scenario-based exercises, and case-study analyses, particularly for young athletes and university students. Coaches, club administrators, referees, and other relevant groups could also benefit from targeted ethics programmes.

Revisiting representation mechanisms within governance structures may further strengthen decision-making processes, ensuring that athletes, coaches, and referees have meaningful input in the formulation of rules and policies. Finally, a restorative approach to ethical governance could be promoted. In addition to holding individuals accountable, this approach would provide opportunities for psychological support, educational engagement, and reintegration into the sporting community. Recognising that manipulative behaviour can arise from complex systemic and personal factors, governance measures that combine accountability with restoration may better reflect the humanistic values of sport and contribute to reducing repeat offences.

VII. Conclusion

The issue of game manipulation is one of the most challenging ethical issues in contemporary sports governance. It not only undermines the fairness of the rules and results of competition, but also deeply reflects the power asymmetry, institutional loopholes and evasion of ethical responsibilities in the governance system. This paper introduces the lack of institutional response to the vulnerability of athletes, the distortion of

governance logic caused by the commercialization of betting, and the lack of transparency and independence of organizational governance. Taking the match-fixing case of Guangdong University of Technology as an example, the manipulation of the game has penetrated into the field of college sports, which is not only a manifestation of individual anomie, but also a warning of the failure of institutional and cultural linkage. To solve this problem, we cannot rely on the punishment of one thing, but need to promote a systemic governance transformation. Ethical governance should not only be about moral education, but also about integrating fairness, respect and responsibility into the daily operation of the sports system through institutional design, role participation and mechanism innovation. As Pielke (2016) puts it, "If we can't govern the integrity of the movement, then we can't really govern the movement itself."

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Ethical Guidelines

Chapter 1. General Rules

Article 1 (Purpose)

The purpose of the following rules is to present the basic ethical principles and direction needed to ensure the research ethics of editorial board members, peer-reviewers. and authors who examine or submit articles to the Journal of Advanced Academic Research and Studies (JAARS). NLBA Eurasian Institute publishes these rules to present the procedure and actions for research misconduct.

Article 2 (Object of the Study and Scope)

The research is subject to sanction, investigation and judgement to determine whether research ethics were followed when any of the following occurs:

i. The study was submitted to the Journal of Advanced Academic Research and Studies,
ii. The study was confirmed to be published in the Journal of Advanced Academic Research and Studies,
iii. The study has already been published in the Journal of Advanced Academic Research and Studies.

Chapter 2. Honesty and Social Responsibility of the Research

Section 1. Honesty in the Research

Article 3 (Honesty of the Research)

a. Researchers must conduct every research behavior (proposing research, researching, reporting and presenting research, investigating and judging) honestly and sincerely.
b. Researchers must describe the content and the importance of the study clearly and objectively, and must not delete or add results arbitrarily.
c. Researchers must carry out every study without any bias or prejudgment.

Article 4 (Ethics for Researchers)

a. Researchers must not commit research misconduct during any part of the research process.
b. A study must not be submitted if it has been published in other journals, and researchers must not request review of the study to different journals at the same time. However, a thesis or a paper presented in a conference as a working paper shall be exceptions.

Article 5 (The Record, Storage, and Report of Research Data and its Disclosure)

a. All research information must be clearly and precisely recorded, processed, and preserved so that it may be accurately analyzed and confirmed.
b. Researchers shall use proper research methods and statistics, and those shall be available to the public if necessary.

Section 2. Fairness in Researchers'Contributions

Article 6 (Collaborative Research)

Researchers must make the roles and contributions of all contributors clear if they conduct a joint study with other researchers, and shall take full responsibility for establishing this. Prior to conducting research, mutual agreement and understanding shall be made with regard to property rights and ownership issues, research director selection, authorship and the standard of order. the data collection method. individual role in the study. and expectations and objectives of the study.

Article 7 (Responsibility and Duty, Order of Authors)

a.Researchers are responsible only for the study that they carry out or are involved in as an author, and are recognized for that achievement.

b.Authors must accept requests for proof of their contributions.

c.The order of authors must accurately reflect the academic contribution by each author to the research contents or results, regardless of the authors'relative positions.

Article 8 (Corresponding Author)

a.Corresponding authors shall take overall responsibility for the results of the study and proofs.

b.Corresponding authors shall have the burden of proof with respect to the order of the author and co- author(s).

Article 9 (Affiliation of Author)

When indicating the affiliation of author(s), the author's current status in principle shall be given. However, it is possible to follow the customs of the author's academic field if their field of affiliation follows a different custom.

Chapter 3. Research Misconduct and Unethical Research Conduct

Section 1. Methods and Principles of Citation

Article 10 (Methods and Principles of Citation)

a.The author may cite a part of other researchers'studies in his/her research paper using their original text, or the translated version by introducing, referring to or making a comment on the original.

b.The author shall take all possible measures to ensure the accuracy in stating sources and making the list of references.The author must confirm all elements of a citation(author's name, number/volume of the journal, page and published year)not depending on the secondary source but solely on the original work. However, when inevitable, the author can include with acknowledgment.

c.The author must cite in a reasonable manner and use the good faith principle, so that uncited works can be clearly distinguished from cited works.

d.The author must cite published works only. However, in the case of citing unpublished academic materials that have been acquired through personal contact, paper review or proposal review, the author must acquire consent from the relevant researcher(S).

e.When the author introduces ideas or theories in his/her work that have been presented in another study, the source must be stated.

f. The author must distinguish his/her own ideas from cited materials when borrowing substantive parts from one source, so readers can clearly recognize the author's work.

g. If a reference has a significant impact on the direction of the research or can help the reader understand the contents, the author must include all such works on the list of references, except in such cases where the relevant research can theoretically and empirically be inferred.

