氏　　名	CHANYACHATCHAWAN Sapa		
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論文題目	A Study on Kansei Data Modeling and Its Application to Personalized Recommendation in Antique Products		
論文審査委員	主査	HUYNH, Nam Van	北陸先端科学技術大学院大学　准教授
		池田　満	同　教授
		藤波　努	同　教授
		由井薗　隆也	同　准教授
		中森　義輝	同　非常勤講師
		UYYANONVARA Bunyarit	SIIT, Thammasat University　准教授

論文の内容の要旨

The market demand for traditional crafts all over the world is decreasing. Traditional crafts are more expensive but less functional than substitute products. Therefore, the development of traditional crafts is necessary to preserve them. Traditional crafts themselves have aesthetic attributes such as brand image, individual preferences, and cultural backgrounds which do not exist in substitute products. These aesthetic attributes are key factors in attracting the consumers. For traditional products, the decision-making process of the consumer is influenced by their individual feelings. By discovering and transferring these feelings into the product design, we can increase demand for traditional crafts. Our objective in this dissertation is to propose a model for representing these aesthetic aspects of traditional crafts. In Kansei Engineering (KE), these aesthetic attributes are called “Kansei attributes” and defined using Kansei words.

According to the research by Kansei Engineering (KE) and evaluation, a Kansei experiment is usually conducted in advance to build the Kansei database of products in which products are assessed according to a predefined set of their Kansei attributes from a population of subjects, typically by means of the semantic differential (SD) method. The Kansei database is then used to generate the so-called Kansei profiles of products, which serve as knowledge for the purpose of affective design or consumer-oriented evaluation. Basically, there are two main approaches to modeling Kansei data for generating Kansei profiles. In the first approach, which has been used in many KE studies, Kansei data is usually treated as numerical data in which a Kansei judgment is viewed as a crisp score and the average of scores given by a population of subjects is defined as the Kansei profile of products. Alternatively, the second approach recently proposed is based on voting model semantics for generating Kansei profiles in which Kansei judgment is viewed as categorical data. However, both these approaches of Kansei data modeling do not take into account the fuzziness inherent in Kansei data.

This dissertation addresses the problem of Kansei evaluation and modeling for personalized recommendation and design support. In particular, it first proposes a novel approach to modeling Kansei data that can capture not only the uncertainty of Kansie data due to subjective judgments but also the fuzziness inherent in Kansei data due to their qualitative nature. Then, a new method for generating the Kansei profiles of products making use of the proposed approach of Kansei data modeling is also developed. Eventually, the newly developed method for generating the Kansei profiles is integrated into the target-based decision model in order to develop a consumer-oriented evaluation model for personalized recommendation in traditional products.

Keywords: Kansei data; Linguistic variable; Semantic overlapping; Consumer-oriented evaluation; Decision support system

論文審査の結果の要旨

In research of Kansei engineering (KE) and evaluation, Kansei experiment is usually conducted in advance to build the Kansei database of products in which products are assessed according to a predefmed set of their Kansei attributes from a population of subjects, typically by means of the semantic differential (SD) method. The Kansei database is then used to generate so-called Kansei profiles of products, which serve as the knowledge for the purpose of affective design or consumer-oriented evaluation. Basically, there are two main approaches to modeling Kansei data for generating Kansei profiles. In the frrst approach, which has been used in many KE studies, Kansei data is usually treated as numerical data in which Kansei judgement is viewed as a crisp score and the average of scores given by a population of subjects is defmed as Kansei profile of products. Alternatively, the second approach recently proposed is based on voting model semantics for generating Kansei profiles in which Kansei judgment is viewed as categorical data. However, both these approaches of Kansei data modeling do not take into account the fuzziness inherent in Kansei data.

This dissertation addresses the problem of Kansei evaluation and modeling for personalized recommendation and design support. The research problem is well motivated and clearly formulated. An adequate overview of relevant theoretical and practical background literature is also provided in the dissertation. The theoretical contribution of this research is to propose a novel approach to modeling Kansei data that can capture not only the uncertainty of Kansei data due to subjective judgments but also the fuzziness inherent in Kansei data due to their qualitative nature. Then, a new method for generating Kansei profiles of products making use of the proposed approach of Kansei data modeling is also developed. Eventually, the newly developed method for generating Kansei profiles is integrated into the target-based decision model in order to develop a consumer-oriented evaluation model for personalized recommendation in traditional products.

This dissertation has made an interesting contribution to theoretical and experimental development within the area of Kansei engineering and application. The research work presented has eventually resulted in one paper published in the journal of Knowledge-Based Systems (Elsevier), and two refereed conference papers.

In summary, Mr. CHANY ACHA TCHA WAN Sapa has completed all the requirements in the doctoral program of the School of IZnowledge Science, JAIST and fmished the examination on November 6, 2017. All the committee members unanimously decided to pass the candidate.