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Comparative Research on States of Cross-Border Electricity Supplier Logistics

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Abstract

Development of cross-border electricity supplier logistics opens up sales channels in recent years for individual national products. The development of cross-border electricity supplier logistics is in four countries: China, UK, Japan and the United States, and they are the most advanced countries. In order to research the advanced mode of cross-border electricity supplier logistics, the paper focuses on the export trade and it compares with each other. The SPSS analysis method is used for the correlation analysis, and significant regression equation is an important conclusion of our concern. For insignificant variables, we use the model of fitting method and the forward entry method because it cannot significantly reject interference variables, and optimize the regression equation. We conclude that world trade and import or export trade link closely with UK. We propose that China should learn from the United Kingdom, increase cross-border investment in large electricity provider of logistics and make the use of the profit of cross-border electricity supplier.

Keywords

1. Introduction

In recent years, China has great development in cross-border electricity. The world economy is also the simultaneous development of each country, and the development of cross-border electricity supplier metrics is hard to define. In the course of the study, we will take China's import and export data for analysis. China's import and export data can be instead of the data of cross-border electricity supplier. Data analysis is an important evidence for the development of Chinese cross-border electricity supplier. In recent years, many scholars study the cross-border electricity supplier logistics: Zhang Xiaheng and scholar Ma Tianshan (2015) suggested that for China's cross-border electricity supplier logistics, there were many difficulties, and the Chinese government must help enterprises

out of difficulties [1]. Li Chi (2015), for cross-border electricity supplier logistics problem, made numerous trends of cross-border electricity supplier and reasonable recommendations [2]. Zhang Hui (2015) uses the common method of statistical analysis, and SWOT analysis method is adapted for China's cross-border electricity supplier logistics [3]. Pang Yan (2015) proposed that the development of cross-border electricity supplier for international trade has a very good role in promoting international logistics model [4]. Zhong Qizhuang (2015) and Wang Feng (2016) respectively put forward the meaning of cross-border electricity supplier logistics and make a detail comparison with their situation. They think that the cross-border electricity supplier logistics are suitable for the development of Hong Kong or Macao [5] [6]. Through learning the above articles, this paper uses SPSS software to compare and analyze the countries' import and export trade data.

2. Analysis of States of Import and Export Trade

For a clear analysis of China's cross-border electricity supplier situation, we take China, UK, Japan and the United States to compare, and the import and export trade and import and export situation in four countries around the world to compare the data collected by the time this paper is from 2004 to 2014. The following data are from China Statistical Yearbook. We can see that the data as shown in **Table 1** are the import trade data for each country, and **Table 2** is export data in various countries.

Table 1. Countries' import trade data (Unit: US $).

Year	China	UK	Japan	USA	World
2004	5933	3475	5657	8188	91,910
2005	7620	3779	5958	9043	103,930
2006	9689	4487	6470	10,366	121,080
2007	12,180	4356	7128	11,632	138,980
2008	11,326	6330	7625	21,695	164,930
2009	10,057	4799	5507	16,038	126,470
2010	13,951	5575	6926	19,681	153,760
2011	17,435	6737	8554	22,659	184,870
2012	18,181	6804	8858	23,354	185,670
2013	19,500	6558	8332	23,291	189,040
2014	19,603	6829	8223	24,094	190,240

Table 2. States of export trade data (Unit: US $).

Year	China	UK	Japan	USA	World
2004	5612	4706	4545	15,255	95,450
2005	6601	5012	5161	17,327	107,530
2006	7915	6012	5796	19,181	124,270
2007	9558	6172	6210	20,170	142,110
2008	14,307	4597	7820	12,874	160,970
2009	12,015	3507	5808	10,569	124,610
2010	15,778	4047	7698	12,781	152,380
2011	18,984	5025	8232	14,804	182,910
2012	20,488	4684	7986	15,473	183,230
2013	22,090	5410	7151	15,796	188,260
2014	23,427	5068	6838	16,232	189,350

It shows a very clear trend, and the import and export goods are in order to grasp the situation in China, and the Chinese data and the data in the world will be on the data comparison, China and the United Kingdom, Japan, the United States, their relationship are difference, we take SPSS analysis method, SPSS analysis is now a widely popular modern statistical theory and method, the paper uses SPSS analysis of import and export with four countries correlation analysis and linear regression analysis, the data results are shown below in table 3, they are imported each country analysis in table 4 countries analysis.

Data in **Table 3** can be seen in the development of each country, China's average import goods is $1.3225 trillion, an average of US imports is $1,727,645,000,000, imports of China ranked second in the world, indicating that Chinese imports of goods more China-made products need to be further developed because imported products are required to spend a high price to acquire the State is certainly profitable exporter.

Correlation analysis allows us to know closely inter-country imports, and **Table 4** tells us that the UK is imported products and the world's most closely, the correlation coefficient is 0.96 in China and the world, second only to the United Kingdom, in the same manner, in various countries between China and the United Kingdom correlation coefficient is 0.907, it shows the relationship between China and the United Kingdom imports closely, which also shows the need to strengthen cooperation between China and the UK. China imports a large quantity, indicating the proportion of Chinese consumers to buy foreign products is large, Chinese cross-border electricity supplier has a good presence of necessity. Export-related data in each country are shown in **Table 5**.

Table 3. Descriptive statistics.

