

Thesis Title:

Electronic Customer Knowledge Management Systems: A Multimodal Interaction Approach

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Abstract

There has been an increasing demand for commercial organisations to foster real-time interaction with customers, because harnessing customer competencies has been shown to be a major contributor towards various benefits, such as growth, innovation and competition. This may drive organisations to embrace the development of multimodal interaction and complement Electronic Customer Knowledge Management Systems (E-CKMS) with metaphors of audio-visual nature. Although the implementation of E-CKMS encounters several challenges, such as lack of trust and information overload, few empirical studies were devoted to assess the role of audio-visual metaphors, and investigate whether these technologies can be put into practice. Therefore, this thesis describes a comparative evaluation study carried out to examine the implication of incorporating multimodal metaphors into E-CKMS interfaces on not only usability of E-CKMS, but also the user's trust, knowledge and acceptance. An experimental E-CKMS platform was implemented with three different modes of interaction: *Visual-only E-CKMS (VCKMS) with text and graphics*, *Multimodal E-CKMS (MCKMS) with speech, earcons and auditory icons* and *Avatar-enhanced multimodal E-CKMS (ACKMS)*. The three platforms were evaluated by three independent groups of twenty participants each (total=60) who carried out eight common tasks of increasing complexity and design based on three different styles. Another dependent group of forty-eight participants (n=48) was instructed to interact with the systems under similar usability conditions by performing six common tasks of two styles, and fill a questionnaire devised to measure the aspects of user acceptance. The results therein revealed that ACKMS was more usable and acceptable than both MCKMS and VCKMS, whereas MCKMS was more usable than VCKMS, but less acceptable. Inferential Statistics indicated that these results were statistically significant.

Keywords:

Customer, Knowledge, Multimodal, Speech, Avatars, Facial Expressions, Auditory Icons, Earcons, Speech, Co-production, Communities of Customers, Trust, Information Overload

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