

Crossing Boundaries: Organization Design Parameters Surrounding CDOs and Their Digital Transformation Activities

Full Paper

Anna Horlacher
LMU Munich
horlacher@bwl.lmu.de

Patricia Klarner
Erasmus University
klarner@rsm.nl

Thomas Hess
LMU Munich
thess@bwl.lmu.de

Abstract

More and more companies are installing Chief Digital Officer (CDO) positions in order to support the progress of their digital transformation. Since the employment of CDOs may influence companies' organizing logics, we conducted a multiple case study analysis to investigate the organization design parameters surrounding CDOs and their digital transformation activities. By examining the governance architectures in which the companies embed their CDOs (vertical dimension) and the horizontal coordination mechanisms utilized by CDOs (horizontal dimension), we shed light on two dimensions of companies' organizing logics. Our results indicate that CDOs need sufficient influence in the organization to pursue transformation activities and that the vertical and horizontal dimensions of companies' organizing logics are not independent of each other.

Keywords

Chief Digital Officer, digital transformation, governance architecture, horizontal coordination mechanisms.

Introduction

In light of the challenges and opportunities the digital transformation poses to companies across industries, the Chief Digital Officer (CDO) position has been growing in importance (Horlacher and Hess 2016). Following Fitzgerald et al. (2013), we define a company's digital transformation as their use of new digital technologies, such as social media, mobile, analytics or embedded devices, in order to enable major business improvements like enhancing customer experience, streamlining operations or creating new business models. As such, the digital transformation goes beyond merely digitizing resources and involves the transformation of key business operations, products, and processes, culminating in revised or entirely new business models (Matt et al. 2015; Downes and Nunes 2013). As a result, a firm's value and its revenues are created from digital assets (McDonald and Rowsell-Jones 2012). Over the last few years, more and more companies have established CDOs in order to take on these responsibilities and to conduct initiatives to explore and harness new digital technologies. Carrying these responsibilities, CDOs are emerging as the focal leaders of the digital transformation.

The employment of CDOs not only influences CIOs, who closely collaborate with CDOs during the digital transformation (Horlacher 2016), but it may also influence companies' *organizing logics*, which refer to "the managerial rationale for designing and evolving specific organizational arrangements in response to an enterprise's environmental and strategic imperatives" (Sambamurthy and Zmud 2000, p.107). The traditional IT organizing logic literature advocates three dominant *governance architectures*: centralized, decentralized, or hybrid (also referred to as federal), which differ in their locus of authority for IT activities (Brown and Magill 1994; Sambamurthy and Zmud 2000). According to Zmud (1988) and Sambamurthy

and Zmud (2000), most firms specifically complement hybrid governance architectures with structural overlays in the form of *horizontal coordination mechanisms*. Yet, according to Brown (1998, p.2), “no matter which hierarchical structure a firm implements (e.g., centralized, decentralized, or federal), horizontal mechanisms can be used to help remove the barriers to cross-unit collaboration that are created by the firm's reporting arrangements”. They facilitate information sharing, collaborative problem-solving and trust across an organization through lateral linkages, which facilitate interactions and the building of relationships across the organization (Brown 1998). As such, the use of horizontal coordination mechanisms might be beneficial for CDOs independent of their governance architectures, since the digital transformation generates organizational interdependencies, which are “situations in which what happens to one organizational actor affects what happens to others” (Pfeffer 1981, p. 68). According to Brown (1998, p.2), such “interdependencies require coordination”. Consequently, one of the main challenges facing CDOs is how to handle organizational interdependencies and how to link intra-organizational key stakeholders.

Given the limited understanding of the organizing logics within firms that employ a CDO, the objective of this study is to investigate two dimensions of *organization design parameters*: (1) in the *vertical dimension*, we aim to investigate the locus of responsibility for activities related to the digital transformation and their organizational structuring (also termed “*governance architectures*”), and (2) in the *horizontal dimension*, we aim to investigate the *horizontal coordination mechanisms* CDOs use. Our paper is organized as follows: First, we give an overview of the literature on IT governance architectures and horizontal coordination mechanisms. We then describe our case study design, the data collection and data analysis processes. Subsequently, we present each case individually and then discuss findings from our cross-case analysis. We conclude with a summary, limitations, and ideas for future research.

