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Does the role of Chief Information Officer & Chief Digital Officer will remain in the future
within the Digital Transformation of Organizations?

A literature review

Trabajo de Grado (Asistente de investigación)

Michelle Grajales Dau

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Michelle Grajales Dau

Jeimy Jose Cano Martinez

Administración de Negocios Internacionales

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Abstract

The appearance of the Chief Digital Officer (CDO) in the organizational structure has caused certain discussions in the literature and in practice towards the implications that this scenario has for the Chief Information Officer (CIO), where there is evidence of a lack of clarity regarding the dynamics of both roles and their future within the organizations. This article seeks to understand the panorama in which both roles are located, showing their characteristics and the perception about both roles by other members of the organization, considering the context of the digital transformation and the evolution in the interactions among stakeholders, as part of the emergence of new technologies and the cultural shift towards digitalization. In this sense, it is established how the CIO should focus on maintaining an optimal IT management, giving a more strategic vision to the area, while the CDO should lead the digital initiatives, understanding the journey of the consumers and looking for new opportunities to change the way of doing business. From this, it is established that although both roles will be necessary in the near future, the CDO will remain until the company is completely digitized, where an evolution of the role towards the search for innovation could be evidenced. Finally, it was evident how considering the differences between each organization, business leaders must be clear on their own context and their digital objectives, for them to have an appropriate action plan towards this evolution.

1. Introduction

In recent years, there has been an important evolution within the strategic vision of modern organizations, where new priorities have appeared for them. The speed with which these needs have been generated within their structures, has caused companies to look for new ways of creating significant and relevant interactions with consumers, in order to increase engagement with them, considering that "digital is a new way of doing things "(Rickards, Smaje, & Sohoni, 2015).

It is evident that the life cycles of organizations have been reduced significantly, so "to reach the state of maximum performance, companies have to be continuously developing new business models through the innovation of them, in a process of continuous transformation. " (Diaz, 2016).

The fact that currently more devices are capable to connect to each other, generating a greater amount of data, has caused certain organizations to put great part of their efforts in capturing and analyzing information within a rigorous process, in order to create competitive advantages. This has forced companies to consider digitalization as a resource of great importance within the transformation towards innovation, where the "digital strategy of many organizations is fast becoming the corporate strategy." (Hughes, 2016)

The question that is evident from this reality is how to implement this strategy in order to effectively carry out the digital transformation of organizations. In this case, this process will depend to a large extent on the specific needs and priorities of each organization, considering their characteristics and the technological stage in which they are located. In order to adequately address the challenges faced by companies within their environment, they must be able to incorporate new technologies that can support the new changes that are occurring in the interaction with their consumers. This, however, is not an easy task that can be performed overnight. This is where it is

shown the constant discussion about the appearance of a new Chief in the Top Management Team (TMT), the Chief Digital Officer (CDO), which is capable of leading digital initiatives and respond to the arisen needs in the current context. Part of this debate is based on what this situation means to the Chief Information Officer (CIO), regarding their permanence within the organization.

Based on the current context, where there is a lack of clarity regarding both roles, it is pertinent to make a comparison of the viewpoints evidenced among different authors about what both roles represent for the organization. From this it is going to be establish to what extend does the role of Chief Information Officer and Chief Digital Officer will remain in the future within the digital transformation of organizations. To establish this, some considerations will be evident with respect to the perception of both roles. In addition, a description of the role of CIO will be made, taking into account the discussions around the role regarding its importance and contribution to the organization. Furthermore, a characterization of the role of CDO will be shown, where concepts from different authors will be reviewed, regarding the entrance of this new executive and the impact towards digitalization. Followed by this, the context in which modern organizations are found will be analyzed, considering that digital transformation is a fundamental part of their survival. From this characterization, a description of how both roles fit within the context of digital transformation will be made, in order to build the scenarios mentioned above, and make a possible forecast of what will happen with each role, depending on the particular characteristics of organizations.

