Association for Information Systems

AIS Electronic Library (AISeL)

Spring 4-29-2020

Digital Fitness – The Goal of Digital Transformation

Julia Kossowski
DXC Technology, julia.kossowski@dxc.com

Annika Lenz
RTS Steuerberatungsgesellschaft KG, annika.lenz@rtskg.de

Erich Heumüller
Center for Digital Transformation at DHBW Stuttgart, erich.heumueller@dhbw-stuttgart.de

Sebastian Richter
DHBW Stuttgart, sebastian.richter@dhbw-stuttgart.de

Follow this and additional works at: https://aisel.aisnet.org/ukais2020

Digital Fitness – The Goal of Digital Transformation

Julia Kossowski
Business Analyst at DXC Technology, Boeblingen, Germany
email: julia.kossowski@dxc.com

Annika Lenz
Head of R&D at RTS Steuerberatungsgesellschaft KG, Stuttgart, Germany
annika.lenz@rtskg.de

Erich Heumüller
Chair for Information Systems and Head of Center for Digital Transformation at DHBW Stuttgart, Germany
email: erich.heumueller@dhbw-stuttgart.de

Sebastian Richter
Head of Business Information Management, DHBW Stuttgart, Germany
email: sebastian.richter@dhbw-stuttgart.de

Digital Fitness – The Goal of Digital Transformation

Abstract

Digital Transformation forces a technology-driven change in organizations and society. Due to this change, companies fear that they will not be able to keep up with innovations. Although digital transformation is a very popular topic in business and research, a precise state a company should strive for, is not discussed adequately. Thus, the aim of this paper is to understand and conceptualize the target state of digital transformation. To achieve this goal, we discuss literature and expert interviews. We found out, practitioners themselves are not aware of the target state, although they have to decide what is to reach on the digital transformation journey. Based on these findings, we propose a model of digital fitness that conceptualizes the target state of digital transformation comprising of three dimensions: digital adoption, digital expertise and the adoption rate of digital innovations.

Keywords: Digital Fitness, Digital Transformation, Target State

1.0 Introduction

Digital Transformation (DT) causes a technology-driven deep change of organizations and society (de la Boutetière et al., 2018; Schwab, 2016; Westerman et al., 2014). The impact of this change is often compared to that of industrial revolution (Brynjolfsson & McAfee, 2014; Rifkin, 2014). A fundamental characteristic of DT is a complex pervasion of digital technologies (cf. Berger et al., 2018) within all societal systems (Brynjolfsson & McAfee, 2014; Schwab, 2016). A result of DT is a fundamental change of markets (Kuratko et al., 2011): Its volatility (Tallon & Pinsonneault, 2011), its reshaping of boundaries (Porter & Heppelmann, 2014) but also fundamental changes of business models (Henriette et al., 2015).

Due to these changes organizations and companies are in special fear to have a kodak moment (Anthony, 2016) – they are afraid not being able to keep pace with the innovations of their market. Thus, the topic of DT is very popular within companies (e.g. de la Boutetière et al., 2018) but also in science (e.g Morakanyane et al., 2017). However, a clear conceptualization of the goal or more precise a state a company should strive for, is not widely discussed. Thus, we raise the question: How can the target state of companies' digital transformation be conceptualized?

The contribution is organized as follows. In the next section, we briefly discuss organizational transformation and DT to define the most relevant concepts of discussion. Subsequently, the method section describes our line of action to "find" the conceptualization of target state within literature but also with the help of interviewed

practitioners. The results of these approaches are outlined next, followed by the concept of digital fitness, that is the proposition of this contribution to conceive the target state of DT. Concluding remarks and limitations finalize the contribution.

2.0 Digital Transformation – a Short Overview

We understand DT as an organizational transformation in the era of digitalization. Thus, it is relevant to briefly shed light on the term transformation itself.

Transformation as such means a change of an object or system from one state to another (cf. Czekala, 2018). Organizational transformation according to Levy und Merry, (1986, p. 5) is: "… a multidimensional, multi-level, qualitative, discontinuous, radical organizational change involving a paradigmatic shift." According to this definition, organizational transformation is not evolutionary but typically a radical change that makes it impossible to return (Weik & Lang, 2003).
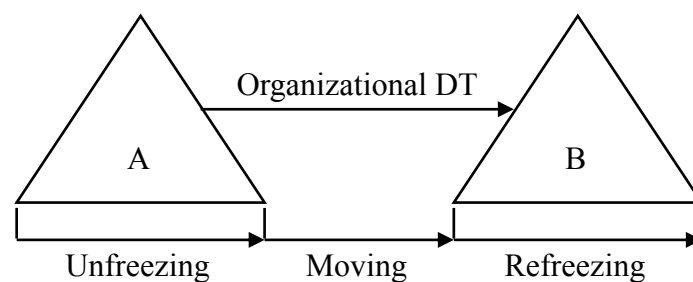

