



# Information behavior in the determination of functional specifications for new product development

Kazuyoshi Ishii<sup>a,\*</sup>, Takaya Ichimura<sup>b</sup>, Ichiro Mihara<sup>a</sup>

<sup>a</sup>*Department of Management and Information, Kanazawa Institute of Technology, Ohgigaoka 7-1, Ishikawa-Gun, Ishikawa 921-8501, Japan*

<sup>b</sup>*Department of Management, School of Business and Commerce, Nihon University, Japan*

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## Abstract

This paper deals with difficulties involved in analyzing and designing a management system to reduce the risk and improve the productivity of new product development. The model represents the processes of determining functional specifications for new product development based on a certain product strategy. The proposed model aims to analyze information behavior in the assessment of users' needs based on the fusion concept. The new product development of a household electrical product in a Japanese company is analyzed using this model and method.

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## 1. Introduction

Most innovations and improvements of products have been developed through trial and error by those in charge of research and development, and the evaluation of innovations has focused mainly on the success or failure of the results alone rather than on the causes and processes. Therefore, it is almost impossible to pinpoint how to

improve or redesign a management system for the purpose of product innovation (Ichimura et al., 1986).

We have developed and proposed models and methods to analyze information behavior in the assessment of users' needs; we have also presented a product innovation process to improve or redesign the product innovation management system (Muramatsu et al., 1990; Ishii and Ichimura, 1992; Ishii et al., 2003, 2004). The concept of information behavior includes the structure and operation of collecting information, using information and making decisions by the generation of

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\*Corresponding author. Tel.: +81 76 294 6710;  
fax: +81 76 294 6711.

E-mail address: [ishiik@neptune.kanazawa-it.ac.jp](mailto:ishiik@neptune.kanazawa-it.ac.jp) (K. Ishii).

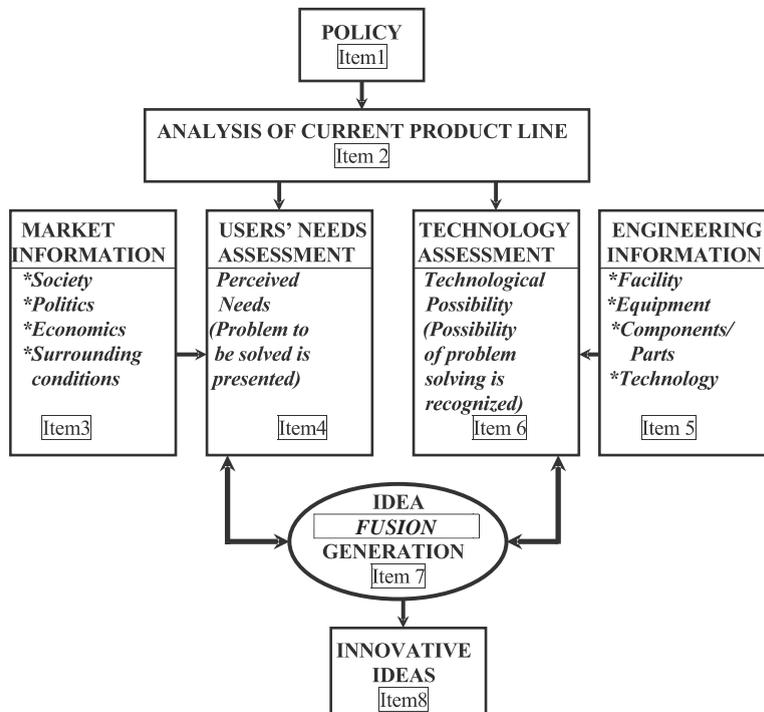


Fig. 1. Model of information behavior based on the fusion concept.

ideas in order to determine users' needs adequately and to design a product according to those needs. Furthermore, we have examined the effectiveness and drawbacks of our method by applying it to a development case. As a result, we have clarified that there are three phases in the process from the assessment of users' needs to the determination of product specifications: listing of functions (Miles, 1961), determining a structure and determining a product specification (Ishii, 1997). Enkawa et al. (1981) proposed a method for determining product specifications based on a specific product's evaluation factors, while Yoo and Ohta (1994), after composing a product profile based on a combination of specification attributes and required standards, proposed a method for determining product specifications based on evaluation results analyzed by the conjoint approach (Luce and Tukey, 1964; Green and Carmere, 1970). In both cases, however, the specifications of components are taken for granted.

In this research project, a model is proposed for the process of determining product specifications which consist of product characteristics deployment (Muramatsu et al., 1990), listing of functions and product family tree analysis (Ishii and Ichimura, 1992) to analyze information behavior and determine the specifications of components based on product strategy. The strengths and weaknesses of this method are examined as it is applied to a case study involving the development of a household electrical appliance.

## 2. Model description and the proposed method

### 2.1. Fusion model

The basic concept behind our research on need assessment is fusion (Holt, 1977). In this concept, the assessment of users' needs and available technology are fused into a new creative idea.

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