2. Methodology

In order to carry out this study, several sources of information that allowed us to characterize the CIO and the CDO were consulted. In this case, a literature review was conducted where articles

regarding both roles and the context of digital transformation were found. From this, those that belonged to indexed journals were selected in order to guarantee the quality of the information. These articles were analyzed carefully, in order to extract the most relevant data that contributed to the investigation. In this way, points were found in common among the different authors, characterizing the roles within the context of digitalization.

3. Perception of both roles

The way in which different authors have referred to both roles is interesting, as it manages to enrich the context of the digital transformation of organizations. Part of the literature review that was carried out was to find a variety of perspectives, not only from academic articles, but also from executives that in certain occasions showed their own point of view regarding both roles. This helped the study to have a more objective interpretation.

The current discussion has focused mainly on the contribution of both roles and their permanence in the companies. For several authors the appearance of the CDO is key to meet the challenges of digitalization, while for others the CIO is a role that through the acquisition of certain new capabilities could face the transformation without the need to include another Chief in the board. Furthermore, for the authors who affirm the importance of the CDO, different positions of the future of the role regarding its temporality are shown.

The investigations that were based on interviews to the CIOs of certain companies evidenced a pattern within the perception of the executives. When asked about the appearance of the CDO, some of them claimed that the functions performed by the CIO were sufficient to meet the challenges of the current context. This is reflected in a study made by Computer Weekly, where

the CIO of a company states that “there's no need for the title to exist, [...] CIOs should still be important but their mindset should be digitally focused” (Samuels, 2015). One of the arguments of this position was that organizations should focus more attention on the skills that the CIO should acquire, and not on bringing another executive to replace it. From this, Forrester Research says “organizations should avoid adding another Chief to the boardroom [...] The executive - rather than the job title - is the most important factor.” (Samuels, 2015)

This standpoint shows the reality of executives who feel threatened within the IT area. For them, functions and responsibilities of their role are fundamental and should not be undervalued. However, it is a subjective point of view that ends up bypassing certain key elements. Each organization is different and their complexity can determine the need to hire another Chief to lead the digital transformation. From this, it can be said that “the line differentiating the CDO from the CIO varies between companies, depending on their goals” (Nash, 2013).

On the other hand, the authors who reiterate the importance of the CDO highlight the need for both roles to work together to generate greater value to the organization, showing how difficult it is for a single executive to be in charge of leading both the IT infrastructure and the digital initiatives. With this in mind, it is established how organizations should not discuss if one role should replace the other, but that they should work together by complementing each other.

The viewpoint reflected in the article by Kim S. Nash, where he talks about what the appearance of the new executive implies, shows that even though the CDO has been given a lot of importance, the CIO must take advantage and leverage the status and credibility given to the IT area. On this basis, the author states that “going digital, with a CDO in charge, doesn't have to be a threat. It can be a career path, but only for CIOs who can break out of historical patterns” (Nash, 2013).

Some authors have been concerned with differentiating the roles by highlighting the level of autonomy and independence within the organization. In this case, Jane Bird (2015) makes an interesting reflection when comparing CIOs with Samurais, and CDOs with Ninjas, considering the flexibility level of each role, where she states that the Samurai "behave according to a set of rules" while "the Ninja was better at dealing with an unconventional enemy " (Bird, 2015).

Finally, the discussion around the CDO also covers the temporality of the role. Deloitte Digital (2016) shows an interesting position of the panorama, demonstrating how the CDO is a transitory role that will disappear when the organization achieves its objective of adopting completely the digital strategy. While a few years ago the business strategy was more important than the digital one, and both were completely separate; nowadays they have come to have the same importance and have found a point in common. In fact, according to Deloitte, by 2020 both strategies will be the same, so a CDO will not be needed, considering that the organization would be fully digitized due to the implementation of said strategy as part of its DNA. (Hughes, 2016)

The different positions that have appeared with the emergence of the new role and the organizational context of digital transformation, have led several authors to show in more detail the characteristics of both the CIO and the CDO. One of the reasons why this discussion has occurred is due to the lack of clarity that exists between the roles, around their functions and the perception that other members of the organization have regarding their contribution. Because of this, certain elements will be analyzed to be able to construct different scenarios and establish to what extend does both roles will remain in the digital transformation. The following is a characterization of the former role, to better understand the panorama.