Figure 1: Organizational Transformation

Figure 1 depicts a simplified view on the phenomenon of organizational transformation. Several input factors as e.g. competition, market change, laws or technology innovation can trigger the perceived necessity to transform from state A to B (cf. Deuringer, 2000; Levy & Merry, 1986; Nadler & Tushman, 1989; Rouse, 2005). State B is a model of an aspired future state of the enterprise that redefines structures, i.e. work processes or governance modes, and consequently e.g. products, services, role and job models but also business models (cf. Rouse, 2005). Independently of being able to model state B precisely in advance, since transforming a social complex system reveals emergent states (cf. Goldstein, 1999; McKelvey, 2003; Mitleton-Kelly, 2003), it is quite necessary to manage that transformation actively (Nadler & Tushman, 1989). Integral part of that management is the description of state B in a satisfactory manner to measure whether the moving comes to an intended target state (cf. Deuringer, 2000).

As stated, technology is a strong driver of transformation (Rouse, 2005). Thus, the broad (maybe inflationary) use of the neologism Digital Transformation is not surprising as almost all industries are concerned by innovations from digital technologies (Downes & Nunes, 2013). Digital technologies combine information, computing, communication and connectivity technologies (Berger et al., 2018; Bharadwaj et al., 2013) to enable the development of new products, business models, services and organizational forms (Fichman et al., 2014).

Often, the terms digitization, digitalization and DT are mixed or even synonymously used. Bockshecker, Hackstein und Baumöl (2018) define all three concepts separately and analyze the relationships between these concepts in their literature review. They define DT as "… the process of organizational or societal changes driven by innovations and developments of ICT. DT includes the ability to adopt technologies rapidly and affects social as well as technical elements of business models, processes, products and the organizational structure" (Bockshecker et al., 2018, p. 9). Another review analyzing the concept of DT was conducted by Morakanyane et al., 2017. It finally presents the definition of DT as follows: "… an evolutionary process that leverages digital capabilities and technologies to enable business models, operational processes and customer experiences to create value" (Morakanyane et al., 2017, p. 437).

Interestingly, the second definition explicitly state that DT is an evolutionary, yet continuous process and not a radical one, as stated above for organizational transformations.

3.0 Method

To understand the target state of DT we analyzed literature focusing on DT – especially by means of reviews. This analysis is not exhaustive but rather representative (Cooper, 1988) and aims to understand if literature helps to find goals and transformative states of DT.

Additionally, we conducted semi-structured expert interviews with practitioners (Gläser & Laudel, 2010; Merton & Kendal, 1946). We mainly asked the open question "How do you define the potential target state of digital transformation?" With these interviews we want to clarify two aspects: 1) do practitioners feel a need

for an abstract target state of DT; and 2) is such a target state rather clear in their understanding.

All experts chosen (see Table 1) are integral parts of DT within their companies or consultants for partner companies. Some take responsibility for transformation projects or for the whole transformation program and some are affected. Table 1 depicts experts working in incumbent companies typically not concerned with digital products or offerings (B, D, F); and experts from companies with core-competence "IT", who are mainly supporting these incumbent companies on their digital journey (A, C, E, H, I&J).

	Expert	Company	Interviewee's Role	Background
Purpose-fully selected companies	A	IT	Transformation Advisor in an international IT company	Experience in matters of DT in theory and practice
	B	Incumbent	Lean Manager of an aerospace and defense company	Partial responsibility for DT in business unit
	C	IT	Client Sales Executive of an IT service provider	Supports Expert B in questions of DT
	D	Incumbent	Solution Manager of a food and beverage company	Partial responsibility for DT within the company and at customers' sites
	E	IT	Chief Technical Officer Manufacturing of an IT service provider	Supports Expert D in questions of DT
Hannover Fair of Industry 2019	F	Incumbent	Employee of a food and beverage company (as D)	Affected by the company's digital changes
	H	IT	Client Sales Executive of an IT service provider	Supports several companies in questions of DT
	I & J	IT-Research	Technical Leader and Marketing Employee of a research organization	Interview with two employees working for an application-oriented research organization

Table 1: Interviewees Selected for Study

The selection of experts was twofold. Experts A−E were selected purposefully. B and D are members of the management in two different large and incumbent companies with a focus on food and beverage and aerospace and defense, respectively. They face and are responsible for challenges of DT within their companies. Experts A, C and E accompany experts B and D as consultants on their transformation journey. Thus, we were able to reflect internal and external perspectives on the same phenomenon. To

triangulate these perspectives, we interviewed experts at the Hannover fair of Industry 2019[1].

