Application of Computer Technology in the Study of the Relationship between New and Old Kinetic Energy Conversion and Competitive Advantages of Service Enterprises-based on the Coordination Process

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Abstract. The "new and old kinetic energy conversion" is a national development idea recently proposed by Chinese government. New and old kinetic energy conversion is closely related to the competitive advantages, especially in service enterprises. Coordinated process theory is presented in this paper, on the basis of empirical research, by combining computer technology shifts the kinetic energy is discussed and the service enterprise competitive advantage of internal relations, set up a new kinetic energy conversion relations with service enterprise competitive advantage model, the model reveals the service enterprises to keep up with the old and the new kinetic energy conversion power source, is for government departments to promote the old and new energy transformation provides a effective method. At the same time, the application of computer technology in the transformation of old and new drivers in service enterprises is studied.

Keywords: New and Old Kinetic Energy Conversion, Competitive Advantage, Concordance Process, Industrial Transformation and Upgrading

1. Competitive advantage and concordance process

The theoretical study of competitive advantage has formed a relatively complete system. Competitive advantage is defined as the advantage that a business or country can bring in more profit or benefit than other companies or countries, such as technology, management, branding, labor costs, etc. It can also be defined as a sustainability advantages compared with the competitors, such as superior resources, advanced operation modes, and more suitable market demand.1[2]
It can be seen that the acquisition of competitive advantage is inextricably linked with competitive factors such as price, quality, delivery deadline, flexibility and reliability. The research on the source of competitive advantage mostly emphasizes the connotation of "comparison" in the definition, and strives to analyze many factors that affect the change of competitive advantage of enterprises. However, due to the lack of relevant theoretical support, these studies ultimately failed to determine the specific content of the competitive advantage factor, which is the "what than" problem.

To solve this problem, In 2001, Professor Lee Kyunghwan formally proposed a competitive strategy theory called “Concordance Process” in his book “National Survival Strategy”. Concordance Process (CP for short)is defined as the dynamic process of competition and cooperation between the power subjects for survival, which creates a competitive advantage.[3] The main content of the theory is five attributes of power subject, namely creation attribute, preservation attribute, combination attribute, dominance and attribution attribute.[4]

2. New and old kinetic energy conversion

The concept of “new and old kinetic energy” was introduced in 2015. The specific work of “new and old kinetic energy conversion” was promoted in 2017. The government attached great importance to new and old kinetic energy conversion. It is the hot word of the government and the media today in China.

The author believes that Concordance Process is an effective theory for explaining how a firm can create a competitive advantage as a power subject. The five attributes of the power advocated by Concordance Process are the source of competitive advantage and can be applied as a competitive advantage factor. This is a good solution to the problem of "what than" in the study of the source of competitive advantage.[5]

3. The establishment of mathematical models

The 3M enterprise business results measurement method is based on the competitive advantage, and the enterprise results are divided into three aspects: the enterprise manufacturing results, the market results and the operator results.[6] When researching the acquisition of competitive advantage of enterprises, the 3M method can best reflect the degree of enjoyment of competitive advantage. This paper initially constructs a mathematical model of the source of competitive advantage based on its concept.

\[
CS = \frac{W_a}{W_b} = \frac{[E_a(1 + \alpha_a)(1 + \beta_a) - (C_{a_1} + C_{a_2} + C_{a_3})\sum_{i=1}^{n} q_{ai}]}{[E_b(1 + \alpha_b)(1 + \beta_b) - (C_{b_1} + C_{b_2} + C_{b_3})\sum_{j=1}^{m} q_{bj}]}
\]

\[
= f(E_a, E_b, \alpha_a, \beta_a, C_{a_1}, C_{a_2}, C_{a_3}, C_{b_1}, C_{b_2}, C_{b_3}, \sum_{i=1}^{n} q_{ai}, \sum_{j=1}^{m} q_{bj})
\]

Among them, CS is the competitive advantage of A company and its main competitor B enterprise, \( W \) is the profitability of enterprise, \( E \) is the input value, \( \alpha \) is the activity increase coefficient, \( \beta \) is the price influence coefficient, and the model is a multivariate function.

4. Empirical research

This paper takes the service enterprises in Shandong Province of China as the research object, and
conducts empirical research on new and old kinetic energy conversion and the acquisition of competitive advantages.

