
Anna Horlacher
Ludwig-Maximilians-Universität München
horlacher@bwl.lmu.de

Thomas Hess
Ludwig-Maximilians-Universität München
thess@bwl.lmu.de

Abstract

Integrating “digital” into the DNA of their business models is an essential part of business success for companies across industries today. The digital transformation has become a critical management issue and requires new ways of managerial thinking. In this context, we address one of the fastest-growing phenomena at top management level: the establishment of Chief Digital Officers (CDOs). We adopt a phenomenon-based research methodology and describe the managerial tasks and roles of CDOs by conducting case studies across different industries. As a result, we present a first conceptualization of the CDO position, suggesting that CDOs primarily focus on the strategic and communicational aspects of the digital transformation and closely collaborate with their CIOs if both positions exist in a company.

1. Introduction

Integrating and exploiting new digital technologies is one of the most urgent challenges for companies today. Across industries, they face increasing pressure to make their digital transformation a strategic priority and to embrace the opportunities presented by recent digital technologies. Following Fitzgerald et al. [1], 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 results in value and revenues being created from digital assets [2]. Typically, we would expect Chief Information Officers (CIOs) to take on this challenge. Yet, the recent digital technologies “demand different mindsets and skill sets than previous waves of transformative technology” ([1], p.6.) For several years now, both practice and research have increasingly demanded of CIOs to extend their roles from technologists to business strategists and to spend less time managing IT that merely supports efficient business processes and more time delivering digital business innovation and broader strategic business value (e.g. [3-8]). Weill and Woerner [8] state that “if they [CIOs] don’t, CEOs may appoint other executives to drive that value” (p. 74). Indeed, researchers as well as practitioners report that some CIOs have difficulties in adjusting to their broadened area of responsibilities (e.g. [8-11]), which seems to have reached a level of complexity that makes it increasingly difficult for one person to assume alone. As a result, more and more companies have recently established an additional position at the top management level, which they label “Chief Digital Officer” (CDO). This phenomenon was first observed at MTV Networks, who hired the first CDO ever in 2005. Since then, the number of CDOs has roughly doubled each year and is forecasted to reach 2,000 by the end of 2015. The CDO is one of the fastest-growing C-level positions and although 88% of CDOs have been hired in the U.S., the CDO is a global phenomenon [12, 13].

Although many CDO positions have already been established and the phenomenon has received significant attention from practitioners, academic research in this field is in its infancy. There is still confusion about what CDOs are expected to achieve, what their responsibilities are, and how they can collaborate with their CIOs. Yet, it is of great interest for firms to know how they can deploy CDOs and how a CDO can complement the CIO in order to embrace the opportunities presented by digital technologies. Our primary questions, which we wish to answer with this study, are: “what do CDOs actually do?” and “how can they complement their CIOs?”. In order to present a first conceptualization of the fast-growing CDO phenomenon, we conducted interviews with CDOs from different industries and triangulated our findings with additional secondary data.

Our paper is organized as follows: First, we give an overview of the two frameworks which help us
categorize the managerial tasks and roles of the CDOs. This is followed by a description of our case study design and our data collection and analysis process. Subsequently, we investigate and discuss the specific tasks and roles assumed by CDOs, their collaboration with CIOs and conclude with a summary, the limitations of our study and ideas for future research.

2. Categorization of IS managerial tasks and roles

We use two frameworks in order to conceptualize the CDO position. Both frameworks have been previously and successfully used in IS literature to describe the CIO’s managerial tasks and roles. The first one is more practically oriented and helps us to dissect the CDOs’ activities into “supply-side” and “demand-side” tasks. This categorization is based on the notion that IT can change business both internally and externally, leading to both operational efficiency and business innovation. The second one is Mintzberg’s [14, 15] framework of managerial roles and is driven from academia. This framework helps us distinguish the roles which the CDOs adopt while assuming their tasks.

