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PROPOSAL OF A QUANTITATIVE MODEL FOR LIFE CYCLE MANAGEMENT OF PRODUCTS AND SERVICES USING UTILITY FUNCTION

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In recent years, life cycle thinking is rapidly becoming a fundamental product design focus for manufacturers. Design for Environment (DfE) method and quantitative evaluation method for Life Cycle Assessment (LCA) using Quality Function Deployment (QFD) have developed and recognized its efficiency for life cycle management. QFD is used to analyze functions required for a product or the product structure to realize these functions is a design tool applicable to early stage of product development. In the quality management field, Kano's quality model is widely recognized as to quantify the types of quality elements of products/services. In conversion of customer requirements into quality elements, it is important to clarify the types of quality elements because a greater value in quality elements does not necessarily satisfy the customer requirements. Kano has proposed quality model where required qualities are classified into attractive qualities, one-dimensional qualities or must-be qualities. In this paper, in order to develop a methodology of products and services for life cycle management, we defined life-cycle model where attractive life-cycle factors, must-be life-cycle factors and one-dimensional life-cycle factor by application of Kano's quality model. Finally, we propose a quantitative model for associating life-cycle model using utility function method.