

Chapter 7

Design Methods for Decision Support Systems: A Perspective of Small Business B2C E-Commerce Environment

Madhury Khatun

Victoria University, Australia

Shah J Miah

Victoria University, Australia

ABSTRACT

This article reviews methods to the development of a decision support system (DSS) solution for small business owners/managers. The main objective of designing the DSS artefact is to support the strategic decision-making for achieving competitive advantages in the business-to-consumer (B2C) e-commerce environment. Many researchers in the DSS domain utilised various methods to design of information systems (IS) artefact, mostly intended for large businesses. Researchers have paid much attention to the business environment as a knowledge source for DSS design and development for the small business strategic decision support needs. User-centred design (UCD) principles were adopted for DSS development. Prior a novel DSS development, multiple case studies were carried out for understanding the user needs and system requirements. Also, knowledge was sourced from the external business environment via the analysis of small business website features against their overseas competitors. The findings suggested developing a DSS solution for small business needs.

INTRODUCTION

The analysis and design of decision support systems (DSS) is a multifaceted activity that points toward exploiting of suitable methodologies for modelling decision processes (Brandas, 2011). This article describes various system development approaches to select suitable method(s) for a small business DSS artefact design. The novel DSS is targeted to enhance small business owner/manager strategic decision-

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making capabilities. The idea is to provide an option to managers with appropriate knowledge to update competitive features on their websites within the business-to-consumer (B2C) e-commerce dynamic environment. DSS is the area of information system (IS) discipline focused on systems that support and improve managerial decision-making (Arnott & Pervan, 2012).

One of the vital roles of a manager in an organisation involves in making most profitable decisions within the business environment and implementing them for the productive business outcome. Making a productive decision is relatively a hard task for small business managers in the dynamic business environment (Power, 2010). Predominantly, decision making may difficult for small businesses in the B2C e-commerce environment, where millions of consumers have the opportunity to direct dealings with companies on their websites and can evaluate products and services until choosing one site (Haag & Cummings, 2009).

This changing environment influences both problems and opportunities for managers. Thus, managers as decision-makers require analysing problems in such environment (Hall, 2008). Moreover, global products and services are produced and delivered to customers in a technologically sophisticated electronic trading environment where markets change rapidly, and consumer demands are high (Power, Sharda & Kulkarni, 2007). Thus, the business processes are complex and competitive oriented (Alalwan, 2013). B2C e-commerce highly visible, as it directly interacts with more than several millions of consumers through websites (Haag & Cummings, 2009). Therefore, appropriate decisions and actions are required by the decision makers in such environment (Hall, 2008).

The majority of Australian small businesses in the B2C sector have been experiencing significant issues in running their online businesses successfully that were recognised through multiple case studies before a novel DSS solution development. In this environment, effective decision-making could be impossible without the use of appropriate technical support that can assist selecting competitive features on small business websites. The adoption of competitive website features would help a small business to reach potential customers to increase sell online. These discussions suggest designing a purpose-specific DSS solution artefact that is essential for owners/managers in making the strategic decision in such environment. The research objective of this study is:

What are the most appropriate methods for developing the novel DSS solution artefact for the small business strategic needs?

This article is organised as follows. First, it discusses the practical problems, DSS requirements, and method used for requirement analysis. Then, it discusses various DSS development approaches to identify the appropriate methods for small business DSS development, and finally, presents a conclusion.

PRACTICAL PROBLEM CONTEXT AND DSS REQUIREMENT ANALYSIS

DSS research has been established as a well-recognised tradition in IS research field. Its dedication is promised to improving decision-making process and practice through the application of appropriate technologies (Miah & McKay, 2016). DSS is significant for this study as it usually focuses on the effectiveness (such as decision) rather than efficiency (such as search & measurement) in helping decision-making processes (Eom, 2007). In small business context, it can assist owners/managers in improving their strategic decision-making process and capabilities using a novel DSS solution artefact because a

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