2.1 Typology of IS managerial tasks

IS managerial tasks can be distinguished between demand-side and supply-side tasks. This approach was originally driven from practitioners and is widely recognized today, also in scientific literature (e.g. [9, 10, 16, 17]).

IS supply-side tasks are aimed at IT operational efficiency and performance through the sourcing and deployment of IT. Supply-side managers exploit IT resources to support business functions and engage in routine operational support. In this context, they aim at delivering higher IT service level performance and lowering the costs of infrastructure on which business applications depend. Managing all IT operational elements that support a business activity, they provide new IT resources, integrate, service and run them. For example, IS leaders might reduce costs through streamlining the supply chain [9, 10, 17].

IS demand-side tasks are aimed at business innovation, business growth and the creation of new business value through IT. Demand-side managers explore IT-enabled innovations and corresponding strategic opportunities for the company in the face of constantly changing market environments. They focus on responding faster to changing business needs by helping the business innovate through its use of technology. For example, IS managers might generate new revenue streams through the use of technology [9, 10, 17].

Overall, supply-side IS managerial tasks tend to be internally focused on managing the IT function and delivering cost-efficient IT support, whereas demand-side IS managerial tasks are more externally focused on innovating and changing the business [18].

2.2 Typology of IS managerial roles

Many IS scholars have conceptualized the CIO role, resulting in a plethora of different role labels and configurations (e.g. [10, 19-22]). We use Mintzberg’s [14, 15] conceptualization since it has been applied in the majority of empirical studies examining the CIO role configuration (e.g. [4, 23-26]). He studied the managerial roles of general managers and categorized them into ten roles, which managers across functional areas and hierarchical levels commonly adopt. These ten roles consist of three interpersonal roles (figurehead, leader, and liaison), three informational roles (monitor, disseminator, and spokesman), and four decisional roles (entrepreneur, disturbance handler, resource allocator, and negotiator). It is important to note that, according to Mintzberg, every manager performs each one of the ten roles. However, executives may differ in the relative importance they place on each role and in the time they allocate to performing them, based on job content, skills levels and expertise.

IS researchers have narrowed down the relevant roles for IS executives to the roles of the spokesperson, monitor, entrepreneur, resource allocator, leader and liaison (e.g. [4, 17, 23-25, 27]). The adapted conceptualization of Mintzberg’s managerial roles and their corresponding activities are presented in Table 1.

<table>
<thead>
<tr>
<th>IS Managerial Role</th>
<th>Activity Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spokesperson</td>
<td>This role involves the communication of information or ideas to people outside the IS function. The spokesperson must cross departmental boundaries and become involved in affairs of production, distribution, marketing, and finance. The spokesperson acts as an information disseminator and politician, ensuring that the IS department is properly connected to the top level</td>
</tr>
</tbody>
</table>
of the organization and to key decision makers in other departments.

**Monitor**
The monitor seeks and receives information in an effort to understand the organization and its environment. He must scan the external environment to keep up with changes in technology and competition. The IS manager identifies new ideas from sources outside of the organization.

**Decisional**

**Entrepreneur**
The entrepreneur identifies business needs and develops solutions that change business situations. As such, he acts as an initiator and designer of change in the organization. He has to ensure that rapidly evolving technological opportunities are understood, planned, implemented, and strategically exploited. As an organizational change agent, he is able to influence the company’s future strategic direction and opportunities.

**Resource Allocator**
The resource allocator is responsible for the allocation of human, financial, and information resources.

**Interpersonal**

**Leader**
The leader is responsible for supervising, hiring, training and motivating subordinates.

**Liaison**
The liaison establishes a personal external network of relationships and develops contacts with important people outside his department. He communicates with the external environment including the exchange of information with suppliers, customers, etc.

