CHAPTER 3

COMPANY BACKGROUND

3. Company Background

The company is a SME, employing around 300 people. It was established in 1957 as a technology firm, repairing electrical measurement instruments and control devices, which had been imported from abroad, to support the increasing demands of industrial manufacturers and government agencies. Eventually, the company started to manufacture its own products.

3.1. Training Kits Manufacturing (TKM) Department

The Training Kits Manufacturing Department was established in 1993 and is responsible for the manufacture and servicing of over 1000 electrical and electronic products, which include training kits, measurement instruments and testing equipment specifically for educational institutions. Customers include education agencies, such as universities, vocational schools and technical institutes.

The TKM Department produces approximately 1,200 products on an assemble-to-order basis, and the production units operate in a job-shop environment. These products are often complex in nature (Figure 3.1 shows an example of a BOM for a module produced by the TKM Department), which means that there are a large number of different components that have to be tracked, as well as the completed modules for final assembly (see Figure 3.2 for material flow diagram). All together, there are about 4,110 different components that are kept in stock within the TKM Department.

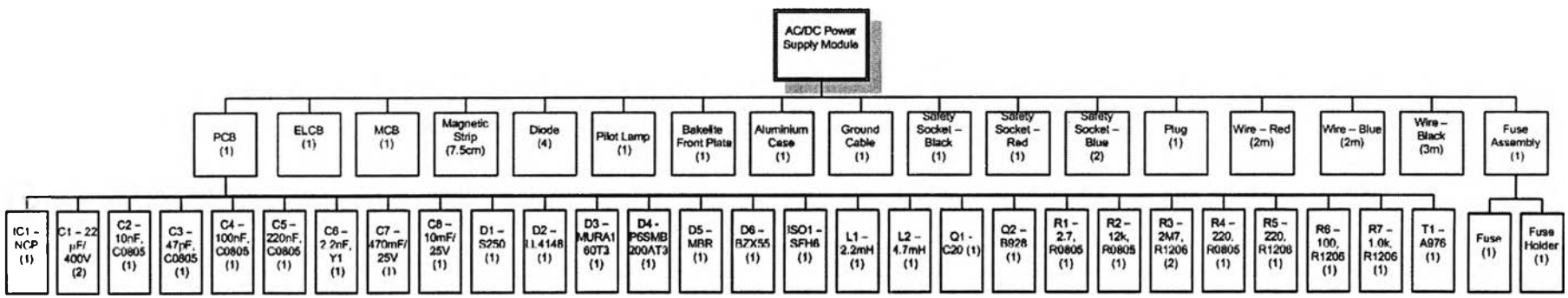

Figure 3.1 BOM for an AC/DC power supply module

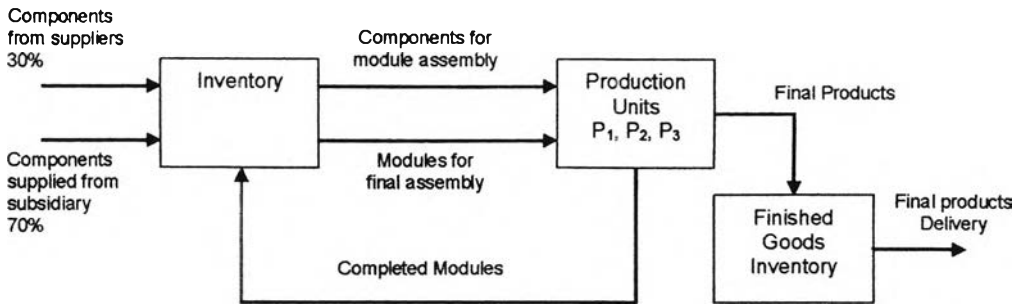

Figure 3.2 Material flows within the TKM Department.

3.1.1. TKM Structure

The TKM Department is made up of three production units, a stock department, a quality assurance department, a research and development department, a purchasing department, and a design department, as shown in Figure 3.3. Production Units 1, 2 and 3 manufacture electrical, electronic and mechanical items respectively.

