Critical Success Factors of
Digital Business Strategy

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Abstract. Digitalization does fundamentally impact firms' strategy development. With the fusion of IT and business strategy, Digital Business Strategy (DBS) creates the foundation for digital business models [1]. In this paper, we develop a DBS framework, based on a structured review of 21 industry reports. From this analysis, we yield 8 generic dimensions with a total of 40 critical success factors (CSFs) for DBS. The CSFs represent a rich set of actions specific to DBS and to the design of business models in the digital business environment. The discussion shows that academic research is lagging behind in contributing to DBS. Future research is suggested to further formalize the concept of DBS and to create a better understanding about how firms can successfully establish DBS.

Keywords: Digital Business Strategy, Business Model, IT Strategy, Industry Reports, Meta-Analysis

1 Introduction

Digital Business Strategy (DBS) is an emerging concept at the intersection of Information Systems (IS) and Strategic Management [2], which calls for contributions from academic research [3]. DBS describes the fusion of business and IT strategy [1] and the incorporation of digital technologies in business strategy [4]. With DBS, the separate and subordinate role of IT strategy to business strategy is given up for a joint approach to both, thereby leveraging internal, e.g. IT, instead of externally focused actions to create competitive advantage [2]. Recently, this trend has got into the focus of IS journals, like the MISQ special issue 2013 or the research agenda proposed in Business and Information Systems Engineering (BISE) in 2014 [5]. The combination of different scientific perspectives as intended by Veit et al. [5] is a cornerstone of DBS. However, guidelines for the development of DBS along with effective implications for the design of digital business models (BMs) are still scarce in the academic literature [6].

Contrary, DBS has found strong support in practice in form of numerous industry reports of research centers like the MIT Center for Digital Business [7], research firms like Gartner [8], technology advisory firms like Accenture [9] or Capgemini [10], and strategy consultancies such as McKinsey [11], BCG [12], and Bain [13]. In practice, the advancement of digital technologies and the rethinking of strategy are linked to "strategic principles" [14 pg. 5], a "digital strategy process" [9 pg. 10], or "strategic

challenges" [15 pg. 9]. The use of digital technologies to "achieve strategic end" [16 pg. 6], leverage of data to create customer insight [8], and develop a digital mindset [17], are among the clearly identified actions of DBS in practice. Interlinks between practice and academia are observable with the new line of thinking on the role of IS executives, inspired by John F. Rockart, developing from "technically oriented" to "managerially oriented" [18 pg. 3]. IS executives are now developing more 'strategically oriented' skills along with greater digital literacy [19], as digital technologies become of strategic importance [20]. These technologies are summarized under digitalization, which stands for the emergence of "rapid Internet and technological advancements" [21 pg. 48] and "a sociotechnical process of applying digitizing techniques to a broader social and institutional contexts that render digital technologies infrastructural" [22 pg. 2]. As a result, strategic implications for the design of BMs from digitalization are observable, justifying the current research on DBS in academia and mainly practice. Nonetheless, good practices for implementing DBS or insights into strategic actions of DBS are few [6]. The development of the related academic research stream is still in its infancy. Hence, it is worthwhile to study what industry reports are suggesting firms to do in terms of Critical Success Factors (CSFs), i.e., in order to "ensure successful competitive performance" [23 pg. 12]. CSFs define a few actions and areas of a firm which are of critical importance to the firm's success [23]. They are not focused on achieving competitive advantage but lead to competitive failure if not met [24]. Hence, they can be used to answer currently open questions on effective strategy development of DBS and the successful translation of DBS into BMs. Moreover, CSFs help us to gain a better understanding of DBS in practice and provide helpful insights for academia. In the end, we deducted our research question directly from the outlined shortcomings of academic research as well as from the profound calls for new insights to DBS: *What are the CSFs of DBS in today's business environment?*

Consequently, our research is motivated by the quest for a new, holistic, approach to strategy development in the digital business environment and the identification of CSFs of DBS. Thus providing new academic input and the needed theoretical grounding. The goal is to derive a set of CSFs of DBS, which can be synthesized in a framework for DBS and the design of digital BMs. As academic research findings on DBS are scarce, this paper provides a review of, particularly, industry reports to include findings and advancements on DBS from practice. We consolidate the current state of industry research on the nature and success of DBS as well as contribute a framework for DBS, which is structured along 8 dimensions with 40 CSFs. The dimensions of the framework provide managerial implications for designing BMs in the digital business environment and outline future research avenues. Also, implications from strategy to BMs further to business processes can be derived [25].

