# Chief Digital Officer

Subjects: Communication

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Digital transformation is becoming more ingrained into everyday life and is a talking point among researchers today. It has been evident from the growing number of publications that have focused on various aspects of digital transformation in the last few years.

chief digital officer    digital transformation

# 1. Introduction

The term "digital transformation" has become a buzzword in recent years in reference to the lasting and sometimes revolutionising impacts that digital transformations can have on both business entities and society as a whole [1][2] [3]. Despite its widespread use, it is difficult to formulate a comprehensive and precise definition of "digital transformation" given its varied and context-sensitive interpretations [4][5]. Gray and Rumpe [4] for example, view this issue through the lens of the way the words transformation and digital are interpreted, expressing doubts about the appropriateness of the former. In order to explain this, they argue that transformation is a process that starts with an initial situation that leads to another (better) situation but "may never meet a stable end" [4] (p. 307). They also believe that since the transformations that occur on that path involve information technology, it is correct to use the term "digital", since it pertains to the digital nature of transformations. Li [6] maintains that the transformation of organisations toward new technologies is a critical success factor, whereas Morze and Strutynska [3] do so in the context of fundamental changes taking place through the integration of traditional processes and digital technologies across a company's organisational structure. According to Schallmo and Williams [7], continuity and integration also play important roles in interpreting the concept of digital transformation. They believe that business strategies should include digital transformation as an integral and continuous component.

In the context of human factors and leadership, the term Chief Digital Officer (CDO) refers to the perception of digital transformation. For instance, Artemenko [8] points out that digital transformation is not a replacement for business processes but rather their digital upgrade, of which success is largely determined by the human factor. A similar position is taken up by the authors Shaughnessy [9], Li [6], Kontić and Vidicki [10], and Klein [11], who believe that digital leadership skills, proactivity, and appropriate competencies are a sine qua non for success, not only with the digital transformation process but also with the management of a newly created or at least a nascent digital organisation. Digital transformation has always been accompanied by the question of who should lead it. Westerman, Bonnet, and McAfee [12] discuss the CDO in relation to its responsibility for defining digital strategies and "driving an organization through the digital transformation of its business", while Matt, Hess, and Benlian [13], in

a paper published a year later, added the role of a CDO to those of the Chief Information Officer (CIO) and the Chief Executive Officer (CEO) as potential leaders in digital transformation and described the role as a new one.

As evidenced by the search results of the major index databases, WoS and Scopus, CDO is a topic that is significantly less researched than digital transformation (**Figure 1** and **Figure 2**). In the query researchers performed, they used the period 2001–2021 as the time parameter. Sources (largely reports and industry analysts) suggest that the process of digital transformation, in a way, began in the late 1990s and early or mid-2000s and that the first CDOs appeared in 2003 [14]. As query results indicate, researchers' interest was not awakened until about a decade and a half after the beginning of digital transformation.
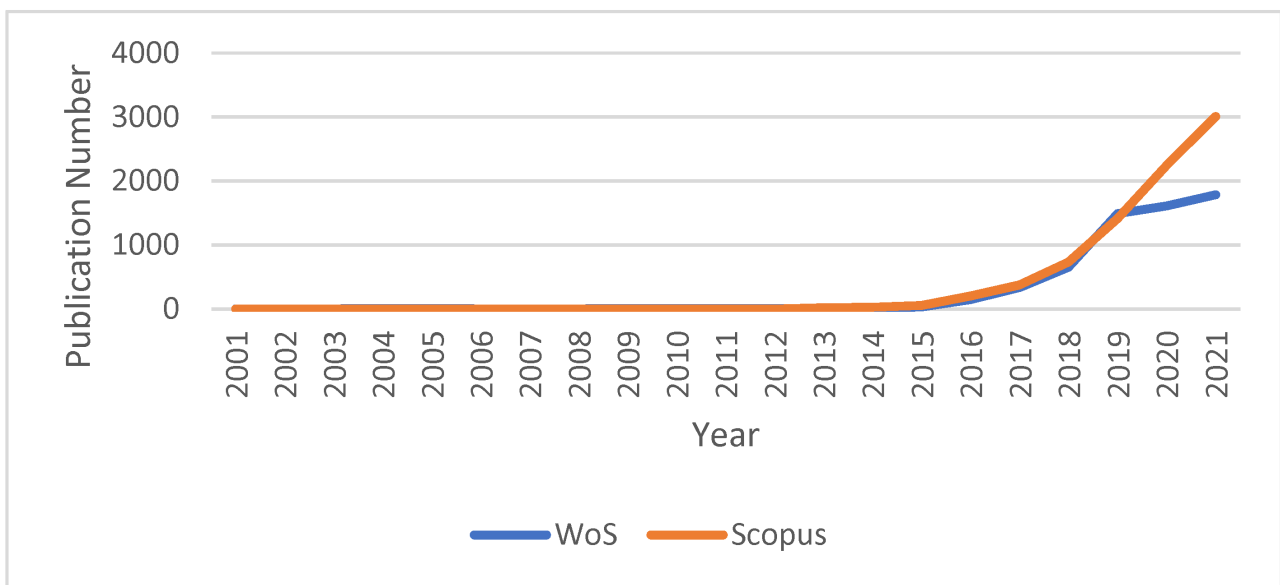