	Mean	Standard deviation	N
World	150,080.00	35,884.506	11
China	13,225.00	4844.529	11
UK	5429.91	1290.172	11
Japan	7203.45	1203.892	11
USA	17,276.45	6367.144	11

Table 4. States of imported data dependence analysis.

		World	China	UK	Japan	USA
World	Pearson	1	0.960^{**}	0.977^{**}	0.939^{**}	0.957^{**}
	sig		0.000	0.000	0.000	0.000
	N	11	11	11	11	11
China	Pearson	0.960^{**}	1	0.907^{**}	0.905^{**}	0.888^{**}
	sig	0.000		0.000	0.000	0.000
	N	11	11	11	11	11

Table 5. States of export data dependence analysis.

		World	China	UK	Japan	USA
World	Pearson	1	0.960^{**}	0.077	0.866^{**}	−0.094
	sig		0.000	0.822	0.001	0.783
	N	11	11	11	11	11
China	Pearson	0.960^{**}	1	−0.113	0.784^{**}	−0.250
	sig	0.000		0.740	0.004	0.459
	N	11	11	11	11	11

From export data analysis, China's rank is the first in the world, it indicates that China's main export-oriented products are mainly for foreign countries to buy Chinese products, they are mainly explained Cross-border electricity supplier development abroad and it also has a good prospects at the same time, China's exports will inevitably weaken the exports of other countries, and the data in **Table 8** represent the relationship between China and other countries, indicating China's increased sales of foreign products, non-Chinese customers purchasing products will be reduced, the China's development has brought great profits, it will promote the development of China's cross-border electricity supplier.

Regression analysis can well explain the relationship between the various countries and world trade, the test found that imports of regression analysis, DW value test did not pass, and therefore not suitable for importing data regression analysis, regression analysis, data exporting countries (**Tables 6-8**).

Table 6 tells us the goodness of fit of the regression equation by inspection, R2 = 0.997, adjusted R2 = 0.995, indicating that it still can be applied to the value of the regression equation, the establishment of the equation is excellent.

DW test is to identify the establishment of equations residuals, residuals test is to examine the independence of residuals, exports of various countries, residuals DW = 2, instructions residuals independence of each country through inspection.

The regression equation is $y = 3.901 * x_1 + 11.922 * x_2 + 8.155 * x_3 - 0.981 * x_4 - 3390.29$, it shows that China's export volume of each additional unit, it will give world trade increased trade transactions 3.901 units, but the US sig = 0.477 > 0.1, this equation is not significant, so we need to optimize the equation. The United States has a large export trade, and it exhibits a total linear. So we need to optimize the regression equation, and its role is to remove the impact of US trade data. Statistical methods are used herein and it is forward variables, and the results are presented in **Table 9**.

Data optimization process is the best way to solve the problem of collinearity, after taking into the analysis of the variables, the model appears there are three, in order to ensure that each variable significantly, sig values were less than 0.05, we select the first three models, the equation is as follows:

$$y = 3.908 * x_1 + 8.656 * x_2 + 8.527 * x_3 - 5050.635.$$

After removing the impact of the United States, variables in each country are significant, and they can be used as a variable factor in world trade.

Table 6. Regression testing R2.

Model	R	R2	Change R2	Standard deviation
1	0.997[a]	0.995	0.991	3239.146

Table 7. DW test.

| Model | Change | | | | | Durbin-Watson |
	R2	F	df1	df2	Sig. F	
1	0.995	271.892	4	6	0.000	2.303

Table 8. Coefficients.

	Model	B Deviation trial version			t	Sig.
	Constant	−3390.929	9885.620		−0.343	0.743
	China	3.901	0.258	0.737	15.130	0.000
1	UK	11.922	4.513	0.273	2.642	0.038
	JP	8.155	1.421	0.298	5.739	0.001
	USA	−0.981	1.295	−0.081	−0.758	0.477

Table 9. Optimization of regression equation.

Model		B	Deviation trial version		t	Sig.
1	Constant	77,680.887	7655.822		10.147	0.000
	China	5.081	0.494	0.960	10.290	0.000
2	Constant	35,511.796	17,674.877		2.009	0.079
	China	5.194	0.392	0.981	13.240	0.000
	UK	8.226	3.240	0.188	2.539	0.035
3	Constant	−5050.635	9341.753		−0.541	0.606
	China	3.908	0.250	0.738	15.645	0.000
	UK	8.656	1.291	0.198	6.705	0.000
	JP	8.527	1.292	0.312	6.597	0.000

3. Conclusion

After analyzing statistical theory and data, China's import and export rank is in the forefront of the world. It indicates that China's import and export trade will certainly affect China's development of cross-border electricity supplier. Through the increase of import and export products, people need this way of cross-border electricity supplier to meet the stronger consumer demand. In this time, Chinese government should strengthen cross-border electricity to establish a good online network platform; cross-border electricity suppliers should improve the specifications, price, evaluation and after-sales service system of products, and they must build friendships and cooperation with each other in online network platform. Logistics and transport costs, commodity procurement, manufacturing, product customs inspection are all need to be considered. From that, so many factors affect the cross-border electricity supplier, and it really lets consumers make a profit. And the platform is at the cross-border electricity supplier network platform online and offline. But, cross-border electricity supplier logistics are still faced with many problems, such as cash, tariffs, and other trust of providers between countries, and these problems are urgent needed to be addressed.

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