4. Characterization of the Chief Information Officer

Nowadays, the evolution of the Chief Information Officer (CIO) over time is increasingly evident. The current environment in which companies operate has changed radically, and so their organizational structure. Executives who were formerly IS managers have become members of the TMT, since the "title of CIO was introduced in the mid-1990s [...] who had been elevated to a C-level position". (Chun & Mooney, 2009). Due to this scenario, progress regarding role functions and their contribution to the organization has been an important issue inside the literature.

Within this evolution, it is important to highlight the strategic element that has been attributed to the role, from being an executive in charge of merely technical functions, where its main objective was to reduce costs and generate operational efficiencies, to be a role that can contribute positively in the strategic management of information and its technology, to generate value for companies; to the point that CIOs are currently "becoming executive-level leaders rather than mere service providers". (Chun & Mooney, 2009).

Although the CIO has been transforming over time, acquiring a more strategic character, it is important to mention that certain organizations still do not know the contribution of the role performance in generating value. In order to understand the reason why the CIO has not been able to advance adequately, certain issues will be mentioned regarding the challenges this executive has been facing over time.

4.1 Issues CIO has faced

It is worth mentioning how the relevance of the issues faced by the CIO has been changing over the years. The inconveniences that the CIO has had in the application of technical and operational

processes, due to the lack of resources, have lost relevance; while issues related to strategic vision and the creation of competing advantages have been more important to CIOs within their performance in the organization.

A very common situation that is evident is how the CIO has been undervalued within organizations. Many members of the TMT have considered for several years that the performance of this role does not provide a relevant outcome to the organization because its contribution is not directly related to the generation of strategic value. This is a perception that the CIOs themselves have identified as one of the biggest obstacles in their performance. In fact, in an article from the journal MIS Quarterly Executive, an interesting opinion of a CIO (whose identity was concealed) is shown, where he mentions that "IT is still not seen as an equal at our firm, and we have to keep proving ourselves." (Kaarst-Brown, 2005). This perception is directly related to the lack of status that the role has had over time.

Members of certain organizations have not recognized the contribution that the CIO can make; and even when they recognize its importance, they have not shown in practice a significant credibility towards the role. This is related to a large extent with the criticisms that have arisen about their performance results within organizations. There has been much expectation regarding what the role means for the generation of value, where facts show an unfavorable scenario.

However, it is important to highlight how this situation acts as a vicious circle, considering that "status and credibility affect an organization's ability to extract value from IT investments" (Kaarst-Brown, 2005), where it can be inferred that said reputation is one of the causes of its inconvenient performance. If the organization does not trust that the executive, who is responsible for the proper functioning of IT, can generate a competitive advantage to the organization, this role

will not count on the necessary resources to perform its functions as expected. This is why this unfavorable perception has been key within the adversities that the CIO had face.

One of the reasons why organizations have these viewpoints with respect to the CIO has to do with the role changes in recent years. The definition given to the IT executive regarding his functions within a company "could have been precise and appropriate 30 years ago". However, "IT has become all-pervasive, and businesses have become ever-more dependent on IT." (Peppard, Edwards, & Lambert, 2011). This is why other executives of the C-level still have in mind the position of the CIO as an IT Director, which lacks the strategic nature. Due to this, expectations regarding the contribution of its performance are affected, creating a particular situation, where the ambiguity of the role has become evident. The different factors mentioned above highlight the difficulty in defining clearly and precisely what a CIO should be and the functions it should perform.