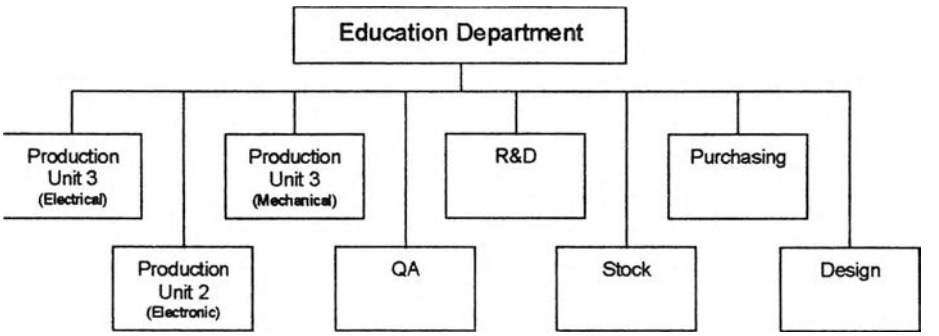

Figure 3.3 TKM Department structure

3.1.2. Computerisation of Inventory System

In the past, inventory in the stock department was paper based. The system required that every item in inventory to be recorded on stock cards and all order receipts and releases were documented on their respective forms and stored in files. Due to the large amount of components that need to be accounted for, this task became time consuming and errors often occurred.

At the start of system development, the company was undertaking the task of computerising the inventory system, and bill of materials (BOM) for all products produced by the TKM Department. The inventory system will help enable the department gain greater control and accuracy in their stock keeping. After the inventory and BOM systems have been completed, they will provide the foundation for the implementation of a MRP system.

3.2. Subsidiary (ABC)

ABC subsidiary is located on the same premises as the main company. It produces about 70% of the components used in the manufacture of products made by the TKM Department. The rest of the materials are sourced from outside; either from local firms or from overseas.

Only the materials produced by ABC will be included in the MRP system, since they make up most of the materials used by the TKM Department. Also, collecting leadtime data for the MRP system should be made simpler by the fact that it is a subsidiary located on the same premises as the main company, thus reducing the number of variables that need to be considered. However, gathering accurate data on leadtimes for the components sourced from outside would be difficult considering the time constraint of this thesis.

3.3. Reasons for MRP Development in TKM Department

Some of the problems that the TKM Department were experiencing with their stock include:

- **Lack of production planning** – The TKM Department lacks formal production planning procedures. Once orders have been confirmed, the production manager sets a monthly production schedule for the Production Units, and the jobs are usually set in the order of their deadlines. Also, the production schedule is set without any consideration of whether there are sufficient materials in stock, and if not, whether ABC subsidiary has

sufficient capacity to produce the required components in time. The result of this is that ABC is often unable to meet the demand for components from the TKM Department, and orders are often late. These delays are then transferred to the Production Units and then the TKM Department cannot meet their deadlines.

- **Lack of inventory control** – The stock department within the TKM Department has a 'look and see' approach to inventory control. This is where the staff judge by eye whether any components need to be ordered. Of course this method does not take into account future demand for any of the components; sometimes components are ordered when they are not needed and sometimes insufficient components are ordered. When components are unnecessarily ordered from ABC subsidiary, it takes up valuable capacity and it inflates the TKM Department's inventory, and when insufficient components are ordered, and a stockout occurs, it not only causes delays to the completion of the order, but it puts a strain on ABC subsidiary's capacity as they try and make up the deficit as quickly as possible.

- **Low stock turnover** – The Company as a whole has a very low stock turnover. According to a financial report covering 6 months up until the 30th of July 2003, the company had a stock turnover of 0.93 times per 6 months, or 1.86 times per year. This is low compared to leading manufacturers in the electrical/electronics industry, where turnovers are usually around 15-24 times per year.

It was decided that a MRP system was needed to help the production manager with the production planning and inventory control, and to help with the high levels of stock. The system would help the production manager by indicating what components are needed to be ordered and when, which would give the production manager the opportunity to communicate with ABC subsidiary's production manager about whether there is sufficient capacity to meet the demand for components from the TKM Department. If a problem arises, the production manager can alter the MPS until the system output is adequate. Also, the system will help with the high levels of stock by indicating only what needs to be ordered.

3.4. Conclusion

The company has been chosen as a case study for this thesis, because it is an SME that seems to be having production planning and inventory control problems within the TKM Department. A MRP system seems to be the best solution, but the company is unwilling to spend the relatively large sum of money that is required to implement a full system. So a MRP system is to be developed within the company, which is to be tailored to the needs of the TKM department.