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## Reviewing Organizational Design Components for Digital Business Strategy

TIMO WEINRICH

**Abstract** The view on information technology strategy has changed significantly. In the past, a functional-level view was prevailing, where information technology (IT) strategy was subordinate to a deliberate business strategy and needed alignment. Recently, rapid developments in digital technologies leaves no industry untouched and IT becomes an enabler and differentiator for businesses. Therefore, IT strategy exceeds the view of alignment towards a fusion of business- and IT-strategy– coined as digital business strategy (DBS). Yet, strategies are inextricably linked to organizational design in order to function well. Consequently, a DBS requires a suitable underlying organizational design. This paper aims to explore the very organizational design components for DBS by examining the state of the art literature. Specifically, this paper sheds light on the organizational design components of strategy, structure, processes, rewards, and people. The research method is a review of relevant literature at the intersect of information systems (IS) and management. Conclusions, implications for research and practice are presented.

**Keywords:** • Digital Business Strategy • Organizational Design • Literature Review •

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## 1 Introduction

In the past, the predominant view on IT strategy was a functional-level view. IT strategy was treated subordinate to a deliberate business strategy and needed to be aligned with it (Henderson & Venkatraman, 1993; Venkatraman, 1994). However, steady improvements in price/performance ratio of technology as well as advances in information, computing, communication, and connectivity technologies bring new functionalities, which affect society and economy at large. In today's uncertain environment, IT supplies crucial dynamic capabilities and becomes an imperative part of strategy formulation (O. A. El Sawy, A. Malhotra, Y. Park, & P. A. Pavlou, 2010; Yoo, Henfridsson, & Lyytinen, 2010). For example, digital technologies (combinations of information, computing, communication, and connectivity technologies) have the power to change business strategy towards a cross functional, modular, distributed nature with global business processes that "enable work to be carried out across boundaries of time, distance and function" (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013, p. 472). To capture this development, Mithas and Lucas (2010) and Omar A El Sawy, Arvind Malhotra, YoungKi Park, and Paul A Pavlou (2010) introduced the concept of DBS: Instead of viewing IT strategy subordinate to business strategy, the authors conceptualize a fusion of business strategy and IT strategy. The concept promotes the view, that IT strategy is much more than just a functional strategy because, nowadays, digital resources are an integral part of almost every organizational area. Digital technologies can create a differential value and increase innovative strength to generate a competitive advantage. Consequently, they are more than just systems and technologies (Bharadwaj et al., 2013). Bharadwaj et al. (2013) further elaborate on the DBS concept and provide a general understanding of DBS. The authors identify key themes and possible research directions, which the authors center around scope, scale, speed and sources of value creation and capture of DBS. (i) scope: DBS transcends functional areas, digitization of products and services, disruption of traditional supply chains towards ecosystems; (ii) scale: scaling of IT as an adaptive capability, network effects enabled by multisided platforms, information abundance, scaling via partners; (iii) speed of: product launches, decision making, supply chain orchestration, network formation and adaptation; (iv) sources of value creation and capture: increased value from information, value creation from multisided business models, value creation through coordinated business models in networks and value appropriation through the control of digital industry architecture. Whereby, Bharadwaj et al. (2013) remark that the identified trends and organizational shifts are merely illustrative and not exhaustive.

Yet, any strategy needs a matching organizational design in order to be carried out. The organizational design may unleash organizational capabilities (combination of skills, processes, technologies, and human abilities that differentiate a company), which in turn can translate to a competitive advantage – the overall purpose of strategy (Kates & Galbraith, 2010). Any change in strategy requires a change of organizational design (Dosi, Nelson, & Winter, 2001). Thus, organizations that pursue a DBS also need a matching organizational design that is different from "traditional designs" (Bharadwaj et

al., 2013). Similarly, Matt, Hess, and Benlian (2015, p. 341) state “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 [...]”. Such organizational changes are independent of the industry or organizations and usually have certain aspects in common (Matt et al., 2015). In sum, a novel organizational design under DBS is acknowledged, but research that explicitly addressees and reviews this subject is scarce. Therefore, the following research question is formulated to address this research gap: “What is the state of knowledge on organizational design in the context of digital business strategy?” In order to answer the research question, we adopt the organizational design perspective of Galbraith (1977), a well-established organizational design framework, which consists of five interrelating categories: strategy, structure, processes, rewards, and people (see 2.2 Framework). Accordingly, the unit of analysis is on the organizational level perspective.

