LitRew on Chief Digital Officer

Seminar paper

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Abstract

Digital transformation became one of the critical success factors in doing business. The Chief Digital Officer (CDO) was introduced into the C-level in recent years and is seen as a specialist for the digital transformation (DT) of an organization. Due to the fast-growing development of this new position, the exact definition of its activities is still insufficient. The role of a CDO has several meanings for different organizations.

The purpose of this literature review is to give an overview of the CDO-role by analyzing the definition, the reasons to adopt a CDO-role, the internal characteristics (CDO-types, interfaces, and impact on other roles), the internal characteristics (responsibilities, obligations, rights, competencies) and to answer the research question if the CDO will be established in long term in organizations.

Keywords: Chief Digital Officer, CDO, Digital Transformation

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1   Introduction

Digital transformation became one of the critical success factors in doing business. A successful transformation requires the engagement of all organization resources, especially by the management level. As a response, the C-Level must face new challenges. To plan a digital transformation of a company's business model, new competencies at the C-suite leadership are required. The Chief Digital Officer (CDO) is increasingly being created for this purpose and is seen as a specialist for DT. Due to the fast-growing development of this new position, the exact definition of its role and its activities is still insufficient. The role of CDO has several meanings for different organizations.

Due to this undefined field of activities, I do a research on the role of the CDO in context with the digital transformation of an organization. My focus is on the following research questions:

- Which types of CDO exist and what are their obligations/tasks for the DT?
- Which skills and knowledge are required to DT an organization?
- Will the role of the CDO be established in the organization in the long term?

The structure of this paper is the followed: Firstly, the procedure of the literature including the keyword research, used databases and the process of filtering will be presented. Secondly, I present my results followed by the discussion. Fourthly, I present a short conclusion with context to my research questions.

2   Literature Review

In total, three steps were used to identify the relevant literature (see the detailed process in figure 1).

(1) choosing relevant data sources, (2) keywords and search string, and (3) selection of relevant literature

(1) First, I used the databases Google Scholar, EBSCOhost, Springer and the Library of the University of Hamburg. For the first search, these databases covered the fields of economics and information technology. Since initially, only very few qualified studies were found, other research sources, such as ieeeXplore and ResearchGate, were added.

(2) In order to find relevant literature, I used the following keywords: "Chief Digital Officer" or "CDO" in combination with (AND) "digital transformation", "digitalization", "transformation", "competence", "requirements", "responsibilities".

Figure 1: Review method and selection process

(3) In the last step I identified the relevant literature. I proceeded chronologically as follows: analysis of the headline, keywords, abstract text, and finally I took a closer look at the selected literature. The relevant papers were searched for further references and links (backward and forward search). This iterative process was carried out in order not to omit any paper. As a result, further papers were identified. After further iterative research no further relevant articles were found. A total of 17 relevant papers were identified. In general, I found that the subject of CDOs is relatively new and therefore there are only a few empirical studies.
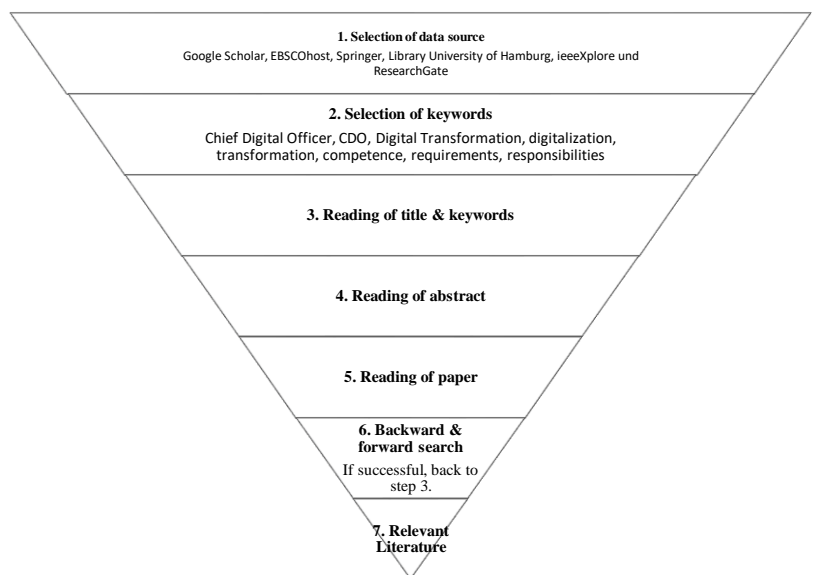
3 Findings and results

3.1 Overview

For the literature research of the topic CDO I identified 17 relevant studies (see appendix; table 1).