Article 11 (Method of General Knowledge Citation)

a. If the author uses someone else's idea or a fact provided by them, the source should be provided.However. general knowledge or material that general readers will already recognize shall be an exception.

b. If the author is unsure whether any concept or fact qualifies as general knowledge, it is recommended to cite the original text.

Section 2. Research Misconduct

Article 12 (Definition of Research Misconduct)

"Research misconduct" refers to any instances of forgery, falsifcation, plagiarism, failure to give proper credit to co-authors or redundant publications that may emerge during the entire research process (research proposal, conduct of research, report and presentation of research, investigation and judgement).

a. "Forgery" refers to the act of presenting non-existent data or research results.

b. "Falsification" refers to the acts which artificially manipulate research processes, randomly modify, or delete data resulting in distorted research content or research results. (Here. "deletion" refers to the act of using only favorable data and intentionally excluding the data that might cause unexpected or undesired results.).

c. "Fabrication" refers to the act of intentionally creating a document or record that does not exist.

d. "Plagiarism" refers to the acts which pirate other's work, ideas or research, using ideas, hypotheses, theories, research contents, or research results without justifiable approvals, citation, or quotations, as if those were his/her own.

   i. "Idea Plagiarism" refers to the act of using someone else's ideas (explanations, theories, conclusions, hypothesis and metaphors)in full, substantial proportions or in a fragmented revised form without giving appropriate credit to the originator of the words and ideas. Authors have moral responsibility to indicate the source of ideas through a footnote or a reference. Authors must furthermore not steal other's ideas which are known through peer review of research proposals and submitted articles.

   ii. "Text plagiarism" refers to the act of copying text from another's work without clarifying the original author.

   iii. "Mosaic plagiarism" refers to the act of combining a part of a text with a few words added, inserted or replaced with synonyms, and others without clarifying the source or the original author.

e. "Redundant Publication" refers to the act of publishing a paper that is identical or highly similar text to one that has already been published in the past in another academic journal without alerting the editors or readers of the fact that this work was previously published elsewhere. If the contents of the paper are almost the same as his/her previously published paper, the later paper is regarded as a redundant publication even if the text has a different point of view or perspective, or including a diferent analysis based on the same data that has been previously published. In the case in which the author would like to publish a paper using a previously published paper, he/she must acquire permission from the chairperson after providing the information about the publication and double-checking whether it is a redundant publication or duplication of a publication.

f.“Self-plagiarism” refers to the act of using images, graphs or part of one's own research already published without identifying the source, and it is regarded as redundant publication.

g.“Failing to give proper credit to co-authors” refers to the act of failing to list those who have contributed academically to the research process or results as a co-author or conversely to the act of listing those who have not made any academic contribution as co-authors.

Article 13 (Research Misconduct and Copyright Infringement)

a.Generally, the copyright of all papers and instances published through NLBA Eurasian Institute is assigned to the author. However, if they are utilized for public objects like education, NLBA Eurasian Institute owns the right of use.

b.The full term of copyright is assigned to the academic journal publisher in all papers published in academic journals.

c.It should be noted that “Redundant Publication” may cause copyright violation.

d.It should be noted that the author should use proper quotation marks when widely citing text from copyrighted sources, and even if the text is properly cited, it could infringe copyright.

Section 3. Inappropriate Writing

Article 14 (Inappropriate Writing)

The following are regarded as inappropriate writing:

i.Inappropriate citations
ii.Distorting references
iii.The act of depending on abstracts when citing the published paper
iv.Citing papers that the author did not read or understand
v.The act of partially citing despite intensively borrowing from a single source
vi.The act of reusing text

Article 15 (Prohibition of Distortion of References)

a.References must only include documents that are directly related to the article content. Unrelated references for the purpose of intentionally manipulating the citation index of the paper or academic journal should not be included.

b.As a moral responsibility, the author should not only cite the references which will be favorable to his/her data or theory, but also cite references which may contrast with his/her point of view.

Article 16 (Reuse of Text)

a.“Reuse of Text” refers to the act of re-using a part of the manuscript that he/she has used in a previous paper.

b.Text reuse is an act contradictory to ethical writing, so the author must avoid re-using text already used. In case of unavoidable text re-use, the author should not violate copyright infringement by following standardized reference practices including the use of quotation marks or proper indication.

Chapter 4. Ethical Rule Enforcement

Section 1. Research Ethics Committee

Article 17 (Ethical Rule Pledge)

New members who have enrolled in the research pool of NLBA Eurasian Institute shall acquaint and pledge to abide by these research ethics when submitting to the "Journal of Advanced Academic Research and Studies" and conducting research. Current members shall be regarded as having pledged to abide by these research ethics when initiated.

Article 18 (The Announcement of Violation of Ethical Rule)

If a member learns that another member has violated any ethical rules, he/she should endeavor to correct the mistake by helping make him/her be aware of the rules. However, if he/she does not correct the violation or the ethical violation is obviously unveiled, the member must report to the committee immediately.

