

CHAPTER 1

INTRODUCTION

1.1 Introduction

In the present business environment with global competition, high energy costs and volatility in foreign exchange rates, a manufacturing firm has to operate at its peak efficiency. Several factors which stand out and play important roles in maintaining competitiveness with other firms are *quality*, *production cost* and *speed of delivery*. Therefore, a manufacturing enterprise needs to be at the forefront in reducing costs, maintaining the level of quality that customers expect of the product, and meeting delivery schedules. The rule of the game is not simply survival of the fittest, but is rather the capability of a manufacturer to adapt to change in order to meet ongoing challenges. A company needs to improve its work processes in order to overcome obstacles that arise. The firm cannot use a single method to solve every problem, but different tactics should be employed to meet various challenges faced by a manufacturing concern.

Frequently, it is difficult for a company to reach its objectives independently without receiving some form of cooperation from other firms. The utilization of collaborative partnerships is a strategy that can be a source of competitive advantage. In a company's competitive environment, it may be essential to determine the appropriate type and amount of work that would benefit from an outsourcing strategy. There are both pros and cons toward decisions whether to make a product in-house (vertical integration) or to subcontract it to a supplier who is qualified to manufacture such an item (outsourcing).

1.2 Company background

Company X was established in 1983 as a family firm and it has remained so. Top management of the company is a member of the family, and the organizational structure is a functional one. As is typical in a functional structure, which as described by Gomez-Mejia and Balkin (2002), such an organization allows employees

who have responsibility in an area to specialize in the functions of one department. Decision-making is centralized in the top echelon of management, and specialists in the same field are grouped into the same department. Moreover, the company's culture matches that of a power culture, which as described by Geert Hofstede (2003) is likened to a culture that depicts the caste system, centralized decision-making and multi-tiered hierarchies in organizations. While day-to-day decisions are seldom made by the managing director unless they are very important, each department has its manager acting as key person in the power culture. Moreover, the company still operates as a family firm. For that reason, the firm's working atmosphere is an informal one.

The company produces various plastic packaging articles such as bottles for cosmetics, milk bottles, and oil gallons, etc. See Figures 1 to 3 show examples of products manufactured by the company. As the items produced are customer specific, they are made to order only. In Company X, there are three core processes in the production line for manufacturing products, which are as follows: injection moulding, blow moulding and printing. A major product line comprises milk bottles, which are produced by blow moulding machinery utilizing polypropylene resin.

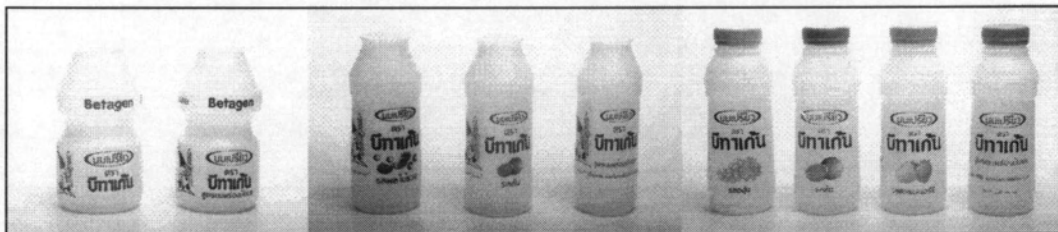


Figure 1.1: Examples of milk bottles

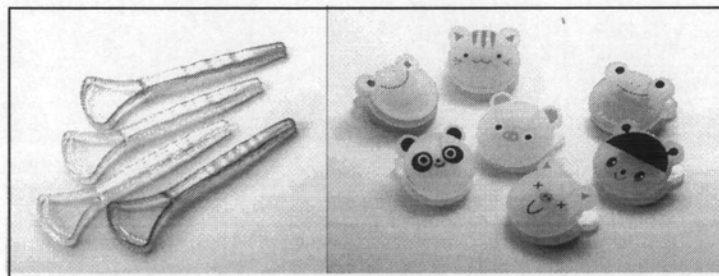


Figure 1.2: Examples of premium and gift products

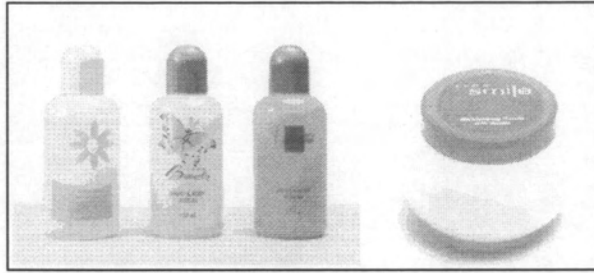


Figure 1.3: Examples of bottles for cosmetics

Additionally, one of the most important functions that add value to the company's products is mould fabrication. It is an integral part of plastics injection and blow processes for making many products for packaging of consumer products. A good mould is required to make quality products which meet stringent specifications. Packaging products need to be both functional and aesthetically appealing. The mould employed must be suitable for high speed production, and its useful life must cover a maximum number of output units with minimal maintenance.

1.3 Statement of the problem

In practice, there is no model for reaching a strategic decision to make or buy in the mould department. The make-or-buy decision has been performed by relying on the experience of the manager of the mould department. Consequently, there is a major problem in the mould department, which is *a long lead time* for mould fabrication.

One responsibility of the mould department is to maintain and repair moulds currently in use. At the same time, the department has to construct new moulds when there is an order for a new product, or when old moulds have to be replaced. Contributing factors to long lead times are the lack of CNC machinery and improper planning in the execution of jobs in the department.

1.4 Objective of thesis

The objective of this investigation is to improve the decision-making process in the mould department of a plastic packaging manufacturer.

1.5 Scope of the research

The scope of this research covers the fabrication and assembly processes of the mould department in a plastics packaging manufacturer. Productivity of the current operations will be analysed and ways for improving the output rate from existing equipment will be designed and implemented.

The final deliverables of the project will include as following:

- An analysis of the current operational behaviour of the mould department
- Design a new framework for the make-or-buy decision
- An analysis of the new framework to find the most suitable solution
- Develop and implement suitable make-or-buy procedures

In addition, the specific aspects of improvement are the reduction of throughput time and the reduced cost of each mould.

1.6 Proposed methodology

The author shall demonstrate how to reach a strategic decision to make or buy moulds or their components in order to maintain the timely supply of these moulds, which are utilized to manufacture finished products.

The methodology of this investigation will be divided into a number of stages. The first stage will be a review of related topics that are based on principles of *delegation and job enrichment, make-or-buy decisions, application of suitable technologies, project management, organisational structure, organisational culture, organisational change, and outsourcing*. After laying the groundwork based on

management principles, productivity data will be collected from the production process in the mould department.

Following the gathering of data, the numbers will be analyzed to determine trends and to look for areas of low productivity that need improvement. Once the problem areas have been identified, ways for upgrading performance with a view toward raising productivity in the process will be devised.

After the pathways for improvement have been designed, they shall be carried out in order to determine their efficacies. Once implementation of the improvement methods has started, productivity data will be collected again. From the new data, it will be determined if productivity has actually improved and whether further modifications are required.

1.7 Expected benefits

From undertaking the present study, major benefits expected are as follows:

- Provide a standardisation for the Make-or-Buy decision-making
- Increased throughput rate (decreased cycle time per job)
- Lower cost per unit
- Divestiture of nonessential activities leading to better utilization of existing equipment
- Higher quality of finished moulds