

Evaluation of New Product Development in the Management Capability of a Firm's Knowledge: A Novel Approach

(Anthony) Shun Fung Chiu¹, (Jackie) Ming Lang Tseng^{2,*}

¹Industrial Engineering Department, Gokongwei College of Engineering, De La Salle University, Manila, Philippines

*²Lunghwa University of Science & Technology, Taoyuan, Taiwan
²ml.tseng@mail.lhu.edu.tw*

Abstract

New product development (NPD) in a firm's knowledge-management capability (KMC) is vital for enterprises in making continuous improvements to maintain sustainable competitive advantages. Evaluation of NPD in a firm's KMC, however, is a challenging task, due to the interdependency cause-effect criteria and the linguistic vagueness of qualitative information. This study proposes a novel approach, the fuzzy decision-making trial and evaluation laboratory (FDEMATEL) method, to evaluate the interdependency aspects of NPD in KMC. The proposed approach combines fuzzy logic with decision-making trial and evaluation laboratory (DEMATEL), wherein the fuzzy logic accounts for the linguistic vagueness of qualitative criteria, and DEMATEL converts the interdependency relations among the cause-and-effect criteria into a visual diagram. For the empirical case study, five aspects and twenty-two criteria of NPD in KMC for a printed circuit-board manufacturing firm in Taiwan are evaluated. The result showed that "monitoring market forces", "specialized market units" and "security" are the most important causal criteria, while "technology" is the most important effectual criterion. Managerial implications and concluding remarks are discussed.