Theoretical Background

IT Governance Architectures (Vertical Mechanisms)

IT governance is an essential part of firm governance and refers to processes, structures, and relational mechanisms in an organization in order to support both business-IT alignment and the creation of business value from IT-enabled business investments (Van Grembergen 2013). Traditionally, the *organizing logic* for IT activities primarily dealt with governance structures for the management of the IT infrastructure, and the management and use of IT applications (Zmud 1988). According to a literature review by Brown and Grant (2005), research on IT governance forms focused on the organizational locus of decision-making authority and the organizational structuring of IT activities (vertical mechanisms). In practice, a sound IT governance strategy strives to satisfy both enterprise-wide economies and efficiencies and local business needs, opportunities, and challenges (Sambamurthy and Zmud 2000). The underlying organizational design decision is the choice between a decentralized, centralized, or hybrid locus of responsibility (Brown and Magill 1994). A strictly centralized governance design places all decision-making authority in a central IS organizational body, while a strict decentralized governance design places all decision-making authority in individual business units (Brown 1997; Brown and Grant 2005). Centralization allows for economies of scale, while decentralization allows for greater responsiveness to business unit needs and the customization of solutions for each business unit (Brown and Magill 1994; Brown and Grant 2005). In between lies the hybrid IS structure, which means that the governance of the IS functions is divided between a central IS organization and autonomous business units (Brown and Magill 1994).

Horizontal Coordination Mechanisms

Horizontal coordination mechanisms link organizational stakeholders through deliberately orchestrated interactions. These interactions can take the form of formal mechanisms, such as formal roles or groups, and informal mechanisms, which provide opportunities for voluntary exchange and collaboration (Brown and Sambamurthy 1998). For instance, formal mechanisms, such as cross-functional teams and liaison roles (e.g. Zmud 1988), have been recognized and widely used as effective top-down design tools to achieve coordination across IS and business units or across corporate and decentralized IS units (Brown 1999). Horizontal coordination mechanisms are independent of the level of (de)centralization of a firm's governance architectures (Brown 1998). As design tools they help remove the barriers to cross-unit collaboration that are created by the firm's hierarchical reporting mechanisms and complement them in order to increase coordination, communication, and decision-making across the organization (Brown

1999). Brown (1999) has developed a categorization scheme of horizontal coordination mechanisms based on prior literature. This scheme involves four categories of mechanisms for the corporate and division coordination of the IS function: formal groups (steering committees and IS standing teams), formal roles (cross-unit integrators and corporate IS oversight roles), informal networking practices (physical collocation, interdepartmental events and IT networks), and cross-unit human resource practices (job rotations and input to performance reviews).

Table 1 summarizes the central elements of the vertical and horizontal dimensions of the *organizing logics* of companies, which we will investigate in this study.

Organization Design Parameter	Manifestation
Governance Architecture (Vertical mechanisms)	Centralized, Hybrid, Decentralized
Horizontal Coordination Mechanisms	Formal, Informal

Table 1. Elements of the *Organizing Logic*

Research Methodology

With this study, we aim to develop a holistic understanding of real-life organization design parameters surrounding CDOs and their digital transformation activities (e.g., Eisenhardt 1989; Yin 2014). We chose a multiple case study design to create more robust theory, since “the propositions are more deeply grounded in varied empirical evidence” (Eisenhardt and Graebner 2007, p. 27). Multiple cases also enable us to compare cases and clarify whether an emergent finding is consistent throughout multiple cases (Eisenhardt 1991). To meet concerns regarding the scientific rigor of case study research, we closely adhere to the methodological recommendations by Yin (2014) and Patton (1990).

Sample

According to Patton (1990), qualitative research typically focuses in depth on relatively small samples, which are selected purposefully. Although single-case studies are common, we chose a multiple-case study design as it allows for cross-case analysis and is less vulnerable to criticism regarding the generalizability of the results. Still, we employ purposeful sampling. First, it enables us to select information-rich cases, which are cases from which scholars can learn most about central issues of their research questions (Patton 1990). Second, it allows us to select cases based on theoretical replication, which aims at identifying contrasting cases (Eisenhardt 1989; Eisenhardt and Graebner 2007; Yin 2014). We selected our sample (see table 2) in two steps: We searched for (1) companies that engaged in digital transformation activities and (2) employed a CDO. Among those we applied the theoretical replication logic and selected companies that differed in their degree of centralization, their sizes, their organizational structures, the industries they belonged to and these industries’ stages in their adoption of digital technologies (Faeste et al. 2015).