The interviews of experts A-E were recorded and transcribed. The interviews of experts F-J were recorded from memory directly after the interview. The interview assessment was done as aggregation and anchoring of main statements (cf. Mayring, 2019).

4.0 Target State of Digital Transformation

To understand the target state of DT, that helps management to assess actions for improving digital capabilities, we analyzed relevant literature and interviewed practitioners. The results are organized from a literature perspective, first, and a practitioner's perspective, second.

4.1 Results from a Literature-based Perspective

We focused on literature reviews for analysis and inferred on the basis of the proposed definitions of DT, which goal or which target state the authors intend. Additionally, we interpret the perspective on transformation proposed by the reviews. By perspective we mean an external or internal perspective. External perspective perceives the organization as a whole and describes the transformation like a black box. An internal perspective focusses more on what to do and has a more constructive notion.

Henriette et al., 2015 use the term DT very liberal and synonymously with digitalization. They state that DT "refers to a business model" due to application of digital technologies (Henriette et al., 2015). DT itself is then "usually implemented through digitization" (Henriette et al., 2015, p. 2). All in all, the definition is not sound to separate the concept of DT from other concepts such as business model transformation or digitalization projects. However, the perspective on DT is rather processual with an end not discussed. DT is perceived externally, and the result is rather descriptive than constructive (to model a goal within the organization for transformation efforts).

---

[1] We decided to triangulate the perspectives of experts A-E and contacted experts on the fair as there are leading companies from industry comparable to the companies, our experts were from. See for the fair https://www.expodatabase.de/en/expos/564-hannover-messe-hanover-germany.

Bockshecker et al., 2018 define DT as ICT-enabled organizational and societal changes. This is a very broad concept that emphasizes the overall change process from an external perspective. They do not intend a target state or goal. However, their contribution highlights that transformation "includes the ability to adopt technologies rapidly" (Bockshecker et al., 2018, p. 9). Hence, from an internal perspective it is a prerequisite (a goal) of further transformation to be able to rapidly adopt technologies. Morakanyane et al., 2017 work with an interesting combination of concepts. "Evolutionary process" (Morakanyane et al., 2017) is an oxymoron. Evolution, on one side, is an emergent (cf. Goldstein, 1999) that is based on chance and has no end. A process, on the other side, is a logically sorted sequence of actions that achieve a goal (Becker & Kahn, 2005). This construction indicates that digital technologies which shall leverage value adding activities, develop dynamically. That means, the goal of this journey is unclear. This seems quite obvious, if the perspective is a descriptive, external one. The definition is not goal-oriented. Especially by the notion of evolution the goal is not determinable. However, one aspect of all digitalization projects under the umbrella of DT is the goal of adding value to the organization.

Reis et al., 2018, p. 418 define DT as „the use of new digital technologies that enables major business improvements and influences all aspects of customers' life." It compares and integrates several definitions. The perspective is an external and very broad one. Their contribution focusses on improvements for customers giving another measure for DT-activities.

Gerster, 2017 researches the interdependencies between IT and DT. DT is considered as process of major changes enabled by digital technologies focusing on customer experience or business models (Gerster, 2017). One insight is that IT plays a key role in driving such innovations, but is also heavily affected by them (Gerster, 2017). A target state is not given, but changes are of major magnitude and not minor. The focus of changes lies on customers or business models.

The literature review by Kutzner et al., 2018 synthesizes and clusters main topics of research on DT. Four clusters emerge: 1) digital business strategies and business models; 2) working culture in a digitized environment; 3) digital innovations and technologies; and 4) knowledge as driver for digitalization (Kutzner et al., 2018). An overall goal or a target state of DT is not evaluated as a research topic at time.

In summary, literature does not focus on a target state or an overall goal of DT. The perspective of the phenomenon DT is often descriptive and from an external

viewpoint. Thus, it is not surprising, that DT is typically regarded as an evolution or an open process. However, some contributions give insights to prerequisites of (further) DT or measurement candidates. For example, the ability to be able to rapidly adopt technologies is a prerequisite for successful further transformation (cf. Bockshecker et al., 2018). DT shall focus on improvements for customers (Gerster, 2017; Reis et al., 2018) or business models (Gerster, 2017; Henriette et al., 2015) and has to add value (Morakanyane et al., 2017). The transformation includes major changes (Gerster, 2017).

