# 論　文　内　容　の　要　旨

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Nowadays, the product design and development has become more complexity and fast changes. Among these conditions, the product image shows the significant role in customer's preference and purchasing behavior. Kansei engineering (KE) is used to determine customer emotion on the shape design and material selection in Thailand. KE can find the feeling and emotion that causes purchasing behavior. Also, it finds the product attributes that affect the customer emotion. Box–Behnken response surface methodology and Taguchi based Grey relation analysis are integrated to seek the optimal product shape from continuous variables design. The study of food wrapping has proposed a base methodology to evaluate materials of food wrapping based on tactile sense.　In more detail, it identified a set of Kansei words representing the tactile sense, made clear the relationships among them as well as their relationships with the attitude. This dissertation also succeeds to apply KE with Fuzzy Analytical Hierarchy Process (FAHP) and Analytic Network Process (ANP) in Thai ceramic manufacturing. Five applications are included in this dissertation.

First, the application of KE and Box–Behnken response surface methodology (RSM-BBD) for optimization of shape design parameters was proposed using a wine glass design as a case study. KE was used to evoke costumer feelings and emotions by evaluation of Kansei words. The RSM-BBD was successfully applied to estimate the optimal design parameters for the extraction of customer emotions. The result of this study provides useful understanding for shape product design and shows that these techniques can be applied to other products.

Second, the application of KE, Taguchi design and Grey relation analysis (GRA) for optimization of shape design parameters was illustrated using a wine glass design as a case study. KE was used to translate costumer feelings and emotions. Taguchi design and GRA were employed to identify the optimal shape parameters which optimize multi- objective customer emotions. This study has proved the feasibility of KE, Taguchi and GRA for solving multi-customer feelings in product design and development.

Third, the study of food wrapping has proposed a base methodology to evaluate materials of food wrapping based on tactile sense. The food wrapping materials included plastic bag, aluminum foil, plastic film, paper, plastic foam net, banana leaf, wax paper, plastic net and plastic air bubble. The evaluation based only on tactile sense meanwhile vision sense was blocked. A semantic differential measurement was used for the evaluation and the principal component analysis for the analysis.

Fourth, the application of KE and Quantification Theory Type 1 was employed to definition of mapping of Kansei word space to mug cup design space. And we also applied FAHP to identification of importance of design characteristics. These findings can support the designer to design ceramic products that satisfy the customer's perception.

Fifth, the application of KE and ANP for multi-criteria decision of the product attribute design was illustrated. KE was used to evoke costumer feelings and emotions. ANP was successfully applied to decide the most important customer emotions and the most important product attributes that extracting the customer emotions. In addition, it can be recommended to manufacturers to apply this procedure into widespread used in several cases of the product design and development. (527 Words)