The remainder is structured as follows: First, the background provides a literature summary of the origin of DBS and its implications for the design of BMs. Next, the research methodology explains the detailed procedures to extract CSFs of DBS via a structured analysis of industry reports. Afterward, findings are synthesized in the DBS framework and the CSFs are explained. Finally, the discussion puts the framework in perspective to the literature and highlights implications and limitations of our research.

2   Background and Related Research

IT has been on the management agenda for a long time, it was first focused on data processing and technical problems, developed to be more functional-oriented and focused on Management Information Systems, later focused on first strategic implications and the competitive use of IT, and last to the alignment of business and IT [26]. Consequently, IT and business strategy were characterized by a distinction, such as how IT could support to achieve business goals. This distinction has been coined 'strategic alignment', describing the parallel development of IT and business strategy as well as the support function of IT to business [27]. As a result, an "aligned but essentially subordinate" [1 pg. 472] role of IT to business strategy dominates strategy development. This differentiation is inadequate for a time where digital technologies are disrupting products, industries, and markets. Where firms have to entrench digital capabilities to stay competitive. Hence, with digitalization a gap between what is required and the traditional thinking of strategic alignment developed.

DBS aims at addressing this gap by taking a broader and more inclusive view on IT strategy and recognizing changes due to the digitalization. Statements, like "digitalization transforms our society like only the industrial revolution did before in recent history" [28 pg. 10] and society is undergoing "remarkable change because of digital technology" [29 pg. 734] support the ongoing transformation. The fusion of the digital and physical worlds fundamentally impacts firms' operations and industry boundaries. In this transformation, it is not a matter of whether or not firms will be digital, but a matter of how and when they become digital [9]. Strategy plays a superior role in this transformation; Catlin et al. [30] show that strategy-related factors cause the biggest variance between 'digital leaders' and average performers when comparing competitiveness. However, the transformation of strategy is lagging quite behind the transformation of the business environment.

As a result of digitalization, IT strategy is seen today "as essential to the framing of overall business strategy, that is, a fusion of IT and business strategy" [2 pg. 513]. The implied constant interlocking of business and IT strategy with DBS can deliver competitive advantage [31,32] and underlines the contrast to the traditional view of IT strategy. However, the current state of research on DBS unveils blank spots in IS as well as Strategic Management with only a few academic articles having been published. While IS research has analyzed how digital technologies are influencing a firm's strategy, structures, and processes [32,33] and how business value is shifting [34], the fusion of business and IT strategy has not yet been a clear focus – the question of "how to build a competitive advantage in turbulence with digital IT systems" [35 pg. 443] remains.

However, it should not be neglected that, academia needs naturally more time than practice to establish a new research stream. Consequently, the overall research on DBS has remained largely atheoretical and dominated by industry reports [16] and practitioner guidelines [36]. Research in practice shows that "conventional business strategy is not the best fit for meeting the demands of digital growth" [9 pg. 8] and affirms that "companies [are] competing in a fundamentally new way" [14 pg. 2], due to digitalization. Practice research recognizes that DBS "it is not about changing the way we do technology, but changing the way we do business" [7 pg. 22] by rethinking strategy.

Although implications on strategy are discussed, BM-related considerations are few, but should be considered, as these two concepts, strategy and BM, although they are distinct, are connected [5]. Strategy is about "deliberately choosing a different set of activities to deliver a unique mix of value" [37 pg. 64] whereas the BM is "an abstract representation of an organization […], of all core interrelated architectural, co-operational, and financial arrangements […], as well as core products and/or services […] needed to achieve strategic goals" [25 pg. 8]. BMs are one way to translate strategic actions from DBS into value architectures for the business [38]. Hence, they have undergone tremendous change as value creation has shifted, due to redefined product and service offerings [39]. New BMs are needed as traditional products and industries are disrupted by digitalization. "The digitalization of the book is fundamentally reshaping the structure that has underpinned the book publishing for 200 years […], changing the very idea of books" [29 pg. 724]; illustrates how value shifts away from products, where it is unclear if industries or markets stay the same or have to adapt.