### 3. Methodology and data analysis

#### 3.1. Case study research

The phenomenon of the CDO has not yet been subject to scientific inquiry and is at a pre-theory stage. Therefore, we adopt a phenomenon-based research approach. According to von Krogh et al. [28], research on a phenomenon goes through three stages of development (embryonic, growth, and mature) and comprises five research strategies (distinguish, explore, design, theorize, and synthesize). Research on the CDO is in its embryonic phase and our goal is to explore the nature of this fast-growing C-level position. To do this, we employ a multiple case study design since case studies give researchers the opportunity to explore a complex and contemporary phenomenon, on which little a priori knowledge exists, in detail [29, 30]. To meet concerns regarding the scientific rigor of case study research, we closely adhere to the methodological recommendations by Yin [30] and Patton [31].

#### 3.2. Sample

**Table 2. Sample overview**

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Industry</th>
<th>Revenues [in €]</th>
<th>Employees</th>
<th>Separate CIO position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case 1</td>
<td>CDO</td>
<td>Retail</td>
<td>20-30bn.</td>
<td>&gt;50,000</td>
</tr>
<tr>
<td>Case 2</td>
<td>CDO</td>
<td>Tourism</td>
<td>10-20bn.</td>
<td>&gt;50,000</td>
</tr>
<tr>
<td>Case 3</td>
<td>CDO</td>
<td>Publishing/</td>
<td>0.1-1bn</td>
<td>&lt;10,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case 4</td>
<td>CDO</td>
<td>Publishing</td>
<td>1-100mn</td>
<td>&lt;500</td>
</tr>
</tbody>
</table>

According to Patton [31], qualitative research typically focuses in depth on relatively small samples, sometimes even single cases, 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 employed purposeful sampling for two reasons. Firstly, this enabled us to select information-rich cases. These are cases from which researchers can learn most about central issues of their research questions [31]. Secondly, we were able to select cases based on theoretical replication. Yin [30] differentiates between literal replication, which aims at identifying similar cases, and theoretical replication, whereby contrasting results are supposed to be generated. We selected our sample in two steps:

We searched for (1) companies that found themselves in the midst of digital transformation and (2) employed a CDO. Among those we applied the theoretical replication logic. We selected companies of different sizes and from different industries, with some companies having a separate CIO position and others not. This enables us to compare the execution
of the CDO role across different specifications. Table 2 provides an overview of our sample.

3.3. Data collection and analysis

Having selected information-rich cases, interviews with the CDOs of each case lend themselves for in-depth inquiry and, thus, serve as our primary source of data. In order to triangulate our findings, our interviews were supplemented with secondary data, including publicly available interviews with our selected CDOs, press releases and management reports of their companies, comments by industry experts and company-internal job descriptions of the CDOs.

The interviews were conducted face-to-face between March 2014 and April 2015. We used a semi-structured interview guideline, which prompted the CDOs to talk about their company’s digital transformation as well as their own responsibilities, tasks and challenges in this process. During the interviews, we exclusively posed open-ended questions to facilitate the exploration of each CDO’s managerial tasks and roles. For reasons of transparency and traceability, we recorded each interview on audio tape. The recorded interviews lasted between 45 and 115 minutes and were transcribed verbatim afterwards. We used ATLAS.ti to gather and code all our primary and secondary data. Based on the coded material, we compiled detailed descriptions of each case (see section 4) and conducted a cross-case analysis (see section 5).

4. Results

4.1. Case 1 (Retail)

The CDO’s scope of tasks: According to the CDO, the position was created for two reasons: firstly, to react to the inertia of the whole retailing industry in adapting to current changes and, secondly, to stop missing out on the opportunities brought about by digital innovations. The CDO now faces the challenges of compensating for what has been ignored for too long in the company and of keeping pace with upcoming changes.

