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Knowledge service decision making in business incubators based on the supernetwork model

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Abstract: As valuable resources for incubating firms, knowledge resources have received gradually increasing attention from all types of business incubators, and business incubators use a variety of knowledge services to stimulate rapid growth in incubating firms. Based on previous research, we generalize the knowledge transfer and knowledge networking services of two main forms of knowledge services and further divide knowledge transfer services into knowledge depth services and knowledge breadth services. Then, we construct the business incubators' knowledge supernetwork model, describe the evolution mechanism among heterogeneous agents and utilize a simulation to explore the performance variance of different business incubators' knowledge services. The simulation results show that knowledge stock increases faster when business incubators are able to provide knowledge services to more incubating firms and that the degree of discrepancy in the knowledge stock increases during the process of knowledge growth. Further, knowledge transfer services lead to greater differences in the knowledge structure, while knowledge networking services lead to smaller differences. Regarding the two types of knowledge transfer services, knowledge depth services are more conducive to knowledge growth than knowledge breadth services, but knowledge depth services lead to greater gaps in knowledge stocks and greater differences in knowledge structures. Overall, it is optimal for business incubators to select a single knowledge service or portfolio strategy based on the amount of time and energy expended on the two types of knowledge services.

Key words: business incubator; supernetwork; knowledge transfer service; knowledge networking service; optimal decision

1. Introduction

Business incubators are considered a promising policy tool that supports innovation and technology-oriented entrepreneurial growth [1]. The most advanced business incubators provide numerous services to incubating firms, including services associated with business opportunities, advisory services, information, viability plans, infrastructure and facilities [2], and much of the content of such services can be considered a type of knowledge resource. Because of the knowledge-intensive nature of incubating firms, the knowledge factor has become increasingly important in management practice in business incubators. Analyzing incubating firms that use knowledge as a resource in Brazilian incubators, Neves et al. [3] conclude that knowledge is essential to conduct the knowledge-intensive activities that encourage innovation. Those new technology-based firms inside science parks that act as a specific business incubator can improve their innovation ability by combining their internal knowledge with the knowledge offered by universities and other co-located partners [4]. In this regard, knowledge resources are key to promoting rapid growth and maintaining a competitive advantage for incubating firms. Thus, many researchers have

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