So far, there is little research about how firms design DBS to develop new BMs as a way to create opportunities and stand out from the industry norm [2]. Nevertheless, the expectations of the research community are high, such as the hope for "DBS to explain why some [strategic implications of digitalization on the business environment] […] are observed instead of others" [40 pg. 553]. Our research connects the consequences of digitalization with implications on strategy as we see "digital technologies are fundamentally reshaping traditional business processes" [1 pg. 472], provides insights into DBS in practice from industry reports, and synthesizes findings into a DBS framework.

3 Research Methodology

Insights from industry reports with a focus on strategic aspects due to digitalization promise to help to develop a better understanding of DBS in academia. However, so far the reports fail to put their research within a theoretical framework and to provide significant insights for academic research, which we aim to overcome. The following review and analysis of industry reports will derive CSFs of DBS, which deliver the input from practice for the development of the DBS framework. Our approach extends current academic research with a profound understanding of the nature of the concept in practice, which is specifically suggested for DBS research [1] and also applied for similar emerging IS concepts [41]. For the review of industry reports, we followed the guidelines for scientific literature reviews as specified by Webster and Watson [42]:

Data collection started with the identification of relevant industry reports. Reports from, among others, analyst and consulting firms were identified by an online search via public internet search engines for the term 'digital business strategy' and slight variations of it (e.g. digitalization strategy). The search was restricted to reports published between January 2011 and July 2015 for the following reasons: First, insights and themes in industry reports are extremely fast-moving and the publishing rate is high, with around five new reports per month. Second, the strategy focus of digitalization is new and it was not until recently that reports focused on strategic implications and DBS [43]. Third, our research should build on a fairly mature stock of insights, which is

rather true for more recent reports, as they are building on the knowledge gained from previous ones. Next, from the online search results, the first 200 hits were reviewed to find out whether they included an industry report relevant to our research goal. Reports had to specifically address strategic aspects in response to digitalization. After deletion of duplicates, the search delivered a total of 64 industry reports.

These reports were then scanned for their strategic implications (e.g. the design of new organizational structures, the long-term orientation of the firm), relevance for strategy in general (the development of new strategies, involvement in the strategy making), as well as usefulness to develop a framework for DBS (e.g. first indications for possible dimensions). Industry reports fulfilling these requirements hold the most potential to deliver input for the framework and were therefore included. We included, for example, a report focusing on strategy over technology [16] or a study on growth strategies [9].

Industry reports not fulfilling these specifications were excluded when they met at least one of the following criteria: (1) focusing on only one singular organizational function like sales or digital marketing; (2) focusing purely on new leadership roles (e.g. only discussing responsibilities of employees or managers); (3) associated with DBS but not providing any strategic implications like an analysis of German 'Industry 4.0' initiatives in the production; (4) too small deltas to other reports (due to subsequent reports from the same authors/institutions) (5) specific industry focus and no implications for strategy (e.g. focused on technological vision). Finally, 21 industry reports were selected as input for the subsequent analysis [7–17,20,30,36,43–49].

For analyzing these 21 reports, we applied the 'critical success factor method' [23]. It aims to identify and determine information and actions (CSFs) which are most needed to reach a defined outcome or goal [23]. Although the original version of the CSF method builds on interviews with top-level executives, it could be modified for our research by replacing the interview data source with the identified industry reports. We used a simplified coding method to identify the specific CSFs in each report [50]. The original aim to make CSFs explicit and encapsulate them to management priorities, allowing management to act on a more knowledgeable and [23], remained true.