4.1. Sample extraction and data collection

From July to December of 2018, this study randomly selected 166 enterprises registered by the China Industrial Management Association and the Shandong Provincial Service Enterprise Research Institute as research samples. The survey targets enterprise strategic decision makers, strategic evaluation performers, and strategic management coordinators of the above-mentioned enterprises. The questionnaire "Questionnaire on the Competitive Advantages of Service Enterprises in China" has been tested and analyzed.

4.2. Analysis of factors

The results of factor analysis are shown in Table 1 and Table 2.
### Table 1. The result of factor analysis of CP

| Factors             | Creation attribute | Preservation attribute | Combination attribute | Dominance /attribution attribute |
|---------------------|--------------------|------------------------|-----------------------|----------------------------------|
| Factor code         | C                  | B                      | J                     | Z                                |
| Inherent value      | 3.32               | 2.98                   | 4.02                  | 4.00                             |
| Cumulative value    | 56.25              | 76.33                  | 80.04                 | 66.31                            |
| Reliability         | 0.85               | 0.86                   | 0.88                  | 0.90                             |

### Table 2. The result of factor analysis of new and old kinetic energy conversion

| Classification       | Technological innovation | Service innovation | Institutional innovation |
|----------------------|--------------------------|--------------------|-------------------------|
| Factors              | Upper drive | Middle drive | Lower drive | Service characteristics | Service quality | Management mechanism | Market supervision | Financial support | Employment mechanism |
| Factor code          | T-1          | T-2          | T-3          | S-1                     | S-2            | O-1                  | O-2               | O-3                   | O-4                   |
| Inherent value       | 6.10         | 3.32         | 4.13         | 0.98                    | 5.73           | 2.04                 | 6.11              | 0.89                  | 3.01                  |
| Cumulative value     | 51.46        | 63.90        | 39.20        | 39.12                   | 63.81          | 51.22                | 65.88             | 12. 22                | 60.03                 |
| Reliability          | 0.88         | 0.94         | 0.71         | 0.22                    | 0.69           | 0.71                 | 0.80              | 0.56                  | 0.88                  |

This study obtained 11 effective factors with inherent value above 1: a total of 4 CP factors and a total of 7 new and old kinetic energy conversion factors. The codes for these factors are: C, B, J, Z, T-1, T-2, T-3, S-2, O-1, O-2, O-4.

4.3. Relevant analysis

In this study, Pearson correlation analysis was performed on each variable (C, B, J, Z, T-1, T-2, T-3, S-2, O-1, O-2, O-4) by SPSS18.0 statistical analysis software. The results are shown in Table 3.

### Table 3. Pearson correlation coefficient between CP variables and new and old kinetic energy conversion dynamic variables

| variables | T-1 | T-2 | T-3 | S-2 | O-1 | O-2 | O-4 |
|-----------|-----|-----|-----|-----|-----|-----|-----|
| C         | 0.796** | 0.423* | 0.053 | 0.442* | 0.559* | 0.711* | 0.034 |
| B         | 0.122  | 0.786** | 0.476* | 0.107  | 0.869** | 0.365* | 0.500* |
| J         | 0.565** | 0.435* | 0.882** | 0.200  | 0.505* | 0.423* | 0.435* |
| Z         | 0.889** | 0.533* | 0.512* | -0.516* | -0.013 | 0.509* | 0.601* |

*Note: ** indicates significant correlation at the 0.01 level (both sides), * indicates significant correlation at the 0.05 level (two sides)*

It can be seen from the above statistical results that CP has a significant positive correlation with the variables of new and old kinetic energy conversion, which indicates that CP promotes new and old kinetic energy conversion by improving the competitive advantage of enterprises, and transforms into the source of power for new and old kinetic energy conversion.

The above statistics also show that at the government level (O-1, O-2, O-4), both of the five attributes have a positive impact. There are also some negative correlations between the dominance and attribution...
attributes in several factors. This is because some of the factors in the factor belong to the dominant attribute, while others belong to the attribution attribute.

5. A relationship model of new and old kinetic energy conversion and competitive advantage of service enterprise

According to the previous theoretical derivation and data analysis, a model can be built around the CP to analyze the relationship between new and old kinetic energy conversion and the competitive advantage of service enterprise, as shown in Figure 1:

![Concordance Process](image)

Government support

**Figure 1.** Model of the relationship between new and old kinetic energy conversion and the competitive advantage of service enterprise

It can be seen from the above model that five attributes of power in CP theory play a role in establishing the order of competition and cooperation within service enterprise, thereby promoting its competitive advantage. The service enterprises that have gained competitive advantages in the industry have further realized new and old kinetic energy conversion under the support and promotion of relevant government policies.

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