Martin Tschandl / Sabrina Romina Sorko (Eds.)

BUSINESS DIGITALIZATION

New Business Models, Smart Production and the Human side of Digitalization

INDUSTRIAL MANAGEMENT

Edited by Martin Tschandl
Volume 9

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Preface of the editors

Modern society is undergoing a transformation from the analogue to the digital age. This increasing rate of digitalization has had a significant impact on all areas of society and the economy. The book series "Industrial Management" covers the key challenges facing decision makers now and in the future. Digital transformation represents a critical balancing act for business, society and politics and is therefore the central topic of this volume.
The Institute of Industrial Management of the FH JOANNEUM University of Applied Sciences qualifies industrial engineers to overcome such challenges. Additionally, it performs teaching and research in order to promote and support companies to optimally use the possibilities of digital transformation.

As the manufacturing industry but increasingly also the service sector is internationally oriented, the step for Industrial Management to be an active member of the PRIME Networking, which stands for *P*rofessional *I*nter-University *M*anagement for *E*ducational networking, was a logical one. PRIME is an international non-profit Association whose purpose is to develop and promote cross-cultural and interdisciplinary training, academic programmes and research that add value to existing education, research and training responsive to a changing global environment.
The annual *European Week* or EUROWEEK Conference is a highlight of the yearly cooperation within this inter-university association. Its major success over 24 years with 17 different member institutions has rendered the cooperation of this association quite uniquely. After 14 years, the 24th Euroweek has been hosted again by the FH JOANNEUM in Kapfenberg, Austria, respectively by the institute of Industrial Management. Moreover, it was perfectly timed as the Smart Production Lab – one of the largest teaching and research labs for smart production and services in central Europe – was opened just a few weeks before the conference.

This volume of the book series builds on a scientific conference in the scope of the Euroweek 2018 and provides not only theoretical but also practical inputs on three key perspectives in the subject area:

1. New business models
2. Smart production
3. The human side of digitalization

Within this framework, experts from a diverse range of fields have provided scientific contributions with practical insides on digital transformation in business, engineering and society.

When it comes to digital transformation, the use of fundamental terms in literature is inconsistent and imprecise. Especially, the definitions of *digitization* and *digitalization* are often used synonymously. Hence, the former means the transformation of analogue information into data which can be processed electronically, whereas the latter goes far beyond this, describing the integration of digital technologies into everyday life by the digitization of everything that can be digitized and implying networking and data continuity across machines and systems. In the present volume, the term digitalization is uniformly used according to this distinction (see e.g. in detail in the article by Tschandl/Kogleck).

The discussion in the literature places smart production in the focus of Industry 4.0 and digitalization. Recent technologies enable new business models that influence not least the employees and society as a whole. State-of-the-art approaches, however, represent another point of view, the one we have also chosen for this book. The possibilities of the digital transformation allow companies to discover and implement new (digital) business models. These business models can be realized with the help of technology, but also lead to smarter production. In this respect, the human being is seen as a key factor in the digital transformation, as an enabler, implementer and creative decision maker, who is not only part of the digitalization, but rather can design and use it optimally. Thus, the editors intend to provide sufficient scope for the different perspectives and approaches and illustrate the complexity surrounding the topic.

As publishers, we would like to express our deep graditude to our Scientific Review Board and our colleagues, Mr. Welsh respectively Mr. Tantscher, for ensuring the linguistic respectively formal quality of this book.
The editors and authors hope that this publication will contribute to an exciting discussion about the topics involving the ongoing digital transformation.

Kapfenberg, August 2019

Martin Tschandl
Sabrina Romina Sorko

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Part 1 – New Business Models

M. Tschandl, R. Kogleck

Generic Strategies in the Digitalization of SME Business Models

Abstract

The digital transformation of business models will become a major success factor for competitive companies in the future. However, less than 20 % of SMEs have already started to digitize their own products and services. Many SMEs shy away from a (radical) digital transformation of their established business model(s), for which there are several reasons: There is a lack of necessary know-how and resources, the benefits of digitization are unknown, there is no model for SMEs to make and implement decisions to digitize business models.

This paper contributes generic strategies and options for action derived from an analysis of opportunities and risks, which occur when companies digitalize their existing or invent new digitalized business models. The research focuses on the situation of small and medium-sized enterprises (SME) with their specific lack of resources by deducing generic strategies to take advantage of the opportunities and strengths to be more successful in their digital transformation.

1. Introduction

Modern society is in flux, provoked by a technological change from analogue to digital age.[1] A comparison of the term digitalization indicates that a majority of authors stresses the definition elements “transformation of business models” by an “innovative use of technologies” and their “internetworking by the Internet of Things (IoT)” aiming to “generate value added”. Digitalization in business takes place on three levels:[2] firstly, the digitalization of products and services (e.g. with sensors, actuators, apps) for short term differentiation; secondly, the digitalization of processes and decisions (e.g. automation, Big Data) for mid-term competitiveness; thirdly, the digitalization of *business models* to become/stay competitive long term. The growing number of research publications on the subject of business models indicates their increasing relevance, focusing on definitions, elements and the management process for the design of business models. In this context, business models describe “the rationale of how an organization creates, delivers, and captures value”[3].

Based on these concepts, definitions and scientific interest, it is obvious that digitalization will have an increasing impact on the economy in general and business models in particular, inducing substantial risks and challenges for existing corporations. New

1 Haushofer et. al 2016, p. 1.

2 Matzler et al. 2016, p. 17-22.

3 Osterwalder/Pigneur 2010, p. 14.

competitors fostered by IoT technologies and disruptive business models can dissolve competitive advantages in the short term and jeopardise established companies.[4] Therefore, digital transformation will be essential for the competitiveness and long term economic survival of enterprises.[5] No matter how large the business is or which industry it is active in, all of them will have to question their business model, whether it uses those digital technologies to become more profitable.[6] Especially small and medium-sized businesses are challenged to adapt or revolutionize their business model in time despite limited specific resources.[7]

How can these companies be sure about an effective and efficient roadmap to digital transformation? Methodically, after defining the relevant terms of digitalization and digital transformation, in a first step the typical strengths and weaknesses of small and medium-sized enterprises were derived from a systematic literature research. Early learning of possible impacts of digitalization for the own business model is the next step preliminary to timely changes or innovations. Hence, the question arises, which risks and opportunities of digitalization small and medium sized enterprises are likely to face? *Stampfl* provides an appropriate model for a systematic answer, a map to analyse and structure all interdependencies between business model and its ecosystem, so as to identify risks and chances of business model innovations.[8]

A contrasting juxtaposition of strengths, weaknesses, threats and opportunities facilitates the deduction of generic strategies which are used to derive, subsequently, a systematic overview of options for action. Thus, a discussion of these results should foster SMEs to use the opportunities of digitalization and to manage the threats of a successful digital transformation.

2. Principles of digitalization of business models for SMEs

2.1 The definition of digitalization

Although the terms digitalization and digitization are used synonymously in some literature, it makes sense to distinguish: *Digitalization* implies the integration of digital technologies into everyday (business) life by the digitization of everything that can be digitized. Thus, *digitization* means the transformation of analogue information

4 Kollmann 2016, p. 626.

5 Zimmermann 2016, p. 1.

6 Cole 2017, p. 28ff.

7 Kraewing 2017, p. 10; Matzler et al. 2016, p. 13.

8 Stampfl 2016, p. 201.