The evolution of the role, determined by the change in needs of the companies, has been misunderstood by other executives, affecting the way in which the success of IT has been measured. This is evident, considering how the organization has "undervalue the contribution IT makes to the business because its focus is more on project metrics than business results." (Peppard & Gerth, 2016). To ensure this situation does not happen again, Peppard proposes that organizations should create an "unambiguous statement of the CIO role" (Peppard, et al., 2011)

The lack of credibility, the little understanding of the current role and the gap that is generated in the expectations, due to the ambiguity of the role, have been affected the relationship between the CIO and other executives of the C-level in a significant way. Peppard clearly demonstrates this situation by showing that:

Because members of the top management team do not all have the same view of the role, meeting or exceeding expectations can be quite difficult. Failure to recognize this of their peers can result in a one-size-fits-all interaction style that is capable of giving rise to poor interpersonal relationships and, ultimately, derailment. (Peppard & Gerth, 2016)

By having the description about the context of the CIO, we will proceed to analyze the properties that characterize the CDO, as a leading executive within the digital transformation. Only in this way we will be able to have a clearer picture of what it would mean to remain in the current context of the organizations and be able to answer the question that was raised at the beginning.

5. Characterization of the Chief Digital Officer

As a fundamental part of achieving a digital transformation, several authors have highlighted the importance of incorporating a new executive within the organizational structure who can lead digital initiatives. This is reflected in the definition given by Roman Friedrich, Michael Pachmajer and Chris Curran (2016), regarding the role that a CDO should play, showing that its main task is to "define the company's digital strategy and execute its cross-functional transformation into a fully digital enterprise." (Friedrich, Pachmajer, & Curran, 2016). Another definition given to the role is that "CDOs help their organizations to use digital technologies to create business value." (Tumbas, Berente & Brocke, 2017). Today, there has been a significant increase in the search for a CDO that can lead such transformation, in order to build a scenario where innovation is an essential part of organizations. However, it is important to note that not every executive is prepared to assume this responsibility due to the new implications required for the role. The discussion

about what it means to have a CDO in the organization has become more evident, considering that even though "the position isn't exactly new, what's required of the average CDO is" (Rickards, Smaje, & Sohoni, 2015), which explains the lack of executives who can take on these new challenges, where the demand for CDOs has been greater than their supply. (Friedrich, et al., 2016)

To understand a little more the importance of the role and how it contributes to the generation of value, through the constant incorporation of innovative initiatives that guide the organization towards digitalization, it is key to consider how this role emerges, in order to have a clear context of this scenario, given the remarkable change in the needs of organizations. Because of this, it will be described why organizations have decided to hire a CDO and why others should consider doing it too.

5.1 Emergence of the CDO

According to an article from McKinsey (2015), there are two principle situations where a CEO decides to hire a CDO to lead digital initiatives. The first shows a scenario where organizations realize they need to go through different process and rethink their business model to move forward in the current context, where innovation is a key factor in order to generate value. In this case, the transformation process has not occurred, so the company chooses to hire an executive that can lead this process and thus take the organization to have satisfactory results within it (Rickards, et al., 2015). The other situation occurs when the organization has already gone through a digital initiative, and within the process encounters certain difficulties in the interaction with its consumers. In this case it is important to recognize the complexity of this transformation, not only

in terms of the capabilities and resources that the company should have, but also the mindset and skills required for the executive throughout the process. (Rickards, et al., 2015).

Besides these scenarios, there are certain authors that affirm certain reasons why this Chief is hired. For them, the need for a Chief Digital Officer is based on four factors: the pressure for digitalization, the need for orchestration of changes within the firm, the CIO role profile and reputation, and the digitalization focus areas. (Haffke, Kalgovas & Benlian, 2016).

Understanding how the role of CDO arises from the challenges organizations have faced in recent years, as part of the changes in the needs of consumers and the advancement of new technologies that have allowed greater interaction between agents in the digital age, it should be considered the necessary skills this executive should have to contribute positively in the generation of value. This is why a series of characteristics that different authors have discussed around what the CDO should achieve will be described below.

5.2 Characteristics and skills required

As a fundamental part of the digital transformation, some authors have emphasized the importance of having an executive within the company so that they can lead such initiatives. In light of this situation, clarity about the properties of the role is needed, in order to understand what their performance expectations are and what they should achieve within that transformation.

