

## Management of Production System among Manufacturing Firms in Iloilo

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**Abstract** - The purposes of the study were to describe the profile of the manufacturing firms, to ascertain the level of efficiency of the production system, and to describe the factors that influence the production efficiency of the manufacturing firms in the City and Province of Iloilo. The research employed the descriptive method, using the Questionnaire on the Management of Production System. The participants of the study were 187 manufacturing firms selected through random sampling method. Means, percentages, and frequency distributions were employed and Pearson r. Results showed that, majority of the manufacturers produce multiple or various types of products and employed intermittent type of production system. The application of production strategy and specific goals and practice of production activities in managing production system were perceived by the respondents to a “large extent”. The over-all influence of internal environment factors in the management of production system of manufacturing firms and influence of external environmental factors were “moderate.” Manufacturing firms in Iloilo (Region

VI) seemed to have very efficient production system. The internal and external environmental factors have “moderate” relationship, production strategy have “moderate” relationship on the production efficiency, while production system have “very high” relationship on the production efficiency of manufacturing firms in Iloilo Province.

**Keywords** - Manufacturing firms, Production system, Production efficiency, Environmental factors, Iloilo

## INTRODUCTION

Given a well-planned and properly managed program for stimulating our country's economic development, the manufacturing industry plays a significant role in uplifting our national economy as the investors renew their confidence in our national leadership.

Manufacturing firms are those firms which include the extractors, processors and fabricators of raw materials (Timms, 1978). They are characterized by their asset size, the number of production workers they employ, the number of product lines they manufacture, and the type of production system they utilize. The presence of manufacturing firms in Iloilo helped improve economic conditions of the City and province due to the increased demand of raw materials and manpower that the firms need as production inputs in manufacturing their products.

In 1983, Iloilo has a total of 3,324 manufacturing firms and ranks third among 73 provinces all throughout the country. As such, it is considered a first class province in terms of commercial centers in Western Visayas. It has an accessible transportation facilities to transport the products and raw materials within outside the province (National Census and Statistics Office, 1990).

The objective of this study is to therefore, describe the profile of the manufacturing firms in terms of their asset size, number of production workers, number of product lines and type of production system utilize to ascertain the level of efficiency of production system and to describe the factors influencing the production efficiency of the manufacturing firms in the City and Province of Iloilo. These factors are: the production strategy, the external environmental factors, the

internal environmental factors, and the production system. The extent of influence of these factors in production was determined to enable production managers to come up with a high level of production efficiency. This study provided relevant and updated information of the status of the manufacturing firms in Iloilo. Furthermore, this study includes inputs for the manufacturing firms, such as better strategies for operations and better policies to answer the demands of the manufacturing industry.

### **OBJECTIVES OF THE STUDY**

The purpose of this study are to describe the profile of the manufacturing firms, to ascertain the level efficiency of the production system, and to describe the factors that influence the production efficiency of the manufacturing firms in the City and Province of Iloilo.

Specifically, the study is focused on the following objectives:

1. to determine the profile of the manufacturing firms in Iloilo in terms of a) asset size, b) number of production workers, c) number of product lines, and d) type of production system
2. to assess the level of efficiency of the production system of the manufacturing firms
3. to measure the extent of application of production strategy of manufacturing firms
4. to measure the extent of influence of the internal environmental factors in the operation of manufacturing firms
5. to determine the extent of practice of the production activities of manufacturing firms
6. to determine the predictions of production efficiency of the manufacturing firms

### **FRAMEWORK**

Production system is a mixture of interrelated activities by which production inputs such as raw materials, facilities and manpower are transformed into useful products. It is characterized by the input-process-output sequence which is applicable to a wide range of human

activities. There is a need for an efficient production system, which is inherent in every business, public or private, manufacturing or service. Production system is important in any organization that exists primarily to generate and produce the organization's products.

A production system is designed as an assurance for the firm to have enough supply of its products that are readily available in the market. The realization of this obligation depends upon the firm to establish production strategies that reveal the plan and specific goals of the production system. The plan and specific goals should not contradict the firm's over-all objectives.

Stevenson (1992) states that the formulation of a production strategy must take into consideration the internal and external environmental factors. These environmental factors have an impact on the system's performance and consequently on the attainment of the business firm's goals.