Article 19 (Organization of the Research Ethics Committee)

NLBA Eurasian Institute shall establish a Research Ethics Committee (hereinafter referred to as the "Committee") mandated to deliberate on matters falling under each of the following sub-paragraphs:

a.Matters concerning establishment and revision of these rules.

b.Matters concerning acceptance and handling of misconduct.

c.Matters concerning beginning actual investigation and decision, approval, and re-deliberation of investigation results.

d.Matters concerning protection of informant and examinee.

e.Matters concerning investigation of research integrity, handling of investigation results and follow up measures.

f.All the matters concerning operations of other committees.

Article 20 (Organization of Research Ethics Committee)

a.The Committee shall consist of one chairperson and members of no less than five but no more than nine persons.

b.The chairperson and the members shall be appointed by the chairman of NLBA Eurasian Institute.

c.The members of this committee shall hold a one year term and they may be reappointed.

d.The chairperson and the members of this committee shall maintain independence and confidentiality with respect to the details relating to deliberations and decisions.

Article 21 (Organization of Research Ethics Committee)

a.The chairperson of the committee shall convene any meeting and preside over such meetings.

b.The committee's meetings shall open with the attendance of a majority of the total members including the chairperson and resolve with the concurrent vote of a majority of those present.

c.No meeting of the committee shall be open to the public. [The meeting shall not be open to the public in principle, but whenever deemed necessary, the committee can ask the related party and hear their opinions.]

d.Whenever deemed necessary, the committee can ask the related party and hear their opinions.

e.Any member who is involved in the research subiect to an investigation will not be permitted to attend the concerned meeting due to a conflict of interest.

Article 22 (Authorities and Responsibilities of the Committee)

a. The committee can summon for attendance and data submission any informants, examinees, witnesses and testifiers, in the process of an investigation.

b. When the examinee refuses to attend the meeting or data submission without a justifiable reason, it could be presumed as an indication that he/she has acknowledged the allegations.

c. The committee can take substantial measures to prevent any loss, damage, concealment or falsification of research records or evidence.

d. The committee members should comply with confidentiality concerning deliberation-related matters.

Section 2. Research Integrity Investigation

Article 23 (Reporting a Fraudulent Act)

An informant can report a fraudulent act using any means available when reporting using their real name. However, when reporting anonymously, he/she must submit the title of the paper, and the evidence and detail of the misconduct in writing or by e-mail.

Article 24 (Confidentiality and Protection of Rights of Examinee and Informant)

a. The committee should not reveal the personal information of the informant unless it is necessary.

b. The committee must take action to protect the informant if the informant experiences illegitimate pressure or threats due to reporting the fraudulent act.

c. Until the investigation of a fraudulent act is completed, the committee must be careful not to infringe upon the rights or reputation of the examinee. If the person turns out to be innocent, the committee must make efforts to recover the reputation of the person.

d. The identity of the informant, investigators, testifiers, and consultants should not be disclosed.

e. All facts relating to research ethics and authenticity investigations must remain confidential and the people involved in the investigation must not reveal any information obtained during the process. If there is a need to disclose related information. the committee can vote to make such a decision.

Article 25 (Raising an Objection and Protection of Defense Right)

a. The committee must ensure the informant and examinee have equal rights and opportunities to state their opinions and obiections. Such procedures must be informed to them beforehand.

b. An examinee or informant may require the avoidance of deliberation and decision after explanation in case he/she expects an unfair decision.

c. The research ethics commitee must give the examinee a chance to submit their opinion and clarify any fact revealed during the first report or any additional report.

Article 26 (Preliminary Investigation of Research Misconduct)

a. The committee must investigate the presence of misconduct if there is a considerable doubt about legitimate conduct or detailed information about misconduct.

b. The chairperson can officially carry out the investigation (hereinafter referred to as the “preliminary investigation") which is a procedure to decide whether the suspected misconduct should be investigated after consultation with the chairman of NLBA Eurasian Institute.

c.The committee shall form the preliminary investigation committee consisting of no more than five members within 30 days of reporting.
d.The committee shall inform the informant and examinee of the formation of such a committee, and give the examinee a chance to clarify within 30 days.
e.A preliminary investigation is initiated within 30 days of the formation of the preliminary investigation committee and the investigation should be completed within 30 days of the start of the investigation except in unavoidable circumstances.
f.If it has been more than five years since a misconduct was committed, the reporting is not handled in principle even if the reporting is accepted.
g.Through preliminary investigation, the following is reviewed:
  i.Whether the reported instance qualifies as research misconduct
  ii.Whether the reporting is specific and clear enough to lead to an actual investigation
  ii.Whether more than five years has passed since the reported misconduct was committed

Article 27 (Report and Notice of the Preliminary Investigation Result)
a.The result of the preliminary investigation shall be notified to the informant and examinee within ten days of the committee's decision, and reported to the chairman of NLBA Eurasian Institute.
b.The result report of the preliminary investigation must include the following:
  i.Specific information regarding the alleged misconduct
  lii.Facts regarding the alleged misconduct
  iii.Grounding for decision on whether to conduct an actual investigation

Article 28 (Raising an Objection and Protection of Right of Defense)
a.The committee must ensure that the informant and examinee have equal rights and opportunities of opinion statement and objection. Such procedure must be informed beforehand.
b.The informant and examinee can make an objection within ten days from the day of being notified of the preliminary investigation.

