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CATCHWORD

Digital Transformation Strategies

Christian Matt · Thomas Hess · Alexander Benlian

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1 Background and Basic Understanding

In recent years, firms in almost all industries have conducted a number of initiatives to explore new digital technologies and to exploit their benefits. This frequently involves transformations of key business operations and affects products and processes, as well as organizational structures and management concepts. Companies need to establish management practices to govern these complex transformations. An important approach is to formulate a digital transformation strategy that serves as a central concept to integrate the entire coordination, prioritization, and implementation of digital transformations within a firm.

The exploitation and integration of digital technologies often affect large parts of companies and even go beyond their borders, by impacting products, business processes, sales channels, and supply chains. Potential benefits of digitization are manifold and include increases in sales or productivity, innovations in value creation, as well as novel forms of interaction with customers, among others. As a result, entire business models can be reshaped or replaced (Downes and Nunes 2013). Owing to this wide scope and the far-reaching consequences, digital transformation strategies seek to coordinate and prioritize the many independent threads of digital transformation. To account for their company-spanning characteristics, digital transformation strategies cut across other business strategies and should be aligned with them (Fig. 1).

While there are various concepts of IT strategies (Teubner 2013), these mostly define the current and the future operational activities, the necessary application systems and infrastructures, and the adequate organizational and financial framework for providing IT to carry out business operations within a company. Hence, IT strategies usually focus on the management of the IT infrastructure within a firm, with rather limited impact on driving innovations in business development. To some degree, this restricts the product-centric and customer-centric opportunities that arise from new digital technologies, which often cross firms' borders. Further, IT strategies present system-centric road maps to the future uses of technologies in a firm, but they do not necessarily account for the transformation of products, processes, and structural aspects that go along with the integration of technologies.

Digital transformation strategies take on a different perspective and pursue different goals. Coming from a business-centric perspective, these strategies focus on the transformation of products, processes, and organizational aspects owing to new technologies. Their scope is more broadly designed and explicitly includes digital activities at the interface with or fully on the side of customers, such as

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Dr. C. Matt (✉) · Prof. Dr. T. Hess
Institute for Information Systems and New Media, Ludwig-Maximilians-Universität München, Ludwigstr. 28, 80539 Munich, Germany
e-mail: matt@bwl.lmu.de

Prof. Dr. T. Hess
e-mail: thess@bwl.lmu.de

Prof. Dr. A. Benlian
Chair of Information Systems and E-Services, Technische Universität Darmstadt, Hochschulstraße 1, 64289 Darmstadt, Germany
e-mail: benlian@ise.tu-darmstadt.de

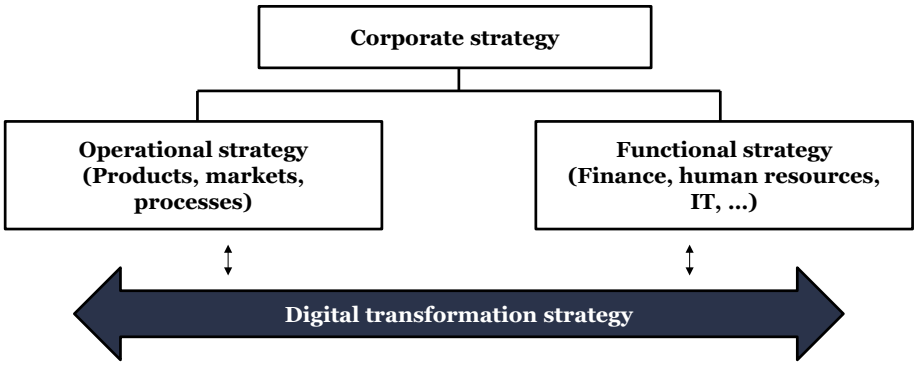

Fig. 1 Relation between digital transformation strategy and other corporate strategies

digital technologies as part of end-user products. This constitutes a clear difference to process automation and optimization, since digital transformation strategies go beyond the process paradigm, and include changes to and implications for products, services, and business models as a whole.

Similar to the previous discussion on the alignment between business strategies and IT strategies (Henderson and Venkatraman 1993), it is critical to obtain a close fit between digital transformation strategies, IT strategies, and all other organizational and functional strategies. Research has addressed this issue and has sought to consolidate IT strategies and business strategies into a comprehensive "digital business strategy" (Bharadwaj et al. 2013). Digital business strategies often discuss the possibilities and the effects of digital technologies for firms. For instance, Oestreicher-Singer and Zalmanson (2013) shed light on the connection of content and community, and prove that community-based digital business models can create profitable revenue streams in times of 'freemium' business models. Drnevich and Croson (2013) show how IT can impact on a firm's business-level strategies and its capabilities. Therefore, while digital business strategies often describe desired future business opportunities and strategies for firms that are partly or fully based on digital technologies, they do typically not include transformational insights on how to reach these future states. In contrast, a digital transformation strategy is a blueprint that supports companies in governing the transformations that arise owing to the integration of digital technologies, as well as in their operations after a transformation. Despite first research efforts and the frequent challenges encountered in practice, academia still lacks specific guidelines for firms on how to formulate, implement, and evaluate digital transformation strategies.

