

Reviewing the literature on the link between Digital Leadership characteristics and Digital Transformation Based on Dynamic Capabilities

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ABSTRACT

Digital transformation has become a strategic imperative on leadership agendas. In this explorative and theoretical paper, we explore how organizations build dynamic capabilities for digital transformation, highlighting the eminent role of digital leaders that will significantly enable sensing market changes, seizing opportunities, and reconfiguring/transforming organizations. We clarify that the success of digital transformation hinges on how leaders make a max of advantage from the usage of digital technologies. Our theoretical contribution is to conceptualize a model that aims to identify the relationship between digital leadership characteristics, the micro-foundations of dynamic capabilities, and the elements of digital transformation in order to gain insights on how effectively lead the digital transformation and what are the main digital leadership characteristics needed in each element of dynamic capabilities. The present study intends to advance the knowledge in this field by adding the theoretical basis of dynamic capabilities to the model, identifying new avenues for research, and raising new research questions.

1. Introduction

An organizational setup and transformation through an innovation project need critical success factors such as project structure, leadership, and culture (Chesbrough, 2010). Digital transformation is all about change, this latter requires strong leadership, as expected by stakeholders, that the leader of the organization will handle the total responsibility of the organization's transformation. Within this change, leaders integrate digital technologies, innovation, productivity, efficiency in processes and customer experiences in order to gain competitiveness. The success of digital transformation depends on leadership just as much as on technological savvy (Baculard, Colombani, Flam, Lancry, & Spaulding, 2017).

By using digital technologies, companies gain more by creating digital business models (El Sawy & Pereira, 2013), which implies digitally transform their business processes. Also, governance and leadership are identified as key success factors in Business Model Innovation (Burmeister, Lüttgens, & Piller, 2016), and it's by no means, that a company that wants to digitally transform must innovate in its business model (Zott, Amit, & Massa, 2011). In the journey of digital transformation, many companies need different organizational capabilities to help them in this process, Human resources skills and competencies are required; an orchestration of their efforts is a must, therefore, the presence of the leader in this process is an imperative, the decisions that he makes and the vision that he shares of this change will contribute in federating the participation of stakeholders. Thus, digital leadership is a significant component of superior and strong dynamic capabilities to anticipate and adapt in the digital era, mastering these dynamic capabilities are essential to any company that look for enhancing its competitive position in the new disruptive market.

When an organization search for a transformation from a manual process to a digital platform, it requires strong leadership. Unfortunately, there is no complete awareness about required changes in leadership in the era of Digital Transformation (El Sawy, Kræmmergaard, Amsinck, & Vinther, 2020). Several studies have evaluated how capabilities

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are developed and organization are mobilized in adapting to change; though, their linking to how decision-making processes affect dynamic capabilities in terms of sensing change, seizing opportunities, and reconfiguring organizations, and therefore drive digital innovation, has not been revealed in any depth (Schoemaker, Heaton, & Teece, 2018).

To our best of knowledge, previous studies tried to link the digital transformation to dynamic capabilities and others, to digital leadership, but a few of them treated the three concepts in the same model and more in-depth. Hence, this study examines the digital transformation that entails new capabilities and different digital leadership characteristics. This article aims to identify the relationship between digital leadership characteristics, the micro-foundations of dynamic capabilities, and the elements of digital transformation by proposing a theoretical model that schematizes this relation in order to verify it in further research avenues. Moreover, we want to gain insights on how effectively lead the digital transformation and what are the main digital leadership characteristics needed in each element of dynamic capabilities. The article is structured as follows; in the first part we present our methodology and then provide a theoretical overview on digital transformation, dynamic capabilities, and leadership in the digital age; in the second part, we present our proposed theoretical model; in the third part, we discuss our theoretical model and give theoretical implications, finally, we conclude by giving future research work agendas.

2. Methodology

This paper adopts a literature review of various articles and research papers on aspects related to digital leadership, dynamic capabilities and digital transformation. The present study explores insights concerning the relationship between digital leadership characteristics in the digital transformation process based on dynamic capabilities in order to enhance our understanding of this phenomenon and to present helpful guidance for researchers and practitioners. We used the Boolean operators (OR; AND) for connecting the different terms or their alternative spelling. This resulted in the following used strings for automated search:

("digital transformation" OR "digitalization" OR "industry 4.0") AND ("change leadership" OR "digital leadership" OR "transformational leadership") AND ("Dynamic Capabilities").

We have reviewed the literature from articles that we found in different databases (*SpringerLink, Ebsco, ScienceDirect, Google Scholar*), we selected them according to their relevance by title, abstract and keywords, they were reviewed and then we go farther to their references that we judged as relevant to our study. The articles selected should be written in English, published in a scientific journal, and approaches digital transformation as our main research variable.

