Energy Development and Economic Growth in the Western Region Based on Energy Internet Marketing Services

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Abstract: Energy is an important material basis for economic and social development. The western region of our country has always been at a relatively low level of economic development, although there are abundant types of energy and huge reserves. The purpose of this paper is to study the energy development and economic growth in the western region based on the energy Internet marketing service. Based on the panel data of 12 western provinces, this paper analyzes the development status of the western region from three aspects: the basic situation, energy endowment, and economic status of the western region. Further selected control variables to analyze the impact mechanism of the resource curse, the resource curse effect in western my country is mainly due to the large-scale development of energy that inhibits the upgrading of the manufacturing industry and causes pollution to the environment. Finally, according to the economic effect of natural energy, the transmission mechanism of resource curse and the theory of economic growth, a feasible service channel management and integration strategy for the development of western energy to promote economic development is proposed.

1. Introduction

With the launch of the "Internet +" new economic form, the business environment of energy companies is more dynamic and challenging than ever [1-2]. At the policy level, with the deepening of the national energy system reform and the reorganization of public institutions, energy companies are facing pressure from other commercial companies and energy companies to enter the market [3-4]. On an economic level, overcrowding is widespread, and energy companies face weak product development. Under the background of the era where the state encourages innovation and entrepreneurship, and further promotes the application of Internet +, "Internet +" will be more quickly applied to various industries and develop rapidly [5-6].

The development and progress of the energy industry has always been a key industry and field in my country [7]. Debiev M V provides an overview of the energy situation in the world and in

Russia, focusing on the development of renewable energy sources (RES). An analysis of trends in the production and consumption of energy resources and an assessment of the use of renewable energy in Russia. Identify incentives to develop renewable energy with world-usable characteristics. The conclusion was drawn on the importance of developing the industry in Russia and the Chechnya Republic as one of its regions [8]. Kurbatova T developed the organizational stage of the formation of the mechanism at the national level and the method of assessing the cost of green power generation. Modelling shows that a 1% increase in the green electricity consumption cap per year will increase electricity bills by 3%, which is not a big financial burden on consumers. The proposed changes to the tradable green certificate system can be an effective management tool to achieve the required amount of renewable energy in the country's total electricity consumption and promote the development of the renewable energy sector in Ukraine [9]. It has important strategic research significance to give full play to the natural advantages of regional comprehensive energy service providers.

The research of this paper draws on and adopts some common research methods of service marketing, Internet +, industrial economics and other disciplines, and comprehensively fits some research methods and methods of statistics and econometrics. Based on the relevant theories and the analysis of the current situation of the "resource curse" in the energy development in the western region, the simulation and measurement of the "resource curse" effect in energy development are carried out, and the strategy of energy development and economic development is obtained through a combination of theory and practice analysis. ideas and policy recommendations.

2. Research on Energy Development and Economic Growth in the Western Region Based on Energy Internet Marketing Services

2.1. The Meaning and Characteristics of Service Marketing

Due to the nature of services, service marketing has many different characteristics from product marketing:

Since the service is intangible, it is difficult for customers to perceive and judge its quality and effect, and they will make more judgments based on tangible clues such as service facilities and environment. Therefore, "tangible image" has become an important tool for service marketing.

Customers directly participate in the service production process, and communicate and interact with service personnel in this process, which challenges traditional marketing and product quality management theories.

2.2. Internet+

Internet+ is actually a comprehensive upgrade of the integration of industrialization and industrialization, which refers to the comprehensive promotion of the integration of Internet and industry, commerce, finance, agriculture, education, sports and other industries with information technology as the core [10]. To put it simply, "Internet +" refers to Internet technology plus traditional industries. Various industries use advanced information technology and network platforms to integrate and innovate the Internet and various industries to create new business, service, profit, and operation models [11]].

In the Internet+ era, all industries including modern industries and traditional industries will be Internet-based, and the production models, marketing service models, publicity models, and profit models of various enterprises will need to undergo profound transformation [12-13].

2.3. Characteristics of Energy Development

(1) Transformation and transfer chemical properties and their development characteristics

Energy, as a substance or material movement, determines the chemical natural properties of its transformation and transmission, thus laying a feasible door for the all-round and multi-functional development and utilization of human beings. Not to mention that coal, oil, natural gas, uranium and other substances require chemical reactions before they can be converted into various energy sources for human use [14-15]. For example, the ancient water diversion irrigation is the application of the kinetic energy and potential energy conversion principle of water, the drum car is a rough tool for water energy transmission, and the modern hydroelectric generator generates electricity, which is also the application of the water energy energy conversion principle. It is a precise tool for the rapid and efficient conversion of water energy into electrical energy [16].