Subsequently, the coding of the 21 industry reports assisted our research by "organize[ing] and make[ing] sense of the qualitative data" [50 pg. 152]. To obtain our framework we followed a staged process: First, we coded CSFs which explicitly focus on strategic actions undertaken by firms or identify potential for firms to improve strategy development to address digitalization. Identified CSFs were recorded in an Excel spreadsheet. The coding delivered an initial, cumulative, and duplicate-free set of 89 CSFs, which occurred in the sample. The second step was a repeated analysis of the 21 reports for the mentioning of the previously determined set of 89 CSFs, which created a result matrix with information on which CSF was mentioned in which report. As a result, the analysis delivered a total of 500 entries with an average of 23.8 different CSFs per report and 5.6 reports per CSF. Counts for each CSF ranged from 1, the lowest (CSF found in only one report), to 21, the highest (CSF found in all reports). This comprehensive set of weighted CSFs provided rich insights but was still distorted by CSFs that were raised to be 'critical' by only very few reports. Therefore, we followed Sproull [51] and reduced the set of CSFs to only those that were identified in more than 15% of the reports (i.e. 3 reports) to gain a more robust set of CSFs. The eliminated 30% of

CSFs explained less than 11%; contrary, the final set of 62 CSFs explain 90% of all entries. Ultimately, we consolidated CSFs with overlapping content as well as grouped similar CSFs together. In the end, 40 CSFs provided the final input for the framework.

Finally, we screened the CSFs to identify dominant themes. Applying an iterative procedure starting with rather broad themes and trying to further condense them to most relevant, led to the creation of 8 dimensions forming our DBS framework. These dominant themes are comparable to themes in academic research, as used by Kohli and Grover in their article, describing themes as "not mutually exclusive, nor are they exhaustive; rather they are meant to initiate a discussion of how the IT community must rethink [...] and expand the agenda for research." [34 pg. 28]. Analogously, the themes were used to structure the CSFs in practice and the dimensions of our DBS framework.

4   Findings

The layout of the DBS framework (Figure 1) is inspired by similar frameworks in adjacent research, like a framework synthesizing the literature on agile manufacturing [52], and is oriented towards the 'business model canvas', which structures relevant areas for new BMs [53], to provide the same clarity and guidance for DBS and to support the translation of strategy into BM by a corresponding structuration. Our framework comprises the 8 dimensions, identified as dominant themes, and the 40 CSFs.

Figure 1. The DBS framework

The first two dimensions, *Sales and Customer Experience* and *Organization*, are the two largest subsets of CSFs; hence and due to their fundamental role, they are pictured as the two 'pillars' of the framework. All other dimensions are placed in a descending order with regard to their strength (i.e. count of entries) between the pillars. Table 1 shows all dimensions, the assigned CSFs, and the count of entries. The CSFs provide actions for DBS development and the design of new BMs. They are introduced in detail in the following, while only explaining the strongest CSFs for each dimension:

Sales and Customer Experience focuses on *seamless integrated offline (physical) and online (digital) channels* [8,16]. The seamless customer experience across all channels with an integration of channels is a decisive action [13,49]. Mobile, as the most significant sales channels in future, requires a coherent presence across all channels. DBS builds on blending physical and digital worlds by a greater integration of online and offline experiences. Experiences around the product, mostly digital and intangible, are superior to the physical utilization of the product [13,36].

Table 1. The dimensions and CSFs as identified by the analysis of industry reports