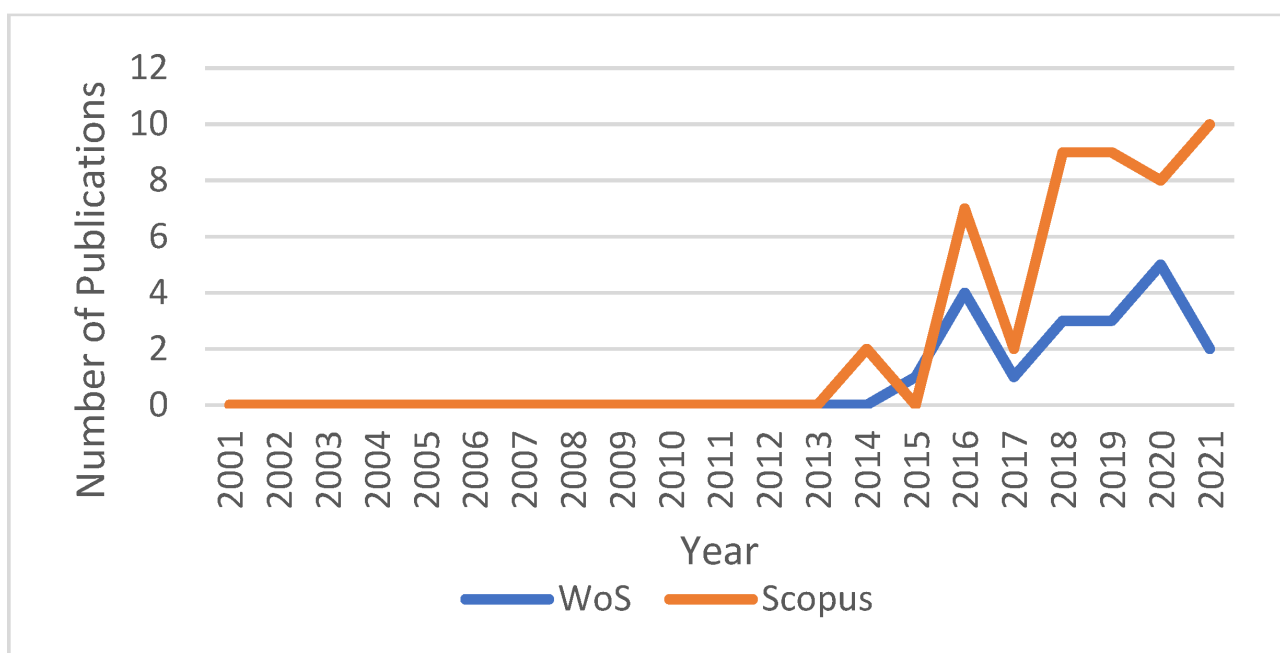**Figure 1.** Number of publications—"Digital Transformation".

**Figure 2.** Number of publications—"Chief Digital Officer".

There has been a significant increase in academic interest in the topic of digital transformation between 2016 and 2021, as reflected in the hits in these index databases (**Figure 1** shows the number of publications in the initial search of the WoS and Scopus index databases by keywords in the string "Digital Transformation" for the period 2001–2021): it increased from 146 and 204 in 2006 to 1784 and 3006 in 2021 in WoS and Scopus, respectively.

As for "Chief Digital Officer", the number of hits is significantly lower (**Figure 2** shows the number of publications in the initial search of the WoS and Scopus index databases by keywords in the string "Chief Digital Officer" for the period 2001–2021) and ranges between 17 and 45 publications in WoS and Scopus, respectively, during that period.

# 2. CDO's Position, Role, and Tasks

According to some authors [15], setting up the CDO's position does not have to be motivated solely by internal factors, such as a recognised need, requirement, or pressure for digital transformation, but could also be motivated by the implementation of a similar position by competing organisations [14]. The authors generally agree that CDO is "strategic management role" [16] responsible for developing the digital strategy [17][18] and "orchestrates the digital transformation of a company" [19].