2 Two Perspectives on Digital Transformation Strategies

Strategic planning refers to the process of defining a strategy as well as deciding on the resources that are allocated to pursue a strategy in order to achieve firms' goals. While procedural aspects govern the development, implementation, and evaluation of digital transformation strategies, owing to their novel character one first needs to define which content aspects digital transformation strategies should consist of. The following four key dimensions and the resulting overarching framework are the result of preliminary works, including literature analysis and multiple case studies and interviews.

2.1 The Four Dimensions of Digital Transformation Strategies

Independent of the industry or firm, digital transformation strategies have certain elements in common. These elements can be ascribed to four essential dimensions: *use of technologies*, *changes in value creation*, *structural changes*, and *financial aspects*. The *use of technologies* addresses a company's attitude towards new technologies as well as its ability to exploit these technologies. It therefore contains the strategic role of IT for a company and its future technological ambition. A firm needs to decide whether it wants to become a market leader in terms of technology usage with the ability to create own technological standards, or whether it prefers to resort to already established standards and sees technologies as means to fulfill business operations. While being a technological market leader can lead to competitive advantages and can create the opportunity of other firms becoming dependent on one's technological standards, it might be more risky and requires certain technological competences. From a business perspective, the use of new technologies often implies *changes in value creation*. These concern the impact of digital transformation strategies on firms' value chains, i.e. how far the new digital activities deviate from the classical – often still analog – core business. Further deviations offer opportunities to expand and enrich the current products and services portfolio, but they are often accompanied by a stronger need for different technological and product-related competences and higher risks owing to

less experience in the new field. The digitization of products or services can enable or require different forms of monetization, or even adjustments to firms' business scope, if other markets or new customer segments are addressed. With different technologies in use and different forms of value creation, *structural changes* are often needed to provide an adequate basis for the new operations. Structural changes refer to variations in a firm's organizational setup, especially concerning the placement of the new digital activities within the corporate structures. For this assessment it is further important, whether it is mainly products, processes, or skills that are affected most by these changes. If the extent of the changes is fairly limited, it might be more reasonable to integrate the new operations into existing corporate structures, while for more substantial changes it might be better to create a separate subsidiary within the firm. However, the former three dimensions can only be transformed after considering *financial aspects*. These include a firm's urgency to act owing to a diminishing core business and its ability to finance a digital transformation endeavor; financial aspects are both a driver and a bounding force for the transformation. While lower financial pressure on the core business may reduce the perceived urgency to act, companies already under financial pressure might lack external ways to finance a transformation. Therefore, firms should confront the need to conduct digital transformations and explore their options openly and in good time.

To ensure the successful rollout of a digital transformation strategy and fully exploit its intended effects, it is essential to closely align the four different dimensions: use of technologies, changes in value creation, structural changes, and financial aspects. The four transformational dimensions and their dependencies can be integrated into one joint Digital Transformation Framework (DTF) (Fig. 2). If all of these four dimensions are taken into account as part of the framework, this will support firms in the assessment of their current abilities and the formulation of a digital transformation strategy.

2.2 Procedural Aspects of Digital Transformation Strategies

Digital transformation is a continuous complex undertaking that can substantially shape a company and its operations. It is therefore important to assign adequate and clear responsibilities for the definition and implementation of a digital transformation strategy. If a digital transformation strategy is approached half-heartedly, firms may lose their scope and may encounter operational difficulties. Companies should ensure that the person who is operationally responsible for the digital transformation strategy has sufficient experience in transformational projects and directly align his or her

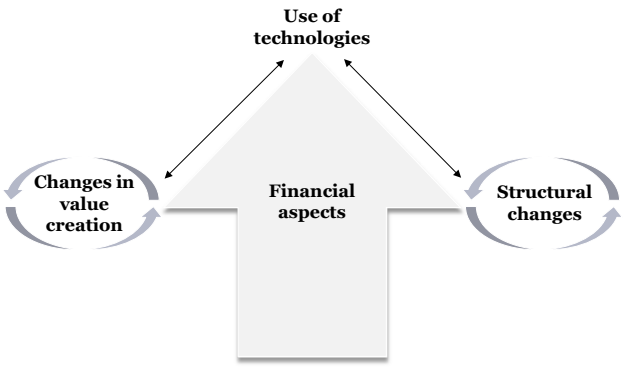

Fig. 2 Digital transformation framework: balancing four transformational dimensions

incentives with the strategy's targets and progress. To date, there is no clear answer to which senior manager should be in charge of a digital transformation strategy. In addition to CIOs or even CEOs, potential candidates include dedicated business transformation managers or the fairly new role of the Chief Digital Officer (CDO). In any case, given the long duration of many transformational processes, this should preferably continue to be one and the same person. Further, beginning with the initial planning phase, top management support is essential along the whole transformation process, since digital transformation strategies affect the entire company, and their execution may therefore result in resistance from different areas of the company. To deal with such resistance, transformation leadership skills are essential and require the active involvement of the different stakeholders affected by the transformation.