Although clear goals or desired states are not mentioned, some authors call for measurement and benchmarking (e.g. with maturity models) (Henriette et al., 2015; Kutzner et al., 2018). Kutzner et al., 2018 motivates to conduct research on methods for managing DT. Both aspects call for a goal to strive for. Thus, we conclude, that a target state is not described by literature but desired by some authors.

4.2 Results from a Practitioners' Perspective

In line with theory about transformation it is worth to understand the triggers for unfreezing the organization to understand the way the transformation will go. Additionally, statements about transformation itself and especially the state towards the transformation should head are of special interest.

The interview partners brought up different triggers for transformation. Noteworthy, interview partners stated that the reason for transformation is neither a problem with the current business model nor with the current position in the market (e.g. A and B). However, some experts feel market pressure either from customers (D) or from benchmarking with other industries (B). One analysis comes from I & J: "Marketing is driving Industry 4.0". Thus, the interview partners fear their current and known situation less than a somehow sensed future situation, that is comparable to the Kodak moment stated above. Digitalization and market developments in foreign industries trigger a feeling of restlessness and the feeling to be obliged to transform digitally (e.g. D; B). This causes innovation pressure without a clear reason, making it difficult to focus on a precise goal.

For example, H illustrates the iterative approach his company takes to implement an own idea of Industry 4.0. One problem is the plethora of adoption possibilities due to different business objectives, different technologies and different innovations in the market. In that situation, companies start different projects in parallel, not necessarily

with an overarching plan, accepting negative cross-impacts or at least inefficiencies. In order to leave the current state as quick as possible and to avoid being the next dying sector, new projects are started, to some extent not linked to each other (A).

In this situation of fear and with the dynamics caused by a rapid technological innovation tempo in mind, one might fail to describe a target state for digital transformation in companies. Market dynamics reshape internal attitudes and behaviors constantly and repetitively (H) – what causes a constant adaptation pressure and adaptation process comparable to natural evolution. The non-influenceable external requirements create a random, non-linear transformation process from one target state to the next (H; F). This is summed up aptly by interview partner B: *"I don't think that we actually will ever reach the end of it. Because we always will find ways of transforming ourselves and improving."*

The practitioners are widely in line with the definitions discussed above insofar, as no definition recognizes DT as a technical phenomenon, but as a phenomenon triggered by technical possibilities. Although interviewee B recognizes the internal transformation as chance to renew the ERP system to solve problems directly linked to the actual system, interviewee A states that the optimization of internal IT is not transformation but optimization (cf. Rouse, 2005). Interviewee A stated therefore: *"I would classify digital transformation on the basis of a problem rather as optimization. I believe that 'digital transformation' as a trend and as a buzzword is often abused."* Interviewee B agrees in pointing out: *"I think that we have reached where we should be when the organization themselves can drive this kind of questions. When they can improve themselves in this area and it happens by itself. So, this is what I see and then we've gotten to the point where it is kind of a self-driving car. […] So it is not a technical level, I think it is an organizational level. That organizations themselves can drive this question / this different things / projects and so on."* Thus, B sketches a target state with this statement. We conclude that DT is an organizational transformation to achieve the ability to adopt digital technologies as opportunities for the own organization. These technology adoptions will then be rather smooth optimizations than transformation scenarios.

The lack of a target state in theory and the thoughts of the practitioners motivate to discuss DT and its target state from another perspective. This discussion follows in the next section.

5.0 Target State: Digital Fitness

In literature, DT is typically considered as evolution or open, long lasting and unpredictable process as analyzed above. This view is contradictory with the inherent meaning of the concept transformation. To overcome that contradiction, we change the perspective and separate external and internal change from the perspective of an organisation. External change means the DT in society, markets, or organizations different from the object of interest. Internal change is the transformation endeavor of the object of interest (in our case any company).