## 2 Methodology

### 2.1 Literature Review

Paré, Trudel, Jaana, and Kitsiou (2015) provide a detailed view on different review types. The authors develop a typology shown in “Table 1: literature review types”, including a brief description of each type:

Table 1: Literature review types by Paré et al. (2015)

Review Type	Description
Narrative	Unstructured approach to identify existing knowledge on a certain topic or subject
Descriptive	Structured approach to identify existing knowledge on a certain topic or subject
Scoping/ mapping	Uncovering the amount and nature of literature on a certain topic
Meta-analyses	Quantitative evaluation of similar studies by combining their data
Qualitative systematic reviews	Qualitative evaluation of similar studies by combining their data
Umbrella/overview	Integrates multiple systematic reviews (quantitative or qualitative)
Theoretical	Draws on multiple existing studies (empirical and conceptual) and transcends them to a model or higher conceptual framework
Realist/ meta-narrative	Theory driven to inform, enhance, extend or supplement existing reviews
Critical	Analyzes existing knowledge and reveals inconsistencies, contradictions, controversies or weaknesses

This piece of research is most in line with a descriptive review type because it shares numerous aspects with this type: (i) it summarizes the prior knowledge, (ii) the scope of the research question is relatively broad, (iii) the search process (following paragraph) is comprehensive, (iv) the identified literature is of conceptual and empirical nature, (v) the identified literature is selected via certain predefined selection criteria (following paragraph), (vi) due to the relatively young phenomenon of DBS, an appraisal for only high quality is not the focus (vii) synthesizing and analyzing the identified literature centers thematically around a given framework (following section) (Paré et al., 2015).

A detailed and systematic search process is important to yield a rigorous, unbiased, objective, transparent and replicable review. Therefore, a review should provide explicit information on how the literature is identified, selected, assessed and synthesized. First, it should outline the research question(s), sources searched, search terms, search strategy and inclusion / exclusion criteria. Afterwards, the actual search is performed. The relevant literature is selected according to the chosen selection criteria and subsequently analyzed. Evidence is summarized and presented (Boell & Cecez-Kecmanovic, 2014; Wolfswinkel, Furtmueller, & Wilderom, 2013).

The research questions, already presented in the introduction, is "What is the state of knowledge on organizational design in the context of digital business strategy". The initial keyword search for the topic relevant literature is conducted by drawing on 50 major IS journals and 16 IS conferences as proposed by Levy and Ellis (2006, p. 186). It is complemented by the Financial Times 50 list (FinancialTimes, 2017). In doing so, the scope of our search covers the dual aspects of DBS and organizational design for this study, i.e., management literature on the one hand and IS literature on the other hand. In the following, the three major steps to conduct this literature review are presented: (i) keyword search, (ii) backward search and (iii) forward search (Webster & Watson, 2002):

- (i) The keywords applied for searching within the journals and conference proceedings are "digit\* business strateg\*" OR "digit\* strateg\*", whereby asterisks are placed to cover any variation of the words. The keyword search is applied to peer-reviewed only and title, abstract and keywords fields (if not available, full text). The selection for relevant articles takes places by reading the title, keyword, and abstract first (or further if still unclear). The criteria for judging the relevancy of the obtained articles is an explicit (i) linkage to DBS and (ii) linkage to the organizational design framework (following section 2.2 Framework).
- (ii) The next step is to perform a backward search, i.e., reviewing the citations of all relevant articles identified during the keyword search. Applying the same selection criteria for the backward search one obtains relevant prior articles that should be considered for this study.
- (iii) Finally, the last step is the forward search, which is the process of identifying relevant articles that build on the previously identified articles, also known as cited by. For this process, Web of Science and Google Scholar are used because

both search engines proved to show occasionally diverging search results and therefore complement each other. Again, for this step the introduced relevancy criteria are applied, which resulted in the final sample of 39 articles (see section 6 Appendix “Table 2: concept matrix of analyzed articles and organizational design components”).