Article 29 (Beginning and Duration of an Actual Investigation)
a.The actual investigation begins within 30 days after a positive result from a preliminary investigation. During the period, the actual investigation committee consisting of no more than nine persons (including the preliminary investigation committee) must be formed to conduct an actual investigation.
b.The actual investigation must be completed within 90 days from the beginning date.
c.If the investigation committee decides that it cannot be completed within the specified period, it can explain the reason to the committee and request a 30 day extension (one time only).

Article 30 (Formation of an Actual Investigation Committee)
a.An actual investigation committee is composed of no more than nine members.
b.Formation and duration of an actual investigation committee is determined by the committee. The chairperson of the actual investigation committee is elected among the actual investigation members.
c.The investigation committee shall include at least two members with specialized knowledge and experience in the relevant field.
d.A person who has a stake in the investigated matter must not be included in the actual investigation committee.

Article 31 (Request for Appearance and Document Submission)

a.The actual investigation committee can request the examinee, informant(S), and testifiers to appear for testimony and the examinee must comply.

b.The actual investigation committee can ask the examinee for submission of a document, and retain and store the relative research materials about the person involved in the misconduct after the approval of the head of the research organization in order to preserve evidence relating to the investigation.

Article 32 (Exclusion, Avoidance and Evasion)

a.The examinee or informant(s)can require exclusion by identifying the reason if there are reasons to believe that a committee member is unable to maintain fairness. When such request for exclusion is recognized, the member subiected to the request shall be excluded from the concerned investigation.

b.If the committee member is directly related to the corresponding matter, he/she shall be excluded from all deliberation. decisions and investigation of the matter.

c.The chairperson can suspend the qualification of a member who is related to the corresponding matter in connection with the corresponding investigation.

Article 33 (Investigation Report Submission)

The actual investigation committee must submit the result to the committee within the actual investigation period, and the result must include the following:

i.Specific details of the alleged misconduct
ii.Facts regarding the alleged misconduct
iii.Evidence, witness list and affidavits
iv.Investigation results
v.Other data useful for decisions

Article 34 (Decision)

a.The decision must be made within six months from the beginning of the preliminary investigation.

b.The committee shall make the decision confirming that the examinee committed research misconduct after reviewing the result report.

Section 3. Action after Investigation

Article 35 (Action in accordance with Investigation Result)

When a decision is made confirming the research misconduct, the committee can sanction the author with applicable punishment to each of following, or impose corresponding retribution.

i.The publication is postponed until the final decision of the research ethics committee is made even if the paper has been confimed to the author that it will be published.

ii.The publication of the paper to which the research misconduct is related is to be canceled and deleted from the article list of the journal even if the volume has already been published.

iii.The author found to have committed such misconduct is prohibited from submitting papers to the journal for three years, and these facts are made public on the homepage of the journal (http://www.nlbaeai.org).

iv. If there is an author found to have committed plagiarism or redundant publication, the editorial board stores the relevant investigation details for five years.
v. The chairperson of the organization with which the author(s) is affiliated is notified of the final decision.

Article 36 (Investigation Result Notification)
The chairperson of the committee shall immediately notify the related persons such as the informant and examinee of the commitee's decision regarding the investigation result in writing.

Article 37 (Investigation Result Notification)
a. If the informant or the examinee refuses the committee's decision, he/she must submit a re-deliberation request to the committee within 15 days from receipt of the result notice as prescribed in Article 37.
b. The committee must decide whether re-deliberation is necessary within 10 days of the receipt of the re-deliberation request.
c. The committee will decide there-deliberation procedure and method.

Article 38 (Follow-ups such as Recovery of Author's Honor)
If the results of the investigation confirm that no research misconduct has been identified, the committee must take follow-up steps to recover the reputation of the examinee.

Article 39 (Storing the Record and Confidentiality)
a. All records regarding the preliminary and actual investigation are stored for five years from the date of the investigation's conclusion.
b. All facts relating to research ethics and the investigation must remain confidential and the people involved in the investigation must not reveal any information obtained during the process. If there is a need to disclose investigation information, the committee can vote to make such decision.

Article 40 (Etc.)
Matters that are not determined by these rules are to be decided by the editorial board.

Article 41 (Date of Effectiveness)
These regulations shall be effective as of January 1, 2024.

Editorial Regulations

Journal of Advanced Academic Research and Studies (JAARS)

Chapter 1. General Roles

Article 1 (Purpose)

The purpose of the following rules is to prescribe matters regarding the editorial work and standards for the Journal of Advanced Academic Research and Studies (hereinafter referred to as "JAARS") published by NLBA Eurasian Institute.

Chapter 2. Editorial Committee

Article 2 (Editorial Committee)

The editorial committee (hereinafter referred to as "committee") is established in order to accomplish the purpose of Article 1.

Article 3 (Formation of Editorial Committee)

a. The editorial members shall be appointed by the chairman of NLBA Eurasian Institute, and the committee shall consist of no more than 50 members.
b. The chief editor shall be appointed by the chairman of NLBA Eurasian Institute and is in charge of all editing.
c. The editorial committee shall be composed of two chief editors, one editor, and one managing editor. The editors are appointed by the chairman of NLBA Eurasian Institute among editorial members.
d. The term for the chief editor is three years, and the term for the editorial members is two years, and editorial members may be reappointed.
e. This committee makes decisions with a majority attendance of the members and a majority agreement of the members present.