Table 1 is categorized by author, title, year, study (either qualitative or quantitative study), journal, ranking of journal (VHB-JOURQUAL3) and categorized by the context of the study. In 2015 the first study on CDOs was published and since then, the number of researches has been increasing (see figure 2).
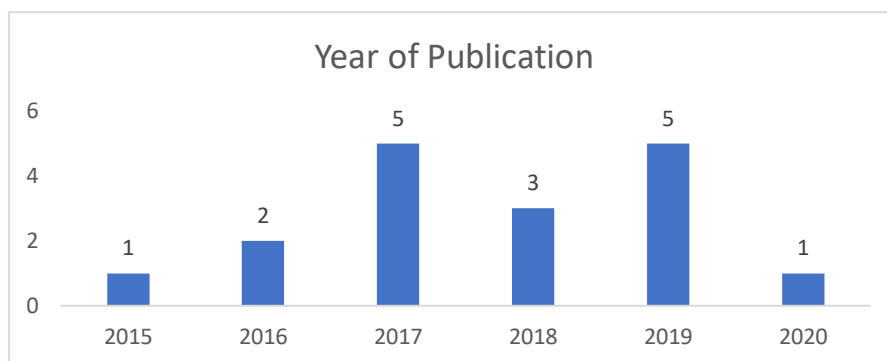

Figure 2: Distribution of publication date

I structured my results into five areas: definitions, reasons to adopt the role of CDO, external and internal characteristics, and the outlook aspect if the CDO will be established in the long term. In table 2, I aggregated the results by topic into sub-categories and explained them.