The external environmental factors are everything outside the organization that might potentially affect it. The external environmental of an organization is composed of two layers: the general and task environments. The general environment consists of non-specific dimensions and forces outside the organization that might affect the organization's activities. These are the economic, technological, social and political dimensions. The task environment, on the other hand, is consists of specific groups that are likely to influence the organization. There are the customers, suppliers, competitors, government regulations, etc. (Griffin, 1990). Moreover, the impact of the general environment is often ill-defined and long-term, most organizations focus more precisely on the task environment. It is on this belief that the researcher stressed on the task environment because of the fact that managers can easily identify external environmental factors of specific interest rather than having to deal with the more abstract dimensions of the general achievement.

On the other hand, the internal environmental factors consist of forces and conditions as marketing, finance and personnel functions. These factors influence the production system for they determine the firm's capabilities to pursue operations.

Information on the external and internal environmental factors leads to appropriate acquisition and allotment of production inputs

(raw materials, manpower and facilities). After these factors are acquired and assembled, the conversation or production process occurs. It is on this stage that manufacturers give the most attention. Hence, production control, inventory, quality control, work methods and measurements are performed by the production workers to ensure the success of the operations. Feedback information is installed to monitor the activities of the operations and behavior of the internal and external environments so that adjustments will be performed if deviations occur during production process.

Buffa (1982) says that the final stage of the operations is the production output and the completion of the finished products. Products are subject to final inspection, evaluation and inventory. These products are packed if needed, and placed in a storage for ready distribution to the markets.

Production efficiency pertains to how well the input resources are utilized in the production process. Thus, it is compared with the actual output achieved with the expected output (based on the production plan) that should have resulted from the employment of the given resources.

Finally, the production efficiency measured in terms of satisfying quantity requirements, completing dates, quality assurance and cost-control will serve as basis to check whether or not the production strategies employed by the management ensure the high level of production efficiency.

Figure 1 illustrates the conceptual framework of this study.

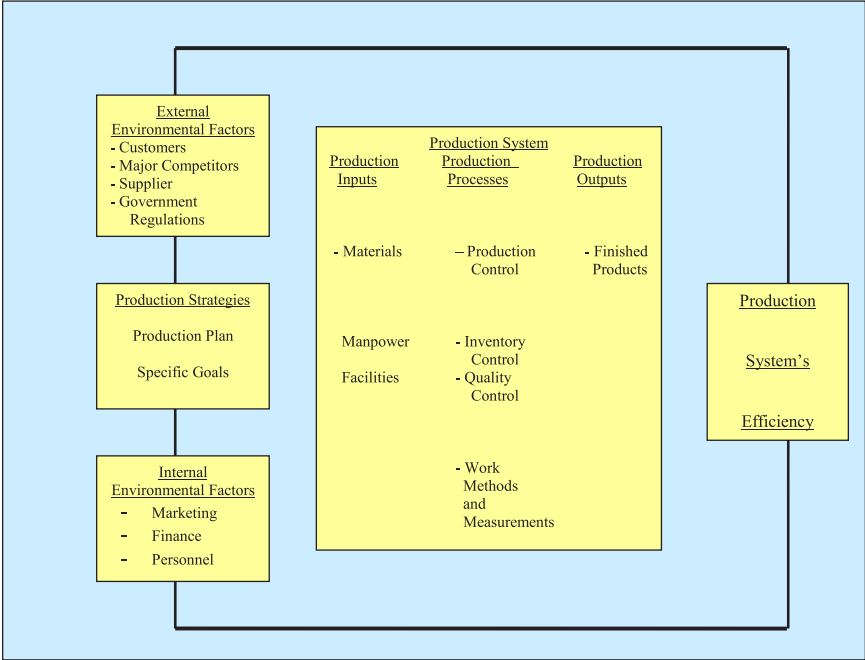


Figure 1. The management of production system of the manufacturing in Iloilo

## METHODOLOGY

Copies of questionnaire were sent personally by the researcher to facilitate smooth data collection, and were retrieved after two weeks. The researcher checked and rechecked the responses whether or not each respondent followed the instructions correctly.

The data were coded and tabulated using the Statistical Package for Social Sciences (SPSS) software. To process the data, this same software was utilized. Responses were also converted into scores to facilitate the listing of relationship and its significance between the independent and dependent variables.

To describe the characteristics of the manufacturing firms in Iloilo in terms of asset size, type of production system employed,

number of product lines and the number of production workers, the researcher constructed frequency distribution tables and computed the corresponding percentages.