In his position, the CDO is responsible for the definition of the company’s digital strategy, the exploration of digital innovations and their implementation in the company. The focus of his work thereby lies in the enhancement of the customer experience at all customer touch points, incorporating both the offline and online points of sale. The CDO aims to use digital innovations in each functional area of the company, either to become more (cost-) efficient or to create a seamless customer experience. Gains in efficiency are strived for in order to enable employees to spend more time on personalized customer service and experience. This includes, for instance, the equipment of sales employees in the retail stores with tablet PCs. This enables them to retrieve data more easily and to better cater to each individual customer’s needs. Other examples are the introduction of new smartphone applications, which integrate state-of-the-art technology, such as location based services and augmented reality, or cross-device online shopping carts. Of particular importance during the digital transformation is IT, which is why the CDO works closely together with the company’s CIO. He states that, as a CDO, he is mainly responsible for the conception and planning of the digital transformation, whereas the CIO mainly takes responsibility for the implementation of the corresponding IT.

According to the CDO, the digital transformation of the company will not be finished until the company has reached a state he calls “digitally empowered and customer driven”.

The CDO’s roles: The strategic exploitation of rapidly evolving technological opportunities and the implementation of digital innovations in the company illustrate the CDO’s entrepreneur role. Of particular importance to the CDO in this context is a culture of trial-and-error, which he deems necessary when dealing with innovations. According to him, it is critical to try out a lot of things and learn quickly from errors.

In the course of digital innovation, the CDO constantly monitors emerging trends and innovations in the industry and analyzes how they could be adapted to the company. He is always on the lookout for companies who manage “digital” exceptionally well and takes this as an inspiration. He then readily tries out what seems appropriate for adaptation in his company.

The CDO emphasized that the digital transformation touches each functional area of the company, from HR to purchasing, making a leadership position such as his necessary to coordinate and drive the digital transition across the company. In this context, he sees himself as a “digital evangelist” in the company, trying to “digitalize” the whole workforce and fostering collaboration across departments, which illustrate both his spokesperson and leader roles. For instance, he once showed his colleagues a movie about the digital transformation, which presented companies that were not able to keep pace with current trends and innovations and
therefore quickly lost ground in the market. Furthermore, he initiated a “digital campus day”, on which employees could listen to keynotes from successful digital companies and experience new technologies hands-on. He generally fosters “digital collaboration” across the company, enabling employees across departments to exchange opinions and ideas.

4.2. Case 2 (Tourism)

The CDO’s scope of tasks: The position of the CDO was created to proactively drive the company’s digital transformation, including the company’s shift towards a more customer-centric, digitally savvy enterprise. To date, the company had a completely different business model: producing travel offerings, which were then sold over travel agencies. Interaction with customers did not take place. Even though the company had already started with several online platforms and first social media activities during the last couple of years, these activities were characterized by a marked silo mentality. The framework conditions were inadequate as a sole digital subsidiary was responsible for the digital business, completely decoupled from the core business. As a result, the two primary tasks of the CDO in the transformation process are now the development of a digital growth strategy and the bundling of all digital activities in the company, resulting in a more cross-functional organization. More specifically, the CDO is responsible for massively growing the company’s online share, boosting App downloads and online registrations on the platforms, as well as customer engagement rates on social media channels. To achieve these goals, the CDO aims to create a 360 degree customer experience across all channels, devices and customer touch points. As a result, the primary focus in the CDO’s daily work is on the company’s online platforms with regards to digital content, customer relationship management, social media and multichannel management.

Another important aspect is the organization of customer data in order to optimize the customer experiences on the company’s various platforms. These tasks involve the creation of technical solutions, which the CDO manages in close collaboration with the CIO. In this collaboration, the CDO explicitly claims to take on the business perspective, whereas the CIO takes on the IT perspective. The CDO asserts to be responsible for the first definition of the general IT requirements which underlie the business goals. These requirements are then further developed in an iterative way and in collaboration with the CIO. The CIO is then responsible to implement what has been defined.

The CDO’s roles: As an entrepreneur, the CDO initiates and designs the controlled shift of the company towards a more cross-functional, customer-centric and digitally savvy company.

