

## Research on the Impact Effects of New Quality Productive Forces on the High-Quality Development of the Tourism Industry: An Empirical Postprint Based on Nine Provinces and Regions in the Yellow River Basin

**Authors:** Zhou Wenli, Wu Shanshan, Peng Su

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### Abstract

Exploring the influence mechanism of new quality productive forces on the high-quality development of the tourism industry and clarifying its impact effects can facilitate the high-quality development of tourism. Taking the nine provinces and autonomous regions in the Yellow River Basin as the research objects, this study constructs an evaluation index system for new quality productive forces and the level of high-quality tourism development. Utilizing the entropy method, fixed effects models, and mediation effect models, the study measures the new quality productive forces and high-quality tourism development of the nine provinces and regions in the Yellow River Basin from 2013 to 2022, and analyzes the impact effects of new quality productive forces on high-quality tourism development.

The results indicate that: (1) New quality productive forces have a significant positive promoting effect on the high-quality development of the tourism industry. (2) The integration of culture and tourism, along with technological progress, plays a mediating role between new quality productive forces and high-quality tourism development. (3) The promoting effect of new quality productive forces on high-quality tourism development is more pronounced in regions with lower levels of economic development. (4) The constituent elements of new quality productive forces—including new technologies, laborers, objects of labor, and means of labor—all contribute to the high-quality development of the tourism industry, with the roles of laborers and means of labor being more prominent at the current stage. Consequently, various regions should fully emphasize the leading value of new quality productive forces and formulate differentiated development strategies based on regional realities to promote

the high-quality development of the tourism industry and contribute to the realization of Chinese-style modernization goals.

## Full Text

### Preamble

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#### GEOGRAPHY

Research on the Impact of New Quality Productive Forces on the High-Quality Development of the Tourism Industry: An Empirical Analysis Based on Nine Provinces and Regions in the Yellow River Basin

Zhou Wenli, Wu Shanshan, Su

(School of Business Administration, Lanzhou University of Finance and Economics, Lanzhou, Gansu 730020, China)

### Abstract

Exploring the underlying mechanisms by which new quality productive forces influence the high-quality development of the tourism industry, and clarifying their specific effects, can significantly facilitate the high-quality transformation and upgrading of the tourism sector. This research is essential for understanding how emerging technological innovations and optimized resource allocations drive sustainable growth within the industry.

To promote high-quality regional development, this study focuses on the nine provinces and autonomous regions within the Yellow River Basin. We constructed a comprehensive indicator system to measure the levels of “new quality productive forces” and the high-quality development of the tourism industry. Utilizing the entropy weight method, fixed effects models, and mediation effect models, we measured and analyzed the evolution of these two variables across the nine provinces from 2013 to 2022.

The results indicate that: (1) New quality productive forces exert a significant positive influence on the high-quality development of tourism. (2) Culture-tourism integration and technological progress play a mediating role between new quality productive forces and the high-quality development of the tourism industry. (3) The promoting effect of new quality productive forces on the high-quality development of the tourism industry is more pronounced in regions with lower levels of economic development. (4) Various constituent elements of new quality productive forces—including new technologies, laborers, objects of labor, and means of labor—all contribute to the high-quality development of the tourism industry; at the current stage, the roles of laborers and means of labor are particularly prominent. Consequently, regions should attach great

importance to the leading value of new quality productive forces and formulate differentiated development strategies based on regional realities.

**Keywords:** New Quality Productive Forces; High-quality Development of Tourism; Integration of Culture and Tourism; Technological Progress; Yellow River Basin

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## 1. Introduction

The concept of “new quality productive forces” represents a significant theoretical innovation in the contemporary discourse on economic development. As a driver of high-quality development, these forces are characterized by innovation, high efficiency, and high quality, moving beyond traditional growth models. In the context of the tourism industry, the integration of new quality productive forces is essential for transitioning from traditional resource-driven growth to innovation-driven development. This is particularly relevant for the Yellow River Basin, a region of immense cultural and ecological significance that faces unique challenges in balancing economic growth with environmental preservation.

In 2024, General Secretary Xi Jinping emphasized that developing new quality productive forces is an intrinsic requirement and a critical focus for promoting high-quality development. These forces represent a departure from traditional economic growth models and conventional paths of productivity development. They are driven by revolutionary technological breakthroughs, the innovative allocation of production factors, and profound industrial transformation. A fundamental hallmark of new quality productive forces is a significant increase in Total Factor Productivity (TFP).

## 2. Theoretical Framework and Research Hypotheses

### 2.1 The Essence and Characteristics of New Quality Productive Forces

The core of new quality productive forces lies in the integration of cutting-edge technologies—such as artificial intelligence, quantum information, and green energy—into the production process. This transformation involves a revolutionary breakthrough in production factors and their combination. By leveraging machine learning and deep learning algorithms, industries can optimize resource allocation and foster the emergence of strategic industries.