Case	Industry	Revenues [in €]	Employees	CDO Centralization	Interviewees
1	Retail	>20bn	>50,000	Central at group level	CDO, CIO
2	Market research and consulting	100-200m	1,000-2,000	Decentral at subsidiaries	CDO, CTO, Managing Director
3	Finance (Private Banking)	100-200m	500-1,000	Decentral in a “Digital Office”	CDO, Head of IT

Table 2. Sample Overview

Data Collection and Analysis

In order to gain in-depth insights, our primary source of data consisted of qualitative data, which we collected through interviews with CDOs and some of their top management team (TMT) colleagues. In order to triangulate our findings, we reviewed any available secondary data, including press releases,

company websites, business publications, reports by industry experts, and management reports. We used multiple informants per case to mitigate informant biases (Golden 1992; Miller et al. 1997), since different individuals are likely to have different perspectives and interests. To ensure that the sample included the most relevant individuals per case, we used snowball sampling. Our initial entry was made through the CDO. During our interviews with CDOs, we asked them to name the most important individuals who were also actively involved in the digital transformation of their companies. Consequently, we also interviewed the most senior IT executives of each company and one Managing Director. Informant biases were also addressed by ensuring confidentiality in order to encourage truthfulness (Miller et al. 1997).

The interviews were conducted face-to-face if feasible. If this was not possible due to time constraints or the location of the interviewee, we conducted the interview via telephone. The interviews took between 30 and 60 minutes each. We used a semi-structured interview format and mainly posed open-ended questions to facilitate exploration and to allow the interviewees to freely express their views. First, we asked our interviewees to explain the organizational structure of their companies. We then asked CDOs how they made sure that cross-unit collaboration was achieved and that the digital transformation was on the agenda of the TMT. We asked the non-CDOs which coordination methods their companies used in order to integrate business units and functions. Follow-up questions in all interviews elicited coordination mechanisms and TMT involvement in more detail. After each interview, we sent a summary of the interview to the respective participant and asked them to provide feedback on our reports.

For reasons of transparency and traceability, we recorded each interview on audiotape and transcribed it verbatim afterwards. We used the ATLAS.ti software to gather, code, and analyze all our primary and secondary data. We used standard within-case and cross-case analysis techniques (Eisenhardt 1989) to look for patterns and revisited the data multiple times, using tables to facilitate comparisons between cases (Miles and Huberman 1994; Yin 2014). Based on the coded material, we compiled detailed descriptions of each case and conducted a cross-case analysis.

Findings from the Within-Case Analysis

Case 1: Retail

Digital transformation: The digital transformation of case 1 rests on three pillars. (1) Customer experience enhancement involves the creation of a seamless customer experience across all touch points, for instance by introducing cross-device online shopping carts, equipping sales employees in the retail stores with tablet PCs to better cater to customer needs, or introducing new smartphone applications with integrated state-of-the-art technology, such as location-based services and augmented reality. Part of a seamless customer experience is that the services of the company are accessible by customers through any relevant channel: social media, telephone, chat, e-Mail, and at the point of sales. (2) Business operations focus on “efficiency through automation” (CDO) with the goal to gain more time for the enhancement of the customer experience. (3) New business opportunities involve the monitoring of new fields of business created through digitalization, which can pose either an opportunity or a threat for the company.

Governance architecture (vertical mechanisms): The CDO is employed by the holding company, but the 15 country subsidiaries do not have separate CDOs. The CDO’s team, which is a separate unit, consists of nine people and is responsible for digital innovations. The CDO pursues an overarching three-pronged strategy for the digital transformation across the corporate group: (1) The digital strategy is designed centrally by the CDO and is promoted and implemented independently in the country subsidiaries by their CEOs. Within the scope of this central strategy, the subsidiaries have the freedom to adapt the strategy according to the specific characteristics of their countries. (2) The digital transformation of the company also happens through demonstration through pilot projects in selected subsidiaries. So, the digital transformation is implemented through coordination by the CDO and his team. One part of the team is a think tank, which deals with new ideas; the other part discusses these new ideas with the subsidiaries and coordinates their implementation across the subsidiaries. If these proof-of-concepts are successful, the pilot projects are rolled out across another subsidiary. (3) The subsidiaries are also required to adopt, adapt and implement ideas and initiatives from other subsidiaries independently.

