Innovation in the Digital Economy: Valuing Investments in Digital Business Models under Uncertainty

July 2021

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Thesis Abstract

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Thesis Title
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Thesis Summary

The Digital Economy has changed the way of how business is done. Since the emergence and growing importance of digital technologies, a new class of digital business models has emerged. These business models have substantially different characteristics from traditional asset-based business models that are built around linear value chains. Today, we can witness increasing success of such digital business models engaged by both tech-newcomers as well as established corporations around the world. When it comes to investment decision-making, managers are facing times of unprecedented pace, unforeseeable trends and ultimately risk. This dissertation aims to help investment decision-makers to face these uncertainties by presenting a set of quantitative frameworks that can identify and evaluate investment opportunities related to digital business models under uncertainty.

Our contributions to this interdisciplinary research area are comprised by several studies. First, we discuss recent developments in the digital economy and provide an understanding of digital transformation, BMI and DTBM. Second, based on these findings, we introduce real options analysis as a viable approach to value these investments and derive investment strategies under uncertainty. A quantitative model is presented that is based on an iterative approach of experimentation and learning to support managers in finding the strategic value of DTBM projects. Third, an alternative perspective on valuation in the digital economy is given by shedding light on the intangible value of users. We introduce customer-based corporate valuation methods as a promising alternative to traditional performance measure and derive business value from a digital company’s most valuable asset: It’s users. We employ this approach to show how to value a digital business by applying it to real-world business cases including Netflix, Roku and Stitch Fix and present some sensitivity analyses to derive concrete measures for managerial action. Finally, we show how input parameters for some of the presented models can be obtained by integrating finance concepts with quantitative technology forecasting literature and demonstrate its functioning by applying it to the 3D printing technology.

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The overall scope of this dissertation is to provide an understanding of doing business in the digital age, provide deeper understanding of digital business transformation from a financial perspective and improve managerial investment decision-making. The study places its focus on investments in digital business models rather than digitization investments for operational layers of businesses. The presented frameworks shall serve as a guide for decision-makers to evaluate digital transformation opportunities in uncertain environments and increase the efficiency of value-based management in such situations.