(2) Alternative use attributes and their development characteristics

At present, coal, oil, natural gas, uranium, neon, neon and other substances and water energy and other substances can be converted into electrical energy through technical means, and electrical energy can also be converted into various mechanical energy, light energy, chemical energy, so energy consumption The serious layout of related industries can be realized better and faster through the alternative utilization of energy, and then contribute to regional development. For example, the aluminum chemical industry, which is heavily dependent on electric energy, can not only be deployed in areas rich in water energy, but also in areas rich in coal mines, and in areas rich in ocean energy, thereby enabling the development of the power industry in these areas. The speed and intensity, the quality and structure of energy utilization, the speed and extent of industrialization, as well as the speed of economic growth and regional development are directly or indirectly affected [17].

3. Investigation and Research on Energy Development and Economic Growth in the Western Region Based on Energy Internet Marketing Services

3.1. Overview of the Basic Situation of the Western Region

The western region of my country includes twelve provinces, municipalities and autonomous regions. The western region has a vast territory and rich resources, and has certain development advantages. However, because most of the western regions are relatively remote, there is a certain lag in talent introduction and technological reform. In addition, the western region has long been dominated by resource development and processing industries. , caused a certain pressure on the local environment.

Using provincial-level data in the western region from 2018 to 2021, verify the existence of the resource curse effect from three aspects: the Dutch disease effect, the crowding-out effect and the industrial effect, and then analyze the correlation between each control variable and economic growth, and clarify the obstacles to economic development in the western region influencing factors.

3.2. Model Setting and Index Selection

(1) Model setting

This paper fully considers the impact of the economic growth level in the lag period on the current period. The one-period lag $EG_{i,t-1}$ of the economic growth level of the explained variable is

introduced as one of the explanatory variables of the model, and the following dynamic panel econometric model is established for empirical analysis:

$$EG_{it} = \beta_0 + \lambda EG_{i,t-1} + \beta_1 X + \mu_{it} \qquad (1)$$

Among them, X is all other explanatory variables except the constant term in formula (1); β_0 and β_1 are parameters to be estimated; μ_{it} is a random interference item.

(2) Index selection

Economic growth level: Select the per capita GDP growth rate of each province to measure the economic growth level, expressed as EG.

Energy industry dependence: Select the proportion of employment in the mining industry to the total employment population in each province to measure the level of energy development, expressed as NR.

The natural logarithm of per capita GDP of one lag period: the introduction of this variable can control the initial differences of the regional economies, reduce the impact of the initial differences on the estimated results, and ensure the reliability of the results, expressed as L.InY.

Fiscal budget constraint: The introduction of fiscal budget constraint, a government intervention indicator, can represent the degree of participation of provincial governments in the development of the energy industry, and the per capita fiscal revenue is selected to measure the fiscal budget constraint, which is expressed as FB.

Manufacturing development level: Select the ratio of the number of employees in the manufacturing industry to the total number of employees to measure the development status of the manufacturing industry, expressed as MP.

Environmental pollution degree: Considering the sustainability of energy development and the impact of environmental expenditure on the economy, this paper selects sulfur dioxide emissions as a measure of environmental pollution degree, expressed as SO.

In this paper, three transmission variables, namely fiscal budget constraint, manufacturing development level and environmental pollution degree, are selected as explained variables, and the natural logarithm of per capita GDP per capita is introduced into the model as a basic control variable to control the economic growth of each province. Therefore, the following dynamic regression model is constructed to study the correlation between energy dependence and various conduction variables.

$$Z_{it} = \varphi_0 + \varphi_1 Z_i + \varphi_2 L.InY + \varepsilon_{it} \qquad (2)$$

Among them, the explained variable Zit is the vector set composed of the above three conduction variables; φ_1 is the parameter to be estimated, and ε_{it} is the random disturbance term.

4. Analysis and Research on Energy Development and Economic Growth in the Western Region Based on Energy Internet Marketing Services

4.1. Demonstration of the Relationship between Energy Development and Economic Growth

This paper also adopts the method of gradually adding control variables to carry out empirical test, and uses Hansen to test the over-identification constraints of instrumental variables, and uses Arellano-Bond test to judge whether the choice of instrumental variables is reasonable. The empirical results are shown in Table 1:

Table 1. Relationship between energy development and economic growth

Index	Model 1	Model 2	Model 3	Model 4
EG	0.615	0.776	0.805	0.824
NR	-0.182	-0.194	-0.176	-0.215
L.InY	0.222	1.525	1.367	1.482
FB		-0.001	-0.002	-0.004
MP			0.071	0.082
SO				0.008

Model 1 only takes the growth rate of per capita GDP and the logarithm of per capita GDP for one period as the basic control variables for analysis. The results show that the coefficient of energy industry dependence on NR is negative, and it has passed the 5% significance level test. Afterwards, three basic economic indicators, namely, fiscal budget constraint, manufacturing development level and environmental pollution degree, were gradually added to Model 2 to Model 4, respectively. The sign of the coefficient of dependence on NR in the energy industry remained unchanged, and through the 5% significance level test, it showed that Energy development does have a deterrent effect on economic growth. The coefficient of fiscal budget constraint is significant at the level of 5%, and the coefficient of the level of manufacturing development and environmental pollution is significant at the level of 10%. The fiscal budget constraint coefficient is negative, indicating that the higher the per capita fiscal revenue, the slower the economic growth rate.