Chief Digital Officier Framework							
1. Explanation		**2. Internal characteristics**		**3. External characteristics**			**4. Outlook: Is the role of CDO needed?**
					Digital capabilities		
Definition	**Reasons to adopt the role of CDO**	**Roles of CDO**	**Interfaces and impact on other Roles**	**Responsibilities, Obligations and rights**	**Competencies & skills**	**Knowledge**	
° CDO supports organizations to use digital technologies to create business value and seizing new opportunities. [14] ° Leader of DT [1], [4], [7], [16] ° CDOs are catalysts for changes and they are established to proactively drive the company's crossfunctional digital transformation. [8], [17] ° CDO is responsible for successful competition in the digital age. The CDO refers externally to the organization's interaction with customers, partners and suppliers; internally to the integration of digital innovation, collection and analysis of data, improvement of organizational and cultural efficiency through the use of digital technologies. [4] ° The CDO's mission is to understand the industry-specific aspects of digitization, determine the impact on the business, develop and communicate a digital strategy across the enterprise. [11] ° CDO is an agent of cultural change and is committed to digital transformation throughout the company. [4]	Environmental factors ° Speed and extent of technological progress ° Competitors' digital advancements ° Threat of new (digital) market entrants ° Customer needs and behavior changes ° Digital endeavors by suppliers and/or partners Strategic direction of the company ° Future (digital) ambitions of the firm ° Level of risk acceptance ° Scope and ownership of innovation strategy ° Past and present use of IT for strategic differentiation CIO characteristics ° CIO's reputation among other executives ° CIO's general business and business process competencies IT function characteristics ° History of IT project delivery quality and timeliness ° Culture within the IT function ° Challenges with executing current IT strategy ° Existing/missing capabilities within the IT function ° Areas of success and failure of past IT projects Organizational characteristics ° Decision making culture ° Governance models and structures ° Organization size and structure ° Organizational culture	° Digital accelerators; Digital marketers; Digital harmonizer [14] ° Entrepreneur; Spokesperson; Leader [8] ° ° Entrepreneur; Digital Evangelist; Coordinator [7] ° ° Evangelist; Coordinator; Innovator; Advocate [5]	° CDO becomes Ambassador for the IT Function; split of the CIO role; tight CIO-CDO Alignment needed [5] ° CDO offers the CIO new opportunities by advocating the IT function. [7] ° CIO and CDO have a symbiotic relationship and are interdependent [8] ° Interfaces of tasks and requirements between CIO & CDO [17] ° General approaches for mobilize resources and create space for their emergent role: graftig, bridging, decoupling [15]	° Control of digital transformation ° Questioning existing business model ° Identifying trends and technologies ° Evaluating customer centeredness ° Using variety of data for gaining insights ° Focus on seizing new opportunities (change management) ° Vision and strategy development ° Development of a digital culture ° Development of disruptive business models ° Coordination of interfaces ° Improvement of internal and external structures ° Increase of customer relation ° Representation of digitization internally & externally ° Increase in efficiency ° IT controlling and IT project management ° Development of success measures & KPIs	° Business and IT competence ° Innovation affinity ° Digital pioneering capability ° Communication and relationship-builder ° Change Management ° Resistance & elasticity ° leadership skills ° Project Management Competence ° soft skills ° problem-solving attitude ° Higher risk profile ° customer engagement	° Business administration knowledge ° IT- and digital technologies knowledge ° Project Management knowledge ° Change-Management ° Development of strategy and Business Plan ° Human resource management	° Role of CDO is needed to fill gaps. May the name will differ in future. [14] ° Majority sees CDO as permanently established, as digitization is not a final project. [16] ° CDO could be a temporary, limited phenomenon of the digital revolution. Organization should not prematurely hire a CDO; examine the need by answering five questions. [17] ° CDO could be a temporary phenomenon and could be defined differently in the future too early to make a definitive statement about the future of the CDO. [7] ° In future it will not be relevant who is responsible for DT, but rather 'how' it is promoted. Significant correlation between budget and revenue/profit development. The higher the investment in the innovation area, the higher the revenue/profit. [6] ° Positive strategic perception of the share investors when the CDO is appointed to the organization [3]
According to: see above	According to: [1],[7], [14], [16],[17]	According to: see above	According to: see above	According to: [1], [2], [6], [12], [13], [14], [15], [16],[17]	According to: [2], [7], [8], [11], [14], [16], [17]	According to: [2], [8], [11], [14], [16], [17]	According to: see above

Table 2: Chief Digital Officier Framework

3.2 Definitions

The Chief Digital Officer (CDO) is on the same level as the CEO, CFO, CMO and, Chief Digital Officer literally occupies the highest leadership position for the digitalization in the organziation. He is the catalyst for change in the organization (Horchlacher & Hess, 2016). The role of the CDO is described as a new type of management position, which is increasingly being created to plan and implement the digital transformation. He is the active designer and driver of the digital transformation of an organization (Walchshofer & Riedl , 2017).

With the aim of creating new business opportunities and value, CDOs support their organization by using new digital technologies (Tumbas et al., 2017).

Friedrich and Peladeau (2015) distinguish the role of the CDO into external and internal affairs. Externally, the CDO must manage the interactions with customers, partners, and suppliers. Internally, the task is to integrate new digital innovations into the organization, collect and analyze data and improve the efficiency of the organization through the use of digital technologies.

The CDO should develop a holistic digital strategy throughout the company, communicate it to all areas and execute it (Haffke et al., 2016).

3.3 Reasons to adopt the role of CDO

According to the research, there are several reasons why organizations decide to implement a CDO. Hess & Singh (2017) defined two main factors for establishing a CDO: (1) high market pressure on DT and (2) the internal complexity of coordinating DT. Based on the interviews, six industry cases were developed and the relevance of CDO establishment was analyzed. The higher the pressure and the more complex the coordination of DT activities, the greater the advantages of the CDO-role. The complexity of coordination will be greater in larger organizations and the number of organizational dependencies between products, processes and IT systems will increase. This is also confirmed by the study by Friedrich and Peladeau (2015): large organizations are more likely to hire a CDO than small and medium entrepreneur's union (SMEs). Furthermore, in their qualitative study, they identified the sectors that benefit most from CDOs. These include the media, entertainment, and consumer-goods industries.

Haffke et al. (2016) provide five reasons to hire a CDO:

(1) Changing environmental factors, such as the speed of technological progress and the level of development of competitors.

