

Application on Mathematical Model of Multivariate Decision in the Marketing Model of Foreign Logistics

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Abstract—The reasonable scientific logistics activity is the core factors that logistics enterprise to obtain sustainable competitive advantage, correctly making use of marketing mode is the important strategic that improve the enterprises' competitive advantages..**Methods:**This article in view of the current logistics globalization and China's foreign present situation of logistics, in systemic constructing optimized model of foreign logistics marketing model, theory with practice, in application of multivariate decision mathematical model to empirical analysis the optimized model of foreign logistics marketing model, and tries to provide theoretical basis and explore new ways for scientific decision strategy in this field, stimulate potential of logistics enterprise strategic. **Results:** Logistics marketing is the most concentrated, most vigorous link of the market demand chain, to provide the best demand supply path on the premise of the optimization cost around the market demand, to provide satisfactory services for the enterprise customers. **4.Conclusion:** Along with the internationalization and development of logistics, traditional logistics marketing also further on way to international logistics marketing, namely foreign logistics marketing.

Keywords- *Multivariate decision; Mathematical model; Foreign logistics; Marketing mode; The empirical analysis*

I. INTRODUCTION

Logistics marketing is an important part of the marketing; is the most centralized, the most dynamic link in the market demand chain; is behavior combination that provide positive feedback factor for logistics activities in systemic under the premise of meeting effectively the logistics requirements, such as service concept, market demand, value, product, space, price, time, communication behavior, etc. With current international economic cooperation deepening, foreign logistics marketing developing rapidly, and greatly promote the international trade and international investment process. So further explore on foreign logistics marketing model ,is the demand on development of The Times, which is also the need of the development of foreign logistics marketing.

II. ANALYSIS ON LOGISTICS GLOBALIZATION AND CHINA'S FOREIGN LOGISTICS MARKETING PRESENT SITUATION

A. *Analysis on logistics globalization growing trend*

The 21st century is the era of logistics development, the main reason is that the international division of labor is more and more frequent in recent years, the world trade greatly growth and international investment increasingly ascending, the limit of manufacturing cost space narrow, on the basis of taking advantage of domestic resources, the advantage which countries further obtain relative cost is more difficult, but commodity profit space exists great potential in the field of items circulation, the logistics role in promoting economic has been increasingly obvious, modern logistics has become a important fundamental industry with national economy, and gradually become one of important indexes of measuring a nation's comprehensive power, and become one of the core problems of global economic and trade field.

With the continuous development of the world economy globalization, foreign logistics into the new era of development. The logistics between the two countries to improve commodity circulation efficiency between countries, improving the environment of international trade hardware and software, and further deepen the international trade and international investment, making global trade between internation has more extensive space, and at the same time, in the marketing level foreign enterprise also from the traditional core gradually transit to the foreign logistics marketing level. In the research and practice of these fields, international trade were closely related to global logistics, which promote each other and positive feedback coupling relationship, optimized foreign logistics mode that can promote profit space of international trade, correlation theory and research in internation have basically formed that consensus, international logistics will be increasingly fierce.

B. *Analysis on China's foreign logistics marketing present situation*

Since the reform and opening up, Chinese economic develop rapidly, and catapulted into manufacturing power country with the fast economic growth, the world "engine" and the global "purchasing center", thus laid the important status of China in the world's supply chain and the core

department position of world super procurement market, China logistics industry faced with unprecedented challenges and opportunities. China paid more attention to logistics cooperation with international trade country and the area, apply for holding many international meeting and BBS in this field, in order to promote a step further development of China in the fields, and the concrete mentioned in the list below.

TABLE I. CHINA'S BID FOR THE INTERNATIONAL CONFERENCE AND BBS ON LOGISTICS FIELD IN RECENT YEARS

Time	Place	Theme
November 19, 2008	Nanjing	China and America logistics meeting
September 10-11, 2009	Shanghai	China and America logistics meeting
December 1, 2010	Shanghai	China Logistics Conference
July 18, 2011	Hefei	fourth Modern Logistics Technology Innovation Conference
August 17, 2012	Zhengzhou	Chinese Cold Chain Logistics Conference and China cold chain industry Fair

As shown in table 1, China strengthen attention on the logistics field, in 2006 held the international purchasing and supply management union world congress for the first time, opens a new heaven for Chinese logistics space through holding the meeting; By the China council for the promotion of international trade (CCPIT), China transportation association (CCTA), the United States transportation and logistics association (AST&L) and related institutions successfully co-hosted held the logistics conference for three consecutive years in China, supply new platform for the u.s.-china logistics to explore new way; In 2008 on the April, China (Dalian) successfully held central European ports and logistics development peak BBS, which means that China is pay attention to international trade regional cooperation. When China enter the key transformtional period of foreign logistics, the international conference and BBS summit held of this field has a positive test benign interaction for the research of Chinese foreign logistics marketing and foreign logistics strategy, has a great significance to promote China's economic development and the domain theory for the study.