3. Literature Review

Digital transformation has become a strategic imperative on leadership agendas (Fitzgerald, Kruschwitz, Bonnet, & Welch, 2014; Horlacher & Hess, 2016; Singh & Hess, 2020), but there is little conceptual research that examines how organizations are digitally transformed. The era of digital transformation is seen as an opportunity to extend profits and market share and become more competitive, and at the same time, passing by it without taking actions will be the main reason for being disrupted by new entrants. The massive use of digital technologies improve the performance of firms (Bouwman, Nikou, & de Reuver, 2019) and help them rethink and reshape their business models. For instance, digital transformation push firms to change their way of creating and capturing value (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013).

The well-known story of Kodak/Fujifilm are the best example of adaptation to technology and digital transformation failure and success, in both cases, we see the eminent contribution of leader's role in changing the vision of the firm, operating the change on company's business model and improving the customer experience to ensure the perennity and the growth of the company. Moreover, we understand that digital transformation isn't just about technology (Tabrizi, Lam, Girard, & Irvin, 2019), it's about other factors that are related to Human resources and especially the leader vision. The leader not only sets and shares the vision for change but prepares for it and develops the main competencies required for such a change. Strong leadership is vital in any changes in the company and at all levels (Brecher, Laurenceau, & Sloman, 2016).

3.1. Digital Transformation

In recent years, the rapid development of digital technologies has enabled companies across industries to compete and create value in completely new ways. Therefore, many companies started early to improve their digital capabilities and resources to seize opportunities and respond to possible disruptions, this phenomenon is often recognized as digital transformation. Digitalization and digital transformation are modifying the existing businesses and organizations so fast

(Collin et al., 2015). The digital transformation process provides the leaders with the opportunity to foster the culture of the company, link the innovation with productivity, efficiency, redefine the value proposition, improve the customer experience and gain a competitive advantage. The success of digital transformation depends on leadership just as much as on technological savvy (Baculard et al., 2017). Many scholars (i.e., (Collin et al., 2015; Rogers, Baricz, & Pawar, 2016; Sheninger, 2014; George Westerman, Didier Bonnet, & Andrew McAfee, 2014)) agreed that digitalization is one of the major opportunities and challenges for organizational leaders today.

The study of (Matt, Hess, Benlian, & Engineering, 2015) specifies four dimensions of an organization that are influenced by Digital transformation: use of technology, change in value creation, structural change, and financial aspects, plus new business model and the creation of new market spaces. Fitzgerald et al. (2013: 2) define digital transformation as “the use of new digital technologies (social media, mobile, analytics or embedded devices) to enable major business improvements such as enhancing customer experience, streamlining operations, or creating new business models”. Embracing the opportunities presented by new digital technologies is a top-priority phenomenon for companies’ executives, one of the most urgent challenges companies are facing today. A digital transformation requires significant human, financial, and technological capital, all of which must be aligned to facilitate successful results and must employ leaders who are capable of directing this change and allow their knowledge and experience to influence the process (Dahlström, Desmet, & Singer, 2017).

In digital transformation, the role of a leader is central to driving a fast decision-making process and propelling the change (Kohli & Johnson, 2011; Liu, Li, & Yang, 2012). Effective digital leadership skills influence the capability of organizations to develop and execute a transformative digital business strategy (Carcary, Doherty, & Conway, 2016). Digital transformation changed the role of leader and imposes new features for a successful digital leader, also the transformative capability of organizations is influenced by the strong leadership of executives that is considered as a key element for the success of the digital transformation journey. Therefore, we formulate the following research question:

R.Q.1: what are the main digital leadership characteristics developed by digital transformation?