Many authors agree that a CDO must be a leader for other members of the organization, inspiring the cultural change for them to consider digital transformation as a priority; in this sense the CDO must “transmit business-critical information [...] and demonstrate benefits from digital transformation” (Singh & Hess, 2017). It is also important to understand the needs and motivations

of employees during the process of digitization. Strengthening the strategic sight in a new area for the executive, such as the digital world, is important to “create digital vision [...] to look beyond existing strategies [...] with different perspectives” (Singh & Hess, 2017), given the lack of importance the IT area has had since the role of CIO was introduced. Hence, the responsibility of this role is to give relevance to the area and make other members of the organization consider digital initiatives as a priority element in the business. In other words, the CDO should take the digital strategy to the corporate level, reporting directly to the CEO.

In addition to worrying about whether such a strategy is carried out in the business, the CDO should encourage digital innovation within the organization. That is, not only lead the digital transformation, but also be in constant search of new developments and changes that can generate a competitive advantage, being proactive to face different challenges. For this, the executive must take into account a series of factors, such as identifying the problems that are really important for the organization and that prevent it from moving forward. Questioning existing business models is another feature that should be examined by the CDO, considering the technological advances and the way in which the interaction between agents has evolved. Being tied to traditional models that have remained in the past will not allow organizations to progress effectively; by questioning business models, the CDO will be able to find new opportunities within its environment, which allows the role to make better decisions.

For the vision aimed at digital innovation to be carried out successfully, it is necessary for the CDO to be concerned about how the organization is being customer-driven. Knowing customer tastes and preferences is key to understanding the role of technology and digital initiatives within their experience as a customer. This is why, today's organizations "require someone whose skill set incorporates customer-centric focus, significant business and team management experience,

consumer change leadership skills and a deep understanding of social technologies." (Dumeresque, 2014).

Much has been said about the importance of being consumer-driven; however, the skills required go beyond a simple understanding of what the client wants in the present. "Nobody can say that he wants something if he has no idea what it is or has not been invented yet. Therefore, digital leaders must concentrate on strategic objectives and not on the needs or desires of clients. This is how decisions about goals become digital capabilities. " (Rowsell-Jones, 2013).

In this sense, it is interesting to see the difference that several authors make between the CIO and the CDO towards their responsibility around the consumer. In the article by Rickards (2015), he states that "while the CDO will need to work closely with marketing and IT leadership, he or she should define the customer-experience journey" (Rickards, et al., 2015). Another interesting position is the one that Tumbas makes about the role that the CDO takes as digital leader when saying that the executive "acts as a buffer between the business and the IT unit [...] focusing on end customers and integrating existing and new digital initiatives" (Tumbas, et al., 2017)

Within the link of the executive with the IT area, it is important to have clarity about the specific functions that each role will come to perform, to the extent that this will define the contribution of each one of them. In the relationship that the authors propose between both roles, the CDO should understand the IT language being able to analyze the information that the IT area can provide, for it to be relevant (Singh & Hess, 2017). That is, not only describe what happens in the organization, but be able to understand why it happens, what would be the possible future scenario and based on that the action plan to follow. This understanding is achieved by integrating the IT data to the business strategy, in order to give it value. By building speed and agility in the way information is interpreted, the CDO can draw insights to make better decisions.

The efficient management of information will allow organizations to face the different challenges within its context around the advances that have been mentioned previously. The CDO is then responsible for making the processes of the organization to favor of the digitalization of the business. For its part, Dumeresque states that in order to "achieve competitive advantage, [...] a dynamic approach to digital business, one that requires speed and flexibility to create the most value, is required." (Dumeresque, 2014)