To determine the relationship between production system and internal and external environmental factors; between production strategy and internal and external environmental factors; between internal and external environmental factors and production efficiency; between production strategy and production system; between production strategy and production efficiency; and between production system and production efficiency the Pearson's Product Moment Correlation was employed.

## RESULTS AND DISCUSSION

The major findings of this investigation are summarized as follows:

Registered manufacturing firms in Iloilo that were used as samples are micro (44.1%), cottage (42.5%), and small enterprise (12.6%) in terms of their asset size. Almost all of them (83.7%) have 2 – 10 production workers. Majority of the manufactures (58.3%) produce multiple or various types of products and because of that, majority of them (55.9%) employed intermittent type of production system.

The application of production strategy and specific goals in manufacturing firms were perceived by the respondents to "a large extent" as reflected by a mean of 3.05, and production plans was perceived to "a moderate extent" with a mean of 2.75.

The over-all influences of internal environmental factors in the management of production system of manufacturing firms was perceived by the respondents as "moderate" with a mean of 2.85. Specifically, marketing and finance functions were perceived to be moderate influences as indicated by a mean of 2.99, while personnel function was perceived to have influence to a large extent at  $M = 3.20$ .

The influence of external environmental factors on the management of production system of manufacturing firms was perceived by the respondents to a moderate extent as reflected by the over-all mean of 2.57, customers were perceived to a large extent at  $M = 3.04$ , major competitors were perceived to a moderate extent, government

regulations were perceived to a little extent, and supplier were perceived to a moderate extent at  $M = 2.94$ .

The practice of production activities in managing production system of manufacturing firms was perceived to a large extent as reflected by the over-all; mean of 3.26, production inputs, production processes, production outputs were all perceived to a large extent as indicated by mean scores of 3.31, 3.18 and 3.30 respectively.

Manufacturing firms in Iloilo seemed to have very efficient production system. The internal environmental factors were found out to have a moderate relationship on the formulation and implementation of production strategy on the production operations of the manufacturing firms in Iloilo as indicated by the Pearson's  $r$  value of 0.6000 on the relationship between the over-all internal factors and production strategy, between the production plan Pearson's  $r$  value of 0.6000, and between specific goals Pearson's  $r$  value of 0.6000. The relationship between these variables is significant at 0.001 level. All internal environmental factors (marketing, finance and personnel) indicate a moderate relationship with production strategy and are considered significant at 0.001 level.

The external environmental factors were found out to have a low relationship on the formulation and implementation of production strategy on the production operations of the manufacturing firms as indicated by Pearson's  $r$  value of 0.22563. The relational between the over-all external environmental factors and production plan and between the over-all external environmental factors and specific goals obtained the Pearson's  $r$  value of 0.2930 and their relationships are considered significant at 0.001 level. Customers, government regulations and supplier are considered significant at 0.001 level while major competitors are considered not to have significant relationship.

The internal environmental factors were found out to have a moderate relationship on the production system activities as indicated by the Pearson's  $r$  value of 0.6789 and considered significant at 0.001 level. All of the internal environmental factors (marketing, finance, personnel) were found out to have a moderate relationship on the production system activities (production inputs, processes, production outputs) and are considered significant at 0.001 level.



The external environmental factors were found out to have a moderate relationship on the operation of the production system activities as indicated by the Pearson's  $r$  value of 0.5416 and considered significant at 0.001 level. All of the external environmental factors except major competitors are considered significant at 0.001 level.

The internal environmental factors were found out to have a moderate relationship on the production efficiency of manufacturing firms in Iloilo as indicated by the Pearson's  $r$  value of 0.6180 and considered significant at 0.001 level.

The external environmental factors were found out to have a low relationship on the production efficiency of manufacturing firms in Iloilo as indicated by the Pearson's  $r$  value of 0.3455 and considered significant at 0.001 level. All external environmental factors except major competitors are considered significant at 0.001 level while major competitors are not considered significant.

The production strategy was found out to have a moderate relationship on the production system activities as indicated by the Pearson's  $r$  value of 0.5000 and considered significant at 0.001 level. The production strategy was found out to have a moderate relationship on the production efficiency of manufacturing firms in Iloilo as indicated by the Pearson's  $r$  value of 0.4510 and considered significant at 0.001 level.