3.2. Dynamic Capabilities

The dynamic capabilities framework has become an active research area in the strategic management literature, the study of dynamic capabilities explains how firms respond to rapid technological and market change (Helfat & Peteraf, 2009; D. J. Teece, Pisano, & Shuen, 1997; D. J. J. L. r. p. Teece, 2018). Starting from a Resource-Based View approach proposed by (Barney, 1991), that listed four key criteria for resources and capabilities in order to gain and preserve a competitive advantage -valuable, rare, imperfectly imitable, and non-substitutable (VRIN); to explain Business model, whereas, this latter can be easily imitated by competitors and the VRIN protects it less, the dynamic capabilities approach comes to reinforce this protection (D. J. J. J. o. i. b. s. Teece, 2014). “the crafting, refinement, implementation and transformation of business models are outputs of high-order (dynamic) capabilities” (D. J. J. L. r. p. Teece, 2018). These two approaches – RBV and Dynamic capabilities- are highly suggested as appropriate theoretical foundations for research on Business model (Barney, 1991; D. J. J. C. M. R. Teece, 1984). Moreover, Business model innovation as a paramount phase in the digital transformation, improve the responsiveness of firms to the changing environments and provide them with a new competitive advantage by using existing capabilities and resources in seizing opportunities (Spieth & Schneider, 2014). In addition, in Casadesus-Masanell and Ricart’s words (2011:100): “Strategy has been the primary building block of competitiveness over the past three decades, but in the future, the quest for sustainable advantage may well begin with the business model.”(Casadesus-Masanell & Ricart, 2011). As we see in the new entrants in the digital age, like Airbnb, Uber...etc., that they have totally new and digital business models in order to create and deliver value. Also, in the big four (Google-Amazon-Facebook-Apple) GAFA, they use digital technologies massively in order to create new value propositions and advance their competitors.

Dynamic capabilities are explained by Schweizer (2005, p.6) “as the ability to seize new opportunities and to change the existing business model by reconfiguring the value chain constellation and protecting knowledge assets, competences and (the access to) complementary assets and technologies in order to achieve sustainable competitive advantage.” (Schweizer, 2005). As added by (Rogers et al., 2016) that “digital transformation is fundamentally not about technology, but about strategy,” meaning that senior leadership executives and their teams must rely on their organization’s dynamic capabilities to get the most out of new and unexpected business model innovations, by creating new value, improving customer experience, and finding a new formula of profit. Kohnke (2017) claimed that along with capabilities it is crucial for leaders to understand the implication for employees, with attention focused on new skills and competencies and new forms of leadership (Kohnke, 2017). The main challenge faced by senior leadership teams is how to balance the exploitation of existing capabilities while at the same time building new digital capabilities that are compatible with the path dependencies of the past (Svahn, Mathiassen, & Lindgren, 2017). Teece (2007) argues that dynamic capabilities consist of three broad clusters. (1) sensing opportunities (and threats), (2) seizing opportunities, and (3) transforming the organization’s business model and wider resources base (D. J. J. S. m. j. Teece, 2007). Companies need to master these

three clusters of dynamic capabilities- sensing external change, seizing new opportunities, and transforming organizations- to enhance their competitive position in the new disruptive market. These strong dynamic capabilities can stay ahead with rapid innovation and distinctive business models (D. J. J. L. r. p. Teece, 2018). However, despite these tensions, the building of capabilities for digital transformation has received limited scholarly attention, given the disruptive nature of digital transformation, dynamic capabilities framework is a powerful lens for examining this transformation process (Warner & Wäger, 2019). Therefore, we formulate the following research question:

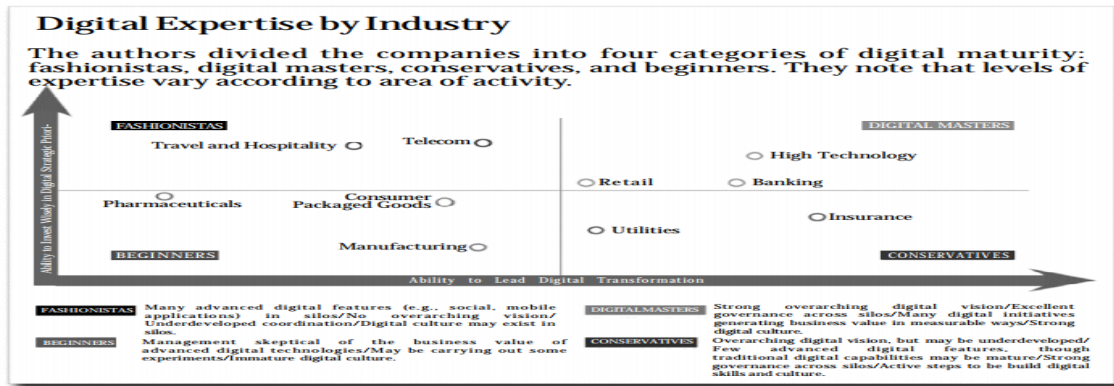
R.Q.2: how do senior leadership teams' sense, seize and transform their organizations in the digital era?