The successful implementation of the digital transformation requires strong communication skills. As a spokesperson, the CDO transmits information company-wide and across all hierarchy levels in order to convince all company-internal decision-makers and the employees of the need to digitally transform.

To accomplish these goals, the CDO simultaneously acts as a leader, conducting workshops to qualify and motivate colleagues to enable the digital transition in the first place.

As a liaison, the CDO often attends networking events and conferences in order to develop contacts with people from her industry or to exchange experiences and ideas with the corporate group’s CDOs from branches in other countries.

4.3. Case 3 (Publishing/Education)

The CDO’s scope of tasks: The position of the CDO was created to transition from a “pure print publisher” to a “modern education company”. After being hired, the CDO’s first task was to create a digital vision for the company, and to translate it into a cross-functional digital strategy.

The main focus of the CDO in this process is product-related. This means that the CDO conceives ideas for new digital products. This, in turn, requires the conception of an underlying technological platform strategy. Technological platforms are needed in order to both produce and distribute the new digital products and opened up further questions regarding the deployment of new technologies. However, the technological part of the transformation is not the core aspect of the CDO’s job. The company does not have a CIO and IT is centralized in a Chief Technology Officer (CTO) position at group level. So, the CDO delegates aspects of the technological infrastructure to the CTO. The CDO also works closely together with the software developers at group level in the course of new product implementation.

The CDO described himself as a strategist rather than a technologist, as he focuses primarily on new digital products and customer needs. For instance, he plans to incorporate data analytics into the new digital products for reasons of personalization, but also to inform product development, sales and
marketing. He aims to track and analyze the efficiency of the company’s e-learning products and services.

Overall, customer-centricity has a big impact in his work. For instance, the CDO works together with development partners. These are potential customers, whose collaboration helps him identify customer needs and adjust product development accordingly.

**The CDO’s roles:** As an entrepreneur, the CDO was the one to define the company’s digital goals and strategy and to adapt the existing business model of the company to the new market requirements. In this context, the CDO mainly develops new product ideas and drives their implementation.

In order to develop new products in line with customer needs, the CDO partners with development partners, a typical liaison activity.

Many business functions are touched by the digital transformation, which illustrates the cross-functionality of the CDO’s job. For instance, when new digital products are created, also existing marketing, publishing and sales processes need to be adapted. As a spokesperson, he becomes involved in affairs across business units and he spreads information internally to convince all decision-makers of the company of the necessity to digitally transform.

Finally, the CDO performs the leader role. The adaptation of the business model also required adjustments in the workforce across business functions. As a result, the CDO hired new, digital-savvy employees.

### 4.4. Case 4 (Publishing)

**The CDO’s scope of tasks:** The CDO position was created in order to tackle the challenges the whole publishing industry is currently facing. The ultimate goal of the company is to stay “at the forefront of future developments in the digital field, both inside the company and towards the customers”, which is why the CDO was specifically hired to build the bridge between IT and business.

The company has no CIO and the CDO holds both positions himself. His scope of tasks includes strategic initiatives regarding e-commerce, digital product development, marketing and sales, but also the development of IT platforms.

The CDO assumes typical IT management tasks and is involved in all IT-decisions across the company. The product-related parts of the CDO’s work disclose a high customer-focus. For instance, the creation of personalized products and a smooth customer experience are of utmost importance to the CDO. With regards to IT, the CDO develops a company-wide platform in order to unite all websites of the publishing group. Internally, the CDO also works on a common group infrastructure in order to enable all employees to work with the same tools and to facilitate their communication and cooperation. One of the tasks of the CDO is the definition and implementation of the publisher’s overall e-business strategy. This explicitly includes the creation of corresponding digital business models and digital products. He also has the ultimate responsibility for the marketing and sales of these products, the implementation of IT-enabled business processes and applications and the adaptation of the underlying infrastructure.

Overall, the CDO is responsible for both increasing digital revenues and enhancing process efficiency.