Horizontal coordination mechanisms: The extended board of the corporate group consists of ten participants. In each of the corresponding *extended board meetings*, which take place once a month, a

dedicated time slot is assigned to the CDO where he reports on his digital initiatives and discusses the next steps with his fellow board members. The CDO updates the TMT on the digital transformation of the company but also on the digital advances across markets and industries in general. After the discussion at board level, the digital initiatives are further refined by the CDO and his unit. The CDO is also a member of the biweekly *Omnichannel Committee*. This steering committee is used to manage the transformation of the company from a traditional offline retailer towards becoming a 360 degree retailer. The company uses steering committees whenever it has such decisive projects or programs. The Omnichannel thereby gets the most attention in the company. At CDO-CIO level, an *intermediary* fosters task integration, coordination and information exchange. Formally, this intermediary is a division manager working with and reporting to the CIO „but de facto he is working for both of us“ (CIO) as he also takes (virtually) part in the CDO’s weekly team meetings. These meetings serve as a platform to discuss the progress of the digital transformation and current initiatives. Consequently, the division manager helps to tightly integrate the CDO and CIO teams and indirectly fosters the mutual exchange of information between CDO and CIO. As a result, innovation initiatives selected by the CDO can be even quicker implemented by the CIO. *Regular meetings with department heads* allow for regular information exchange and the motivation of colleagues by the CDO. Regarding the informal coordination mechanisms, the CDO invites the complete campus of the holding and all country boards to a *Digital Campus* twice a year. This event serves as a platform to exchange and promote ideas and demonstrate what has already happened in the course of the digital transformation across the corporate group. The cross-functional HR program *Digital Fit*, which targets all employees and encompasses talks and trainings on specific digital topics such as crowdsourcing or social media, further fosters a regular exchange across teams.

Governance Architecture (Vertical Mechanisms): Centralized				
Horizontal Coordination Mechanism	Formal		<i>Description</i>	<i>Specific Goal</i>
		Extended Board Meetings	<ul style="list-style-type: none"> • Monthly • 10 participants 	<ul style="list-style-type: none"> • Update of the TMT • Discussion of next steps
		Omnichannel Steering Committee	<ul style="list-style-type: none"> • Biweekly • Stakeholders of the channels (online and store) 	<ul style="list-style-type: none"> • Cross-functional coordination • Linking of processes
		Intermediary	<ul style="list-style-type: none"> • Weekly • Division manager of the CIO 	<ul style="list-style-type: none"> • Information exchange • Task coordination
	Regular meetings with department heads	<ul style="list-style-type: none"> • Continuously • With individuals responsible for marketing, e-business, IT 	<ul style="list-style-type: none"> • Information exchange • Motivation of colleagues 	
	Inf.	Digital Campus	<ul style="list-style-type: none"> • Twice a year • Present ideas and concepts 	Exchange of ideas across corporate group
		HR program “Digital Fit”	<ul style="list-style-type: none"> • Continuously • Talks and trainings 	Exchange between teams

Table 3. Organizing Logic of Case 1

Case 2: Market Research and Consulting

Digital transformation: The digital transformation of company 2 rests on two primary pillars. (1) Technology-enabled research (TER) focuses on how the company can optimize the market research solutions they offer to their customers. Traditionally, market research was about collecting primary data and the main capability in the company lied in statistical analyses. With the emergence of social and search data, the company’s definition of market research began to change. Increasingly, market research involves mechanisms to analyze secondary data and pool or even replace them with primary data. The company is currently building a social data warehouse to enrich their market research projects with social media data. Thus, predictive modelling or the generations of early warning indicators become feasible. (2) Integrated marketing focuses on the company’s marketing consulting activities. New digital touchpoints, which become feasible through social media, also change the requirements for the marketing solutions the

company offers to their customers. In the course of these digital transformation activities, a CDO was appointed to digitalize the company and serve as a catalyst for the corresponding changes.

Governance architecture (vertical mechanisms): The company is a country subsidiary of one of the largest research agencies worldwide. Several of the country subsidiaries have CDOs, but not the holding company. The holding company defines many strategic specifications, which need to be implemented by the subsidiaries. Consequently, the subsidiaries do not always have full freedom of choice, yet strategies can be adapted to the countries. The global strategy can also be influenced by the larger subsidiaries. The global strategy is not conceived “in an ivory tower”, as the Managing Director pointed out. Instead, initiatives are developed in collaboration with selected subsidiaries. These strategic initiatives revolve around the customer needs as well as the possibility to roll out a successful initiative across many subsidiaries.