## 2.2 Framework

Organization design can be viewed as a chain of decisions and choices and collectively refers to the “process of configuring structures, processes, reward systems, and people practices to create an effective organization capable of achieving the [digital] business strategy” (Kates & Galbraith, 2010, p. 1). Initially, it originates from Galbraith (1977) well-established organizational design framework that consists of the intertwined components of strategy, structures, processes, rewards and people. The following paragraph introduces each component briefly.

The component strategy determines a company’s course of action and can be understood as the cornerstone of the organizational design. It originates from the decision-makers’ understanding of the various environmental influences such as new technologies, competitors, customers, suppliers etc. Essentially, it is the success formula to gain a competitive advantage and differentiation.

Structure refers to the organizational chart and key roles. Some common types of organizational structures are functional, product, geographic, or customers-centric structures. It represents the possibilities of how to group different people together in an organization. Furthermore, it clarifies responsibilities, decision-making powers, and authorities.

The component processes refers to any connected activity that is linked with the information flow within and across an organization. Processes dissolve collaboration barriers that may result from an organization’s structure. Well-designed processes ensure that e.g., the right people find each other to innovate a new product. Processes can determine mechanisms for collaboration and therefore how well units within and across organizations work together.

Rewards have the purpose to harmonize the behavior and performance of individuals with the overall goals of an organization. It includes e.g., rewards based on measures or variable compensation.

The component people contains practices like selecting, training, staffing and developing of people to gain desired capabilities and a mind-set to successfully execute the strategy. This may include e.g., competencies like interpersonal skills and decision making capabilities such as considering multiple points of view (Kates & Galbraith, 2010).

### 3 Findings

The following subsections present the findings of the identified literature on DBS and organizational design along the framework's components of strategy, structure, processes, rewards, and people. Whereby, the appendix includes a summarizing table "Table 2 Concept matrix of analyzed articles and organizational design components" and figure "Figure 1: Cumulative articles published on DBS and organizational design components".

#### 3.1 Strategy

Following a DBS implicates establishing new capabilities, e.g., process-, customer and performance management (Mithas, Agarwal, & Courtney, 2012). Specifically, organizations desire an increased agility and responsiveness, multi-channel ecosystem connectivity, visualization and governance of data and information. In order to obtain this, organizations need to invest in multiple IT-enabled efforts (Freitas Junior, Maçada, Brinkhues, & Montesdioca, 2016). In fact, Mithas, Tafti, and Mitchell (2013) show that under higher industry dynamics, organizational spending differs for DBS related activities and vice versa for industry growth and concentration. Technology related investments may allow organizations to solve ambidextrous strategies, like a DBS, because it often involves pursuing multiple goals at once e.g., by following revenue growth and cost reduction at the same time (Bonchek & France, 2015; Mithas et al., 2012). However, Woodard, Ramasubbu, Tschang, and Sambamurthy (2013) show that organizations are path-dependent when it comes to designs of their existing digital artifacts. The authors refer to "design moves", resulting options/debt of past investments that enable/constrain strategic actions of organizations. Strategic paths can also be disrupted via a destabilization of self-reinforcing mechanisms resulting from digitalization (Wenzel, Wagner, Wagner, & Koch, 2015). Though, DBS is not only about optimizing internal operations or responding to single competitors, it is also about the responsiveness and awareness of the whole competitive environment (Mithas et al., 2013). This may open up new choices for digital business models, like Netflix, who first started with efficient delivery system of physical DVDs and later, due to digitization of media, the organization seized the opportunity and became the market leader for online media streaming (Mithas & Lucas, 2010). Therefore, IT does not just support strategic goals but increasingly becomes an enabler of strategic goals (Hess, Matt, Benlian, & Wiesböck, 2016). As strategy originates from the decision makers understanding of environmental influences (Kates & Galbraith, 2010), for DBS, this is the case for pervasive digital technologies (Bharadwaj et al., 2013). Digital technologies are an integral part of DBS formulation (Yoo et al., 2010). In line, the identified literature shows, that many DBS of organizations encompasses engaging in harnessing digital technologies to gain a competitive advantage and differentiation.

