



Research Center
Finance & Information Management



Project Group
Business & Information
Systems Engineering

Mindful Engagement in Emerging IT Innovations - A Dynamic Optimization Model Considering Organizational Learning in IT Innovation Investment Evaluation

by

Björn Häckel, Andreas Lindermeir, Florian Moser, Stefan Pfoser

in: The DATA BASE for Advances in Information Systems, 48, 1, 2017, p. 53-74

WI-415

University of Augsburg, D-86135 Augsburg
Visitors: Universitätsstr. 12, 86159 Augsburg
Phone: +49 821 598-4801 (Fax: -4899)

University of Bayreuth, D-95440 Bayreuth
Visitors: Wittelsbacherring 10, 95444 Bayreuth
Phone: +49 921 55-4710 (Fax: -844710)



Mindful Engagement in Emerging IT Innovations - A Dynamic Optimization Model Considering Organizational Learning in IT Innovation Investment Evaluation

Abstract

Companies regularly have to decide whether, when, and to what extent to invest in IT innovations with different maturities. Together with mature IT innovations, companies should incorporate emerging IT innovations in their investment strategy. Emerging IT innovations have not yet been widely accepted. Thus, they are characterized by higher uncertainty about their future evolution but have potentially high long-term returns. To enable mindfulness in these decision-making processes, the literature emphasizes organizational learning through continuous engagement in IT innovations to enhance a company's ability to understand, successfully adopt, and implement emerging IT innovations. IT innovation literature so far has focused on qualitative work, but lacks of quantitative models for the analysis of ex-ante investment decisions. Therefore, we develop a dynamic optimization model that determines the optimal allocation of an IT innovation budget to mature and emerging IT innovations, considering the impact of organizational learning. Based on our model, we examine relevant causal relationships by analyzing the influence of uncertainty, a company's initial individual innovativeness, and the market's average investment share on the optimal engagement. We find that companies should always invest at least a small portion of their budget in emerging IT innovations, regardless of their actual innovativeness. Our results offer new insights into the crucial determinants of investment decisions and provide the basis for future quantitative research on emerging IT innovations.

Keywords: IT Innovation Investment Evaluation, Technology Adoption, Strategic Information Systems, Organizational Learning, Emerging IT Innovations, Simulation

ACM Categories: H.1.0; K.6.0.

General Terms: Management, Economics, Theory