Horizontal coordination mechanisms: Following the structure of the holding company, the digital transformation of the subsidiary consists of a matrix system with three boards. The *Transformation Board* is the highest-level strategy and decision-making board for transformation topics in general, but with a focus on digital transformation. It consists of the CEO, CDO, CTO and the C-level members of the Markets and Offer Boards. In the corresponding board meetings, the CDO, in cooperation with the CTO, brings forward his ideas for discussion and decisions. The decisions that are taken in the Transformation Board are then handed down to the Markets Board or the Offer Board, depending on whether they concern the market segments or the customer solution segments. The CDO is also a member of the *Offer Board*, with the primary goal of supporting the product managers “in the development and advancement of digital solutions” (CDO) and „in understanding why this needs to be done and how these new products can be marketed accordingly” (Managing Director). Afterwards, the responsibility for implementation passes into the line organization. The CDO does not take part in the Markets Board, but the CTO, which whom the CDO works closely together, participates. In order to coordinate their actions and exchange information, CDO and CTO have biweekly *CDO-CTO meetings*. Additionally, the company has a *TER Steering Committee*, which deals specifically with the strategic decision making regarding technology-enabled research – the primary pillar of the digital transformation. This purpose-built committee consists of the CDO, CTO, and an employee of the Digital Center – a separate entity, which primarily deals with social data integration and integrated marketing. The specific topics which come up in the TER Steering Committee, such as mobile or social topics, are passed on to dedicated *work groups*. These work groups elaborate or adapt the strategies of specific initiatives before they are passed on to the line organization for implementation. Each work group consists of about ten people of different divisions in order to bring in diversity and different perspectives. Interposing these work groups ensures that business representatives, who are experts of certain topics, gather in small groups to pursue and elaborate ideas and issues. To raise general awareness for the digital transformation across the company, the CDO addresses related topics in regular *leadership calls* at the management level and at regular *staff meetings* at the employee level.

Governance Architecture (Vertical Mechanisms): Hybrid				
Horizontal Coordination Mechanisms	<i>Formal</i>		<i>Description</i>	<i>Specific Goals</i>
		Transformation Board	<ul style="list-style-type: none"> • Monthly • CEO, CDO, CTO, CFO, CHRO, two representatives of the markets 	<ul style="list-style-type: none"> • Strategic decision making
		TER (Technology-enabled Research) Steering Committees	<ul style="list-style-type: none"> • Biweekly • CDO, CTO, one representative of the Digital Center 	<ul style="list-style-type: none"> • Strategic decision making specifically on TER initiatives
		Offer Board	<ul style="list-style-type: none"> • Monthly • CDO plus one representative of each offer segment 	<ul style="list-style-type: none"> • Information exchange • Motivation of colleagues • Monitoring
		Work groups	<ul style="list-style-type: none"> • Continuously • Around ten people per work group 	<ul style="list-style-type: none"> • Collaboration

	CDO-CTO Meetings	<ul style="list-style-type: none"> • Biweekly • CDO and CTO 	<ul style="list-style-type: none"> • Collaboration • Information exchange
	CDO informs in Leadership Calls	<ul style="list-style-type: none"> • “Every now and then” (CDO) • All managers 	<ul style="list-style-type: none"> • Information exchange • Raising awareness
	CDO speaks at staff meetings	<ul style="list-style-type: none"> • “Every now and then” (CDO) • Whole staff 	<ul style="list-style-type: none"> • Motivation of colleagues • Raising awareness

Table 4. Organizing Logic of Case 2

Case 3: Private Banking

Digital transformation: The digital transformation in case 3 needs to be viewed against the backdrop of the industry the company belongs to, which is historically highly conservative. Characteristic for the private banking industry are high levels of security and confidentiality. These values are also deeply entrenched in the third case’s employees across all hierarchy levels. Consequently, the digital transformation of case 3 needs to proceed with great consideration and sensitivity and be “carefully innovative” (CDO). Moreover, the pressures to digitalize within the private banking industry have not yet been that strong, especially compared to other industries. Another company-specific factor is worth mentioning: The digital transformation has currently no priority in case 3 due to recent M&A activities and the TMT’s focus on integration. Despite these obstacles, the CDO’s current priority is to achieve a mind change within the company; particularly within the TMT but also among the employees. The CDO views this mind change as the first step towards the digital transformation of the company – an urgently needed one to proceed with concrete initiatives. Accordingly, the CDO refers to herself as “evangelist”. Offering their customers a better service with digital tools is the CDO’s main activity besides the aspired mind change. For instance, the customer consultants are equipped with tablet PCs and other digital tools to better cater to customer needs. Additionally, the CDO advises her fellow subsidiaries on digital topics.