#	Count	Dimensions / CSFs	#	Count	Dimensions / CSFs
	84	*Sales and Customer Experience*		76	*Organization*
1	20	Seamlessly integrated offline(physical) and online (digital) channels	7	15	Agility to reallocate resources and reorganize rapidly
2	15	Digitalization of customer interaction and products&services	8	13	Change management for radical and rapid change
3	14	Analytics to customize and create products&services	9	12	Multi-level and multi-speed organization for faster reaction
4	13	Direct contact for customer centricity	10	11	Organizational alignment towards digital
5	12	Customer integration with open innovation	11	10	Long-term orientation but short, intense sprints to change
6	10	Outstanding customer experience and satisfaction	12	8	Organizational separation → Spin-off
			13	7	Lean decision-making
	66	*Culture and Leadership*		57	*Capabilities and HR Competencies*
14	15	Create and foster digital mindset with a digital agenda	20	13	Capability to reinvent value chain and to challenge status quo
15	15	Common set of values with digital as value creation	21	11	Digital skills, know-how, and talent
16	12	Accept failure and encourage new to grow success	22	10	Capability to design new business models
17	10	Innovation and adaptive culture with evolvable goals	23	9	New assets and capabilities
18	8	Commitment to transformation in strategy and culture	24	7	Leaders have to identify new HR potentials
19	6	Rethinking of C-level roles (CDO, CIO)	25	7	Acquire, retain, and attract new talents
	56	*Foresight and Vision*		48	*Data and IT*
26	13	Establish a clear vision with future positioning	31	19	Use data and information from central source
27	13	Tight feedback loops and aspiration to improvements	32	11	Fundamentally different role of IT with two-speed IT
28	12	Foster faster innovation / rapid prototyping	33	10	Real-time and large-scale data processing
29	10	Look what is laying left and right	34	8	Modular IT platform
30	8	Bold experimentation			
	31	*Operations*		25	*Partners*
35	17	Data-driven and digitally automated process	39	14	Network effects with open systems and partner integration
36	5	Not just business but operating models change	40	11	External partners
37	5	Blending human and digital resources			
38	4	Provide financial resources			

Augmented reality, customer-focused technology, and digital customer decision journeys lead to a *digitalization of customer interaction and products&services*, allowing firms to develop data-rich insights about customers [16]. As products and services are being digitalized firms are required to enhance them with digital extensions like a permanent access to them via a digital channel. As a result, BMs have to allow for every (physical) product being augmented with a digital service [8]. The increased availability of customer makes *analytics to customize and create products&services* an absolute necessity with DBS where customer messages are individualized to preferences and enriched with contextual data. Products are constantly adjusted to better reflect the customer needs. With *direct contact for customer centricity,* firms build deeper connections between brands and customers as well as execute customer care from all business units via digital channels [36]. Firms have to avoid third parties and disintermediate customer relationships to establish a long-lasting tangible and emotionally affected brand connection [15]. Firms take on an 'outside-in' perspective, internalize the customer viewpoint, and customers become the central hub of digital service delivery [49].

Organization focuses on *agility to reallocate resources and reorganize rapidly.* Agility is an integral part, or, 'in the DNA' of DBS, requiring firms to self-tune the organization to changing circumstances. DBS builds on organizational agility to allow for fast adaptation [16] by collaboration across foregone organizational boundaries. Organizational liquidity allows firms to shift businesses as customer needs shift, requiring new BMs, agile operating models, and the ability to scale fast and learn quickly [43].

Proper *change management for radical and rapid change* prepares employees for imminent changes and sets the organization on a new course. Story-telling can be used to convey the 'digital story' and to gain employee buy-in, stimulate pride, and entrench the digital transformation [16]. A *multi-level and multi-speed organization for faster reaction* is needed to enable ambidextrous organizations which renovate the core and innovating the outside. As a result, firms are able to quickly respond to customers' demand while balancing internal constraints with needed speed for faster reaction. *Organizational alignment towards digital* is used to establish a dedicated team to support digital business opportunities and build up digital governance to align fragmented digital activities [30]. Digital transformations by individual units need to be aligned to the organization, culture, and technology of the firm [47]. *Organizational separation, such as spin-offs,* enable digitally centered sub-businesses with separate competitive advantage. Corporate venturing is a catalyst for digital platforms and growth of divisions without constraints by utilizing variable business architectures [12,17].

Next, _Culture and Leadership_ aims to *create and foster a digital mindset with a digital agenda* where the culture takes on an exploratory and adaptive character [14], is open for change, and "conducive to the digital transformation" [16 pg. 9]. Collaboration and cross-functional work are encouraged to generate new ideas and drive innovation. Firms are breaking free of silo-thinking [30]. With it, firms have to establish *a common set of values with digital as value creation* and integrate digital technologies in the transformation as well as the way people work. Leaders have to entrench digital values for the culture, such as forward-thinking, openness, technology acceptance, entrepreneurial spirit, and a startup way of working [43]. The value of digital innovation has to be understood, recognized, and cherished to be successful [16]. This goes along with a new culture which supports to *accept failure and encourage new to grow success.* It is necessary to establish a common appreciation that risk taking involves failure and failure is embraced "as a prerequisite for success" [16 pg. 4]. The culture must encourage risk-taking and tolerate failures to succeed [14]. A *commitment to transformation in strategy and culture* is needed by the leadership team to set DBS on the right course and lead the digital transformation by example from the top of the organization [7,16]. It is important to understand that leaders drive the transformation, address technologies that bring change, and trigger the connected change of culture.