This includes engaging in social media for various purposes. Organizations increasingly use social media such as wikis or blogs for internal and external communication and collaboration (Delerue & Vuori, 2012; Ross et al., 2016). Regarding social networks,

organizations leverage and create value from it by fostering additional transactions out of social media relationships. Catlin, Patiath, and Segev (2014) emphasize to digitally connect with (existing) customers by extending digital marketing activities, to retain customers and improve cross- and up-selling. A more nuanced view is provided by Oestreicher-Singer and Zalmanson (2013), who demonstrate that social media should not just be a substitute to offline marketing activities. In order to generate value from social media, organizations need to “[...] take a strategic rather than techno-centric view of social media, that integrate social media into the consumption and purchase experience” (Oestreicher-Singer & Zalmanson, 2013, p. 591). However, social media does not always complement organization’s DSB. Increasingly, social media companies compete with e.g., news media or mobile services providers (Palekar & Sedera, 2015).

Yet, social media is much more of just another customer touchpoint. Next to wearables, tracking customers via cookies or app permissions etc., social media is a valuable source of information. For example, combined with data analytics it yields customer insights and a better customer understanding (Catlin et al., 2014). Analytics can provide meaningful insights and enable organizations to scale recommendations and offer products and services on a highly personalized level (Bonchek & France, 2015; Ross et al., 2016). Thus, the analysis of large data is often an integral part of DBS to e.g., become a more customer centric organization because “[...] the buyer, not the seller, determines which dimensions of value matter and how offers compare” (Keen & Williams, 2013, p. 644). Other application fields of analytics within DBS also include the support for strategic and tactical decision-making and business processes (Watson, Wixom, Hoffer, Anderson-Lehman, & Reynolds, 2006). In sum, analytics of large datasets are a key under DBS (Bhimani, 2015) and has the power to create a sustainable competitive advantage (Erevelles, Fukawa, & Swayne, 2016).

Next to social media and analytics, cloud computing is also frequently mentioned within the identified articles. Yet, Goutas, Sutanto, and Aldarbesti (2015) highlight, that many organizations simply adopt it without having a clear DBS. In order to unleash the full potential of cloud computing, it not only has to fit to the existing processes and systems, but also has to be part of an overall DBS. DBS on cloud computing usually encompass the intention for optimization, innovation and/or disruption (Berman, Kesterson-Townes, Marshall, & Srivathsa, 2012b). Nevertheless, the overall focus should be the value creation to customers by e.g., increasing software security and customization. Only then, cloud computing enables DBS to transition to new, digital business models (Berman, Kesterson-Townes, Marshall, & Srivathsa, 2012a). Likewise, in a qualitative study Cowen, Johnston, and Vuke (2016) show, how cloud computing increasingly becomes an integral part of organizations DBS in a developing country. Their main findings indicate that via cloud solutions, organizations achieve a better return on capital, improved quality and efficiency, better customer relationship and innovation acceleration and it has a cultural impact.

Finally, Ross, Beath, and Sebastian (2015) highlight that, in order to realize a competitive advantage from digital technologies in general, organizations need to gain a holistic

picture and not just focus on individual solutions. This means, to invest with caution, to achieve integrated and not just isolated solutions. For example, not only to just invest in mobile technology by offering apps and customer service (Catlin et al., 2014). Overall, “[...] a strategic focus that directs their technology spending [on] social, mobile, analytics, cloud, and internet of things technologies” (Ross et al., 2015, p. 2), is needed to foster new capabilities that make sense for DBS.

### 3.2 Structure

To implement a DBS successfully, organizations have to align their structure correspondingly. Literature shows, that there are several common practices for DBS. In general, Catlin et al. (2014) emphasize, that the governance and operating model need to fit to the organizations “digital maturity”. Together with an increasing digital maturity a lot of the organizational functions become decentralized and embedded in business unit activities. Increasingly, organizations create units that consist of cross-functional teams e.g., of technology and operation for business lines, to achieve a better responsiveness (Sia, Soh, & Weill, 2016). Others contributions highlight the launch of innovation labs detached from an organization (Ross et al., 2015). In sum, organizations need to decide how to integrate digital operations into their existing structures or separate it from the core business (Hess et al., 2016).

