Application and Analysis of an Interspecific Competition Model in a Digital Economy Ecosystem

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ABSTRACT

Expanding industrial digitization is vital for a thriving digital economy. This article delves into the application of interspecies competition models within the digital economy ecosystem. Such models aid in analyzing competitive dynamics among enterprises and understanding innovation trends. Interspecies competition models offer insights into enterprise competition within the digital economy ecosystem. They illuminate competitive landscapes, enabling strategic planning for enterprises facing peer and cross-industry competition. Moreover, these models facilitate the study of innovation and evolution, predicting market trends and aiding decision-making for enterprises and policymakers. Empirical studies across e-commerce, fintech, and sharing economy sectors validate the effectiveness of interspecies competition models. Analysis using these models elucidates competitive dynamics and provides actionable insights for enterprises and policymakers. Furthermore, addressing data migration bandwidth issues in cloud processes fortifies digital ecosystem construction.

KEYWORDS
Digital Economy, Economic Ecosystem, Factor Analysis, Influencing Factors, Interspecific Competition

INTRODUCTION

With the continuous development of information, communication, and digital technology, the digital economy has become a powerful force on a global scale. The digital economy has played an important role in resource allocation, penetration, integration, and coordinated development by promoting industrial structure adjustment and sustainable economic development. In the process of digital economy development, the lack of a comprehensive and scientific evaluation system makes it difficult to accurately evaluate the level of digital economy development in different countries, and it is also difficult to effectively compare the development of digital economy between countries. In order to evaluate and characterize the level of digital economy development, this study selected indicators and representatives highly related to digital economy development, constructed a digital economy indicator evaluation system, and used factor analysis methods to quantitatively evaluate and characterize the level of digital economy development in 42 countries around the world. At the...
same time, this study introduces variables based on the LRS model for the development level of the digital economy and analyzes the impact mechanism of the digital economy on the division of labor position in the global value chain (GVC). Through the analysis of cross-border panel data from 42 countries, this study further explores the impact of the digital economy on the GVC division of labor in different industries, countries, and industries in different countries. It also analyzes the forward and backward participation rates and draws richer conclusions. This study solves the pressure of data traffic processing and the bandwidth problem of data migration in cloud computing processes and strengthens the construction of digital ecosystems. The results of this study provide important references and guidance for the development of the digital economy, as well as new ideas and methods for building a digital ecosystem.

LITERATURE REVIEW

According to gray system theory, the main research includes correlation analysis, cluster evaluation, prediction, decision-making, and control (Chen et al., 2018). In recent years, the theory has derived a variety of different gray correlation analysis models and algorithms, such as area correlation model, slope correlation model, A-type correlation model, B-type correlation model, parametric gray correlation model, generalized gray correlation model, absolute gray correlation model and relative correlation model, and other algorithms to improve the calculation of correlation between data series, as well as gray cloud optimization-based whitening model and multi-attribute decision making of fuzzy complementary judgment matrix and other improvements on gray decision algorithms, optimization of gray cluster analysis algorithm of stomach, and refinement of multivariate gray control model (Ferasso et al., 2020). The grey correlation analysis method is an important part of grey system theory, and its basic idea is to calculate the correlation between curves by comparing the proximity between them concerning the data series and comparing the geometry of the data series. Scholars combine their research directions and analyze the characteristics of gray correlation models to propose many innovative and feasible solutions (Li et al., 2020).

The initiative, as well as the quantitative aspects of analysis, can be used as important technical tools for model evaluation, etc. The difference between these two is mainly the difference in the results obtained and the form of presentation. The rules are opposite between quantitative and qualitative modeling, where quantitative models start from statistically obtained relevant data and use mathematical methods to explain the intrinsic property relations of the object of study (Villa et al., 2018). Although the two approaches are different, they are not contradictory but complementary and indispensable for the study of complex problems. Qualitative analysis methods include scenario simulation and empirical discrimination; quantitative analysis methods include regression analysis, gray correlation analysis, principal component analysis, and data inclusion analysis (Sopa et al., 2020). Gray correlation analysis is often used in the analysis of operational management performance, such as the use of gray correlation analysis to study and analyze the status of the management performance of the relevant airline companies. Its main contents include firstly, selecting the more typical financial evaluation factors; secondly, obtaining the comprehensive score and ranking of each enterprise to analyze its operation effect and give a plan that meets the actual situation of the enterprise; and third, using the grey correlation method to analyze the important role played by the internal and external environment on the comprehensive performance score of each listed salt and chemical company through the grey correlation method to profitability, inventory management, asset quality, operation, and other indicators (Liu et al., 2018). The composite performance scores of the pharmaceutical companies under the composite scores of several logistics companies in terms of operational management effectiveness were explored using gray correlation and Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) analysis (Nave et al., 2019).