

# Chapter 4.10

## Simulating E-Business Innovation Process Improvement with Virtual Teams Across Europe and Asia

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### ABSTRACT

In this article, E-business new product development innovation processes were studied at four enterprises across Europe and Asia. E-entrepreneurship innovation was improved using a quality of idea priority model. The conventional quality function deployment phase 1 matrix was revised to increase the voice of customers and engineer quality of idea decision-making. The

proposed model was simulated with geographically dispersed virtual teams (based on production data). Statistical analyses were applied to test the hypothesis that an improved innovation process could better discriminate between new product return on investment pass or fail probability.

### 1 INTRODUCTION

E-business new product development (NPD) methodologies are evolving across Europe and

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Asia. This may be a response to the global economic crises and to leverage Internet virtual collaboration technology (Clegg & Tan, 2007; Durmusoglu, Calantone, & Sambamurthy, 2006; Griffith, Harmancioglu, & Droge, 2009; Mishra & Shah, 2009). The virtual e-enterprise context brings people together that often have diverse cultures and personalities (Kotabe & Helsen, 2008; McCrae & Terracciano, 2005; Mead, 2005; Ozer, 2006; Park, Lim, & Birnbaum-More, 2009; Quelch & Klein, 2007; Strang, 2009a), thus making it challenging for team members to be effective and objective throughout NPD.

Although the term 'e-entrepreneurship' has been associated with "the act of establishing new companies specifically in the Net Economy" (Kollmann, 2006, p. 323), existing enterprises must synergistically innovate their NPD processes due to the competitiveness and complexity of the e-business context (Strang, 2008). In e-business, NPD processes can vary across the regional teams due to organizational culture, individual culture, language dialects and/or personality differences (Strang, 2009b). Market needs can be perceived differently, and may be different, across geographic locations. The Internet brings many advantages to e-businesses, yet it requires enterprises of any size to have NPD processes that effectively leverage virtual resources.

Notwithstanding the above, NPD processes may not be understood or effectively applied by e-business design teams (Pentina & Strutton, 2007). According to the Product Development Management Association (PDMA) survey, "best practices research still has not been able to supply clues, let alone answers, on how to organize most effectively for NPD" (Barczak, Griffin, & Kahn, 2009, p. 22). "There is strong evidence that NPD productivity is heading in the wrong direction [down]" (Cooper & Edgett, 2008, p. 48). It is disconcerting to find a 41% NPD project failure rate from "best of the best" multinationals (Barczak et al., 2009, p. 6), and shocking to learn 38.5% of these companies did not have a formal

NPD methodology (Barczak et al., 2009, p. 4). In our experience with multinational European and Asian case studies, we observed a 35% NPD failure rate. It seems more e-business NPD innovation methodology research is needed.

Recent studies of NPD success emphasized the importance of effective front-end ideation processes to capture the voice of the customer (Chang & Cho, 2008; Cooper, 2004; Cooper & Edgett, 2008; Gordon, Tarafdar, Cook, Maksimoski, & Rogowitz, 2008; Kahn, 2005; Koen et al., 2002; Miller & Swaddling, 2002; Sawhney, Verona, & Prandelli, 2005). Quality function deployment (QFD) is considered a best-practice in NPD as judged from empirical studies (Bayraktaroglu & Özgen, 2008; Jiang, Shiu, & Tu, 2007; Marsot, 2005). Although mostly-used in product-driven ideologies, "QFD is the most complete, systematic and convincing method for designing products with the quality that fulfils expressed and latent requirements of customers" (Jiang et al., 2007, p. 30). QFD originators and others (Kano, Seraku, Takahashi, & Tsuji, 1984; Miguel, 2008; Sullivan, 1986) concur that QFD is a systematic technique to ensure customer needs impact NPD.

However, it has been our experience that NPD team members with diverse cultures/languages may not be able to objectively express the voice of the customer and/or convince engineers of high-priority local market needs. Likewise, engineers and senior management may have different (inaccurate) perceptions of localised market needs. An NPD study found differences in eastern cultures: "Chinese SMEs do not regard financial returns as the primary criterion in the idea-generation stage" (Mu, Peng, & Tan, 2007, p. 125). Furthermore, we have found that even when QFD is employed, products fail.

To that end, we developed an improvement to QFD phase 1 that used a quality of ideas mechanism, with higher precision, along with competitive and technical benchmark multipliers for the House of Quality (HOQ) matrix. We then tested the new model with successful and failed NPD

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