Additionally, DBS needs to be communicated organization-wide by the senior management and managers at all levels across an organization should be enlisted in technology decisions. In so doing, Mithas and Lucas (2010) and Sia et al. (2016) point out, that the CEO, CIO and the senior management need to work tightly together to execute a DBS. For example, the “CIOs must engage their business counterparts to shape IT decisions and create buy-in for IT efforts” (Mithas & Lucas, 2010, p. 4). Likewise, not all power over the DBS should be located at a single department, for example, at the marketing department, which might only lead to customers’ attention shortly but will not provide sustainable value (Haque, 2015). Some organizations introduce a Chief Digital or Data Officer (CDO), a dedicated position within an organization who is in charge of the DBS. In this case, too, interactions and collaboration between the CDO and the other management is critical for DBS success. The CDO role, tasks, responsibilities and reporting structure need to be articulated clearly – particularly with respect to the CIO as a neighbored manager (Haffke, Kalgovas, & Benlian, 2016; Hansen & Sia, 2015; Horlacher, 2016). Especially, since it is known that a tight CIO-CEO reporting structure is beneficial for differentiation (Banker, Hu, Pavlou, & Luftman, 2011). Thus, the reporting structure needs to fit to the DBS of an organization. In sum, DBS affects the whole organizational structure along with the power over the DBS execution, which may vary from organization to organization (Hess et al., 2016). In line, Matt et al. (2015) come to the conclusion, that there is no distinct answer, who should be in charge of the DBS.

### 3.3 Processes

As introduced, the component processes refers to any connected activity that is linked with the information flow within and across the organization. The following paragraphs highlight the (i) information flow within an organization, (ii) the information flow from the outside in and, (iii) from the inside out of an organization.

First, the credo for DBS is “what can be digitized will be digitized” to cut costs and increase service quality. Therefore, digitization, optimization and standardization of processes are imperative to allow for e.g., straight-through processing or and rapid product configuration (Catlin et al., 2014; Hess et al., 2016; Ross et al., 2016). As already mentioned for the component structures, teams from different departments or innovation labs are a common practice. The intention is to achieve a culture of experimentation, agility for innovation processes and an increase in the speed of product launches. This includes “test-and-learn” processes and allow failures as an example for new product development and as a part of the innovation process (Bonchek & France, 2015; Ross et al., 2016; Sia et al., 2016). It is increasingly encouraged that every employee can participate and give feedback (Sia et al., 2016). Additionally, social media is often used to internally or externally crowdsource ideas (Delerue & Vuori, 2012). Under DBS sophisticated customer service processes are gaining more and more importance to achieve customer orientation and customer response in order to answer changing customer demands. Setia, Venkatesh, and Joglekar (2013, p. 585) exemplarily state that for “[...] the sophistication of customer service processes and goals of customer service performance, firms may customize their initiatives to build effective digital designs across customer service units”.

Second, nowadays organizations usually operate within whole business ecosystems and make use of shared products and platforms and processes become increasingly commoditized. Markus and Loebbecke (2013) introduced the term “commoditized processes”, which are processes that are conducted in the same way, for example by using SAP or Salesforce. In contrast, standardized processes can still be customized individually e.g., an industry norm. Organizations that use commoditized processes do not necessarily have to interact in some way, but it can accelerate activities like (future) partnering or outsourcing (Markus & Loebbecke, 2013). Yoo et al. (2010) point out, that it can be a challenge for organizations to coordinate and manage distributed and dynamic processes of maintaining and designing IT infrastructures at a corporate level. Nevertheless, it is not a question of if but how to interface to customers, partners and suppliers because they are a critical source of innovation under DBS (Keen & Williams, 2013). More and more, organizations need to be able to integrate and process heterogenic internal and external information and knowledge resources. Being able to combine and store data from various databases can be used for different fields of application (Ross et al., 2016), such as a seamlessly omni-channel experience for customers (Hansen & Sia, 2015) or speed up the decision making process by using e.g. real-time business intelligence (Watson et al., 2006). In addition, it becomes increasingly important to not

only know the customer but also to process and lever relevant information e.g., via analytics as shown in the subsection strategy (Bonchek & France, 2015). This also requires integrating different sources of information such as new channels like apps, social media and webpages, not only with traditional offline channels but also with the inventory management system (Oestreicher-Singer & Zalmanson, 2013; Ross et al., 2015; Ross et al., 2016).

