

Industry cluster research and analysis of the impact on business performance: with reference to the solar power industry

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Abstract

the competitive advantage of industry clustering has always been a main source of growth and innovation among Taiwanese manufacturers. Its benefits are particularly beneficial for businesses at times of economic crisis. Factors such as rising R&D costs, decreasing product life span, globalized competition, and rapid changes in the technological industry including the environment since the 1990s, has caused businesses to form alliances against competition. Therefore, industry clustering is an essential core capability.

This study uses high-quality human resources, technical infrastructures, knowledge resources, and capital resources described by Porter (1990) [20] as criteria for the formation of industry clusters and as elements to evaluate its effects.

Previous studies have examined clustering in regional economics and urban planning. Therefore information on the effects of clustering and its implications for business management is limited. This study investigates the relationship between industry clustering and business performance by empirical research and analysis. And thus stimulate the motivation of this study, the study results can help enterprises set up factories in the decision-making reference basis.

In addition, problems in the Hsinchu and Tainan Science Parks and the magnitude of its clustering effect are verified by location quotient analysis. A model for evaluating manufacturer's efficiency is constructed by data envelopment analysis (DEA). Sensitivity analysis is used to determine the order of importance for the criteria of industry cluster formation. This study shows that as the effects of clustering increases, the performance of those manufacturers in the cluster becomes more substantial. Furthermore, the size of businesses is the most significant

factor which influences the effects of clustering. The sensitivity analysis results can be observed in the industrial clusters of the elements of the performance impact on the solar industry Sort order: capital, high-quality personnel, R & D expenditures, machinery and equipment investment. In other words, in the implementation of industry clusters, cluster enterprise scale the greater the more to enhance the performance of the firms. As the size of a manufacturer in a cluster increases in scale, the performance of manufacturers in the cluster becomes more substantial.

Keyword : industry clustering; solar power industry; data envelopment analysis; performance evaluation