CHAPTER 1

INTRODUCTION

1.0 RESEARCH BACKGROUND

Product development is process of designing, creating and marketing new product to benefit customers. The early step on new product development taken much time for any industry company to create new product. They need to give more attention on this stage. The process need to consider customers demand because from customers demand there has specification on new product. During to develop new product it has to going through step by step. Early process in product development is where teams of product development must identifies the customer needed or demand. By customer’s requirement the details of product specification was developed.

The design of product should be evaluate by responder to avoid the late correction. The late correction effect the cost and consume of time for iteration of design. The design evaluation in product development made designer to select the best design on decision making process before they do the final decision. The tools that use to evaluate the best design is integrated Fuzzy-AHP where decision making on multiple criteria. All design will be evaluate with same criterion that been set to find the best design.

The affection on doing design evaluation in product development where if the decision maker failed to select the best design it will effect on time during making decision
and of course it will increasing the cost while waiting the product to be produce. Therefore, this is the priority of new product development to conduct evaluation process in correct way to make sure the process of decision making has shorter time and the product can be market early to give benefit for user.

1.1 PROBLEM STATEMENT

Ideal condition in developing new products are the involvement of shorter time production and faster delivery process. This condition being dreamed by all business or industry companies in the whole world because they want to gain the profit as earlier they can.

However, due to vagueness and uncertainty in the decision-maker’s judgment, pair-wise comparison with Integrated Fuzzy-AHP may be able to accurately capture the decision-maker’s judgment. Therefore, fuzzy is introduced into the pair-wise comparison in the AHP to compensate for this deficiency in the integrated Fuzzy-AHP. This is referred to as integrated fuzzy-AHP.

The Fuzzy-AHP will help the vagueness of responder to make evaluation on design of new product. With weighting scale the perspective from responder can be verify the condition of design against criteria stated whether it is good or very good or not good. The evaluation method will obtain the ranking with their relevant weight for each responder viewpoint. To achieve ideal condition designer can use integrated Fuzzy-AHP to improve the design evaluation in product development.

1.2 OBJECTIVE

i. To develop decision making method for design evaluation using integrated Fuzzy-Analytical Hierarchy Process.
ii. To help design engineers to finalise their choice by selecting the best design concept of case study.

1.3 SCOPES OF PROJECT

The Venn diagram above shows the product development process, then going to design evaluation process using integrated Fuzzy-Analytical Hierarchy Process (AHP) tool. The integrated Fuzzy-AHP is use to reduce the duration of time on decision making process. The fuzzy method is a process in make selection on design by doing evaluation in terms of criteria on alternative. In fuzzy-AHP represent comparison of pair-wise matrices (CPM) in concept of hierarchy make the selection that should be the first priority as customer demand. This situation involved on research and development department in multinational company.