Third, in today's world of ubiquitous information, stakeholder of an organization like their customers are empowered, well informed and want organizations to be transparent about their product quality, features, etc. in order to trust them (New, 2010). Therefore, organizations need to take care of the process, which and how information flows from the inside out. Granados and Gupta (2013) argue that transparency is a relevant part of DBS and organizations should selectively and strategically disclose information to their stakeholders. Nevertheless, Grover and Kohli (2013) debate, that organizations need to be cautious about exposing systems' software, process, and information, which might expose strategic intentions to competitors and thus potentially give away a competitive advantage. In line, Dewan, Freimer, and Jiang (2007) highlight that transparent information, such as stock and price information, could also be used by competitors and not only by customers. In sum, under DBS the information flow out of an organization can be described as a balancing act of giving away just the right information to stakeholders (Grover & Kohli, 2013).

### **3.4 Rewards**

The organizational design component rewards shows the fewest results in the literature. Only Catlin et al. (2014) emphasize that organizations need to reward a more risk-taking behavior, which should yield in a test-and-learn culture. However, the authors are not explicit on how this behavior is rewarded only that "digital spend [should be] measurable in terms of return on investment." (Catlin et al., 2014, p. 3). Similarly, when it comes to the specific person(s) that are in charge of the DBS endeavor, their incentives should be directly linked to the target and progress of the DBS (Matt et al., 2015).

### **3.5 People**

The role of digital talents is crucial for organizations that engage in DBS because new skillsets are required as digital technologies impact organizations at large (Hess et al., 2016). For example, it requires managers not only to think in terms of business or IT but with a deep understanding of DBS (Bonchek & France, 2015). Specifically, competencies and knowledge is required on how to synchronize IT and business strategy, IT governance, implement IT projects, and manage the organizational IT infrastructure in order to be successful in DBS (Haffke et al., 2016; Hansen & Sia, 2015; Mithas et al., 2012; Mithas & Lucas, 2010; Valentine & Stewart, 2015). Leaders need to be open towards innovation and know how digital technologies and ubiquitous information affect their organization. This also includes an organization's ecosystem, which consist of their

stakeholders like customers, alliances, employees, suppliers etc. Such an understanding is the foundation to lever digital resources and create value for an organization (Bennis, 2013; Favaro, 2016; Sia et al., 2016). In so doing, it may help an organization to preserve a competitive advantage or to gain new competencies and define a new competitive advantage (Mithas et al., 2012; Mithas & Lucas, 2010). Nevertheless, managers need to be capable to communicate the DBS and their beliefs organization wide to create a common understanding (Mithas & Lucas, 2010). This is especially important because DBS affects the whole organization and any change may bring resistance to some degree (Matt et al., 2015). Digital talents can either be recruited externally or internally, by hiring people with the sufficient experience from academic institution or other (digital) organizations, mergers and acquisitions or training via dedicated digital training programs (Catlin et al., 2014; Hess et al., 2016; Matt et al., 2015).