Article 4 (Qualification of Editorial Members)

The editorial members shall meet the following qualifications:

i. Being at least an associate professor in a domestic/international university or a person equally qualified
ii. Someone who studies in an area within the JAARS's specialty and who has published at least 3 articles in a journal (or l article in an SCI, SSCI and/or SCOPUS indexed journal) within the last three years

Article 5 (Responsibilities and Obligations of Editorial Members)

a. Editorial members are fully responsible for the decision to publish JAARS-submitted papers, confirm their integrity during the deliberation process, and observe candidates during the editing process.
b. Editorial members should respect the author's person and independence as a scholar, and make the process of the evaluation of the research paper public if there is a request.
c. Editorial members should handle submitted papers only based on the quality and submission guidelines, not based on the author's gender, age, or affiliation.

d.Editorial members should request a reviewer with specialized knowledge and fair evaluation ability in the relevant field to evaluate submitted papers. However, if evaluations of the same paper are remarkably different, editorial members can acquire advice from an expert in the relevant field.
e.Editorial members should not disclose the matters of the author and the details of the paper until a decision is made pertaining to the publication of the submitted paper.

Chapter 3. Paper Submission and Peer Review Committee

Article 6 (Qualification of Submission and Submission)

a.All the paper submitters must be members registered with JAARS.
b.All papers should be submitted through the JAARS's online submission system (http://www.nlbaeai.org/) and Email:edubscon@outlook.com, and can be submitted at any time. English-language papers from authors outside of the United States of America may also be submitted using e-mail.

Article 7 (Formation of Peer Review Committee)

a.Peer reviewers are appointed by the chief editor, and selected based on the field of the reviewer's expertise. (According to circumstances, a peer reviewer who is not a member of JAARS may be appointed.)
b.Editorial members for each content subject such as international economy, international management, or practice of trade can also serve as peer reviewers.
c.The chief editor represents editorial members, handles all the matters relating to review, and reports the results of peer review to the committee.
d.The managing editor is in charge of the procedure relating to review.
e.The classification and selection of submitted papers is decided by the chief editor and the managing editor, and they report it to the committee.

Article 8 (Qualification of Peer Reviewers)

Peer reviewers shall have the following qualifications:

i.Being at least an associate professor in a domestic/international university, or a person who is as equally specialized as the person above.
ii.Someone who studies an area within the JAARS's specialty and has published at least 3 articles in a iournal (or 1 article in an SCI, SSCI and/or SCOPUS indexed journal) within the last three years.
ii.Someone who presents a paper, chairs a session or serves as a discussant at an academic conference at the same level of the institution, or has served as a reviewer of a study which has been indexed in a domestic or international journal within the last three years.

Article 9 (Responsibility and Duty of Peer Reviewers)

a.Peer reviewers should evaluate papers and report the results of the evaluation to the committee within the time period set by the committee. However, if he/she believes that they are not appropriately qualified to review the paper, they should notify the committee without delay.
b.Peer reviewers should respect the author's person and independence as a scholar. Peer reviewers may request for revision of the paper with detailed explanations if needed in the evaluation of the research paper.

c.Papers are reviewed confidentially using a method in which the name and affiliation of the author is confidential to the public. Showing the paper and/or discussing the contents of the paper with a third party is not desirable unless a consultation is needed for purposes of review.

Article 10 (Unethical Behavior in the Review Process)

a.Peer reviewers must not manipulate either directly or indirectly the related research-specific information contained in the research proposal or review process without the consent of the original author.

b.Peer reviewers must be careful of the following since it could be regarded as unethical research practices in the review process:

i.The act of handing over are quested paper to students or a third party

ii.The act of discussing the details of a paper with colleagues

ii.The act of obtaining a copy of the requested material without shredding it after review

iv.The act of disgracing the honor of others or fabricating a personal attack in the review process

v.The act of reviewing and evaluating a research paper without reading it

Article 11 (Personal and Intellectual Conflict)

a.Peer reviewers must fairly evaluate using an objective standard regardless of personal academic conviction.

b.Peer reviewers must avoid personal preiudice when reviewing a paper. If there is a conflict of interest including personal confict, it must be notified to the committee.

c.Peer reviewers must not propose rejecting a paper due to a confict in interpretation or with the point of view of the reviewer.

Chapter 4. Principle and Process of Paper Review

Article 12 (Papers for Peer-review)

Review shall proceed based on the writing and submission guidelines. If the submitted paper substantially diverges from the writing and submission guidelines, the paper may not be reviewed.

Article 13 (Request for Review and Review Fee)

a.The chief editor discusses the selection of reviewers with editorial members and selects two reviewers for each paper after submitted papers pass the eligibility test.

b.The chief editor immediately requests the two selected reviewers to review the relevant submitted paper.

c.Papers are reviewed by confidential method in which the name and affiliation of the author is confidential to the reviewer, the name of the reviewer is confidential to the author.

d.The chief editor requests a review after deleting the name and the affiliation of the author from the submitted paper, so that the reviewer cannot obtain the identity of the author.

e.A review fee shall be paid to the reviewer.