(2) Strategic direction of the company, such as future digital ambitions of the organization.

(3) Characteristics of the CIO, such as lack of leadership skills.

(4) Characteristics of IT functions, which cannot be dealt by C-Level.

(5) Organizational characteristics that require a CDO due to the high complexity of the organization and combination of several departments.

Tumbas et al. (2017) present through their qualitative study with 35 CDOs three main reasons for hiring a CDO:

(1) The IT department is preoccupied with large-scale infrastructural projects or is in a weak political position.

(2) The marketing department has a rigid focus on traditional marketing methods and there is no trusted relationship between IT and marketing.

(3) The organization has many local digital initiatives but lacks a strategic digital direction.

However, the main reason to integrate a CDO into the organization is the speed of digitization, which represents a strategic challenge for the organizations in the future. Due to changing expectations of digitally affine customers, the business models of the organization have to be revised. Management lacks the necessary know-how of digital technologies (Boeselager, 2017).

3.4 External characteristics

3.4.1 Types and roles of CDO
In total I identified four studies that classify the types of CDOs and assign their tasks.

Based on four CDOs Horlacher and Hess (2016) identified three roles: entrepreneur, spokesperson, and leader. In a later study in 2017, they redefined these roles based on six companies and ten interviews: (1) entrepreneur, (2) digital evangelist and (3) the coordinator.

(1) The entrepreneur has the obligation to research IT-supported innovations, defines a digital transformation strategy and supports companies in innovating by using new digital technologies.

(2) The digital evangelist inspires employees in organizations, makes them enthusiastic about digital topics and communicates their digital strategy.

(3) The coordinator is responsible for all changes that are necessary to successfully implement the digital transformation of their organizations.

Haffke et al. (2016) as well came to this conclusion through interviews with a total of 19 organizations. They added the role of the advocate to the previous roles. This fourth role acts as a link between the CEO and the CIO and spreads the digital spirit in both business and IT functions. He ensures that the IT strategy is aligned with the digital business strategy.

The study by Tumbas et al. (2017) includes interviews with 35 CDOs from different industries and also identified three roles: (1) digital accelerators, (2) digital marketers and the (3) digital harmonizers.

(1) The digital accelerator drives digital innovation and is free to experiment and implement digital technologies into the organizational structure.

(2) The digital marketer manages digital marketing activities of the company based on the needs of the customer.

(3) The digital harmonizer is responsible for the complete overview of all digital initiatives and connects all activities.

3.4.2 Interfaces and impact on other Roles
There are certain interfaces between the CIO, who is responsible for the IT, and the CDO.

The qualitative study by Walchshofer and Riedl (2017) analyzed a total of 13 job advertisements of CDOs and they interviewed six CDOs. They compared the CDOs tasks and requirements with those of the CIO and noted certain equivalencies. The tasks of the vision and strategy development, efficiency increase, identification of trends and technologies, IT-controlling and IT project management are the same. These tasks are more assigned to the CDO, but so far also to the CIO.

Regarding the requirement profile, there are commonalities in the areas of technical competence, business administration and IT-knowledge, project management knowledge, leadership competence, soft skills, strategic thinking and acting. In this study, the CDO was defined as superior to the CIO because of the cooperation with several departments.

Haffke et al. (2016) examined the effects on the CIO. They concluded that the strategic aspect of the digital business would decrease for the CIO and increase for the CDO. They summarize three most dominant implications for the CIO role under the existence of the CDO:

(1) The CDO becomes an ambassador for IT. The effects of the CDO strengthen the importance of IT and also the role of the CIO.

(2) Split of the CIO role. The CIO must transfer previous tasks, such as demand-side management, to the CDO.

(3) Tight CIO-CDO alignment is needed. A close CIO-CDO alignment is the key factor for the business-IT alignment, which can become more complex by including the CDO in the management team.