Figure 2 depicts the idea of that separation. We believe that it is possible to formulate a model of optimal digitalization of every company in any single moment. We call that *known digitalization*. However, it seems obvious, that digital technologies will evolve and bear new opportunities for future developments (cf. Brynjolfsson & McAfee, 2014). Thus, we feel in any single moment that such an optimal model of known digitalization is of very short durability and of very limited value. Latter is implied by the term *unknown digitalization* in Figure 2. This certitude triggers a feeling of necessity to transform but also a feeling of not knowing which state is best. Hence it is then a sound argument for DT as a concept of evolution.
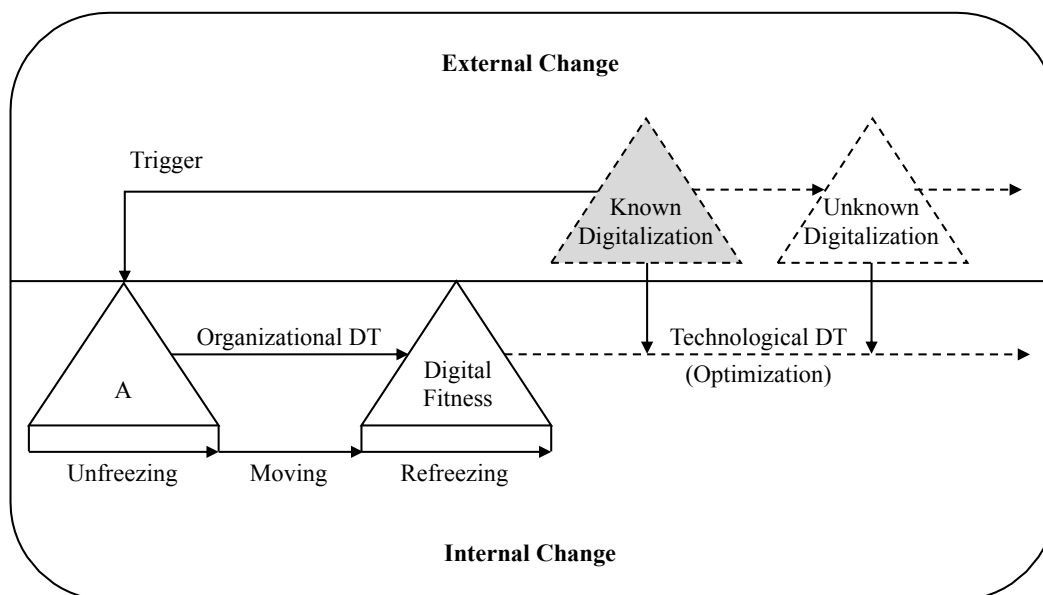
Figure 2: DT - an Internal and External Perspective

However, organizational change theory emphasizes the well-balanced relationship between destabilization and stabilization (e.g. Deuringer, 2000; Levy & Merry, 1986; Rüegg-Stürm & Grand, 2017). This relationship seems to be faulty when there is permanent change as in an evolution. Thus, we believe that DT is an organizational

change. This change aims for structuring the organization so that it is able to adopt digital technologies for strategic purposes in high speed. Easy spoken, DT is a transformation to enable a company's digital adaptability. Therefore, Figure 2 differentiates between two phases of DT. An organizational one, which is a real transformation (a phase of destabilization and internal turmoil) with the target state of having digital fitness. The next phase is technological DT that understands the adoption of digital technologies as optimization projects without larger turmoil in the overall organization.

To measure the transformation effort of organizational DT we propose the construct Digital Fitness (DF) as target state. The idea of DF comes from the fitness construct of biology as the use of biological metaphors has a long tradition in management research (e.g. Iansiti & Levien, 2004; Keeley, 1980; Moore, 1993; Penrose, 1952). Spencer, 1864 was the first in biology who mentioned survival of the fittest. Thereupon the concept of fitness became relevant. A broad view on fitness is the ability to survive (cf. Orr, 2009). Baker, 2009 defines the concept more specifically describing it by using five different dimensions. Two of them – adaptedness and adaptability are promising for our problem. Adaptedness means the "degree to which an organism is able to live and reproduce in a given environment (…)" (Baker, 2009). Adaptability is "(…) the degree to which an organism, population or species can remain or become adapted to a wider range of environments (…)" (Baker, 2009). That means in analogy of our context, that adaptedness is the fit of the current digitalization of a company with the needs of its environment. Adaptability is the ability for change to meet future needs of the environment.

The DF of a company has to fit with an expected digitalization level and speed of the environment (Figure 3). The expectations are primarily shaped by the market of the company. The market defines the requisite fitness (analogous to requisite variety; Ashby, 1957). The market is influenced by society and (typically integral part of the market) by the customers. The expectations of customers are not only shaped by one market but by all markets and by all companies a customer (as person) interacts with (Chanias, 2017).