Besides adequate staffing for both the initial phase and further implementation, firms need to find procedures for formulating, implementing, evaluating, and – if necessary – adapting digital transformation strategies. This can be a complex endeavor, and experts from inside and outside the company might be needed as additional support. Further, since diffusion of digital technologies can change swiftly, there typically is high uncertainty concerning the digital transformation strategies' underlying assumptions. Hence, digital transformation strategies should be subject to continuous reassessment, in which both the underlying assumptions as well as the transformational progress to date are evaluated. To ensure that early actions can be taken if expectations are not met, clear procedures on the reassessment of digital transformation strategies are needed. This not only concerns the intervals between reassessments, but also the definition of procedures and measures to evaluate intermediate progress and thresholds upon which corrective actions can be taken. Such methods are important to ensure management credibility and to avoid decision-making bias, for instance if high sunk costs impede the willingness to counter steer.

3 Further Research Opportunities

While the basic foundations on digital transformation strategies have been laid, there are various opportunities for further research, which can be divided into at least three different topics.

3.1 Elements and Success Patterns of Digital Transformation Strategies

The digital transformation framework describes the cornerstones of the transformation along four dimensions. Future research should seek to further identify and concretize common elements that can be attributed to these four dimensions. This pertains in particular to the different attributes companies could adopt for each of these elements. Empirical insights could help comparing digital transformation strategies across different industries to assess commonalities as well as differences, in order to increase success rates. One key question relates to the optimal extent of digitization that a firm should achieve, since greater use of digital technologies may not always be desirable (Grover and Kohli 2013). Future research should analyze whether a firm's size or the extent to which its core products can be digitized have different influences in this respect. Likewise, it is of great interest whether successful patterns for B2C companies differ from those of B2B companies.

Further, digital transformations are often accompanied by changing skill sets that are not only necessary for the transformation itself, but also for regular operations thereafter. While current staff members may have a different, less tech-savvy mindset and may lack the required technological capabilities to cope with the upcoming changes, new highly skilled and focused staff members might be difficult to find, given the particular location of a firm. Research could support firms by providing guidance on the assessment of their existing technological capabilities and on procedures to weigh up their current options, as well as guidance on the design of training procedures for current employees and new hires.

3.2 Procedural Aspects and Responsibilities

Owing to limited empirical evidence, ambiguity about conventions on how to formulate and reassess digital transformation strategies remains. This is reinforced by the considerable uncertainty that results from swift technological changes and makes necessary adjustments to digital transformation strategies at a later stage more likely. This calls for concrete recommendations for procedures for the continuous refinement of digital transformation strategies, such as how to observe and evaluate technological developments and how to test their impacts in controlled environments within the company. Other key questions include the desired extent of digital transformations and the granularity as well as the temporal extent of digital transformation strategies, which could vary from swift, one-time actions to multiple successive projects.

In addition to the definition of procedural aspects, further insights are required to solve questions of responsibilities, particularly related to the new CDO role, in the planning and deployment of digital transformation strategies (Horlacher and Hess 2014). Owing to the cross-functional characteristics and the far-reaching scope of digital transformation strategies, it might be useful that a dedicated CDO takes on the responsibility (CIO 2013). Research should analyze the necessity for a dedicated CDO position in greater detail and should formulate guidelines for the definition of this new role. For companies employing both a CIO and a CDO, research should provide recommendations for the concrete alignment between the two; such research can build upon prior research on CIO-CEO alignment (Johnson and Lederer 2010).

3.3 Integrating Digital Transformation Strategies into Firms

As noted, digital transformation strategies have a cross-functional character and need to be aligned with other functional and operational strategies. However, the alignment of IT strategies with other strategies has remained a difficult and controversial endeavor. Given the rather recent appearance of digital transformation strategies, further evidence is needed as to how this alignment can be conducted in practice – not only related to IT strategies, but also from an organizational perspective. In this respect, the interaction of digital transformation strategies with business development and business models also needs to be assessed from a management perspective. Since digital transformation strategies cut across various other strategies at the same time, complex coordination efforts might be needed. Research should provide guidelines for firms to help structure these processes in order to achieve shared goal-setting, the alignment of different strategies, and cooperation between various people and entities throughout a firm.

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