3.5 Internal

3.5.1 Responsibilities, obligations, and rights

In general, the CDO is responsible for the digital transformation of an organization (Becker et al., 2017; Catarino et al. 2018; Friedrich and Peladeau, 2015). The CDO should first define a digital strategy with a digital culture and integrate both into the corporate strategy (Catarino et al., 2018; Heinrich et al., 2018, Friedrich and Peladeau, 2015, Trout et al., 2019). It is important for the CDO to constantly identify new trends and new technologies. Through the experimental use of digital technologies (Trout et al., 2019; Tumbas et al., 2018), disruptive business models need to be developed and integrated into the organization (Friedrich and Peladeau, 2015; Tumbas et al., 2018; Catarino et al. 2018; Walchshofer and Riedl 2017). In addition, the CDO is intended to improve internal and external corporate structures (Walchshofer, Riedl 2017; Heinrich et al., 2018). Since the CDO works across functions, he must increase the customer relationship and focus on the customers needs. He must develop KPIs to measure his performance and identify successes or failures (Heinrich et al., 2018). In the study by Boeselager (2017), it was defined what the CDO is *not* responsible for: the optimization of IT. This is the task of the CIO. Rather, his focus should be on developing the digital strategy of its organization.

3.5.2 Digital capabilities

In order to perform these mentioned tasks, the CDO requires appropriate capabilities, like competences, knowledge and skills. All authors identified that business and IT skills are urgently needed to implement the digital transformation. This business and IT knowledge come from a predominantly technical or business management education (Merx, O. and Merx, L., 2020). Tumbas et al. (2017) examined the different CDO types and their capabilities. Three essential skills were identified:

(1) Digital Innovation, (2) Data Analytics and (3) Customer Engagement.

(1) Digital Innovation describes the development of digital skills for intensive experimentation. This means that the CDO should be generally motivated to carry out strategic changes to organizational processes, products, services, or business models. Digitalization is based on the fast speed of changes, therefore Hess and Singh (2017) added the capability of a pioneer and the capability of inspiration. As the digital transformation changes the fundamental strategy of the company, the CDO should have the will to change and to drive the corporate culture forward.

(2) It was analyzed that the CDO does not need to be a technical expert and analyze data itself. Rather, the CDO must be able to collect internal and external data and provide it to the organization.

(3) The CDO should always have the competence to maintain the relationship with the customer. Therefore Boeselager (2017) added the capability to communicate.

In addition, the CDO must have the power of endurance and resilience in case of resistance from the organization (Hess and Singh, 2017).

3.5.3 Outlook: Is the role of CDO needed?

Based on the literature, there is no clear answer to the question of whether the role of the CDO will remain established in the long term. The need of further development of the digitalization will remain as a constant topic in the future.

The result of the study by Boeselager (2017) shows that the majority of respondents consider the CDO to be permanently established, as the digitalization will not be a final project.

During the initial considerations, an organization should not hire a CDO too quickly, as this could also trigger potential conflict between the CIO and the CDO. If the CIO has the same requirements as the CDO, he could take responsibility for the digital transformation. Walchshofer and Riedl (2017) defined four questions to examine whether the role of the CDO is necessary or whether the CIO can take over the role of the CDO:

(1) Is the CIO an active change manager who can implement change effectively and efficiently?

(2) If not, can the CIO make himself sufficiently competent through qualification measures, i.e. is it possible to grow into the CDO role?

(3) Does the CIO have any ambitions at all to transform out of his often rather passive role, which is mainly concerned with administrative and partly operational tasks of IT management, into a more active role with a focus on strategic tasks?

(4) Does the CIO still have sufficient time resources to expand his range of tasks? If not, sufficient time resources can be created by reorganising the IT organisation in general and the working environment so that the CIO can perform additional digital transformation tasks.

In summary, as CIO it is possible to perform two roles at the same time, as long as the skills and time resources are available.

Gärtner et. al (2018) come to the conclusion, based on their qualitative study with 378 management positions, that in the future it will not be relevant *who* will be responsible for the role of DT, but rather *how* it will be promoted. The study shows a clear correlation between the budget of the CDO sector and the development of sales and profits. They are significantly positively correlated, i.e. the more budget is allocated to the CDO sector, the higher the sales and profits of the entire company. This study confirms the necessity and positive effects of the CDO role.

In another recent study, Drechsler & Wagner (2019) examined the impact of an organization's share price when an organization officially announces the adoption of a CDO. They investigated 135 companies which issued more than one press release on CDOs. As a result, they presented a positive reaction to the share price as soon as an organization hires a CDO and makes this public at the same time.