To be in fit with the expectations of the environment prevents from overfitting. Overfitting in this context means the investment in digitalization projects without real benefit for the company. Digitalization is not an end in itself, nor is DF. The idea is to handle the relationship of adaptedness and adaptability with care.
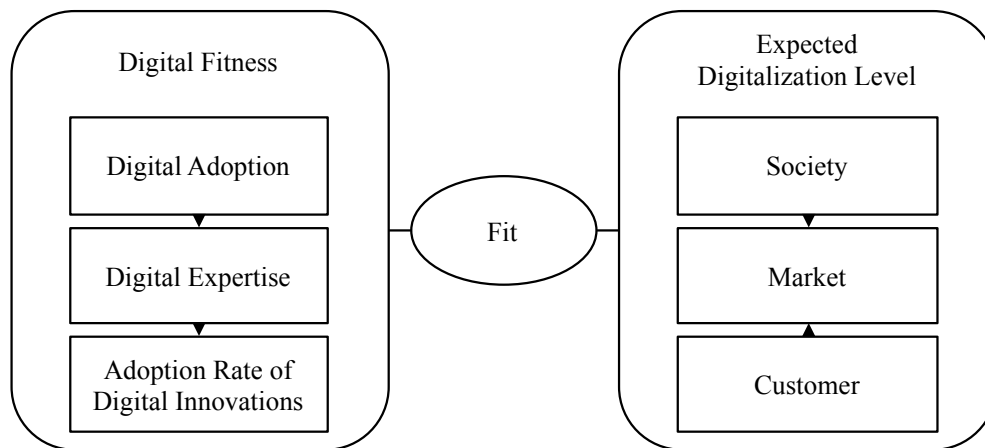
Figure 3: Digital Fitness

The DF construct comprises three dimensions. Digital Adoption measures the adoption of digital technologies with strategic impact. This dimension is referring to the past insofar as the technologies are already adopted. Thus, it is a measure of adaptedness. It is a quantitative measure. For DT strategy formulation a quite similar dimension 'use of technologies' is proposed (Hess et al., 2016; Matt et al., 2015).

Digital expertise is a dimension that measures the ability of the company to cope with projects of digitalization. This includes financial resources for that topic, the digital proficiency of employees, management and digitalization partners, the digital change culture, but also the capability to improve customer communication and partner coordination via digital technologies. Digital expertise is a qualitative measure. The dimension reflects the potential to adapt in order to meet the requirements by the environment. In part this dimension corresponds to the strategy formulation dimensions 'structural changes' and 'financial aspects' (Hess et al., 2016; Matt et al., 2015).

Adoption rate of digital innovations measures how fast a company is able to adopt digital technologies with success in relation to its environment. This measure is quantitative. The dimension relates to the future and directly reflects adaptability. Somehow it corresponds with the DT strategy dimension 'changes in value creation' (Hess et al., 2016; Matt et al., 2015). The faster a company is able to adopt digital technologies the better it is.

We hypothesize that digital adoption is positively correlated with digital expertise. With ongoing experience in adopting digital technologies and in executing such projects, a company will learn (cf. Fiol & Lyles, 1985). With increasing digital expertise, the adoption rate of digital innovations will rise. That means, if the

company understands which resources are necessary, if the company implements a digitalization culture and coordinates partners and customers in an adequate way, it will also be possible in future to adopt digital innovations fast and successful.

DF shall be the goal of all organizational efforts in the DT to enable a company to optimize with digital technologies the own business model, the customer experience, the efficiency of the value network and the expertise of the employees. Thus, it is a transformation goal for companies in DT journeys.

6.0 Conclusions

The contribution of this research provides a discussion on DT and DF as a concluding model of the target state of organizational DT. We follow the argument, that the overall DT is an evolution from the perspective of markets and society and thus, the target state of that transformation is hard to define. From an internal perspective, this paper presents a target state. The three dimensions digital adoption, digital expertise and adoption rate of digital innovations determine DF corresponding to adaptedness and adaptability. While digital adoption is a measure of adaptedness, the latter two dimensions are measures of adaptability. The DF of a company has to be in fit with the requirements of the environment to survive its disruptive evolution.

We believe that this model helps researchers to progress with measuring DT efforts (cf. Henriette et al., 2015; Kutzner et al., 2018). Furthermore, DF is a goal for the development of methods for DT (cf. Kutzner et al., 2018). Additionally, it helps to understand the relationship of adaptedness and adaptability that should be researched in future.

The model is interesting for practitioners as it supports efforts of organizational DT. DF helps to clarify the relationship of organization and technical interventions in a special company, as the latter will not succeed without having the appropriate organizational environment for it.

This contribution is subject to the following limitations. Since the model proposed was not falsified empirically, it has the status of a hypothesis. Thus, researchers are highly welcomed to criticize the model and to falsify it. The proposed determinants of DF do not serve as measures, yet. It is open research to develop a measuring procedure for the three determinants. Furthermore, the relationships between the three determinants are rather unclear. Future research will address these questions.

References

Anthony, S.D. (2016), "Kodak's Downfall Wasn't About Technology", *Harvard Business Review*, Vol. July.

Ashby, W.R. (1957), *An Introduction to Cybernetics*, 2nd ed., Chapmann & Hall, London.

Baker, J.S.F. (Stuart). (2009), "Defining Fitness in Natural and Domesticated Populations", in Werf, J. van der, Graser, H.-U., Frankham, R. and Gondro, C. (Eds.), *Adaptation and Fitness in Animal Populations. Evolutionary and Breeding Perspectives on Genetic Resource Management*, Springer, Amsterdam, pp. 3–14.