Governance architecture (vertical mechanisms): Jointly with the Head of IT (referred to as CIO in the following), the CDO founded the Digital Office two years ago as the platform for the digital transformation of their company. It consists of five people in total: CDO, CIO, two programmers, and one mediamatician. As such, the Digital Office is “a combination of online communication and web development” (CIO). It belongs to the communication department, which, in turn, reports to the CEO. The Digital Office is also responsible for the projects for which the CDO was originally employed 15 years ago as a communication specialist: online communication, online marketing and all associated web platforms of the company. With the establishment of the Digital Office, CDO, and CIO now aim at showing new paths to the company regarding the opportunities that the digital transformation offers. The digital transformation is not yet on the agenda of the TMT. Accordingly, the CDO does not take part in the company’s board meetings. Although not directly reporting to the CEO, the CDO has meetings with the CEO on a weekly basis, primarily, however, to discuss digital communication topics.

Horizontal coordination mechanisms: As the digital transformation of company 3 is not yet advanced, no coordination mechanisms are put in place so far.

Governance Architecture	Decentralized
Coordination Mechanisms	-

Table 5. Organizing Logic of Case 3

Findings from the Cross-Case Analysis

Comparing our cases (see table 6), we identified three different *governance architectures* (vertical mechanisms). Case 1 has a highly centralized governance architecture with a centralized CDO who has the primary decision-making authority. In case 3, all decision-making authority is placed within the confines of one single unit (the Digital Office), which exemplifies a strictly decentralized governance architecture. Case 2 discloses a hybrid structure, since the digital corporate strategy can be adapted by the subsidiary CDOs to the country specifics, while the corporate strategy can be influenced by the country subsidiaries.

The three companies also differ in their use of *horizontal coordination mechanisms*: Formal mechanisms are used by companies 1 and 2, who have already reached an advanced stage in their digital transformation processes. In their positions as digital leaders, both CDOs take part in the companies’ top-level strategy boards and can use these platforms to involve the TMT in the digital transformation. The CDOs discuss the progress of the digital transformation with these boards and the latter decides about the next steps. In both cases, the digital transformation is at the top of the TMT’s agenda. Both companies have installed dedicated steering committees, which deal with the digital transformation at the strategic decision-making level. The formal mechanisms for information exchange and collaboration, however, differ between both cases. In case 2, the matrix and board structures play the most important role for the company-wide coordination of the digital transformation. To enhance cross-functional collaboration and benefit from the diverse expertise of employees across the company, formal work groups are set up. The idea behind this organization design is to bring people together from across the company into the boards, committees, and work groups. These people then take the information and insights from these meetings back into their respective departments. Thereby, the digital transformation diffuses throughout the whole company and into every department. Additionally, the CDO regularly informs managers (leadership calls) and employees (staff meetings) on “digital topics” (CDO) within the company. In case 1, the CDO benefits from an intermediary, who fosters information exchange and task integration with the CIO – a C-level executive who works closest with the CDO. Furthermore, the CDO holds regular meetings with the departments involved in the digital transformation. Company 1 also uses informal devices to foster cross-functional information exchange and relationship building by means of dedicated cross-functional trainings (“Digital Fit”) and platforms (“Digital Campus”). Such interdepartmental events are known to be “a highly effective mechanism for cross-unit relationship building” (Galbraith 1994; Brown 1999). In company 3, neither formal nor informal coordination mechanisms are in place, since the company is not yet advanced enough with their digital transformation. Instead, the CDO is responsible for singular projects, such as equipping employees with tablet PCs or advising fellow subsidiaries on digital issues. TMT attention to digital transformation topics is still absent. Therefore, the CDO’s primary mission is to change the mindsets of the TMT and to draw their attention to the digital transformation. Yet, so far, the CDO does neither directly report to a C-level manager nor take part in any TMT committees.