Article 14 (Review of Paper and Decision)

a.Reviewers shall submit a decision report via the JAARS's online submission system (http://www.nlbaeai.org/) and Email:edubscon@outlook.com within two weeks after they are asked to review a paper.

b.The reviewer shall decide whether the paper should be published based on the following standard. However, if the paper receives less than 30 points in the suitability and creativity of the topic, it will not be published.

i.The suitability of the topic(20 points)
ii.The creativity of the topic (20 points)
iii.The validity of the research analysis (20 points)
iv.The organization and logic development of the paper (20 points)
v.The contribution of the result (10 points)
vi.The expression of the sentence and the requirement of editing (10 points)

The reviewer must give one of the following four possible marks within the two week period: A (90~100 points, acceptance), B (80~89 points,acceptance after minor revisions), C (70~79 points,re-review after revision), F (Rejection), and write an overall review comment concerning the revision and supplementation of the paper.

c.In an instance where the reviewer does not finish the review within the two week period, the chief editor can nominate a new reviewer.

Article 15 (Correction of Papers according to the Editing Guideline)

a.Before holding an editorial committee meeting, the chief editor shall request editorial staff correct those papers that receive“acceptance”or “acceptance after minor revisions”, using the journal's paper editing guidelines. However, if there is a paper that receives “acceptance” after the editorial committee meeting, the chief editor will request the editorial staff to correct the paper after the meeting.

b.The chief editor shall notify each author of the result of his or her paper review after receiving the corrected version of the paper from the editorial staff. However, papers which receive a “rejection” shall not be notified of their result.

Article 16 (Decision of Paper and Principle of Editing)

a.The chief editor shall call an editorial board meeting and make publication decisions after receiving finished papers from reviewers.

b.The editorial board will make decisions to publish based on the following chart. The editorial board should respect

Results of 2 peer-reviews	Overall evaluation(average)	Decision to publish
AA	A	Acceptance
AB, AC, BB	B	Acceptance after minor revisions
AD, BC, BD, CC	C	Re-evaluation after revision
CD. DD	F	Rejection

reviewers'decisions on relevant papers, but can make decisions based on the editorial policy of the JAARS.

c.The paper that is awarded “acceptance” should receive a “B” or higher from reviewers or the level of overall evaluation (average) should be“B"or higher, and the paper that is awarded “acceptance after minor revisions” should have its satisfactory revisions and/or developments confirmed by the initial reviewer after re-submission.

d.The editorial board shall confirm that papers in consideration for publication are suitable to the writing and submission guideline of JAARS, look through detailed matters, and decide particular issue policies such as the number of papers and the order of them.

e.In the case where a paper was presented or submitted for review previously, it cannot be published in JAARS.
f.In the case where an author submits two or more papers for consideration, only one paper that receives "acceptance"shall be published in the same issue.

Article 17 (Notification of the Result)

a.The chief editor shall notify an author of the review result after the initial evaluation or re-evaluation is finished, but can request the author to revise and develop the paper based on the evaluation report. If the editorial board makes a final decision on publication, the author should be notified.
b.The author must be notified of the review result within one month from the day of receiving the paper or revised paper (or the deadline of submission). If it is impossible to notify the author within one month, the reason and the due date of notification must be notified to the author.
c.Unless there is a specific reason, the author must submit a file including a response to the evaluation report, revision to and/or development of the paper to the chief editor after editing the paper within the period the editorial board suggests when he/she is asked to edit the paper. The changed details must be confirmed by the editorial board as well. In case the author does not submit the revision and development to the editorial board within the period, it shall be automatically postponed until this process is finished.
d.A paper that receives a "C" in the overall evaluation (average) shall be re-evaluated after the chief editor sends the revised article and revision report to the initial reviewer(s).
e.In cases where the evaluations of the same paper are remarkably different among reviewers, the chief editor can nominate a third reviewer and request a re-evaluation. In this case, the chief editor shall send the evaluation report to three different reviewers and have them submit the final evaluation report based on the details of the paper, and the paper can be published after revision only if the final mark awarded the revised paper is higher than a "B" in the overall evaluation.
f.The chief editor will issue an acceptance letter for the papers confirmed to be published.

Article 18 (Proofreading and Editing)

a.The chief editor shall request domestic/international members to proofread and edit papers confirmed to be published.
b.Proofreading and editing members shall be recommended by the chief editor and appointed by the chairman of NLBA Eurasian Institute.
c.The chief editor shall send the results of proofreading and editing to the original author and request the author to edit the paper appropriately.
d.The author, unless there is a specific reason, must submit the revised paper and revision report to the chief editor after editing the paper within the period the editorial board suggests when he/she is asked to edit the paper. The changed details must be confirmed by the editorial board as well.
e.Even if a paper is confirmed to be published, it will be rejected if it has not fulfilled the editing procedure following the result of proofreading and editing, or has been found to have committed research misconduct of any kind.
f.If an editing member finds plagiarism, inadequate form, or low quality in the process of editing a paper that the journal has confirmed to be published, he/she must notify the chief editor. and can suggest proper responses to the findings. g. The chief editor suggests whether to avoid publication of a paper or have the author re-submit the paper after revision and development according to the guidelines stipulated in Article 5. In the case of a paper requested to be revised and developed, publication can be postponed based on the degree of completion and the schedule of revision and development.

