1. INTRODUCTION

Since the 1970s, the role of the purchasing function has gone through considerable change. In the past, it was regarded as a clerical function with the objective of purchasing a good/service at the lowest price. In the early 1970s, Ammer [1] found that top management viewed purchasing as having a passive role in the organisation, with purchasing being an administrative rather than a strategic function. However, the 1973–74 oil crisis and related raw material shortages drew significant attention to the importance of purchasing [2]. Porter [3], in his seminal work on the forces that shape the competitive nature of industry, identified buyers and suppliers as two of the critical forces. Thus, the strategic importance of the purchasing function to the organisation was beginning to receive recognition in the literature. This trend continued with the purchasing function being recognised as making a significant contribution to an organisation's success [4, 5], and has resulted in purchasing assuming a more strategic role in many organisations [6, 7]. One of the core issues to have emerged in strategic purchasing has been the growing importance of the make or buy decision [8].

The aim of this chapter is to show how knowledge based systems technology can assist in the area of strategic purchasing. The authors discuss a knowledge based system (KBS) designed to help companies in the make or buy decision, which is arguably the most fundamental component of manufacturing strategy [9]. In recent years, many companies have been moving significantly away from 'making' towards 'buying' [10].
However, research carried out by Ford et al. [11] has revealed that make or buy decisions are rarely taken within a thoroughly strategic perspective. They found that many firms adopt a short term perspective and are motivated primarily by the search for short term cost reductions with little consideration being given to the content of the decision making process. The make or buy model described in this chapter attempts to overcome some of these problems by offering a structure for an organisation to follow in the make or buy decision. Within the description of this KBS there is specific focus on the issues involved in the application of case based reasoning (CBR) techniques and Multi-Attribute Analysis (MAA) to the automation of the make or buy decision. The development of this system is intended to illustrate that a case based system should be capable of providing sound solutions utilising relatively small case libraries, while avoiding a large rule base which would be required if rule based reasoning was used exclusively.

THE MAKE OR BUY DECISION

The make or buy decision is being given more consideration within organisations because of its strategic implications. The make or buy decision can often be a major determinant of profitability, making a significant contribution to the financial health of a company [12]. Prior to the early 1970’s, buying by organisations had been done largely on the basis of obtaining the best price, while taking into account a few other factors such as quality and delivery. However, in many cases a significant number of factors such as delivery reliability, technical capability, cost capability and the financial stability of the supplier were not taken into consideration [13]. Few companies have taken a strategic view of make or buy decisions, with many companies deciding to buy rather than make; for short-term reasons of cost reduction and capacity [11]. In addition, some organisations may find themselves in a position that has been inherited from past management decision-making. Their position in the supply chain is already established and the extent of vertical and horizontal integration already mapped out. However, this is likely to have occurred due to a series of short term decisions with no consideration for the long term strategic direction of the organisation. Some of the key problems encountered by companies in their efforts to formulate an effective make or buy decision are as follows:

(i) No Formal Method for Evaluating the Decision

Many companies have no firm basis for evaluating the make or buy decision. Blaxill and Hout [14] have found that many firms make sourcing decisions primarily on the basis of overhead costs. The choice of which components to outsource is made by ascertaining what will save most on overhead costs, rather than on what makes the most long-run business sense. Companies are failing to consider issues such as:

- What are the organisational implications of the sourcing decision?
- Do the internal design and manufacturing capabilities lag behind potential suppliers?
- Will customers recognise a difference in the finished product if the company outsources some of its components?