

## *Abstract*

In today's competitive environment, production of goods and services is very much driven by customer demands for products of the highest quality, sold at the lowest price and delivered just in time. Therefore, production activities must be well planned to satisfy customer demands, yet at the same time, must be able to operate in an economical manner. To this end, a well-designed and customisable production planning tool can help achieve this competitive advantage. This research focuses on an object-oriented customisable production planning tool which has customised features applicable to the manufacturing environment. The customisable production planning tool has been developed using object-oriented techniques and analysis. Object-orientation also makes the planning tool more manageable and maintainable. A robust and scalable architecture enables software to be reused through the component-based software engineering process within the production application systems. Customisation allows more flexibility to the user in planning production activities. It enhances users' ability to adapt to their requirements more easily thus enabling them to use the customisable planning tool with ease. Besides, a use case model can be used to represent a high-level analysis model which captures system's requirements at an early stage in the development process. This analysis model gives shape to the system's layered architecture that brings about dramatic improvements on development time and costs. This will ultimately lead to a more efficient development of the production planning tool that will enable the manufacturing

domain to gain advantage in the production of goods that will be able to meet customers' expectations and timing as well as their ever changing demand patterns.

This tool which uses object-oriented techniques as part of the software engineering process will also enable the reuse of classes in future software enhancement. In addition, object-oriented engineering also offers a modular way of analysis and design that can accommodate the dynamics of a fast changing manufacturing environment, thus making it a very suitable technique for the development of a customisable production planning tool. This is because as requirements evolve over time especially so in the manufacturing industry, object-oriented approach focuses first on identifying objects from the application domain, then fitting procedures around them, thus retaining the underlying framework of the application domain. This will lead to a dramatic improvement on the component-based systems development and software performance, ultimately increasing productivity and efficiency in the production industry apart from achieving a satisfactory level of profitability so as to prolong business life.