III. THE EMPIRICAL ANALYSIS ON MULTIVARIATE DECISION MATHEMATICAL MODEL IN FOREIGN LOGISTICS MARKETING MODE

Based on the 4 Ps framework, the 4 Cs foreign marketing model mainly includes sight the market demand, forecast cost payment, analyze market convenience, customer communication and other modules, and can be expressed as (X_1, X_2, \dots, X_k) , in foreign logistics

marketing mode, these modules are mutually independent and variable without linear correlation, foreign logistics marketing model general return to independent variable model that contains k module, expressed as:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \varepsilon \quad (1)$$

In formula (1), α and $\beta_1, \beta_2, \dots, \beta_k$, is the general regression parameters of foreign logistics marketing model, in which α said intercept between the module, β said the slope of each module 's independent variable, ε is all other factors influence on Y of each variable module in addition to X (foreign logistics marketing model general regression), namely random error. In which for any module variable values have constant variance $\sigma_{Y.1,2,\dots,k}^2$, and there were no correlation relationships and collinearity relationships between each module. In the premise, corresponded foreign logistics marketing model general regression equation for:

$$E(Y | X_1, X_2, \dots, X_k) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k \quad (2)$$

In formula (2), $E(Y | X_1, X_2, \dots, X_k)$ is the general regression expectations in foreign logistics marketing model when the module X take specific value. After general regression equation fitting, multiple linear regression equation of foreign logistics marketing mode is:

$$\hat{Y} = a + b_1 X_1 + b_2 X_2 + \dots + b_k X_k \quad (3)$$

In formula (3), a said a returned intercept, b_1, b_2, \dots, b_k is the slope of module variable X_1, X_2, \dots, X_k . \hat{Y} is general regression parameter fitted value in foreign logistics marketing model.

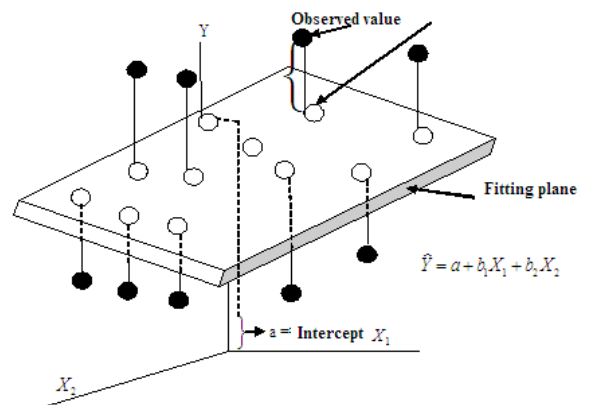


Figure 1. general regression analysis graphics of two modules independent variable in foreign logistics marketing model

As shown in Figure 1, the plane referred to fitting plane, the intercept of it and the axis Y says a, along the X_1 axis for slope b_1 , along the axis X_2 for slope b_2 . a, b_1 , b_2 three regression coefficient through the solution get normal equations

$$Y = na + b_1 \sum X_1 + b_2 \sum X_2$$

$$\sum X_1 Y = a \sum X_1 + b_1 \sum X_1^2 + b_2 \sum X_1 X_2$$

$$\sum X_2 Y = a \sum X_2 + b_1 \sum X_1 X_2 + b_2 \sum X_2^2$$

Then, we can draw a conclusion; each dot in fitting plane represents general regression parameter Y, market demand variable X_1 , cost payment forecast X_2 , observed value of three variable determined regression parameter scatter in foreign logistics marketing model; dot in the fitting plane represents a group of market demand variables X_1 and pay cost prediction X_2 in substitution of regression equation get the value \hat{Y} which conjointly determined fitting point; dot attachment between each variable vertical the plane, usually not perpendicular to the fitting plane, in which the absolute value of connection section equal to the absolute length of the salvage value $|e|$, regression parameter observation dot above the fitting plane, the residual value is positive, conversely is negative, through the least squares fitting the plane of regression equation, and further ensure that sum of squares of the salvage value in the minimum state.

Same as empirical analysis on foreign logistics marketing model in simple multiple decision mathematical model, randomly selected a module variable sample from the overall inspect foreign logistics marketing mode in multivariate decision mathematical model, according to the sample variables related mathematical fitting multiple regression equation, through the strict significance test, finally making decision to regression parameter relation on overall, and to make scientific decisions for the foreign logistics marketing model

IV. CONCLUSION

Logistics marketing is the most concentrated, most vigorous link of the market demand chain, to provide the

best demand supply path on the premise of the optimization cost around the market demand, to provide satisfactory services for the enterprise customers. Along with the internationalization and development of logistics, traditional logistics marketing also further on way to international logistics marketing, namely foreign logistics marketing.

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