#### **4 Summary and Conclusion**

Overall, this literature review contributes to the body of DBS and organizational design. It sheds light on DBS and organizational design by specifically looking at the components of strategy, structure, processes, rewards and people (Bharadwaj et al., 2013; Galbraith, 1977). Considering strategy, it is evident, that digital technologies have to be an integral part of DBS. Yet, the majority of identified articles specializes on certain digital technologies under DBS and do not treat them in a holistic manner as frequently emphasized (Ross et al., 2015). Additionally, there is a strong focus on harnessing cloud computing, analytics and social media under DBS. Whereas, mobile technologies are underrepresented but not less important (Cisco, 2017). In terms of structures, this piece of research points out that under DBS organizational functions become increasingly decentralized. It is also evident that the reporting structures and decision-making power shifts since DBS is an organization-wide endeavor and needs orchestration within and across the organization. However, how organizations achieve this is quite heterogeneous (Matt et al., 2015). Regarding the component processes, an increasing interfacing with the ecosystem, which includes customers, partners, suppliers and possibly competitors, is key. Organizations need to be capable to lever their ecosystem because it is a critical source of value creation by e.g., fostering innovation (Keen & Williams, 2013). Regarding the component rewards, this literature review found surprisingly little on harmonizing individual behavior with the overall goal of an organization. While literature mentions the importance of this aspect, only little information is given. Finally, the component people shows that to follow a DBS, digitally skilled employees and leaders are needed, which understand digital technologies, their strategic implications and know how to create business value from it. Overall, this literature review is able to show that in order to carry out a DBS, organization design requires a large shift. Yet, the presented organizational design components for DBS should not be treated mutually exclusive but as interrelating components, which need to be closely aligned to complement each other to be successful.

Limitations of this literature review exist because, for example, an organizational design perspective is adopted, which inhibits an in depth examination of DBS from an ecosystem perspective – another important aspect of DBS e.g., Pagani (2013). Additionally, only literature is included that explicitly refers to digital strategy / digital business strategy and components of the framework.

This contribution has practical and research implications likewise. The practical implications highlight the need for a suitable organizational design under DBS. In doing so, this review also shows practical audience, common organizational shifts for the components strategy, structures, processes, rewards and people. These design components are directly under the control of leaders and, therefore, organizations pursuing a DBS can draw from these insights and transfer them to their organizational context. Moreover, companies should reconsider existing portfolios of single DBS speedboat initiatives and treat them in a more holistic manner by orchestrating them. By doing so, the initiatives complement each other meaningfully and unleash their full potential.

Common research implications for literature reviews are uncovering research gaps and pinpointing possible future research questions. Thus, a review typically can give guidance for future research (Webster & Watson, 2002). For strategy, future research directions encompass how and which single and formerly isolated digital technology solutions complement each other. Due to this, future research is emphasized to yield an integrative and holistic picture of digital technologies under DBS. In addition, mobile devices are getting smarter and mobile data traffic is increasing exponentially (Cisco, 2017). Yet, their implications for DBS are still not fully examined and require future research. For the component structure, one can observe heterogeneous approaches of organizations. Therefore, an analysis of which structure may lead to superior organizational performance is emphasized. This may include reporting structures and distribution of power in general, new roles like the CDO, team settings like cross-functional teams etc. For the component processes, integrating and analyzing different sources of large amounts of information becomes increasingly important differentiator and a source of value. Yet research at the intersection of DBS and digital business infrastructure, i.e., how do incumbent firms build a digital business infrastructure, is still scarce. Another research gap is evident for the component rewards. Future research may look at how to harmonize individual behavior with DBS, including metrics and measures. Finally, organizational design can influence not only organizational performance but also organizational culture (Kates & Galbraith, 2010). Organizational culture is an output of the “[...] cumulative design decisions that have been made in the past and of the leadership and management behaviors that result from those decisions.” (Kates & Galbraith, 2010, p. 3). This means leadership cannot directly influence organizational culture but indirectly via the organizational design. The impact of DBS on organizational performance has been proposed and examined in some recent contributions, e.g. (Freitas Junior et al., 2016; Leischnig, Wölfl, & Ivens, 2016). However, little is known on how culture changes or looks like under an organizational design for DBS. Therefore, future

research should elaborate on this topic. Additionally, drawing on a different framework for DBS could yield additional insights. Finally but yet importantly, a change in organizational design under DBS intends to unleash new capabilities, that in turn may lead to a new business models (DaSilva & Trkman, 2014). Thus, questioning, what are new or typical business models resulting from pursuing DBS with a corresponding organizational design.