4   Discussion

4.1   Commonalties and differences

During this literature review it became clear that almost all research on CDOs is based on qualitative studies. This research method is used for new topics in order to explore them anew, usually with interviews. The overall few results on the topic confirm the recent invention of this approach. Furthermore, I noticed that the definitions of CDOs in the literature are fairly homogeneous. In almost every definition is the CDO responsible for DT and is supposed to develop new business models by using digital technologies. It is noticeable that the focus of current research is on the scope of tasks and competencies. This is not surprising, as the topic of CDOs is relatively new and these are the first approaches in research. In general, there was a very homogeneous understanding of CDO types, areas of responsibility, competencies, and skills. These are contextually linked and confirmed by citing other authors who have done research in this field. The authors agree that digitalization is essential and that new digital business models must be developed in order to remain in the long term. At this stage, the literature mainly agrees that it cannot be clearly determined whether the CDO will assume DT's responsibility in long term, or another role, such as that of Chief Innovation Officer will emerge. This requires further empirical research as followed.

4.2   Management value of the paper

My practical implications for management usage of my literature review is for managers who are dependent on digital transformation. First, a general understanding of the role of a CDO is given, followed by an introduction to the external characteristics of a CDO. I.e. which roles of the CDOs exist and how they could cooperate with the CIO. Internal characteristics, such as task fields and required competencies, are also provided. This paper can be used for the own organization to determine whether a CDO is necessary and which types of CDO, along with required competencies, are useful.

4.3   Future research

It was noted that there is only a limited research on this subject. I identified mainly qualitative studies, such as expert interviews and case studies. In order to increase the reliability and validity, future research should conduct quantitative studies to complement these qualitative studies. Further research with organization from different industries is needed to evaluate and compare the organizational design characteristics and relevant contingencies in environments. Three further fields of research were identified during the literature search: (1) empirical study of the influence of CDOs during different DT phases, (2) comparison of CDO competencies in SMEs and LSE and (3) in which way the CEOs and other executives' functional backgrounds can have an influence: (3.1) the creation of a separate CDO position, (3.2) the CDOs and other executives' roles in DT activities, and (3.3) the decision-making process for DT activities.

4.4   Limitations

As already mentioned, I identified predominantly only qualitative studies. Therefore, the results can only be generalized to a limited extent. Despite many case studies from different industries, the sample sizes are still too small. I discovered that mainly studies by consulting and market research companies were published. These studies provide useful information, but they can also be seen as marketing instruments and must therefore be critically reflected in this context. Research findings based on recognized empirical research methods (Horlacher & Hess) are the exception. Furthermore, many publications characterize the tasks and competencies of a CDO, but the role of the CDO is rarely questioned in the long run. Gärtner et al. (2018) or Drechsler & Wagner (2019) were among the few who verified these in their studies.

5   Conclusion

The digital transformation of organizations is an important driver for developing new business models. This requires a responsible person who has business and IT skills, and who can enter new markets by using digital technologies. The CDO position was created for this purpose and in the following I will answer the research questions:

(1) Which types of CDO exist and what are their obligations/tasks for the DT?

Various types of CDOs have been identified in the literature, which differ in certain characteristics and functions. These include digital accelerators, digital marketers, digital harmonizers, evangelists, coordinators, innovators, and advocates. As the name of the Chief Digital Officer suggests, the primary responsibility for all types of CDOs is the digital transformation of its organization. Accordingly, it is his task to develop a customer-oriented digital strategy and culture, to spread it internally and externally. This is done through the experimental use of digital technologies, with the target to enter new digital business models.

(2) Which skills and knowledge are required to DT an organization?

The implementation of DT requires a broad spectrum of skills and knowledge from the business and IT sectors. As a change manager, the CDO requires a high degree of leadership potential to introduce digital technologies into the organization. The requirements for identifying technology trends is the need of innovation inspiration and willing to experiment. With his high level of communication skills, he spreads the digital strategy internally as well as externally. Due to the cross-functional role, the competence of relationship maintenance is required.

(3) Will the CDO role be established in the organization in long term?