[Figure 1: see original paper]

As illustrated in [Figure 1: see original paper], the transition from traditional to new quality productive forces involves a multi-dimensional evolution across labor, instruments of labor, and subjects of labor. Scientific and technological innovation is the “soul” of this process. In advanced manufacturing, the optimization of production schedules can be represented by the objective function:

$$\min Z = \sum_{i=1}^n \sum_{j=1}^m c_{ij} x_{ij}$$

where  $x_{ij}$  represents the allocation of resources and  $c_{ij}$  denotes the associated cost coefficients. Furthermore, the integration of  $\mathcal{F}$ -type functional transformations in data processing allows for the extraction of high-value insights from massive datasets [?].

## 2.2 Impact of New Quality Productive Forces on Tourism

New quality productive forces act as a catalyst for structural optimization within the tourism industry. By leveraging innovations such as big data and the Internet of Things (IoT), the industry can transition from labor-intensive models to technology-intensive frameworks.

**Hypothesis 1 (H1):** New quality productive forces significantly promote the high-quality development of the tourism industry in the Yellow River Basin.

**Hypothesis 2 (H2):** Culture-tourism integration plays a significant mediating role in the relationship between new quality productive forces and the high-quality development of the tourism industry.

**Hypothesis 3 (H3):** Technological progress plays a significant mediating role in the relationship between new quality productive forces and the high-quality development of the tourism industry.

## 3. Research Design and Methodology

### 3.1 Variable Selection

1. **Dependent Variable: High-quality development of the tourism industry (QDT).** This is measured through a comprehensive evaluation index system including the scale of the tourism economy, tourism supply quality, and industry efficiency.
2. **Explanatory Variable: New quality productive forces (NQP).** This includes dimensions of new technology, labor value creation, means of labor (industrial digitization), and objects of labor (industrial upgrading and green development).
3. **Mediating Variables:** Culture-tourism integration (CT) and Technological Progress (TTI).
4. **Control Variables:** Household Consumption Demand (CD), Social Consumption (SOC), Labor Force Level (EMP), Education Level (EDL), Foreign Direct Investment (FDI), and Informatization Level (IFM).

### 3.2 Model Specification

To verify the impact and explore the mediating mechanisms, we construct the following benchmark regression and mediation models:

$$QDT_{it} = \alpha_0 + \alpha_1 NQP_{it} + \alpha_2 ControlVariables_{it} + \mu_i + \lambda_t + \epsilon_{it}$$

$$CT_{it} = \gamma_0 + \gamma_1 NQP_{it} + \gamma_2 ControlVariables_{it} + \mu_i + \lambda_t + \epsilon_{it}$$

$$QDT_{it} = \phi_0 + \phi_1 NQP_{it} + \phi_2 CT_{it} + \phi_3 ControlVariables_{it} + \mu_i + \lambda_t + \epsilon_{it}$$

Where  $i$  represents the province,  $t$  represents the year,  $\mu_i$  denotes individual fixed effects, and  $\lambda_t$  denotes time fixed effects.

### 3.3 Data Sources

This study utilizes provincial panel data from nine provinces and autonomous regions in the Yellow River Basin spanning 2013 to 2022. Data were sourced from the *China Statistical Yearbook*, *China Cultural Relics and Tourism Statistical Yearbook*, and provincial statistical yearbooks. Missing values were addressed using mean imputation.

## 4. Results and Analysis

### 4.1 Descriptive Statistics

The descriptive statistics () show that the mean value of high-quality tourism development (QDT) is 0.310, indicating a relatively low overall level with significant regional gaps (max 0.835, min 0.013). The new quality productive forces (NQP) show a mean of 0.222.

### 4.2 Benchmark Regression

The benchmark regression results () indicate that the coefficient  $\alpha_1$  is significantly positive, supporting Hypothesis H1. This suggests that new quality productive forces provide a powerful driving force for the high-quality development of the tourism industry.

### 4.3 Mechanism Analysis

The mediation analysis confirms that both culture-tourism integration (CT) and technological progress (TTI) serve as significant pathways. New quality productive forces facilitate the high-tech and high-efficiency integration of culture and tourism, while disruptive innovations generate fresh momentum for the industry.

## 5. Conclusion and Policy Recommendations

The development of new quality productive forces is essential for the high-quality transformation of the tourism industry in the Yellow River Basin. Regions should: 1. Strengthen scientific and technological innovation to master core technologies. 2. Promote the deep integration of culture and tourism through digital empowerment. 3. Formulate differentiated strategies based on regional economic realities to bridge the development gap. 4. Enhance human capital by cultivating high-quality talent capable of navigating the digital economy.

*Note: Figure translations are in progress. See original paper for figures.*

*Source: ChinaXiv – Machine translation. Verify with original.*