**The CDO’s roles:** As an entrepreneur, the CDO conceives the strategic direction of the company and adapts the existing business model.

Of particular importance for the CDO is the spokesperson role. Firstly, one of his internal challenges is to convince the whole company of the need to digitally transform. Not all employees proved to be automatically on board, so the CDO organized workshops to inform the company’s employees about his strategy and the progress of the digital transformation. Secondly, the CDO generates and disseminates business-critical information across the publishing group and informs the management of upcoming trends and developments. Thirdly, his work is highly cross-functional as he supports and coordinates different business units and functions, such as the product units, e-commerce, IT and online marketing.

The CDO also acts as a leader, when conducting workshops, which also include employee training sessions in order to qualify employees for changing requirements in their work. On top, he holds regular staff events at the branch offices. As a liaison, he attends networking events in order to connect with digital leaders of other companies.

### 5. Cross-case analysis and discussion

After describing each case individually, we performed a cross-case analysis. Table 3 summarizes the interviewed CDOs’ managerial tasks and roles, which will be further discussed in the following sections.
| **Case 1** | **Demand-side tasks:**  
| | • Explores and implements digital innovations and corresponding strategic opportunities  
| | • Creates a seamless and personalized customer experience  
| **Supply-side tasks:**  
| | • Achieves efficiency gains (in order to have more resources at disposal for enhancing the customer experience)  
| **Entrepreneur** | • Defines the digital strategy  
| | • Strategically exploits technological opportunities  
| | • Implements digital innovation  
| **Spokesperson** | • Coordinates and drives the digital transition across the company  
| | • Fosters collaboration across departments  
| **Leader** | • Acts as a “digital evangelist” in the company  
| | • Initiated a “digital campus day”  
| **Monitor** | • Visits events to look for emerging innovations and trends  
| **Case 2** | **Demand-side tasks:**  
| | • Shifts the company towards a more customer-centric enterprise  
| | • Increases digital revenues/ online share  
| | • Creates a seamless and personalized customer experience  
| **Entrepreneur** | • Defines a digital growth strategy  
| | • Initiates and implements a more cross-functional, customer-centric and digitally savvy company  
| **Spokesperson** | • Transmits information regarding the digital transformation company-wide across all hierarchy levels  
| **Leader** | • Conducts workshops to qualify and motivate colleagues  
| **Liaison** | • Attends networking events  
| | • Exchanges with the corporate group’s other CDOs  
| **Case 3** | **Demand-side tasks:**  
| | • Extends the company’s business scope from a “pure print publisher” to a “modern education company”.  
| | • Develops new digital products and services in close collaboration with potential customers  
| | • Personalizes products and services  
| **Entrepreneur** | • Defines and implements the digital strategy  
| **Spokesperson** | • Crosses departmental boundaries and becomes involved in affairs of production, distribution, marketing, etc.  
| | • Spreads information regarding the digital transformation across the company  
| **Leader** | • Hires new, digital-savvy employees  
| **Liaison** | • Works together with potential customers  
| **Case 4** | **Demand-side tasks:**  
| | • Increases digital revenues  
| | • Develops new digital products  
| | • Personalizes products  
| | • Creates a seamless customer experience  
| **Supply-side tasks:**  
| | • Enhances process efficiency  
| **Entrepreneur** | • Defines the e-business strategy  
| | • Conceives the strategic direction of the company  
| | • Adapts the existing business model  
| **Spokesperson** | • Disseminates information across the corporate group  
| | • Informs the company’s employees about the strategy and its progress  
| | • Crosses departmental boundaries  
| **Leader** | • Conducts workshops and employee training sessions  
| | • Holds regular staff events  
| **Liaison** | • Attends networking events  

| 5132 |
Our interviewees’ priorities are on demand-side tasks

The digital transformation in the investigated companies comprises strategic, communicational and technical aspects. We have seen that CDOs do need some IT knowhow, but mainly strong skills in strategy development, change management and communication. This is due to the fact that CDOs can most often collaborate with an IT executive who takes on the technical aspects. The strategic and communicational aspects of the transformation process, however, fall in the sole remits of the CDOs.