The _Capabilities and HR Competencies_ dimension strongly builds on a *capability to reinvent value chain and challenge status quo* where employees identify where value is now and in the future as well as lift value to the next level by moving it from the traditional world of value chains to the world of platforms, ecosystems, and stacks [12]. Disaggregated value chains are caused by a reduction of transaction costs and firms need to analyze the value chains to detect points which are best for possible digitalization [13]. The need for *digital skills, know-how, and talent* stands on top of the list for almost all firms [47]. In order to design and execute DBS, firms have to train employees for the needed digital skills, align incentive systems, and provide financial resources for human capital development [7,16]. Beyond the clear technical IT skills, also non-IT skills, such as visioning, collaboration, and organizational change management, are required with DBS. New talents are attracted by a commitment to the digital transformation, leaders' digital literacy, and a firm-wide understanding of the power of digital

technologies [16,43]. In particular, the *capability to design new business models* becomes a strategic capability with DBS. As BMs change from 'inside-out' to 'outside-in', they become more customer focused. "This shift is the essence of adopting a digital BM" [9 pg. 6]. Firms innovate their BMs more often and incorporate small-scale as well as fundamental disruptions of traditional BMs [16]. Hence, BMs are shorter lasting and adapted more frequently when aligned to DBS [8]. The knowledge-driven digital business environment requires *new assets and capabilities*, such as, in the form of state-of-the-art infrastructure to enable the digitalization of products, as well as digital capabilities to design digital product extensions [49]. Firms digitally transform their core capabilities by building up complex and cross-functional combinations of assets and capabilities in their BM, e.g. people, processes, and expertise, to withstand competition [17]. However, not everybody is able to learn required digital skills, so *leaders have to identify new HR potentials*. Hence, the assessment of required skills and the identification of people, which can be trained to support the transformation, are needed [8,30].

Foresight and Vision is about *establishing a clear vision with future positioning* for the digital transformation [20]. With DBS, firms are required to have a transformative vision of the future and still provide the needed clarity and to achieve it [7]. The vision is characterized by *tight feedback loops and aspiration to improvements*, where firms learn from customer, employee, and partner interactions to further develop the vision and, hence, update services and products. Frequent feedback loops and the reaction to feedback are an iterative process which determines the success with DBS [47]. *Fostering faster innovation/ rapid prototyping* enables 'learn-track-react' behavior and 'test-and-learn' approaches, where firms model new products quickly, put them into the market promptly, and test them constantly [49]. For the continuous delivery of new products, minimum viable products are sufficient which increase the speed of product development [49] to allow firms to "fail, fast, and inexpensive" [8 pg. 24]. As the environment is changing quickly, firms need to *look what is laying left and right*. Scanning the environment helps to identify digital opportunities, disruptions, and potential threats [30]. Sensing and anticipating of technology-driven transformations are needed [12] as traditional industry barriers disappear and allow asymmetrical rivals and unlike allies.

The *Data and IT* dimension puts the CSF to *use data and information from a central source* in focus. It is one of the most often occurring CSFs in our findings, which underlines that (big) data analytics and sense-making of structured and unstructured, as well as inside and outside data from different sources channeled in a central data source, are vital [30]. DBS leverages data and analytical methods to use data-driven decision making, make data-assisted economic decisions, learn about the customer, and turn data into insights. Data is a competitive advantage as information is at the core of BMs in the digital business environment. As a result, the *fundamentally different role of IT with two-speed IT* is no longer about enabling, but creating the business. IT takes on a new thinking by harnessing digital technologies to create business value [20]. *Two-speed IT* lets firms operate IT at two different speeds with rapid results, high reaction times, and extreme flexibility towards the customer facing side, and a strong internal backbone on the other [30,47]. This bimodal approach supports digitalization with rapid front-end changes while fulfilling backend requirements. Moreover, *real-time and large-scale data processing* is a key action allowing firms to "track and communicate digital key