Becker, J. & Kahn, D. (2005), "Der Prozess im Fokus", in Becker, J., Kugeler, M. and Rosemann, M. (Eds.), *Prozessmanagement. Ein Leitfaden Zur Prozessorientierten Organisationsgestaltung*, 5th ed., Springer, Berlin, Heidelberg, New York, pp. 3–16.

Berger, S., Denner, M.-S. & Röglinger, M. (2018), "The Nature of Digital Technologies - Development of a Multi-Layer Taxonomy", *Proceedings of the 26th European Conference on Information Systems (ECIS), Portsmouth, UK, 23.-28.06.*

Bharadwaj, A., El Sawy, O.A., Pavlou, P.A. & Venkatraman, N. (2013), "Digital Business Strategy: Toward a Next Generation of Insights", *MIS Ouarterly*, Vol. 37 No. 2, pp. 471–482.

Bockshecker, A., Hackstein, S. & Baumöl, U. (2018), "Systematization of the Term Digital Transformation and Its Phenomena From a Socio-Technical Perspective – a Literature Review", *Proceedings of the 26th European Conference on Information Systems (ECIS), Portsmouth, UK, 23.-28.06.*

Brynjolfsson, E. & McAfee, A. (2014), *The Second Machine Age. Wie Die Nächste Digitale Revolution Unser Aller Leben Verändern Wird*, Börsenmedien AG, Kulmbach.

Chanias, S. (2017), "Mastering Digital Transformation: The Path of a Financial Services Provider Towards a Digital Transformation Strategy", *Proceedings of the 25th European Conference on Information Systems (ECIS), Guimarães, Portugal, 05.-10.06.*

Cooper, H.M. (1988), "Organizing knowledge syntheses: A taxonomy of literature reviews", *Knowledge in Society*, Vol. 1 No. 1, pp. 104–126.

Czekala, T. (2018), "Kontext, Anforderungen und Operationalisierung des Enterprise Transformation Cycle", in Pfannstiel, M.A. and Steinhoff, P.F.J. (Eds.), *Der Enterprise Transformation Cycle. Theorie, Anwendung, Praxis*, Springer Gabler, Wiesbaden, pp. 21–51.

Deuringer, C. (2000), *Organisation Und Change Management. Ein Ganzheitlicher Strukturansatz Zur Förderung Organisatorischer Flexibilität*, Deutscher Universitätsverlag, Wiesbaden.

Downes, L. & Nunes, P. (2013), "Big-Bang Disruption", *Harvard Business Review*, Vol. 3, pp. 44–56.

Fichman, R.G., Santos, B.L. Dos & Zheng, Z. (Eric). (2014), "Digital Innovation as a Fundamental and Powerful Concept in the Information Systems Curriculum", *MIS Quarterly*, Vol. 38 No. 2, pp. 329–353.

Fiol, C.M. & Lyles, M.A. (1985), "Organizational Learning", *The Academy of Management Review*, Vol. 10 No. 4, pp. 803–813.

Gerster, D. (2017), "Digital Transformation and IT: Current State of Research", *Proceedings of the 21st Pacific Asia Conference on Information Systems, Langkawi, Malaysia, 16.-20. 07.*

Gläser, J. & Laudel, G. (2010), *Experteninterviews Und Qualitative Inhaltsanalyse*, Springer VS, Wiesbaden.

Goldstein, J. (1999), "Emergence as a Construct: History and Issues", *Emergence*, Vol. 1 No. 1, pp. 49–72.

Henriette, E., Feki, M. & Boughzala, I. (2015), "The Shape of Digital Transformation: A Systematic Literature Review", *Proceedings of the 9th Mediterranean Conference on Information Systems (MCIS), Samos, Greece, 03.-05.10.*

Hess, T., Matt, C., Benlian, A. & Wiesböck, F. (2016), "Options for Formulating a Digital Transformation Strategy", *MIS Quarterly Executive*, Vol. 15 No. 2, pp. 123–139.

Iansiti, M. & Levien, R. (2004), "Strategy as Ecology", *Harvard Business Review*, Vol. 82 No. 3, pp. 1–10.

Keeley, M. (1980), "Organizational Analogy: A Comparison of Organismic and Social Contract Models", *Administrative Science Quarterly*, Vol. 25 No. 2, pp. 337–362.

Kuratko, D.F., Morris, M.H. & Covin, J.G. (2011), *Corporate Entrepreneurship and Innovation: Entrepreneurial Development within Organizations*, 3rd ed., South-Western Cengage Learning, Mason, OH.

