The Research of the Innovation Performance Evaluation System for Enterprises in Internet and Communication Industrial Clusters

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ABSTRACT

This paper focuses on the evaluation system and algorithm for Enterprises’ innovation performance in Internet and Communication industrial clusters. An Individual enterprise innovation performance system is developed based on network techniques. The functional model and constructing structure of the evaluation system are firstly illustrated. With the applying of Analytic Hierarchy Process Fuzzy (AHP-Fuzzy) method and the construction of the index system, the system realizes the innovation performance evaluation for enterprises of Internet and communication industrial clusters. The operation of the evaluation system achieves a real-time and effective result, which is significant for realistic innovation evaluation.

Keywords: Evaluation System, Fuzzy Comprehensive Evaluation Method, Innovation Performance, Internet and Communication Industrial Clusters, Variable Rate Subscription

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INTRODUCTION

Industrial cluster is important for developing the economics while innovation is a significant factor in boosting the industrial cluster’s development. Additionally, the innovation performance is an important index for measuring the innovative abilities, especially in Internet and Communication clusters, where innovation plays an important role. The concept of performance comprises four aspects, objectivity, feedback (both positive and negative), quantification, and practice. The innovation performance can be represented by the last output, which is measurable and beneficial in showing the pros and cons of innovative activities in enterprises or even cluster directly.

In recent years, an increasing number of studies have been conducted on evaluation system of innovation performance, offering some interesting results. However, these studies still have limitations. (1) There is no evaluation system entity to monitor and evaluate the innovation of the enterprises, though many studies have been conducted. In Internet and communication techniques field, the innovation ability of enterprises changes rapidly, so a real-time evaluation system is significant in reality. (2) The index systems of the existing evaluation system are not complete because many researchers only consider one aspect of the performance, which is not enough to obtain a reasonable and comprehensive evaluation result. (3) From the perspective of index systems and the maneuverability of collected data, researchers often focus on designing indices that are concrete and tangible but ignore or even discard some factors that are invisible and abstract. In this situation, the reduction of the indices makes it difficult to predict and evaluate the long-term and potential trend of innovation performance. (4) The design of index system has a certain degree of subjectivity. The index systems are never scientific enough. Some index systems are too complicated and there are intersections between some indices. Some index systems are too simple, ignoring many important indices.

In this paper, we present the research in innovation performance evaluation entitative system for high technology enterprises in Internet and communication clusters, which includes the function model and the system structure, and also, we consider the problems in current theoretical research and then analyze and compare the existing research achievements and methods. Some reasonable and correct advantages are selected as reference. We reconstruct the evaluation index system of industrial clusters’ innovation performance with the combination of the developed AHP-Fuzzy evaluation method. The results of the exploration should reflect the reality.

REVIEW OF LITERATURE

Innovative performance has always been one of the hot topics in the fields of management and economics. In the 1980s, CIS developed the famous Oslo Manual jointly with OECD, which aims to promote the establishment of innovative performance index system. The manual involves two important indices, the ratio of sales revenue of innovative products to total sales revenue, the enterprise’s product sales revenue in each stage of the product’s life circle, and its revised version was released in 1996. Drucker (1993) proposed that innovative performance combines all innovative factors at the enterprise level. Mcgtegart (2000) gave the content to innovative performance at the state level. Roberto Badile and Poti (2000) narrowed the research scope to consider the perspective of region. Shan (2002) proposed that innovative performance comprises various first-grade indices, including economic benefits and social index. Hagedoom and Cloedt (2003) measured the innovative performances of over 1200 enterprises in four high and new technology industries in America, and the indices covered the input of R&D (input), the number of patents, output of new products, and the number of cited patents (output).

From the perspective of technological innovation network, Wang (2005) discussed...
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