Value-driven IT Project Portfolio Management: Process Model, Evaluation Framework, and Decision Support

Completed Research Paper

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Abstract

Companies must optimize their information technology (IT) project portfolio to achieve goals. However, IT projects often exceed resources and do not create their promised value, for example, because of missing structured processes and evaluation methods. Continuous IT portfolio management is thus of importance and a critical business activity to reach value-driven goals. Guided by Design Science Research with literature reviews and expert interviews, we develop, evaluate, and adjust an IT project portfolio management process model, a holistic IT project evaluation framework, and implement a decision support system prototype. Our results and findings synthesize and extend previous research and expert opinions and guide decision-makers to make more informed and objective IT project portfolio management decisions aligned with optimal value creation. Furthermore, we deduce new research opportunities for IT project portfolio management process models, decision tools, and evaluation frameworks.

Keywords: IT project portfolio management, process model, evaluation framework, decision support system, value contribution, design science research

Introduction and Motivation

Information technology (IT) impacts a company's long-term performance and competitiveness and forms a critical success factor (Bezdrob et al. 2020). Thereby, IT projects are characterized by complexity, cross-functionality, dynamics, non-routine, temporality, and uncertainty. These make IT project portfolio management (ITPPM) a challenging task (Chiang and Nunez 2013; Kester et al. 2011). Selecting the "right" IT projects is essential to create optimal value. Nevertheless, ITPPM is often unstructured and decisions are made ad hoc instead of long-term planning. Thus, many IT projects deviate from their defined objectives, are not completed, or completely fail (Varajão and Trigo 2016). According to the Project Management Institute (PMI 2017a), roughly $97 million US Dollars per $ 1 billion investments in IT projects are wasted. Similarly, Lee et al. (2021) refer that on average 66% of implemented IT projects are more expensive and 33% require longer as planned. Failed IT projects due to weak ITPPM processes lead to resource losses and exceedances (e.g., Hershey: $150 in lost sales, 19% drop in earnings), project abandonment (e.g., Dell: $200 million), or bankruptcies (e.g., FoxMeyer) (Fadlalla and Amani 2015; Hughes et al. 2017). Thus, companies need adequate and resilient methods for the critical business activity of ITPPM. Considering existing interdependencies and constraints, these methods ensure that selected IT projects fit the company's strategy and create value (Chiang and Nunez 2013; Kester et al. 2011). If departments and functions are aligned to strategy, IT projects are more likely to be completed successfully