In addition to the capabilities that the CDO must have around business knowledge, new technological trends, changes in the needs and demands of consumers and the analysis of data, it is important for the CDO to extend its networks and find interesting opportunities with other companies within their organizational context. The executive must have a more holistic vision and not act on its own, but consider the benefits that could bring the organization to collaborate with certain agents that can contribute something different to the business model. This will allow the CDO to take advantage of several opportunities, given the different resources and capacities of organizations, which allow them to have unique competitive advantages through their know-how. For the company to carry out this situation, the CDO must be aware of the new market trends, and thus determine what type of links are best suited to the organization. As mentioned by some senior partners of McKinsey & Company, "successful CDOs are keenly aware of such trends. They build networks of people, technologies, and ideas far outside of their company, constantly scanning the small-business landscape to identify possible acquisitions or partners that can provide complementary capabilities." (Rickards, et al., 2015).

The characteristics a CDO should have on its radar is key to identify what the executive should do in order to provide a competitive advantage. However, it is important to recognize how each organization is different, where their needs around a CDO can vary significantly. Even though a

CDO should have the skills mentioned above, the current context shows scenarios where companies are in different stages towards digitalization. Given this, it is relevant to analyze the current context of digital transformation, to understand the outlook of the situation.

6. Digital Transformation

Today's organizations have faced a series of changes in the way the market behaves, digital transformation being one of the processes that are becoming more relevant today, where organizations seek to be at the forefront of the changes brought by the new dynamics between the agents of a company and its consumers. The incorporation of the digital within physical resources has shown new behaviors that force companies to respond effectively to market demands; therefore, the organizational structures have had to be modified in order to adapt to this phenomenon.

Within the literature, the authors who have analyzed this new scenario, where the organizational structure has been modified, “characterize the behavior of digital transformation as radical, disruptive, evolutionary, continuous and complex” (Morakanyane et al. 2017). The new technological changes that occur as part of the transformation of organizations imply new ways of interacting with the digital world; this considering that “when the border between the physical and the digital world is crossed, suddenly the rules change and the possibilities of combining information, clients, products, services, processes and resources become almost infinite” (Rowsell-Jones, 2013). In this sense, as it is evidence in McKinsey’s article (2015), “digital should be seen less as a thing and more a way of doing things” (Dörner & Edelman, 2015).

As a result of the constant changes that have arisen, companies face different challenges, which depend to a large extent on the type of organization. In this case, the digital structures of each define how difficult it will be to meet current demands. There are companies that were born in the digital era and have adopted this strategy throughout their business cycle, being digital natives; while certain companies have had to migrate certain processes towards digitalization. In addition to this, there are still organizations that have been analogue throughout their lifecycle, which shows more difficulties and challenges to face.

In addition of this changes, individuals are facing a series of possibilities they did not have before, towards hyper connectivity and how information that is not structured is transformed into data that generates knowledge, given the optimizations that have arisen as part of the process automation and the simplification of transactions. The changes organizations are facing besides being disruptive, give technology a much more accelerated capacity (Diaz, 2016).

Considering this scenario, it is important to know how organizations must respond to these new challenges. For this, the World Economic Forum (2017) shows a number of implications to be taken into account by individuals who want to lead the digital transformation, so that this process is successful. The first element is the creation of new business models, where companies must rethink the traditional way in which they operate. Thinking about digital incorporation within their physical processes is one of the priorities to be disruptive organizations, considering the constant changes in the way they interact with consumers. In order to face these transformations, business leaders must take advantage of available technologies that can generate value to organizations. Another key element to consider is the creation of partnerships that are strategically viable. The executive that guides the digitalization must take advantage of what different agents, whether

inside or outside the industry, can contribute to the organization, given that each partner could offer different competitive advantages.

The third key element to face digitalization is the cultural change. It is not merely to have access to new technologies and being able to change the business model, but to face the visible resistance when traditional models are being transformed. Organizations should understand that “digital transformation goes beyond merely digitalizing resources and results in value” (Singh & Hess, 2017); this process requires other efforts that involve a change in the corporate culture of the firm. Evolution brings challenges, and this is where much of the effort should revolve around the change of people's mindset. Guiding the path of the organization in a clear way towards reaching competitive advantages is a way to face those challenges, considering that “driving a strong sense of purpose and a diverse, high-digital-quotient workforce are critical.” (World Economic Forum, 2017). For this it is important to strengthen the digital literacy of people for them to be proactive when looking for creativity and innovation in the business model.