Creating the CDO position necessarily involves identifying its position in a company's hierarchy. According to their research, Singh et al. [20] concluded that CDOs can be in C-suite positions or decentralised units, depending on whether a company uses a centralised or decentralised digital strategy. Thus, multiple CDOs can exist within different business units if different digital transformation strategies are implemented. Kutnjak et al. [18] emphasised the fact that the position of CDO is highly complex, as digital organisational change often involves balancing between two "worlds" that may not be aligned: managers (economic and domain experts) and IT experts (technology experts). A CDO should be a bridge/buffer between IT and the business [21][22], which means interactions between the CIO and the CDO are crucial. There is, however, a lack of clarity in the manner in which a CIO and a CDO cooperate [21], and the complexity of their relationship is further accentuated by the fact that both are at the same level of hierarchy and report directly to CEO [17][23]. While some authors [24] argue that CDOs often oppose their role to IT executives (CIOs), Buchwald and Lorenz [25] contend that, in the ideal scenario, CDOs work with IT (CIOs) to deliver the support needed to implement a digital strategy. Furthermore, they emphasise that the complementarity of these two roles can lead to a fruitful relationship. The CDO's function appears to be broader than that of CIO, as CIO is a strategic IT expert, while a CDO is a digital transformation expert [19], responsible for communicating with employees, understanding the business processes, etc. CDOs are responsible for the strategic and communication aspects of digital transformation, while CIOs are responsible for the technical aspects [17], so the CIO is the CDO's right-hand person [8].

Companies' stock exchange listing can be affected by the existence of both the CIO and CDO positions. Drechsler et al. [26] argued that the existence of a CDO in parallel with a CIO may send a negative signal to investors due to

the possibility of overlaps or even conflicts of authority.

Only a few CDOs can confidently state that their tasks, as well as expectations and responsibilities, which are assigned to them in order to fulfil those tasks, are clearly defined [8][14][15][21][27][28]. Even though the CDO's tasks are determined, they are subject to change due to the very nature of digital transformation: this process is continuous and changes constantly, which means the CDO's role has to be continuously updated [27][29].

In the opinion of most authors, the CDO role involves defining and implementing a digital transformation strategy [15][16][17][18][19][21][23] and is not just about implementing new technologies to digitalise the business [8]. Becker et al. [29] examined the scope of a CDO's work from the perspective of the size of an organisation: in SMEs, CDOs are mostly involved with digitalisation and strategic management, but in large organisations, their role is primarily concerned with strategic management and IT.

CDOs are primarily responsible for developing, iterating, and implementing digital strategies [23][25]. This involves restructuring a business, developing a vision, and creating a comprehensive plan for digital transformation of business processes [8].

To implement digital initiatives [23] and to successfully restructure a company [8], it is essential that the CDO encourages cross-functional cooperation [19] while promoting cultural change in the implementation of digital initiatives [17][23]. If digital transformation is to proceed according to the adopted plan, then the CDO must eliminate or at least mitigate differences between previously created silos (vertical functional areas of the organisation) that often arise because managers are too focused on their departments and unwilling to work closely together [17]. To accomplish this goal, a CDO will need to manage tensions among various parties [24][28]. Therefore, Horlacher and Hess [17] state that the CDO's job is cross-functional and interdisciplinary. One of the CDO's tasks is to train and motivate employees for the changes that will be caused by the digital transformation. A CDO's role is to serve as a digital evangelist, dealing with organisational interdependencies [17] and connecting key stakeholders within organisations throughout the digital transformation process [20].

**Table 1** contains quotations related to the roles, responsibilities, and tasks of CDOs from selected authors.

**Table 1.** Selected quotes.

| Source | Quotes |
| --- | --- |
| Horlacher & Hess, 2016 [17] | "CDO is responsible for developing the digital strategy, executing the digital transformation across the company and taking the entire company along on the journey" (p. 5133) |
| Haffke et al., 2016 [15] | "The CDO role is a business role with the mandate to understand the industry-specific aspects of digitization, determine the implications for the company, develop and communicate a holistic digital strategy across the firm, and lead the required change efforts. The CDO is a digital business strategist who holistically understands and communicates the implications of digitization across the organization" (p. 5133) |

| Source | Quotes |
|---|---|
| Singh & Hess, 2017 [19] | "The CDO orchestrates the digital transformation of a company. The CDO role thus includes supporting top management in formulating and executing a dedicated digital transformation strategy. … CDOs have a wider role than heads of individual digital business units; CDOs assume cross-department authority for digital initiatives and aim to transform the company as a whole" (p. 8) |
| Ctarino et al., 2018 [21] | "CDO define the digital strategy/vision, align/converge the digital strategy with the corporate strategy, create a digital culture in the enterprise, disrupt, transform to digital, change management" (p. 46) |
| Kutnjak et al., 2019 [18] | "Chief Digital Officer, by developing a digital strategy, begins the path of transformation in the organization. Using digital technology, he/she finds new business opportunities and focuses on continuous innovation in business by targeting customer needs. Along with the foregoing, CDOs knowledge must be also fulfilled with business model analysis and business model transformation methods to success in DT in accordance with the new business model" (p. 5717) |
| Kossowski et al., 2020 [16] | "Chief Digital Officer (CDO) as a strategic management role, to control the journey of DT" (p. 1) |
| Berman et al., 2020 [23] | "CDOs are business executives responsible for creating and executing strategies for digital solutions across their enterprise. The scope of their role can vary from one organization to the next, but CDOs typically work horizontally across functions and lines of business" (p. 32) |

