Chapter 11
Electronic Commerce and Decision Support Systems:
Theories and Applications

Kijpokin Kasemsap
Suan Sunandha Rajabhat University, Thailand

ABSTRACT

Electronic Commerce (e-commerce) is an advanced online business tool that allows many companies to launch their websites and helps customers search their specific products shown on the websites. Decision Support Systems (DSSs) are computerized tools designed to facilitate strategic decision making. With the support of data mining and business intelligence methods, DSSs can effectively increase the performance of decision making and can present a sophisticated method of managerial thinking in a timely and effective manner toward gaining competitive advantage. The chapter argues that utilizing e-commerce and DSSs has the potential to enhance business performance and reach strategic goals in modern business.

INTRODUCTION

Electronic commerce (e-commerce) is the online business with the support of computers (Kasemsap, 2015a) and becomes one of the required ways of online shopping (Kasemsap, 2018a). E-commerce creates a paradigm shift in the way modern companies conduct business (Kuah & Wang, 2017), and can help enhance the digital economy (Kamel, 2010). E-commerce has a tangible impact on the way business is conducted (Strzębicki, 2015). E-commerce tools has been made available that are able to help customers by generating purposed recommendations (Palopoli, Rosaci, & Sarné, 2016).

The emergence of e-commerce has provided manufactures and vendors with more business opportunities (Acampora, Alghazzawi, Hagras, & Vitiello, 2016). Electronic retailers may enjoy early mover advantages because of the consumer demand inertia amplified by the nature of the Internet and the system design characteristics of e-commerce platforms (Wang, Cavusoglu, & Deng, 2016). E-commerce websites increasingly incorporate tracking technologies that can monitor consumer behavior on their websites (Currim, Mintz, & Siddarth, 2015). Evaluating usability issues allows improving the design of e-commerce websites (Díaz, Rusu, & Collazos, 2017).

Decision support systems (DSSs) are the computer systems designed to provide the assistance in evaluating alternative courses of action (Kasemsap, 2017a) and in enhancing decision-making processes (Kalina & Zvárová, 2013). Decision making is the cognitive process resulting in the selection of a course of action among several alternative scenarios (Kasemsap, 2016a) for solving complicated problems where multi-criteria objectives are involved (Tran, Abraham, & Jain, 2008). There is a growing trend to provide managers with information systems that can assist them in their decision-making processes (Averweg, 2010).

Because of the importance to individual, group, and organizational success (Forgionne, 2005), information systems research continues to examine the effective ways to improve the support for decision making (Forgionne, 2009). DSSs are a subset of information systems that support human decision making through computerized systems that offer contextual information (Bihl, Young II, & Weckman, 2014). The field of DSS development is reaching the end of its expansion stage, which is characterized by the proliferation of processes and methodologies in all areas of decision support (Gachet & Sprague, 2010).

The chapter is based on a literature review of e-commerce and DSSs. The extensive literature review provides a contribution to practitioners and researchers by indicating the theories and applications of e-commerce and DSSs in the digital age.

BACKGROUND

E-commerce represents one of the most promising directions for generating competitive advantage at the micro level of the organization and for increasing productivity at the macro level of the economy (Rahman & Raisinghani, 2000). Many companies have recognized the importance of developing an online platform with the objective of having a higher interaction with the client, and influence them in e-commerce, through the buying process (Ibarra, Partida, & Aguilar, 2015).

E-commerce has substantial potential to promote the growth of small and medium-sized enterprises (SMEs) in developed and developing countries (Kurnia, Choudrie, Mahbubur, & Alzougool, 2015). Due to the growth of e-commerce, more organizational resources are being directed into electronic securities, Internet facilities, business plans, and new technologies (Kasemsap, 2016b). E-commerce transforms the world into an information society (Kartiwi & MacGregor, 2008), and assists organizations in reducing the cost of entry and in expanding the market reach for a wide variety of business activities (Lin, Jalleh, & Huang, 2016).

Decisions are activities that individuals face and deal with every day (Abdou, Radaideh, & Lewis, 2010). The successes over the past 10 years in developing, implementing, and sustaining effective DSSs for decision making for both governments and businesses hold many beneficial lessons for the implementation of sophisticated systems under conditions of extreme difficulty (Kamel, 2006). Decision making is a crucial element of a manager's responsibility (Garrido, 2015) in both day-to-day operations and strategic planning (Abdelsalam, Dawoud, & ElKadi, 2013). Supporting decision taking by management in an integrated way means to support the global decision process of the organization and increase its efficiency and resilience (Garrido, 2015).

In recent years, DSSs have moved from a radical movement that changed the way information system was perceived in business, to a commercial information technology (IT) movement that all organizations engage (Wang & Radosevich, 2010). Nowadays, many DSSs are based on spatially distributed sensors (Dunkel, Bruns, & Pawlowski, 2010). Organizations continuously need to increase their business intelligence

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