Intensifying the necessary knowledge to face the digital world is another element that becomes relevant. Organizations must look to the future and anticipate changes by acquiring skills that allow them to move forward. For this, “reskilling current employees through continuous learning and training will support the transition of the workforce.” (World Economic Forum, 2017).

Finally, business leaders should be concerned that their data management provides security to the company. Companies should not only invest in privacy and cybersecurity issues, but also make sure that information handled can generate value to their performance. The resulting benefit to business leaders will determine the digital trust that the company can generate.

When considering these implications, organizations will be more prepared to face the digitalization, considering this transformation as “an evolutionary process that leverages digital

capabilities and technologies to enable business models, operational processes and customer experiences to create value”. (Morakanyane, Grace, O'Reilly, 2017). This concept identifies the transformation as an evolution, beyond being a radical change in organizations, because this implies being aware on the constant variability that occurs in the environment, to be able to adapt to new market trends.

Having a description of the digital transformation, and what this has meant in the current context of the organizations, it is evident a need to be in constant search of new opportunities, through the innovation of processes, with the use of new technologies and a necessary change of mindset to face these challenges. From this, it will be shown below the discussion that arises from this situation, in order to establish the permanence of both the CIO and CDO in the digital era.

7. Discussion

The complexity of the current context implies understanding the type of organization that is being analyzed. Most companies today do not know what to do in this new digital scenario, where they have to face many challenges in their processes and their way of doing business. They know they have to be alert to new changes, see trends, adapt to what emerges in the environment, and look for new opportunities; but the digital transformation is an evolution that is happening so fast and that needs so many skills from the organization and its members, that several do not know how to respond adequately. There is no manual that tells each organization how to operate and what to do in each situation that is presented, much less in the current context, where there has not been so much research about what that digital evolution should be.

The introduction of a new role has been a constant topic of conversation in both literature and practice, where the CDO appears as a guide to that process. The problem is that there are few authors who really characterize this role in a deep way to establish when it is appropriate to hire it, truly understanding what digital transformation means in organizations and how they should adapt adequately to the current context.

In practice, industries that have a more robust information management, such as banks and telecommunications companies, have given more importance to the role of CIO over time than other types of industries. According to Tajinder Toor, Advisory Delivery Program Leader at IBM Canada Ltd., “IT-intensive sectors have 53 per cent CIOs holding a seat at the executive management table, compared with just 17 per cent of CIOs in all industries” (Toor, 2017). This has given the role a greater approach to the strategic vision of the business, allowing the CIO to face the digital transformation in a more effective way.

On the other hand, we see how industries where digitization is a priority tend to need the acquisition of a CDO that can lead the transformation. In an article by Strategy &, the authors state that “the percentage of companies with CDOs varies significantly by industry, of course. Consumer-oriented industries, for instance, led the pack: 13 percent of communications, media, and entertainment companies have CDOs” (Friedrich, et al., 2015).

When understanding the difference of each industry and that each company has different characteristics, it is understood that to find the candidate that best suits each role, it is important to establish a series of elements; such as, the responsibilities of each one, the organizational structure, the authority that each role has towards the strategic vision of the business, the use of technology within its functions, and the way in which the success of its performance is measured.

Considering these aspects, CEOs could make better decisions and thus have a better overview of what it means for them to have both a CIO and a CDO within their organizational structure, to then determine what will happen to both in the future, within this scenario. When comparing the CIO and the CDO within the demands of the digital transformation, it is possible to say that both roles should share several soft skills, necessary to have a better performance. One of the features that stands out is the leadership that both executives must have. Inspiring the other members of the organization to understand how the vision of the business should be aimed at the digital strategy is a fundamental task for the CDO. Likewise, promoting the idea that the strategic management of data should be an essential element for companies is a function that should concern the CIO.

