

생산시스템 및 제조전략의 상황적 분석과 기업성과

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This paper attempts to propose a new typology of production systems and to analyze the relationship between manufacturing strategy and performance by the proposed production systems.

The first objective of this paper is to develop an empirical typology of production systems based on technical flexibility and technical continuity which differs from the existing production system typology based on technical continuity alone.

The second objective is to clarify the relationship among production systems, manufacturing strategies, and business performances.

The third objective is to investigate whether or not high technical flexibility in more complex production system is attainable and raises business performance as well. Results of this investigation might examine several important findings on the nature of the compatibilities among manufacturing capabilities.

This paper has six hypotheses about production systems, manufacturing strategy, and performance which were tested empirically.

The questionnaire was sent to 200 production executive officers appearing in 1990 Directory of Korean Corporate Affiliations. Seventy four usable responses were collected, which represented an effective rate of 37 %.

Six hypotheses and results are as follows:

Hypothesis 1. There are four primary production systems classified according to technical continuity and technical flexibility, which are 'intermittent production system', 'continuous production system', 'concurrent production system', and 'simple production system'.

Technical flexibility dimension explains 37.2 % of variance of production systems and technical continuity dimension explains 29.5% of variance of production systems.

Normalized two factor scores derived from the result of the above analysis using regression method were used for cluster analysis to test the typology of production systems suggested by a theoretical model. Multiple discriminant analysis was used to test the significance of clusters. This supports Hypothesis 1.

Hypothesis 2. There are four dimensions of manufacturing strategies, which are 'economies of learning', 'economies of differentiation', 'economies of scale', and 'economies of scope'.

We can find four dimensions of manufacturing strategies through factor analysis. This supports Hypothesis 2.

Hypothesis 3. Different manufacturing strategies would prevail along each

of the four primary types of production systems classified according to technical continuity and technical flexibility.

There are differences in manufacturing strategy in plant size, lot size, breadth of product line, engineering changes, and production information. Though only five manufacturing strategic variables are statistically significant by ANOVA, MANOVA which tests multivariate differences of manufacturing strategies for the production system types supports Hypothesis 3 ($p < 0.001$).

Hypothesis 4. Different competitive dimensions of manufacturing strategies would prevail along each of the four primary types of production systems classified according to technical continuity and technical flexibility.

All competitive dimensions of manufacturing strategy are significantly different along the production system types. Hypothesis 4 is well supported by the results of analysis.

Hypothesis 5. Business performance would be different along each of the four primary types of production systems classified according to technical continuity and technical flexibility.

Performance variables are not different along production system types. Hypothesis 5 is rejected. The result, however, shows that high technical flexibility in more complex production system is attainable and raises business performance.

Hypothesis 6. The business units that exhibit the fit between production systems and manufacturing strategies outperform competitors who does not exhibit it.

Hypothesis 6 is rejected by ANOVA which tests the interaction effect of of performance between production systems and manufacturing strategy.

These findings imply the followings;

First, production manager should take a contingent approach to make more effective manufacturing strategy.

Secondly, the importance of flexibility dimension for a typology of production system is well recognized.

Thirdly, high technical flexibility in more complex production system is attainable and raises business performance.

In our study, the number of firms adopting 'concurrent production system' exceeds the anticipation of the researchers. But, we should not overevaluate the adoption of 'concurrent production system', for world-wide 'concurrent production system' is not the same as the one in Korea. Thus it is required to replicate this study in different environments.