Chapter 5. Editing and Publication

Article 19 (Editing and the Date of Publication)

JAARS is published six times a year in principle. However, if there is a reason such as the number of submitted papers, the committee can increase or decrease the number of issues.

Article 20 (Notification of Editing)

a.The chief editor shall acquire publication consent from the authors of the confirmed papers before printing.

b.The chief editor shall report to the chairman of NLBA Eurasian Institute when the editorial process following editorial policy is completed, and shall further follow the outlined process for printing and editing.

Article 21 (Sanction on Plagiarism and Redundant Publication)

If the ethics committee finds that a submitted paper or a published paper contains plagiarism or was published in another journal, the following sanctions will be taken:

a.Distributing after deleting the relevant paper in the journal if the journal has not been distributed yet,

b.Notification of paper deletion on the website if it the related issue has already been distributed,

c.Notification of the plagiarism or redundant publication of the relevant paper on the website,

d.Banning the relevant author from submitting papers to all journals published by JAARS for two years from the date when plagiarism and redundant publication is found and from presenting in conference,

e.Notifying the author's affiliated organization or institution of the fact of the plagiarism or the redundant publication, if necessary.

Article 22 (Transfer of the Rights of Publication, Duplication, Public Transmission, and Distribution)

a.The right of publication of the paper is owned by NLBA Eurasian Institute unless specified.

b.The author(s) shall transfer the right of duplication, public transmission, and publication to NLBA Eurasian Institute.If they do not agree, the relevant paper cannot be published in JAARS.

Article 23 (Notification of Paper on Homepage)

Papers published in JAARS shall be publicly notified on the JAARS homepage (http://www.nlbaeai.org/)

Article 24 (Etc.)

The matters that are not decided in these rules are either subject to the submission guidelines or decided by the editorial board.

Article 25 (Date of Effectiveness)

These regulations shall be effective as of January 1, 2024.

Author's Check List

Journal of Advanced Academic Research and Economics (JAARS)

Title of Manuscript: _____

Manuscript ID: _____

Please check ☑ to confirm fulfllment of instructions below before submitting your manuscript.

1.General guidelines

□ The submission contains an original manuscript, a checklist, and a copyright transfer agreement.
□ The manuscript follows the journal template, using MS Word.
□ The manuscript consists of a title page, abstract, keywords, JEL Classifications, acknowledgement (if any), main text, references, appendix (if any), tables and figures.
□ The pages are numbered consecutively beginning with the title page.

2.Title page

□ The manuscript consists of title, author(s)name(s), and affliation(s).
□ The lower area of the title page includes the name(s)of the author(s)and e-mail of the corresponding author only.

3.Abstract, Keywords and JEL classifications

□ The Abstract is less than 250 words for an original article.
□ Includes no more than six keywords.
□ Includes no more than five JEL classifications.

4.Main text

□ Subtitles are ordered according to the journal template.
□ All figures and tables are cited in numerical order as they are first mentioned in the text.
□ All figures and tables are referenced within the text.

5.Tables and figures

□ The titles of figures and tables are set flush left above them, capitalizing the first letter of each word in these titles except for prepositions and articles.
□ Vertical lines are avoided in tables.
□ Pictures or photos are supplied in high resolution (minimum 300 dpi) .
□ Pictures or photos are supplied at a reasonably legible size for printing if they may be affected by resizing in the printing process.

6.References

□ References follow KITRI style.
□ Each entry in the reference list is cited in the main text.
□ All references are listed in alphabetical order followed by the year published.
□ The title of books and journals is expressed in italics.
□ Complete references are included with the full title of the article and up to six author names. Where there are seven or more authors,they are identified as "et al."
□ Journal articles have been double-checked as to whether the author name, (published year), title, joumal name, volume (issue number) and pages are correct.
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All authors of this manuscript must agree to the following:

1. All authors certify that the manuscript does not violate any copyright and confirm its originality.

2. All authors have made an actual and intellectual contribution to this manuscript and hold responsibility for its contents.

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4. The "Journal of Advanced Academic Research and Studies" has rights in legal action against the infringement of copyright of this manuscript without authors'permission.

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In order for my manuscript to be accepted for publication in the Journal of Advanced Academic Research and Economics (JAARS), I hereby assign and transfer to the NLBA Eurasian Institute all rights, title, and interest in and the copyright in the manuscript, entitled.

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Corresponding Author: Signature:

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Call for Papers

Journal of Advanced Academic Research and Economics (JAARS)

The Journal of Advanced Academic Research and Economics (JAARS) is the official publication of the NLBA Eurasian Institute publishes manuscripts of significant interest that contribute to the theoretical and practical basis of business, economics, and international trade studies. JAARS's broad scope and editorial polices create accessible, thought-provoking content for the general academic community of business, economics, and international trade.The goal of JAARS is to publish insightful, innovative and impactful research on business, economics, and international trade. JAARS is multidisciplinary in scope and interdisciplinary in content and methodology.

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JAARS is an interdisciplinary journal that welcomes submissions from scholars in business, economics, and trade disciplines and from other disciplines (e.g,political science) if the manuscripts fall within the JAARS domain statement. Papers are especially welcome which combine and integrate theories and concepts that are taken from or that can be traced to origins in different disciplines.