Given this, the fundamental difference relies on the responsibilities that both have when facing the current context of the organizations. While the CDO should focus on leading the digital transformation through its knowledge of new business models, new interactions with consumers and the use of different technologies, among other things; the CIO should be able to support digital initiatives, offering an adequate IT infrastructure and providing a more strategic vision around the management of the company's information.

By taking into account the difference between how each role should contribute to the organization and understand what the business leader must examine to guide the process of transformation, it is shown how the CDO should be in charge of those responsibilities; being an executive that, within the literature that has studied the role, has the necessary characteristics to generate value for the company. However, as Deloitte affirms, it can be inferred that when the organization reaches digitalization, an executive who leads the process will not be needed anymore, considering the effective integration of digital resources through the use of new technologies, and the successful shift in the mindset of other members of the organization. This

situation, however, does not seem to be a close scenario for several organizations. The digitalization of companies is a process that requires a constant analysis of the specific needs of each company, so to fully implement the digital strategy is a great effort for the CDO. Although it is not an easy task, if there is a clear understanding of role functions and their contribution within the company, the CDO would have a successful performance in the digital transformation.

8. Conclusion

The context in which organizations are today reflects several changes that demand new efforts from business leaders. There are new consumer needs, new technologies that are appearing, and new interactions between stakeholders that are constantly evolving. This whole scenario is part of the new phenomenon of the digital transformation of organizations, which shows a new way of doing business, forcing companies to adapt to market dynamics.

Bearing in mind that each organization has different characteristics, companies must evaluate how necessary it is for a new Chief to be in charge of leading digital initiatives, which will depend to a large extent on the type of company being analyzed, on the process of digitalization in which it is located and how complex is its organizational structure. Before companies decide to hire a new executive, they must understand what functions they should perform and what contributions should be expected from that role, in order to clarify whether it is necessary to enter, or if another executive such as the CIO can play that role, taking into account the importance of strategic management of IT infrastructure.

If companies in this case are so complex they need the incorporation of another role, it should be considered minimum skills the executive must have to lead the digitalization. Some of these

capabilities are: inspire other members of the organization about the importance of digital transformation, be able to respond to constant changes of consumers, understand their behavior towards their purchasing journey, and thus be able to find business opportunities that allow to generate competitive advantages when knowing how to leverage new digital resources. From this, it is established as a first conclusion that companies that want to be digital must be specific with what they want to achieve, in order to have a clearer picture of what their future will be like and what action plan they must take to reach their objective.

Once the CEO decides that he needs a new Chief in the board, the dynamics of both the CIO and the CDO in the organization should be analyzed. The perception regarding the contribution of the CIO in the business strategy has not been so favorable for the IT area, which supposes two possible scenarios with the appearance of the digital leader. Certain authors affirm that this role represents a threat, while others affirm that, on the contrary, IT area members must take advantage of the CDO's strategic vision and work together with the executive to generate more value to the organization and empower the area, leveraging its reputation in order to exploit IT management in a better way.

By understanding the different perceptions, it was evidenced how the permanence of the CDO has been discussed by several authors, where one of the most likely scenarios is that the role remains in the organization until it is fully digitized. In this case, the CIO will continue to ensure that the IT infrastructure is properly developed, generating value to the organization and giving a more strategic vision to the area, while the CDO could evolve and become another role where it can be responsible for promoting constant innovation in the processes of the company, taking into account the new technologies that appear and constantly looking for business opportunities.

Taking this into account, this article reflects on what several authors have said about both roles within the digital transformation, through a literature review about the topic, where a possible evolution of the Chief Digital Officer towards a Chief Innovation Officer could be established, considering that innovation must be a factor that must remain constant in companies for the proper development of organizations and their generation of value. For this, it would be interesting to consider conducting a study proving what this role could contribute to the organization once it is completely digitalized. For now, it can be said that this evolution will not happen in the near future, as it is understood the lack of guidance organizations have towards digital transformation.

9. References

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