Overall, we see a strong focus of our four interviewees on demand-side managerial tasks. Each of our CDOs explores IT-enabled innovations and associated strategic opportunities for their companies, thus helping their companies innovate through the use of technologies. The main focus of the CDOs is on strategic growth, particularly on digital sales revenue increase and market share growth. As common in demand-side management, responsiveness to the market is of particular importance in this context. The CDOs exhibit a strong customer focus, aiming at the creation of seamless and personalized customer experiences to achieve their goals. This includes the collection and analysis of customer data in order to offer customers a personalized service at any touch point or to inform product management, marketing and sales. To use the words of the CDO of case 1, their goal is to create a “digitally empowered and customer driven” company.

This does not mean, however, that CDOs cannot act as supply-side managers as well. In case 4, the CDO explicitly talked about typical supply-side managerial tasks. This, however, is largely owed to the fact that this CDO also takes on the role of the CIO and, as such, any IT-related issues in the company. Yet, also the CDO of case 1 referred to efficiency gains as one of his goals. His focus, however, is still on demand-side tasks and gains in efficiencies are used to transfer capacities to demand-side tasks.

Our interviewees’ priorities are on the roles of the entrepreneur, the spokesperson and the leader

The role priorities of our interviewees are very similar. The CDOs establish a digital strategy and drive the necessary changes across the company, as such acting as an entrepreneur. For a new strategy to be successfully implemented, it requires an appropriate corporate culture and underlying shared values. Therefore, CDOs need to convince the whole workforce, across departments and hierarchical levels, to pull together. They need strong communication skills in order to create a cohesive digital vision across all organizational silos. We infer that, as a spokesperson, CDOs communicate their digital strategy across the company and cross departmental boundaries in order to take the whole company along on the digital journey. We learned from the CDOs that the digital transformation is not an isolated process and affects many parts of a business. For instance, innovations affect IT, product development, HR, marketing, sales and other departments. It became clear that the digital transformation requires a strong coordination of different functional areas, leaving no more space to previous silo approaches and mentalities. Yet, the respective executives seem often concerned with their own departments, unwilling to pull together. As the digital transformation requires the alignment of executives across functions, the CDOs need to work across these organizational silos. We find that, accordingly, the CDO’s job is both highly cross-functional and interdisciplinary. CDOs need to be able to analyze their companies across functions and understand different aspects of a business, such as business models, processes, technologies and customer needs.

When bringing the whole company along on the digital journey, the leader role manifests itself in two instances. Firstly, the CDOs hire new digital talents to complement or replace parts of the existing workforce. To use the words of the CDO from case 2, “it is critical to success to have the right people in place”. Secondly, they train and motivate the existing employees to cope with the challenges and corporate changes in the process of the digital transformation. As such, the CDOs are acting as “digital evangelists” in their companies.

Three of our interviewees also referred to activities which are related to the liaison role. However, these CDOs did not further elaborate on these activities or mentioned them only on a side note. The same applies to the monitor role, which was briefly mentioned by one CDO. Activities relating to the resource allocator role were mentioned at no instance at all. We infer from this that the liaison, monitor and resource allocator roles are not the key roles in the work of the CDOs and that the CDOs’ priorities are on the roles of the entrepreneur, the spokesperson and the leader. As we noted above, Mintzberg [14, 15] reasoned that managers perform each managerial role, but they differ in the relative importance they place on each role and in the time they allocate to performing them, based on job content, skills levels and expertise.
Our interviewees’ relationships with their CIOs are symbiotic and interdependent

The area of responsibilities in the course of the digital transformation seems to have reached a level of complexity that makes it increasingly difficult for one person to assume alone. Accordingly, we found that CDOs and their respective IT executives clearly distinguish between their responsibilities. Across our cases, the CDOs are responsible for the strategic and communicational aspects of the digital transformation, while the focus of CIOs/CTOs is on the technical aspects.