Kutzner, K., Schoormann, T. & Knackstedt, R. (2018), "Digital transformation in information systems research: A taxonomy-based approach to structure the field", *Proceedings of the 26th European Conference on Information Systems (ECIS), Portsmouth, UK, 23.-28.06.*

de la Boutetière, H., Montagner, A. & Reich, A. (2018), "Unlocking success in digital transformations", *McKinsey & Company*.

Levy, A. & Merry, U. (1986), *Organizational Transformation. Approaches, Strategies, Theories*, Praeger, New York.

Matt, C., Hess, T. & Benlian, A. (2015), "Digital Transformation Strategies", *Business and Information Systems Engineering*, Gabler Verlag, Vol. 57 No. 5, pp. 339–343.

Mayring, P. (2019), "Qualitative Inhaltsanalyse – Abgrenzungen, Spielarten, Weiterentwicklungen", *FQS*, Vol. 20 No. 3, p. Art. 16.

McKelvey, B. (2003), "Emergent Order in Firms: Complexity Science vs. the Entanglement Trap", in Mitleton-Kelly, E. (Ed.), *Complex Systems and Evolutionary Perspectives on Organisations. The Application of Complexity Theory to Organisations*, Pergamon, Amsterdam u.a., pp. 99–125.

Merton, R.K. & Kendal, P.L. (1946), "The Focused Interview", *American Journal of Sociology*, Vol. 51 No. 6, pp. 541–557.

Mitleton-Kelly, E. (2003), "Ten Principles of Complexity and Enabling Infrastructures", in Mitleton-Kelly, E. (Ed.), *Complex Systems and Evolutionary Perspectives on Organisations. The Application of Complexity Theory to Organisations*, Emerald, Bingley, UK, pp. 23–50.

Moore, J.F. (1993), "Predators and Prey: A New Ecology of Competition", *Harvard Business Review*, Vol. 71 No. 3, pp. 75–86.

Morakanyane, R., Grace, A. & O'Reilly, P. (2017), "Conceptualizing Digital Transformation in Business Organizations: A Systematic Review of Literature", *Proceedings of the 30th Bled EConference, Bled, Slovenia, 18.-21.06.*

Nadler, D.A. & Tushman, M.L. (1989), "Organizational Frame Bending: Principles for Managing Reorientation", *The Academy of Management Executive*, Vol. 3 No. 3, pp. 194–204.

Orr, H.A. (2009), "Fitness and Its Role in Evolutionary Genetics", *Nature Reviews*, Vol. 10 No. 8, pp. 531–539.

Penrose, E.T. (1952), "Biological Analogies in the Theory of the Firm", *American Economic Review*, Vol. 42 No. 5, pp. 804–819.

Porter, M.E. & Heppelmann, J.E. (2014), "Wie smarte Produkte den Wettbewerb verändern", *Harvard Business Manager*, Vol. 12, pp. 34–60.

Reis, J., Amorim, M., Melao, N. & Matos, P. (2018), "Advances in Information Systems and Technologies", *Proceedings of the 6th World Conference on Information Systems and Technologies (WorldCist'18), 27.-29.03.*, Naples, Italy.

Rifkin, J. (2014), *Die Null-Grenzkosten-Gesellschaft: Das Internet Der Dinge, Kollaboratives Gemeingut Und Der Rückzug Des Kapitalismus*, Campus Verlag, Frankfurt a.M., New York.

Rouse, W.B. (2005), "A Theory of Enterprise Transformation", *Systems Engineering*, Vol. 8 No. 4, pp. 279–295.

Rüegg-Stürm, J. & Grand, S. (2017), *Das St. Galler Management-Modell. Management in Einer Komplexen Welt*, 3. Aufl., Haupt Bern, Bern.

Schwab, K. (2016), *Die Vierte Industrielle Revolution*, Pantheon, München.

Spencer, H. (1864), *The Principles of Biology: Volume 1*, William and Norgate, London.

Tallon, P.P. & Pinsonneault, A. (2011), "Competing Perspectives on the Link Between Strategic Information Technology Alignment and Organizational Agility: Insights from a Mediation Model", *MIS Quarterly*, Vol. 35 No. 2, pp. 463–486.

Weik, E. & Lang, R. (2003), "Organisationale Transformation", in Weik, E. and Lang, R. (Eds.), *Moderne Organisationstheorien 2*, Gabler Verlag, Wiesbaden, pp. 279–306.

Westerman, G., Bonnet, D. & McAfee, A. (2014), "The Nine Elements of Digital Transformation", *MIT Sloan Management Review*, Vol. 55 No. 3, pp. 1–6.