The fixed effect model is used to test and analyze the transmission mechanism of slow economic growth caused by energy dependence. The empirical results are shown in Table 2.

Table 2. Estimated results of the impact mechanism of the resource curse effect

Model	Lag period	R^2 test
FB	0.69	0.92
MP	0.77	0.95
SO	0.82	0.94

In the FB model, the energy industry dependence coefficient is significantly positive at the level of 5%, which indicates that energy development is conducive to improving per capita fiscal revenue, as shown in Figure 1.

In the MP model, resource dependence has a negative effect on the level of manufacturing input. Energy development has high profits, and a lot of investment flows to energy-based industries. The increase of resource income level and factor cost makes the development of manufacturing industry face difficulties in the western region.

In the SO model, the degree of environmental pollution caused by energy industry dependence is significantly positive at the level of 1%. It shows that the development of the energy industry in the western region is more serious to the environmental pollution, and shows that the development of the energy industry in the western region is still based on the premise of sacrificing the environment and promoting economic development with a large amount of energy consumption.
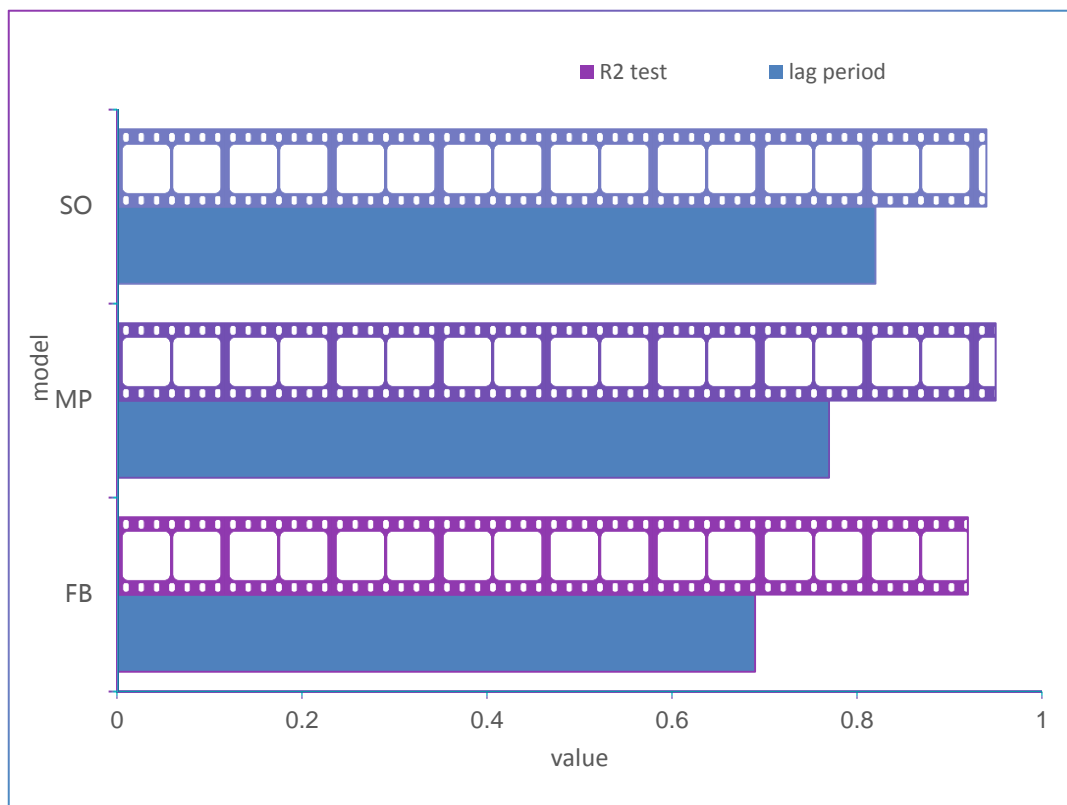
Figure 1. Empirical results

4.2. Service Channel Management Integration Strategy

(1) Build a unified energy integrated service channel management organization system

In order to do a good job in the integration of service channels, Xinjiang Tianfu must first determine a unified service channel management organization, establish a service channel management team with clear functions, and be responsible for the overall management of all service channels of the enterprise, so as to realize the integrated operation management of service channels. , mainly includes: unified planning, integration, management and maintenance of service channels, including channel positioning, functional improvement management, customer access, etc., in order to improve the degree of coordination and cooperation between channels, comprehensive utilization of resources, and ultimately achieve service Channel value utilization is optimized, as shown in Figure 2.