The CDO's main responsibilities are always linked to digital transformation. A study conducted by Becker et al. [29] revealed that more than half of the surveyed CDOs are the sole person responsible for digital transformation and receive support from other C-level managers. The responsibilities and roles of the CDO are not static. In fact, they are constantly changing because digital transformation never stops [27]. On the other hand, CDOs themselves are catalysts for change in organisations because they establish and implement a digital strategy through digital initiatives, stimulating change throughout the company [17][18][23][28].

Although CDOs do not have a functional IT responsibility, they still have a great responsibility in establishing a bridge between IT and business (priorities of which should be clearly defined) [18][21]. A CDO should identify new business opportunities, focus on innovation, and utilise the appropriate digital technologies [18]. **Table 2** provides an overview of the most important tasks/activities performed by CDOs.

**Table 2.** CDO's job/activities.

| Job/Activities | Sources |
|---|---|
| Building/developing digital strategy | [23] |
| Implementing digital transformation | [30] |
| Coordinating key stakeholders within an organisation | [20] |
| Analysing market of technologies and new digital solutions | [8] |
| Restructuring a company | [8] |

| Job/Activities | Sources |
|---|---|
| Forming a vision | [8] |
| Encouraging cross-functional cooperation | [17][19] |
| Creating a comprehensive plan for digital transformation of business process | [8] |
| Executing digital initiatives | [23] |
| Focusing on clients with the goal of creating a personalised user experience | [17] |
| Managing conflicts | [24][28] |

# 3. CDO's Competencies

In the previous section, it was mentioned that Drechsler et al. [26] believed that the existence of a CDO in parallel with a CIO may send a negative signal to investors and unfavourably affect companies' stock exchange listing. According to the same authors, a similar effect can be achieved through the educational background of the CDO and the competencies they have acquired based on that education: a CDO's business-related education is better accepted by (potential) investors than a STEAM (Science, Technology, Engineering, the Arts and Mathematics) background because the company's digital transformation is more of a business than an IT challenge [26].

Besides stating that the CDO should have a degree in economics, ICT engineering, or business administration, Kutnjak et al. [18] also noted that a CDO should have multidisciplinary professional skills (some of them provided in **Table 3**). This refers not only to skills in the fields of business and IT but also to various soft skills (e.g., problem solving, critical thinking, teamwork, digital literacy, etc.) [18][31] that other senior managers may lack [14].

**Table 3.** CDO's competencies.

| Competencies | Sources |
|---|---|
| Communication and cooperation skills | [17][25] |
| Change management skills | [17][18][25] |
| Leadership skills | [18] |
| Soft Skills (communication, motivation, and teamwork) | [31] |
| Strategy development skills | [25] |
| Conflict management skills/negotiation skills | [18][28] |
| Digital Pioneering Skills | [19] |

CDOs are expected to possess strong communication skills as well as change management skills [17]. A leader who will introduce changes within an organisation [18] is inevitably required to possess knowledge of business

processes [8]. CDOs should have a combination of the knowledge of technical specialists, market analysts and managers; have experience with e-commerce and Internet marketing; and be able to work with data [8].

The complexity of digital transformation naturally requires a broad range of competencies for CDOs [18]. The results of the research conducted by Berman et al. [23] indicated that three main skills are required of CDOs: innovation, technology, and business strategy development. As a rule of thumb, IT knowledge is a requirement, but it may not be sufficient for the CDO's position: in addition, a CDO should possess skills in strategy development, change management, and communication [17]. Communication is also the focus of the authors Buchwald and Lorenz [25], who point out that communication and cooperation skills are important in digital transformation, since it involves most business processes in which the participants require efficient information exchange and cooperation. Communication skills are crucial for implementing digital vision across all organisational silos [17] and for promoting cross-functional cooperation [19]. Proper communication is the only way to inspire those involved in the digital transformation. A CDO should also have digital pioneering skills, so they can create a "cohesive digital vision for the company" [19] (p. 12).

These competencies are not necessarily acquired through formal or non-formal education [18] but are often the result of experience.

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