performance indicators frequently" [30 pg. 11]. Additionally, real-time contextual information and analytics are combined to rapidly develop actionable insights from data for DBS [49]. A *modular IT platform* with "agile technology delivery skills" [30 pg. 5] builds on speedy but flexible services, and integrated functions with shared solutions. Firms utilize an orchestration of services along with a 'continuous delivery model', which allows them to release and iterate quickly [48].

Operations is infused with data to create *data-driven and digitally automated process* for higher automation. This allows supply chains to react quickly and anticipate customer demand. The further automated handling of services and completely automated customer interactions in BMs, such as Zipcar or car2go, increase speed and efficiency [11]. *Blending human and digital resources* creates human-centric designs for businesses with individual solutions by interlocked human and digital channels [49]. DBS focuses on efficiency in the interaction between people and technology, with digital technologies adding velocity to processes and services.

The main goal of the *Partners* dimension is to utilize *network effects with open systems and partner integration*. There is an increase in value with each new customer added, hence digitally-enabled firms tend to form natural monopolies and create "winner-takes-all dynamics", e.g. Google and Facebook [15]. Firms have to open their services and products to a community as well as allow for an easy integration of new connected devices, objects, and people via open standards, allowing products in a network to be more powerful. With *external partners,* firms form strong and collaboratively partnerships. Additionally, extensive external orientation supports learning and innovation [8]. The collaboration goes beyond boundaries of the firm and extends to customers, technology providers, and suppliers. Firms allow partners to collaborate for specialized expertise [49] and utilize partnerships for specific innovations.

In summary, all 40 CSFs allow better strategy development and help to advance the understanding of DBS, but only some have received academic mentioning.

5   Discussion

We advance the literature on business and IT strategy by identifying CSFs of the content and development of Digital Business Strategy. Specifically, we presented a comprehensive overview of CSFs, as raised by industry reports, consolidated in our DBS framework. The framework provides actions for the development of DBS with 40 CSFs, divided into 8 dimensions. As the framework is derived from industry research, its CSFs should be discussed by reflecting it with scientific work, where available.

First, the academic literature exhibits a strong focus on the customer side of DBS and on building customer-centric organizations [4], which supports the strong customer orientation in our framework, as represented by the pillar 'sales and customer experience'. We observe a growing number of digital BMs, redefining customer interfaces with digital technologies and putting customer service capabilities to the next level. As a consequence, BMs have to 'integrate physical and digital worlds' by blurring boundaries between online shops and physical stores (e.g., order online and pick up offline).

Furthermore, as IT systems become core elements of firms, there is evidence of firms 'digitalizing products&services' for competitive advantage [29,54]. With it, the 'digitalization of customer interaction' leverages customer data to improve in-store customer satisfaction by working with value-adding service from online, like access to customer profiles to provide individualized services. Recent examples are the BMs in the sports gear industry, which focus on integrated fitness trackers for all apparels.

Next, there is a growing body of literature on new leadership roles due to the digitalization. For instance, Bennis, in line with the 'culture and leadership' dimension of our framework, focuses on the change of leadership roles with DBS as he discusses how leaders must "understand the power" of digitalization [19 pg. 635]. In practice, as in our framework, the role of the Chief Digital Officer (CDO) pays respect to this development and ensures the needed attention. As a consequence of DBS, we see the appointment of CDOs to head new BMs and addressing digital services. Contrary, academic research remains at stressing skills like transparency and adaptive capacity [19].

Nonetheless, changes due to DBS should not stop at the top level, but have to be translated further into the entire organization. Hence, firms have to establish 'organizational alignment towards digital', which has not been mentioned in the DBS literature, yet. The scarce literature on DBS stresses to increase the firm's strategic capability to adapt to dynamic changes in the business environment [1]. Indeed, 'agility' becomes a strategic action and goal, as we were able to identify it as a CSFs of our framework.