The production system was found out to have a very high relationship on the production efficiency of manufacturing firms in Iloilo as indicated by the Pearson's  $r$  value of 0.8162 and considered significant at 0.001 level.

## CONCLUSIONS

On the basis of the foregoing findings, the following conclusions are advanced:

Almost all of the manufacturing firms in Iloilo are micro, small and cottage enterprises in terms of asset size. In terms of number of production workers employed, majority of manufacturing firms employ 220- 10 workers only. As to the numbers of product lines, majority of the firms manufacture multiple or various types of products. In terms of type of production system, majority of manufacturing firms in Iloilo used the intermittent production system.

Manufacturing firms in Iloilo seem to have a very efficient production system. Efficiency production system include: quantity requirements, quality assurance, completion dates, and cost-control of the products to be manufactured. Manufacturing firms in Iloilo apply production strategy to a large extent indicating the fully recognition of the importance of production strategy to ensure the success of their operations.

The internal environmental factors seem to have influenced the management of production system of manufacturing firms to a moderate extent with the personnel function leading the other factors which are marketing and finance functions. The external environmental factors seem to have influenced the management of production system of manufacturing firms to a moderate extent especially the customer factors. Manufacturing firms in Iloilo seem to employ the production activities (production inputs, production processes, production outputs) to a large extent.

There is a significant relationship between internal environmental factors and production strategy. The over-all external environmental factors (except major competitors) were found out to have a significant relationship on the formulation of production strategy. There is a significant relationship between the internal environmental factors and the production system. There is a significant relationship between external environmental factors (except major competitors) and production system. There is a significant relationship between production strategy and production system. The internal environmental factors were found out to have a significant relationship on production efficiency of a system. There is a significant relationship between over-all external environmental factors (except major competitors) and production efficiency of a system except on major competitors where it exhibits a significant relationship. There is a significant relationship between the production strategy and production efficiency. There is a significant relationship between production system and production efficiency.

## RECOMMENDATIONS

It is recommended that government agencies such as the Department of Trade and Industry (DTI), the Department of Tourism, Department of Science and Technology (DOST), National Manpower and Youth Council (NMYC), Development Bank of the Philippines and other government owned banks to join efforts to help the manufacturing firms in Iloilo by:

1. Improving the market access, expansion of domestic market, promotion of product exports, sponsoring exhibits and product fairs is also encouraged.
2. Helping the manufactures to acquire or upgrade the technical skills and management skills of the workforce in order to improve the product competitiveness in the market both domestic and foreign.
3. Assisting in the establishment of trade cooperatives and common service facilities in order to help the manufacturing sector improve their production and market performance must be considered.
4. Manufacturing firms in Iloilo should continue to adopt the following factors: quantity requirements, quality assurance, cost-control and completion dates of manufacturing the products as indicated to determine the level of production efficiency.
5. Internal environmental factors, external environmental factors, production strategy and production system may be considered by the manufacturers in order to maintain the achievement of production efficiency.
6. Manufacturing firms should give more attention to their major competitors in the market place.
7. Further studies will be made as to improve the financial status of the manufacturing firms in the City and province of Iloilo.

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## LITERATURE CITED

Buffa, E. S.

1982 Modern Production/ Operations Management, 7<sup>th</sup> edition.  
New York: John Wiley and Sons, p.18.

del Mar, D.

1985 Operations and Industrial Management. New York: McGraw-Hill, p. 592.

Garrett, L.J. et al.

1973 Production Management Analysis, 2<sup>nd</sup> edition. New York: Harcourt Brace Jovanovich, p. 251.

Griffin, R.

1990 Management, 3<sup>rd</sup> Edition. Boston: Houghton Mifflin, pp. 85-90.

Hopeman, R.J.

1976 Production: Concepts, Analysis and Control. Ohio: Bell and Howell , p. 16.

National Census and Statistics Office, Region 6 (1990), 3.

National Statistics Office,

1985 Annual Survey of Manufacturing Establishments, p.13.

Riggs, J.L. Production Systems: Planning, Analysis and Control, 2<sup>nd</sup> edition. New York: John Wiley Publishing.

Stevenson, W.J.

1982 Production/Operation Management. Illinois: Richard Irwin, p. 7.

Timms, H.

1978 The Production Function in Business. New York: McGraw-Hill.

Trade and Industry Division – Department of Trade and Industry

1992 Region VI, Situationer on the Food processing Industry of Western Visayas, 1992, p.16

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