

## Chapter 3.3

# Econometric Simulation for E-Business Strategy Evaluation

**Lidan Ha**

*Coppin State University, USA*

**Guisseppe Forgionne**

*University of Maryland, Baltimore County, USA*

### ABSTRACT

Effective and efficient e-business strategy development is crucial to achieve a competitive advantage in the electronic marketplace. However, e-business strategy evaluation constitutes complex and dynamic challenges for business management. This paper offers assistance for the evaluation process by applying a computer simulation that uses an econometric model delivered through a decision making support system. The major econometric simulation logic and methodology introduced here covers multidisciplinary areas and is among the first attempts to identify and establish a comprehensive, quantitative tool to support the strategy development processes of e-businesses. The authors hope to shed some lights on e-business strategy research through this paper.

### INTRODUCTION

While bringing new opportunities (Ghosh, 1998; Huizingh, 2002; Lumpkin & Dess, 2004; Udo & Marquis, 2001/2002) to organizations, the development of Internet and Web-based technologies also presents challenges (Hoffman, 2000; Laudon & Laudon, 2004; Porter, 2001). To many companies, it is still not clear how to benefit from the Web and other digital technologies (Lumpkin & Dess, 2004). Business strategy plays an increasingly important role in order for companies to achieve a competitive advantage in the Internet age (Porter, 2001; Raisinghani & Schkade, 2001). However, the new and dynamic nature of e-businesses makes strategy development a tough mission for companies. Comprehensive and effective tools are needed to deal with this problem by supporting the strategy making processes of e-businesses.

E-business has attracted a lot of attention when looking at different fields (e.g., management science, economics, econometrics, management, and information science). The major related research on e-business decision-making support includes areas like strategy studies (Hambrick & Fredrickson, 2001; Kim, Nam, & Stimpert, 2004; Li & Chang, 2004; McGrath & Heiens, 2003; Podgajny, 2001; Rayport & Sviokla, 1996; Rohm & Sultan, 2004), e-business models (Afuah, 2004; Applegate, Austin, & McFarlan, 2003; Hayes & Finnegan, 2005; Lam & Harrison-Walker, 2003; Lumpkin & Dess, 2004; Scott & Scott, 2004), business process reengineering (Greasley, 2003; Gunasekaran & Kobu, 2002; Hengst & De Vreede, 2004; Jang, 2003; Kim & Ramkaran, 2004; Vuksic, Stemberger, & Jaklic, 2001), supply chain management (Laudon & Laudon, 2004; Swaminathan & Tayur, 2003), distributional channel management (Anderson & Day, 1997; Chiang, Chhajed, & Hess, 2003; Dykstra, 2001; Kumar, 2000; Rohm & Sultan, 2004), and customer relationship management (Hellier, Geursen, Carr, & Rickard, 2003; Kohli, Devaraj, & Mahmood, 2004; Peppard, 2000; Wilson, Daniel, & McDonald, 2002).

With business strategy becoming increasingly important (McGrath & Heiens, 2003), several researchers present their work on how to establish successful e-business strategies. However, these studies are mostly qualitative in nature. What they mainly provide is a high-level explanation of major decision factors and their relationships toward a company's performance. The factors, relationships, and their organizational effects usually are not measured and evaluated quantitatively. Further, research in the management field (Besanko, Dranove, Shanley, & Schaefer, 2004; David, 2003; Hambrick & Fredrickson, 2001; Robbins & Coulter, 1999) points out the importance of support for top-level decision making (vs. tactical-level decision making) in an organization (Finlay, 1994). However, due to the complex nature of top-level decision making,

information technology has not been employed fully as with the other lower-level activities (Finlay, 1994).

Different e-business models are explored to help companies win on the Internet. However, e-business models do not stand alone. Through e-business models, organizations aim to implement their strategy and to realize their organizational goals. It is strategic objectives that determine the appropriate e-business model(s), and e-business models are among the ways to implement strategy (Lam & Harrison-Walker, 2003).

Business process reengineering (BPR), according to David (2003), mainly addresses short-term and business-function-specific issues that are involved in tactical decisions. Furthermore, BPR is from a process perspective and aims to improve an organization's performance through operational effectiveness. However, as pointed out by Porter (1996), the effectiveness of individual activities or functions within an organization is not enough for a company to stay competitive; sound strategy needs to be in place to guide, integrate, and optimize overall organizational functions. In other words, BPR practices also should be guided by the overall strategy of an organization.

As put by researchers, process-oriented<sup>1</sup> supply chain management (SCM) involves decisions that should be assessed based on an organization's strategic positioning (Chopra & Van Mieghem, 2000); distributional channel management (DCM) activities should be in alignment with overall organizational strategic goals (Anderson & Day, 1997); a strategic perspective is indispensable for successful customer relationship management (CRM) initiatives (Peppard, 2000).

The previous summarizes the e-business strategy studies and studies that focus on tactical issues (e.g., e-business models, BPR, SCM, DCM, and CRM) in businesses. Certain quantitative tools (e.g., simulation, econometrics, and analytical tools) are provided by the prior work, but such tools or methods are utilized mainly for lower-level, not strategic-level, decision-making issues,

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