To implement (new) platforms and underlying infrastructures, the CDOs of the cases 1 and 2 work closely together with their CIOs. Both made explicitly clear that the CDO is responsible for developing the digital strategy, executing the digital transformation across the company and taking the entire company along on the journey. The CIO, in turn, is responsible for the implementation of the corresponding IT and the evolution of platforms and IT systems, thus making sure that all technical requirements for new platforms and applications are in place. Both CDOs stated that a close collaboration with their CIOs is necessary to successfully transform the company. In these cases, the relationship between CDO and CIO seems to be a symbiotic and interdependent one, yet, with a clear distinction between responsibilities.

Nonetheless, overlaps in responsibilities may occur. For instance, the CDO of case 4 takes on both the CDO and the CIO position simultaneously. He clearly distanced himself from the “typical CDO role”, stating that, “commonly”, CDOs and CIOs coexist, with the CIOs servicing (new) infrastructures and applications and the CDOs contributing a strong customer perspective to the digital transformation. The CDO of case 3 acts somewhere in the middle of the spectrum between the CDOs of the cases 1 and 2, which closely collaborate with their CIOs, and the CDO of case 4, who takes on both positions simultaneously. Not having another C-level executive in his company, he works together with the CTO of the corporate group.

We made two further observations in this context. Firstly, the CDOs and CIOs are established on the same hierarchical level, all of them reporting directly to the CEO, which highlights the equal ranking of the positions. Secondly, we observed that the companies 3 and 4, which do not have a separate CIO, are distinctly smaller than the companies 1 and 2 and that their CDOs take on more technical aspects of the transformation themselves.

6. Conclusion, limitations and future research

Although the position of the CDO has been established in many companies around the world, there is still confusion about what CDOs actually do and how they can complement CIOs. We addressed these issues and provided first insights into the managerial tasks and roles of CDOs across different industries. Overall, we found that CDOs serve as catalysts for change in their companies. Fitzgerald et al. [1] uncovered that 63% of executives and managers find that “the pace of technology change in their organization is too slow” (p. 2) and that cross-department authority for digital initiatives is a means by companies to overcome this issue effectively. We saw in our case studies that CDOs are the ones being established to proactively drive the company’s cross-functional digital transformation. They take on (1) the strategic aspects of the digital transformation, devising and implementing digital strategies as entrepreneurs and (2) the communicational aspects, countering cultural resistance in their companies as spokespersons and leaders. The CIOs, in turn, always focus on the technical aspects of the transformation. This implies that the roles of the CDO and CIO differ. Their relationships are symbiotic and interdependent, yet with a clear distinction between their responsibilities.

Further research is needed to investigate the variables on which the collaboration with the CIO depends and to explicitly compare the specific tasks adopted and roles performed by CDOs and CIOs. Both issues go beyond the research goal of this paper and should be addressed in separate studies.

The empirical insights we generated are relevant for both scientific researchers and practitioners. On the one hand, we wish to start a scientific debate on IS organizational issues of the digital transformation and we laid the foundation for research on the CDO as one manifestation thereof. On the other hand, we want help managers understand how CDOs can contribute to firm success and how they can complement the CIO.

We acknowledge some limitations of our study. Being a qualitative study, generalizing our results is only possible to a limited extent [32]. We partially address this limitation by choosing a multiple case study approach [33], which included companies operating in different industries and of different sizes. On top, we triangulated our interview data with secondary data. Still, our sample size is small. To mitigate this shortcoming, we purposefully selected the companies and followed theoretical replication.
Our study reflects only a snapshot in time as the CDO position has only recently been introduced. Thus, our findings should be viewed as preliminary and further research is required to validate them and to answer our open questions.

7. References