		Case 1	Case 2	Case 3	
Governance Architecture		Centralized	Hybrid	Decentralized	
Horizontal Coordination mechanisms	Formal	TMT Involvement			
		Extended Board	Transformation Board	-	
		Strategic Decision Making			
		Omnichannel Steering Committee	TER Steering Committee	-	
		Information Exchange and Collaboration			
	Informal	<ul style="list-style-type: none"> • CDO-CTO intermediary • Regular meetings with department heads • CDO-CTO intermediary 	<ul style="list-style-type: none"> • Direct CDO-CTO meetings • CDO in Offer Board • CTO in Markets Board • Leadership calls • Staff meetings • Work groups 	-	-
		Information Exchange and Relationship Building			
		Digital Campus	-	-	
		HR program “Digital Fit”	-	-	

Table 6. The Organizing Logics across Cases

Discussion and Conclusion

The employment of CDOs challenges companies’ *organizing logics* in two dimensions. Vertically, companies need to choose a *governance architecture* in which they embed their CDOs. As the focal leaders of the digital transformation, CDOs, in turn, have to manage organizational interdependencies *horizontally*.

We addressed both issues and provided first insights from top-level managers on how companies embed CDOs in their organizational structures and how CDOs deal with horizontal interdependencies by using coordination mechanisms across their firms. Our findings contribute to extant research in two ways:

First, they reveal that decentral CDOs seem to have less power in their organization to effectively pursue digital transformation initiatives. A major challenge such CDOs face is the lack of TMT commitment. Indeed, the CDOs from our case companies emphasized that for a successful transformation, „the commitment of the top management is absolutely fundamental” (case 2) and that “the top management clearly needs to support a new [digital] culture” (case 3). This relates to earlier findings that have shown that the attention focus of top management can increase firm receptivity to new technologies (Kaplan 2008). Similarly, in the case of the digital transformation, CDOs need a certain degree of centralization of their position to ensure TMT commitment and work more closely with TMT members to garner continuous support for digital transformation activities. It is therefore not sufficient to formally establish a CDO position, but such CDOs also need sufficient influence in the organization to pursue transformation activities.

Second, our findings suggest that the vertical and horizontal dimensions are not independent of each other. Whereas some scholars suggested that horizontal coordination mechanisms can remove the barriers created by vertical mechanisms (Brown 1998), others emphasized that vertical and horizontal mechanisms relate to each other (Sambamurthy and Zmud 2000; Zmud 1988). We found that formal coordination mechanisms are used in case 1 and 2, but that the CDO of the hybrid governance architecture in case 2 used a much broader range of these mechanisms. One potential reason might be the fact that CDOs need to act more proactively in hybrid settings compared to centralized architectures in order to gain support for their initiatives. Formal coordination mechanisms may be particularly well suited for such CDOs to communicate with different stakeholders and inform decision making bodies about ongoing activities before decisions are taken in strategy meetings. In decentral architectures, however, CDOs do not have enough visibility and discretion to implement formal coordination mechanisms in the first place. This also supports Zmud (1988) and Brown (1999), who claimed that most firms with hybrid governance architectures use coordination mechanisms as structural overlays.

Although further research is needed to investigate the effectiveness of different organizing logics in different organizational contexts, our insights are of high relevance to both scholars and practitioners. Our descriptive study provided first empirical evidence of the different organizing logics companies implement and of the interplay between their vertical and horizontal design parameters. Moreover, we aim to call the special attention of CDOs to cross-functional coordination mechanisms as organizational design tools to support information exchange and collaboration across the company and to link intra-organizational stakeholders. Companies therefore need to think wisely about the appropriate degree of centralization and the corresponding horizontal coordination mechanisms required for a CDO to pursue and effectively implement transformation activities.

We acknowledge some limitations of our study. Generalizing the results from our qualitative is only feasible to a limited extent (Myers 2013). We partially address this limitation through (1) a multiple case study approach with companies from different industries and of different sizes and (2) interviews with multiple informants per case to mitigate informant biases. We additionally triangulated our interview data with secondary data. Still, our sample size is relatively small. To mitigate this shortcoming, we purposefully selected the companies and followed theoretical replication. Yet, our findings reflect a snapshot in time as the CDO position has only recently been introduced and the organizational (re-)design for the digital transformation may not be completed yet in all companies. Hence, future research can build on our findings and examine how organizational logics change in the course of the digital transformation.

REFERENCES

- Brown, C.V. and Magill, S.L. 1994. “Alignment of the IS Functions with the Enterprise: Toward a Model of Antecedents,” *MIS Quarterly* (18:4), pp. 371-404.
- Brown, C.V. 1997. “Examining the Emergence of Hybrid IS governance Solutions: Evidence from a Single Case Site,” *Information Systems Research* (8:1), pp. 69-95.

