



A Study on the Modernization Indicator System of the Service Industry

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Abstract

The modern service industry is a concept relative to the traditional service industry from the perspectives of service awareness, operation principles, and forms of organization, technological means and other vital factors. Such relativity lies in that some highly modernized service industries developed from traditional service industries on the one hand. On the other hand, the highly modernized service industries is exerting more and more significant influence on traditional service industries and accelerating the modernization of traditional industries by virtue of its high adaptability to the times and rapid development. Therefore, it is more important to investigate the modernization level of the overall service industry while measuring and monitoring the development scale of the modern service industry.

Keywords: service industry; high adaptability; modernization level.

1. Introduction

Modernization of the service industry represents the development direction and the future of the service industry. Based on the understandings and knowledge of the “modernization of the service industry” described in this paper, the “modernization of the service industry” is believed to have the following features:

2. Judging principles of the modernization level of the modern service industry

(1) Technicalization and knowledgeablization of persons. The modernization of the service industry is mainly to more elaborately divide the work based on specialization by making use of science and technologies, and to enhance the service efficiency and quality and reduce the transaction costs effectively by service enterprises or organizations equipped with specialized talents and professional skills with the application of professional knowledge and practical experience.

(2) Modernized level of equipment. This feature mainly refers to the modernized transformation and improvement of the service industry based on the traditional service industry, especially the digital technologies and information network technologies.

(3) High profitability of capital funds. The higher the modernization levels of the service industry, the better the use of capital funds of enterprises. On the contrary, the worse the utilization effect of capital funds, the lower the profitability of capital funds of enterprises.

(4) High profitability. The higher the modernization level of the service industry, the higher the market competitiveness, the development potential and profitability of enterprises

(5) High added value. Modern service industry is dedicated to providing non-material services, thus the added values are greatly increased, the output efficiency is higher, and more non-material outcomes can be realized for the benefit of the society.

3. Establishment of indicators for the modernization level

Category 1: indicator for quality of persons. Structure of education backgrounds, professional and technical titles and skill grades are adopted as the indicators to measure the intensity of knowledge of persons engaged in modern service industry.

Category 2: indicator for equipment. Per capita computer is adopted as the indicator to indicate the modernization level of equipment of the service industry in order to show the features differing service industry from other industries in a more precise way.

Category 3: indicator for profitability of enterprise capital fund. Profit margin of capital fund and per capita paid-up capital is applied to indicate the profitability and intensity of capital fund of an industry.

Category 4: indicator for enterprise profitability. Profit margin is applied to indicate enterprise profitability and operational efficiency.

Category 5: indicator for industrial efficiency or benefits. Per capita operation revenue, i.e. labor productivity, is applied to indicate the labor and organizational efficiencies of an industry comprehensively.

4. Measurement of modernization level

In order to integrate the above five categories of indicators to comprehensively evaluate the modernization level of an industry and make them comparable within the overall tertiary industry, the following method is applied to calculate the factors of the above five indicators to guarantee the positive and comprehensive comparability of the indicators, and the scores of different sectors are established based on the current development status of the service industry, the development features of different industries and the structural proportion of development of different sectors of the service industry.

Supposing:

x_i ($i = 1, 2, \dots, n$), where, n refers to the number of industries;

$a_i = \max(x_i)$ refers to the maximum value of the indicator of each industry;

Then, $u_i = \frac{x_i}{a_i}$

$Y_i = u_i * c_i$

Where, Y_i represents the indicator for modernization level; x_1 represents the structure of education backgrounds; x_2 represents the professional and technical title; x_3 represents the skill grade; x_4 represents the per capita computer; x_5 represents the profit margin of capital fund; x_6 represents

the per capita paid-up capital; x_7 represents the profit margin; x_8 represents the labor efficiency; C_i represents the score; and u_i represent the element coefficient.

Quality of persons: structure of education backgrounds, professional and technical titles and skill grades are adopted to measure the intensity of knowledge of persons engaged in modern service industry. In terms of structure of education backgrounds, the proportion of persons with college degree or above (including college degree, bachelor degree, graduate degree and above) in all those engaged in the industry is adopted as the measurement indicator; in terms of professional and technical titles, the proportion of persons with intermediate titles or above (including intermediate titles and senior titles) in all those engaged in the industry as the measurement indicator; and in terms of skill grades, the proportion of persons with technicians' skills or above (including technician and senior technician) in all those engaged in the industry as the measurement indicator.

Modern equipment: per capita computer, i.e. the ratio of gross computers possessed by the service enterprises within each industry to persons engaged in the industry, is adopted as the indicator to measure the modernization level of equipment of the service industry.

Profitability of enterprise capital fund: profit margin of capital fund (i.e. total profit to paid-up capital ratio) and per capita paid-up capital (paid-up capital to number of persons engaged in the industry ratio) is applied to indicate the profitability and intensity of capital fund of an industry.

Enterprise profitability: profit margin, i.e. total profit to main business income ratio, is adopted as the indicator.

Industrial efficiency or benefits: labor productivity, i.e. main business income to number of persons engaged in the industry ratio, is applied to indicate the industrial efficiency or benefits of an enterprise.

Based on the above calculation model, the data deriving from the general investigation are processed according to the range to figure out the development coefficient of each sector of the service industry.

5. Conclusions

The score of modernization level is figured out by measuring different sectors of the service industry with weighting coefficient method.

With EVIEWS software for observation and detection, the following results are obtained:

$$Y = 1.7219 + 0.6330X$$

$$(0.7937) \quad (20.9667)$$

$$R^2=0.9756 \quad F=439.6023 \quad D.W.=1.8175$$

Where, $R^2=0.9756$ means that the goodness of fit of the regression equation is high, the model is favorable to the explanation, the combined linear action of different explanatory variables is significant, and apparently, F can pass the test. D.W. value means that there is no autocorrelation, and the residual analysis means that there is no heteroscedasticity.