JAARS is a methodologically pluralistic journal.Quantitative and qualitative research methodologies are both encouraged, as long as the studies are methodologically rigorous.Conceptual and theory-development papers, empirical hypothesis-testing papers, and case-based studies are all welcome. Mathematical modeling papers are welcome if the modeling is appropriate and the intuition explained carefully.

Notes for Prospective Authors

Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere. All papers are referred through a peer review process.

All manuscripts should follow the submission guidelines on the JAARS homepage ((http://www.nlbaeai.org/).

JAARS operates an on-line submission system. Manuscripts should be submitted to the on-line submission system at http://www.nlbaeai.org following all prompts on the screen.
There is no firm submission deadline for papers and the submitted articles will be evaluated on a rolling basis.
Any queries should be sent to the Editor of JAARS at the following address:edubscon@outlook.com

Guidelines for Authors (In Brief)
[Journal of Advanced Academic Research and Studies (JAARS)]

How to submit the paper

The authors submit their manuscripts (in MS Word Format) to the on-line submission system at http://www.nlbaeai.org

Blind Review Policy

The journal follows double blind peer review policy. The paper is sent to two reviewers appropriately qualified experts in the field selected by the editor to review the paper in the light of journal's guidelines and features of a quality research paper. For papers which require changes, the same reviewers will be used to ensure that the quality of the revised paper is acceptable.

Manuscript Preparation Guidelines

The author(s) must follow the Manuscript Preparation Guidelines in preparing the manuscript before submission.

1. Language

The language of the manuscript must be English (American English, e.g. "color" instead of "colour").

2. Length of Paper

The length of the paper should not exceed 30 pages (Times New Roman, 12 Font) excluding tables, figures, references and appendices (if any). Articles should be typed in double-space (including footnotes and references) on one side of the paper only (preferably Letter size) with 1 inch margin. Authors are urged to write as concisely as possible, but not at the expense of clarity.

3. Title Page

The title page should include: (i) A concise and informative title, (ii) The name(s) of the author(s), (iii) The affiliation(s) and address(es) of the author(s), and (iv) The e-mail address, telephone and fax numbers of the corresponding author.

4. Abstract

Please provide an abstract of 200 to 250 words. The abstract should not contain any undefined abbreviations or unspecified references. The content of abstract must include Purpose, Design/Methodology/Approach, Findings, and Research Implications.

5. Keywords and JEL Classification Code

Please provide 4 to 6 keywords which can be used for indexing purposes.

6. Acknowledgement

The author may use acknowledgement section in the title page of the paper (if any).

7. Subdivision of the article

Divide your article into clearly defined and numbered sections. Sections should be numbered in Roman numerals (e.g., I, II). Subsections should be numbered using the decimal system (e.g., 1., 1.1., 1.1.1., 1.1.2., 1.2., …, 2., 2.1.). The abstract is not included in section numbering.

8. Table and Figure

Present tables and figures within the article, not at the end of the article. Please note that the article will be published in black and white (print), although online version will contain the colorful figures (if any). However, the color print will be available in extreme cases as per the request of the author.

9. References

Author(s) should follow the latest edition of KITRI style in referencing. Please visit www.nlbaeai.org to learn more about KITRI style.

■ **Citations in the text**

Please ensure that every reference cited in the text is also present in the reference list (and vice versa).

■ **Reference List**

References should be arranged first alphabetically and then further sorted chronologically if necessary.

Guidelines for Authors (In Brief)
[Journal of Advanced Academic Research and Studies (JAARS)]

■ **Examples:**

Reference to a journal publication:

Wegener, D. T., J. F. Dollan and Soon-Hwan Jeon (2015), "Current Trends of Marketing Activities in Parallel Imports", Journal of Asia Trade and Business, 11(5), 55-57.

Hyun, Jun-Seog and Won-Joong Kim (2015), "A Study on the Effects of Export-Import Share and Exchange Rate", Journal of International Trade & Commerce, 11(1), 142-145. http://dx.doi.org/10.16980/jitc.11.1.201502.139

NB: For Oriental authors such as Korean, Chinese and Japanese authors, the first names are spelled out. Names shall be romanized according to their own preference. For Korean authors, the first and second syllables of first names shall be hyphenated.

Reference to a book:

Schmithoff, C. M. (2010), Letter of Credit, New York, NY: Pitman Press, 158.
Jeon, Soon-Hwan (2017), International Trade Practices (5th ed.), Seoul: Hanol, 156.

Reference to a chapter in an edited book:

Bomhoff, E. J. (1998), "Introduction". In E. M. Rogers and S. Taylor (Eds.), The Global Leadership Mindset (2nd ed.), Oxford, UK: Oxford University Press, 12-25.

Reference to a web source:

Liu, Chengwei (2005), Price Reduction for Non-conformity: Perspectives from the CISG. Available from http://www.cisg.law.pace.edu/cisg/biblio (accessed January 11, 2016)

Manuscript Review Timeframe

Manuscripts will be initially reviewed by the Editor within two weeks from submission.

The Editor will contact the corresponding author with news of whether or not the submission will be advanced to the first round of blind reviews (or is being rejected as not suitable for publication in the journal).

Typically, the blind review process takes approximately six to eight weeks.

The JAARS does not process any submission that does not comply with complete requirements of submission guidelines.

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