Further, developing two organizational speeds is a way for creating organizational agility; it is equally discussed in practice as well as academia. The so-called 'multi-speed organization' is a CSF and fundamental tension of DBS. It is supported by Woodard et al. [40], who stress dynamic adaption to changing market conditions while providing a stable environment for value generation, and the recent bimodal IT concept, describing "different architectures, processes, and organization parts" [41 pg. 1418].

Also, other CSFs, outlined in our framework, yield opportunities for digital BMs like to 'use of data and information' (e.g. 'real-time and large-scale data processing'), or integrating niche players to access highly-specialized services in value networks.

In conclusion, academic articles on DBS fall short with regard to some aspects of the DBS framework but show first insights into DBS from academia. The discussed aspects of the DBS literature present only a subset of the CSFs identified in our framework. The DBS framework with its 8 dimensions and 40 CSFs, presenting the nature of DBS in practice research, goes beyond currently scientifically addressed topics, offers a broad perspective on the strategic implications due to digitalization, and provides guidelines for strategy development and BM design. Therefore, DBS focuses on the utilization of digital technologies and how they can be applied to create business value, hence, changes the way of business and revenues, ultimately leading to digital BMs [5].

Limitations and future research: Our research is limited by a focus on DBS relevant aspects, but the high number of CSFs shows the different facets of the concept and the diverse research areas. Hence, a deeper analysis of singular CSFs will be promising. Methodologically, the combination of a literature review approach and a modified critical success factor method to analyze industry reports is quite unique to IS research, so far; accordingly, the value and plausibility of such an approach might be less clear as for well-established research methods. Furthermore, the selection of industry reports is

intended to provide a clear strategic focus for the DBS framework. Still, selection criteria can vary and are not free from subjective influences. The same applies to the subsequent elimination of minor CSFs, which was chosen according to the research set-up [51]. The CSFs were grouped into 8 different dimensions, using the dominant themes identified by the researchers. The themes are not free of overlap nor indisputable, a deeper analysis should look at relationships among them (e.g., interaction effects or causalities, preconditions etc.), since their impact on long-term firm success is of course highly inter-related (e.g., the tight interconnection between the dimensions of organization and culture). Further, the dimensions could be validated by a Delphi study, which could also refine a ranking of the most important CSFs, not provided by our framework so far. Hence, future research could add to our research with more quantitative measurement scales and statistical metrics for the CSFs. Finally, two limitations were identified by interviewees[1]: firstly, the framework lacks a finance dimension, which would pay respect to the huge investments firms make to advance the digital transformation; secondly, a dimension considering the influence of regulation on emerging topics and developments in the digital business environment is missing.

In summary, the understanding of adequate strategy development is essential to design BMs [25]. As we know that BMs are an extension of DBS, we discuss how BMs can add causal relations between the components of DBS to generate value.

6   Conclusion

DBS, an emerging concept for strategy development, has caught high attention by practitioners and scholars. It presents a further advancement of IT strategy and the traditional alignment view. Our research explores the current state of industry research on DBS, identifies CSFs of DBS, and synthesizes them into a framework. Our framework addresses outlined challenges of traditional strategy development, where IT strategy is "aligned but essentially subordinate to business strategy" [1 pg. 472], by presenting 40 CSFs. Led by these CSFs, our framework allows better strategy development and a more integrated approach to the challenges raised by digitalization. The dimensions of the framework are stable as they are conceptually rooted as well as remain generic to allow for changes of single CSFs over time.

DBS puts firms in a superior position, when it comes to the digital transformation and evolving to digital maturity. Evidence for the success of DBS is found since the majority (~ 80%) of digitally mature firms have a DBS; by contrast, among digital immature firms only 15% do [16]. By translating DBS into digital BMs above-average results regarding revenue [9], cost efficiency, and capital productivity can be expected. The CSFs of our framework will help practitioners advance DBS and present starting points for further research, as outlined above. In the end, our framework enriches the body of knowledge on DBS, but shows also that more insights are required.

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[1] We started discussing the findings of our analysis with experts from the industry who brought up these thoughts. We thank for their intellectual support.

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