- Brown, C. V., and Sambamurthy, V. 1998. *Linking Intra-organizational Stakeholders: CIO Perspectives on the use of Coordination Mechanisms*, Center for Information Systems Research, Sloan School of Management, Massachusetts Institute of Technology.
- Brown, C. V. 1999. "Horizontal Mechanisms under Differing IS Organization Contexts," *MIS Quarterly* (23:3), pp. 421-454.
- Brown, A. E., and Grant, G. G. 2005. "Framing the frameworks: A review of IT governance research," *Communications of the Association for Information Systems* (15:38), pp. 696-713.
- Downes, L., and Nunes, P. F. 2013. "Big Bang Disruption," *Harvard Business Review* (91:3), pp. 44-56.
- Eisenhardt, K. M. 1989. "Building theories from case study research," *Academy of Management Review* (14), pp. 488-511.
- Eisenhardt, K. M. 1991. "Better stories and better constructs: The case for rigor and comparative logic," *Academy of Management Review* (16), pp. 620-627.
- Eisenhardt, K. M., and Graebner, M. E. 2007. "Theory Building from Cases: Opportunities and Challenges," *Academy of Management Journal*, (50:1), pp. 25-32.
- Faeste, L., Gumsheimer, T. and Scherer, M. 2015. „*How to Jump-Start a Digital Transformation*,” BCG Perspectives. <https://www.bcgperspectives.com/content/articles/transformation-large-scale-change-technology-business-transformation-how-jump-start-digital-transformation/>
- Fitzgerald, M., Kruschwitz, N., Bonnet, D. and Welch, M. 2013. "Embracing Digital Technology," *MIT Sloan Management Review* (55:2), p. 1.
- Galbraith, J.R. 1994. *Competing with Flexible Lateral Organizations*. Reading: Addison-Wesley.
- Golden, B. R. 1992. "The past is the past—or is it? The use of retrospective accounts as indicators of past strategy," *Academy of Management Journal* (35), pp. 848-860.
- Horlacher, A. 2016. "Co-creating Value—The Dyadic CDO-CIO Relationship during the Digital Transformation," *Proceedings of the 24th European Conference on Information Systems (ECIS)*, Istanbul, Turkey.
- Horlacher, A., and Hess, T. 2016. "What Does a Chief Digital Officer Do? Managerial Tasks and Roles of a New C-level Position in the Context of Digital Transformation," *Proceedings of the 49th Hawaii International Conference on System Sciences (HICSS)*, Kauai, Hawaii, pp. 5126-5135.
- Kaplan S. 2008. "Cognition, capabilities and incentives: assessing firm response to the fiber-optic revolution," *Academy of Management Journal* (51:4), pp. 672-695.
- Matt, C., Hess, T., and Benlian, A. 2015. "Digital Transformation Strategies," *Business & Information Systems Engineering* (57:5), pp. 339-343.
- McDonald, M.P., and Rowsell-Jones, A. 2012. *The Digital Edge: Exploiting Information & Technology for Business Advantage*, Gartner eBook.
- Miles, M. B., and Huberman, M. A. 1994. *Qualitative Data Analysis*, (2nd ed.). Thousand Oaks, CA: SAGE Publications.
- Miller, C. C., Cardinal, L. B., and Glick, W. H. 1997. "Retrospective reports in organizational research: A reexamination of recent evidence," *Academy of Management Journal* (40), pp. 189-204.
- Myers, M.D. 2013. *Qualitative Research in Business and Management*, Thousand Oaks, CA: Sage, 2nd ed.
- Patton, M.Q. 1990. *Qualitative Evaluation and Research Methods*, Newbury Park, CA: Sage.
- Pfeffer, J. 1981. *Power in Organizations*, Marshfield, MA: Pittman, 1981.
- Sambamurthy, V. and Zmud, Robert W. 2000. "Research Commentary: The Organizing Logic for an Enterprise's IT Activities in the Digital Era-A Prognosis of Practice and a Call for Research," *Information Systems Research*, (11:2), pp. 105-114.
- Yin, R.K. 2014. *Case Study Research: Design and Methods*, Thousand Oaks, CA: Sage, 5th ed.
- Van Grembergen 2013. "Introduction to the Minitrack: IT Governance and its Mechanisms," *Proceedings of the 46th Hawaii International Conference on System Sciences (HICSS)*, Wailea, Hawaii, p. 4394.
- Zmud, R.W. 1988. "Building Relationships throughout the Corporate Entity," in *Transforming the IS Organization: The Mission, the Framework, the Transition*, J.J. Elam, Washington, D.C.: ICIT Press, pp. 55-82.