Human Factors and Ergonomics

Contents

Incorporating Markov chain modelling and QFD into Kansei engineering applied to services

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Abstract: Instead of usability, customers today concern themselves more on satisfying their emotions/Kansei. This paper discusses an integrative framework that incorporates the Kano model, Markov chain, and quality function deployment (QFD) into Kansei engineering (KE). Its purposes are:

1 to exhibit the relationship between service performance and Kansei
2 to enable service designers to establish the extent to which they prioritise their improvement programmes in dealing with current and future preferences.

A comprehensive case study involving Indonesian, Japanese, and Singaporean tourists, was carried out. Understanding the cultural differences with respect to Kansei evaluation will yield valuable insights for international marketing strategies.

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Tan Kay Chuan received his PhD in Industrial Engineering and Operations Research (concentration in human factors engineering) from the Virginia Polytechnic Institute and State University, USA, in 1990. He has been with the Department of Industrial and Systems Engineering, NUS, since then. He is currently associate professor and certified human factors professional (CHFP) issued by Board of Certification in Professional Ergonomics (BCPE). His teaching expertise is in human factors engineering, engineering statistics, engineering economy, quality planning and management, and more recently service innovation and management, and Six Sigma. His research interests are in quality function deployment, quality award systems, and innovation in service design.

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1   Introduction

Competitive price and performance features have become prominent factors in deciding which products to buy (Schifferstein and Hekkert, 2008). Each product or service therefore needs to offer features or properties that distinguish it and attract customers. Nowadays, the focus of customers refers to the switch between functionalism and product semantics. Quick model changes, technical updates, and price reduction are no longer sufficient (Shaw and Ivens, 2002). An impression evoked by a product experience is deemed to bring customer satisfaction (Khalid and Helander, 2006; Schifferstein and Hekkert, 2008). Norman (2004) argues that products or systems that are able to make customers happy are easier to deal with.

In dealing with customer emotions, KE has been extensively applied (Nagamachi, 1995, 2002a, 2002b). Its applications cover product design and service quality improvement (Nagamachi and Lokman, 2011). Recent research (see Hartono and Tan, 2011) has extended the application of Kansei engineering (KE) into international-class services and cross-cultural studies. Although the focus of many studies on service quality has been mainly on cognition (Liljander and Strandvik, 1997; Wong, 2004; Ladhari, 2009), this study was carried out to highlight the role of KE in services by incorporating proper service and quality tools.

This study has two objectives. The first it is to develop an integrative framework of KE applied to services. The second is to conduct a case study on luxury hotel services involving participants from different cultural backgrounds. This paper is organised as follows. Following the introduction, a brief review of KE, the Kano model, Markov chain, and quality function deployment (QFD), is presented. Thereafter, the main contribution of this research – an integrative framework followed by a case study – is provided. A discussion and conclusion section wraps up the paper.

2   Brief literature review

2.1   Kansei and KE

According to Nagamachi (1995), Kansei is defined as the customer's psychological feeling and image of a new product. All human senses as well as cognition are simultaneously involved (Schütte et al., 2008). KE has been in use since the 1970s. Basically, the KE methodology is useful in several regards:

- KE is able to translate customer emotions into concrete design parameters through engineering aspects (Nagamachi, 2002a, 2002b)

- KE tries to minimise subjectivity by building a mathematical model between emotional responses through all the human senses and their respective external stimuli