Digitization confronts organizations with many new challenges. DT is not a final project and therefore the necessity and further development of DT will remain as a constant topic. The question remains only for the responsible person. Provided that the competencies and time resources of the CIO or another C-role are given, it may even be the case that the CIO takes over the responsibility of DT. To answer the research question as to whether the CDO role will remain established cannot be answered at this point.

One of the most likely scenarios is that the role of the CDO will remain established until the organization is fully digitized. In this context, it must be mentioned again digitalization is not a final project and always ongoing. To ensure the further development and value creation of an organization, a responsible person must face innovations. It is possible that the phenomenon of the current CDO role will be further developed towards the role of Chief Innovation Officer, or another role will be introduced. Further research is urgently needed for this purpose.

Appendix

Author	Title	Year	Study	Journal	Ranking	Context
Friedrich, Peladeau	The 2015 chief digital officer study	2015	Qualitative study	PWC	-	Identification of organizations, who hiring a CDO Backgroundinformation of the new CDO.
Horlacher, Hess	What Does a CDO Do? Managerial Tasks and Roles of a New C-level Position in the Context of Digital Transformation	2016	Qualitative study	Hawaii International Conference on System Sciences	C	Tasks and roles
Haffke, Benlian and Kalgovas	The Role of the CIO and the CDO in an Organization's Digital Transformation	2016	Qualitative study	International Conference on Information System	A	Identification of roles, reasons to hire a CDO, effects on CIO
Tumbas, Berente and vom Brocke	Three Types of Chief Digital Officers and the Reasons Organizations Adopt the Role	2017	Qualitative study	MIS Quarterly Executive	B	Reasons to hire a CDO, digital skills, types of CDOs, relationship between CDO and CIO
von Boeselager	Der Chief Digital Officer	2017	Qualitative study	Springer Vieweg	-	Reasons to hire a CDO, requirements, future of CDO
Walchshofer, Riedl	Der Chief Digital Officer (CDO): Eine empirische Untersuchung	2017	Qualitative study	Praxis der Wirtschaftsinformatik	D	Tasks, requirements, differences and similarities between CIO/CDO, future of the CDO
Hess, Singh	How CDO Promote the DT of their Companies	2017	Qualitative study	MIS Quarterly Executive	B	Reasons to hire a CDO, competencies, challenges, tasks
Becker, Schmid and Botzkowski	Role of CDO in digital Transformation	2017	Qualitative study	Hawaii International Conference on System Sciences	C	Responsibility, rights, management functions, tasks
Catarino, Rosa and da Silva	Defining the CDO using COBIT 5	2018	Qualitative study	ISACA JOURNAL Information Systems Audit and Control Association	-	Responsibilities and boundaries between CDO/CIO
Gärtner et al.	Chief Digital Officer Studie 2018	2018	Quantitative study	-	-	Managing the implementation of the digital strategy, success factors, challanges
Tumbas, Berente and vom Brocke	Digital innovation and institutional entrepreneurship: CDO perspectives of their emerging role	2018	Qualitative study	Journal of Information Technology	A	Reasons to hire a CDO, activities, objectives
Singh, Klarner and Hess	How do CDO pursue digital transformation activities? The role of organization	2019	Qualitative study	Long Range Planning	B	organizational design parameters, DT activities
Trout et al.	CDO Decoded: The First Wave of Chief Digital Officers Speaks	2019	Qualitative study	-	-	CDO background, tasks, motivation, measure of success
Drechsler, Wagner and Reibenspiess	Risk and Return of CDO Appointment An Event Study	2019	Eventstudy	International Conference on Information System	A	Investigation of shareholders' reaction to the company after CDO nomination
Locoro, Ravarini	The CIO and CDO Socio-technical Roles in the Age of Digital Business Transformation: An Interpretive Study	2019		-	-	Differences and interaction between CIO and CDO
Ravesteyn, Ongena	The Role of e-Leadership in Relation to IT Capabilities and Digital Transformation	2019	Qualitative study	International Conference on Information System	A	Investigation between e-competence, IT-capability and DT
M. Merx, L. Merx	CDO-Kompass 2020 Fakten und Trends zum Chief Digital Officer (CDO) in der DACH Region von 2012 bis 2019	2020	quantitative study	-	-	Analysis of the general trend, CDOs by sector and region

Table 1: Structured findings of literature research

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