
Editorial: decision sciences in the information and knowledge era

Willem Selen

In this special issue, a cross-section of e-commerce and internet-enabled business issues are addressed, which may involve detailed decision science tools and methodologies, or more qualitative frameworks.

In the first paper by Lee and Sohn, the authors realise that many e-business companies are trying to survive in internet markets through building customer loyalty by emphasising trust. On the other hand, they notice that e-businesses set high switching costs in order to lock-in customers. Few studies have empirically conducted tests to verify that trust and switching costs are the most critical components to build customers' loyalty. This study, which is based on survey analysis and structural equation modelling, revealed that trust is the main factor in building customers' loyalty, rather than switching costs.

The second paper by Sharma, Ahmed, and Wickramasinghe describes major factors, at both macro and micro levels, that hindered Small and Medium-sized Companies' (SMEs) participation in e-commerce adoption in Asia during the early stages of e-commerce over the period 1999–2001. Although the study is limited to Asia and covers an earlier period of e-commerce implementation, the results could contribute to better understanding of the obstructive factors in e-commerce adoption as they relate specifically to the business environments of SMEs.

In contrast to the previous paper, Nguyen and Harrison address e-business at the supply chain level by empirically testing a taxonomy that illustrates a firm's strategic positioning along Electronic Business and Integrated Supply Chain Management (ISCM). A firm's position in this taxonomy represents its Electronic Supply Chain Orientation (ESCO). The results were applied to the Australian manufacturing industry, and indicated the existence of four types of firms according to the general strategic options that they adopted: laggards, e-business players, ISCM players, and integrators. Each of these orientations is then further discussed in detail. Supply chain performance measures indicated that the integrators gained most significant benefits, while the laggards were well behind.

The fourth paper by Ashayeri, Kuo, and Selen continues this theme of strategy by looking into the important interaction between e-business and global sourcing. It is noted that global sourcing can benefit from the functionality of Electronic Business (EB) by exhibiting more flexible structures and added opportunities in communications and transactions with partners among worldwide supply chains/networks. In this paper, the authors aim to clarify two important questions: 'what are the relationships between global sourcing and EB?', and 'how do EB applications and strategies help global sourcing lead to better performance?'. A comprehensive literature review was conducted from three perspectives: the applied theories, the covered business scope, and the changing roles of flows. In analysing the potential benefits of EB to global sourcing, the enhancement of supply chain components and alignment effects were subsequently

discussed, leading towards a framework that highlights how EB and global sourcing interact.

The special issue then shifts its focus to more detailed methodological approaches in dealing with decision science tools/approaches, and how they further internet applications in enterprise management. In the paper by Ahn, Cho, Kim, and Choi, the authors point out that, with the continuous growth of the internet and e-commerce, increasing choice has also caused product overload, where the customer is no longer able to effectively choose among the products offered. A promising technology to overcome product overload is the use of 'recommender systems' that help customers find the products they would like to purchase. Collaborative filtering is the most successful recommendation method, but its widespread use has exposed some problems such as sparsity and scalability. To overcome such limitations, this paper proposes hybrid recommendation methodologies based on web usage mining and dimensionality reduction techniques to enhance the recommendation quality and performance of current collaborative filtering-based recommender systems. Experiments on real e-commerce data show that the proposed methodologies provide higher quality recommendations and better performance than existing collaborative filtering methodologies.

The special issue concludes with the paper by Gottlieb, Matveev, and Stavrovski, in which the authors address contemporary issues in e-business enabled inventory database management. E-business technologies enable an inventory manager to make coordinated decisions on the basis of regularly updated and timely ordered information. The dynamic features of the inventory items and inventory locations make a rationally organised time schedule of regular and irregular updates for inventory databases difficult. Using a game theory strategy of optimal regular updates for dynamic databases can significantly lower costs associated with the database update process. This article describes an internet-based solution of creation, maintenance, update, and query of a computerised inventory database for inventory items and their locations with time-dependent (dynamic) and time-independent (static) attributes.

The diversity and wide scope of the articles that were selected attest to the fact that internet-technology has truly permeated business decision-making, and thereby new challenges and opportunities are created. I hope you will enjoy reading more about these in this special issue.