## Appendix

Table 2: Concept matrix of analyzed articles and organizational design components. S=social media, M=mobile technologies, A=analytics C=cloud computing, G=general, IN=information flow within an organization, OI=information flow outside in of an organization IO=information flow inside out of an organization.

#	Reference	Strategy					Structure	Process			Reward	People
		S	M	A	C	G		IN	OI	IO		
1	Banker et al. (2011)						.					
2	Bennis (2013)											.
3	Berman et al. (2012)				.							
4	Bharadwaj et al. (2013)					.						
5	Bhimani (2015)			.								
6	Bonchek and France (2015)			.		.		.	.			.
7	Catlin et al. (2014)	.	.	.			.	.			.	.
8	Cowen et al. (2016)				.							
9	Delerue and Vuori (2012)	.						.				
10	Dewan et al. (2007)									.		
11	Erevelles et al. (2016)			.								
12	Favaro (2016)											.
13	Freitas Junior et al. (2016)					.						
14	Oestreicher-Singer and Zalmanson (2013)	.							.			
15	Goutas et al. (2015)				.							
16	Granados and Gupta (2013)									.		
17	Grover and Kohli (2013)									.		
18	Haffke et al. (2016)						.					.
19	Hansen and Sia (2015)						.		.			.

20	Haque (2015)						.					
21	Hess et al. (2016)					.	.	.				.
22	Horlacher (2016)						.					
23	Keen & Williams (2013)			.			.	.				
24	Markus and Loebbecke (2013)							.				
25	Matt et al. (2015)						.			.		.
26	Mithas and Lucas (2010)					.	.					.
27	Mithas et al. (2013)					.						
28	Mithas et al. (2012)					.						.
29	New (2010)								.			
30	Palekar and Sedera (2015)	.										
31	Ross et al. (2016)	.		.				.	.			
32	Ross et al. (2015)	.	.	.	.	.	.		.			
33	Setia et al. (2013)							.				
34	Sia et al. (2016)						.	.				.
35	Valentine and Stewart (2015)											.
36	Watson et al. (2006)			.					.			
37	Wenzel et al. (2015)					.						
38	Woodard et al. (2013)					.						
39	Yoo et al. (2010)					.		.				
Sum		6	2	8	4	11	12	7	9	4	2	12

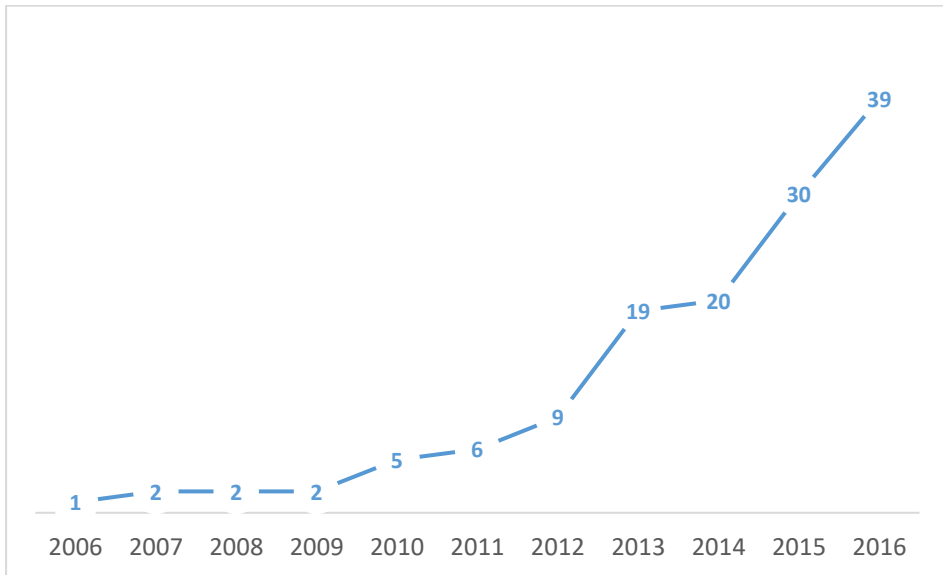


Figure 1: Cumulative articles published on DBS and organizational design components. The numbers on the line represent the cumulative articles published up to the corresponding year.

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