(2) Build an "Internet +" energy integrated service channel information technology platform

In the process of building the information system platform, special attention should be paid to the development of information collection, analysis and sharing functions of service channels to meet the individual needs of customers and achieve precise marketing. First, it is necessary to comprehensively collect customer information, including basic customer information, business information, consumption information, channel contact history information, etc., in order to conduct customer identification, customer value judgment, business and product recommendations, channel preference recommendations and other strategies; three It is to share customer information, realize channel coordination and diversion, so as to enhance the precise marketing ability and customer retention ability of service channels, as shown in Figure 3.
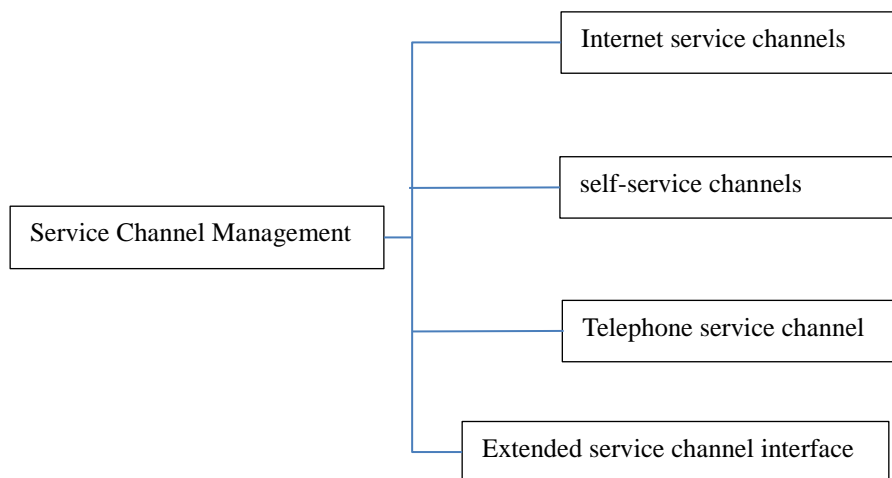
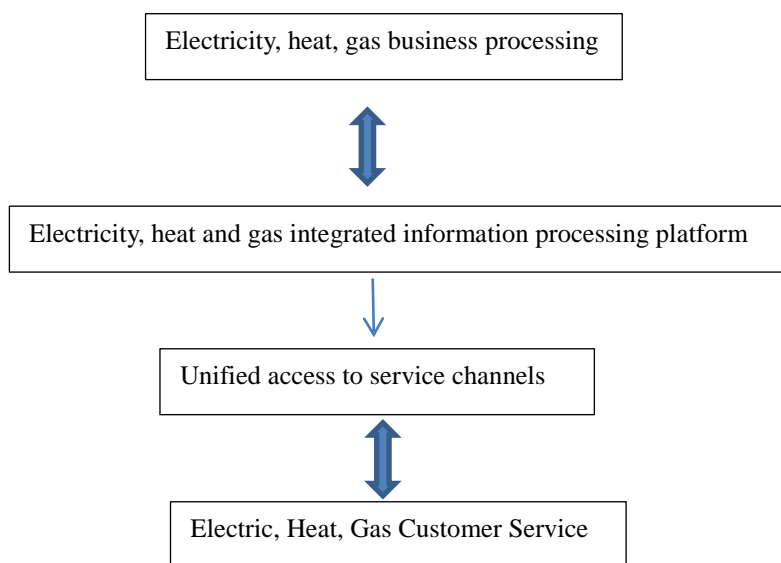*Figure 2. Organizational chart of service channel integrated management*

Figure 3. Unified information platform system framework

5. Conclusion

Since the Industrial Revolution, the ecological environment has been deteriorating, and the sustainable development of human society has been seriously threatened. Based on the analysis of the characteristics of energy demand development in the western region in recent years, this paper is closely related to the background of energy reform and supply and demand, and through the empirical analysis of the relationship between energy development and economic growth, combined with the current situation of enterprises, puts forward a demand-based The management's service marketing strategy "aims to hope that the research in this paper can play a role in attracting new

insights, and thus contribute to the development of the regional economy and regional energy enterprises.

Funding

This article is not supported by any foundation.

Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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