

## Method and model development for manufacturing cost estimation during the early design phase related to the complexity of the machining processes

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### Abstrak

Product manufacturing cost estimation in the early stages of the design process is useful for accelerating product time to market, reducing costs, and increasing quality in order to obtain products with a high level of competitiveness in the free market. Complexity and machining cost are important variables to estimate the final cost of the product. However, current cost estimation models only consider their calculations based on the design which has been determined beforehand, so that it is difficult to apply a cost estimation model early on in the design process because of minimal information. Therefore, in this research, a new method to produce a cost estimation model during the early stage of the design process is proposed. The new model was developed by correlating the cost calculation with the complexity of the machining process based on product features. By using this model, the designers are able to put through design changes quickly by modifying revisions at the manufacturing stage. In this paper, the development and implementation of the proposed cost estimation model which involves the milling process is known as the SPMF (Single Product Multi-Features) Product model is explained in detail. The proposed method shows that the SPMF Product model can be used to produce a manufacturing cost estimation based on process complexity.