3.3. Leadership in the digital age

When an organization seeks to transform from a manual process to a comprehensive digital platform, this requires a successful leadership strategy that can be influential and impactful in advancing this type of change over the long term (Sow, Aborbie, & Research, 2018). Digital transformation is essential to have a better response and enabling business agility to optimize business performance. In industry 4.0 where digital technology based on the internet and cloud become more dominant, the incumbent firm has to embark on digital transformation (L. W. W. Mihardjo & Rukmana, 2018). Many studies of researchers, Annual reports of well-established consulting firms (Accenture, EY, KPMG, Bain...), and even the DAVOS (2019) report have considered that leadership is a key success and lever to the right implementation of digital transformation. In digital transformation, the role of a leader is central to drive a fast decision-making process and propelling the change (Kohli & Johnson, 2011; Liu et al., 2012). Digital leadership is a combination of the leadership style of transformation leadership and the uses of digital technology. Digital leadership is defined as the combination of culture and competence of the leader in optimizing the use of digital technology to create value for the firms (Rudito & Sinaga, 2017). The study of digital leadership is the part of the study about leadership based upon the upper echelon theory developed by (Hambrick & Mason, 1984), where the output of organizations is influenced by the leader decision based on the interpretation and cognition from the actors. In terms of the digital leadership, the concept is created by combining the leadership skill and the digital capability to optimize the benefit of digital technology in order to increase the business performance (Wasono, Furinto, & Technology, 2018). In Carcary words "the organization's capability to develop and execute a transformative digital business strategy is likely to be influenced by the effectiveness of their digital leadership skills and the availability of an appropriate digital talent pool to deliver on this strategy" (Carcary et al., 2016). According to the study of (Staffen & Schoenwald, 2016), digital leaders are responsible of leading the organization through industry 4.0 and its transition to a digital organization (Jones, McCaffrey, Wilson, & Holdsworth, 2004) through managing the disruptive changes and by motivating the employees. A digital leader's mission isn't just about leading a digital transformation process, but even the resulting digitalized company, it's about new ways of working and leading high performing teams as defined by (Bawany, 2019).

Westerman et al. (2014) defined the digital capabilities as the levels of investment in technology-enabled initiatives meant to change how the company operates. Digital leadership capabilities create the necessary conditions required to drive transformation, the How of leading change (George Westerman, Didier Bonnet, & Andrew McAfee, 2014). In their study, Westerman et al., (2014) recognized four quadrants: Beginners, fashionistas, conservatives, and Digital Master. The intersection of two axes, the horizontal axis one talks about the leadership ability to lead Digital Transformation, and the vertical axis talks about digital capabilities.

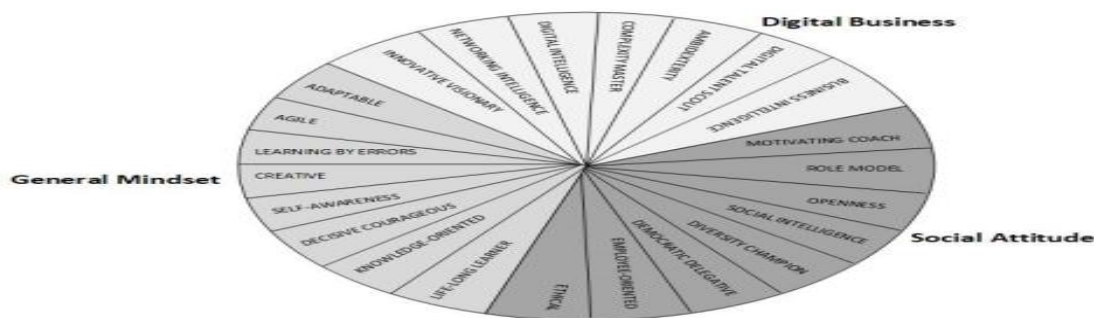
Figure 1: Digital Mastery Model by Industry Sector.



Source: Westerman et al., 2014.

The actions of leaders directly impact employee performance and therefore affect the implementation of digital transformation strategies (Mugge, Abbu, Michaelis, Kwiatkowski, & Gudergan, 2020). The digital era entails a new capability for an imperative digitalization, to drive the vision forward, and to implement an appropriate leadership model (Kohnke, 2017). Several studies have weighed the foundation of development capabilities and the mobilization of organization in adapting to change; however, their interrelation to how decision-making processes affect higher-order dynamism in terms of sensing change, seizing opportunities, and reconfiguring organizations, and thus drive digital innovation, has not been revealed in any depth (Schoemaker et al., 2018). A new term developed in the digital era, digital leadership, its nature is dynamic and central to driving digital transformation (Oberer & Erkollar, 2018), integrating culture and competencies in optimizing digital technology to create value (L. W. W. Mihardjo & Rukmana, 2018). Several studies highlighted the main characteristics of leadership in the digital age; in the study of (Toduk & Gande, 2016) specified 4 characteristics : (1) entrepreneurship related to creativity and innovation, (2) digital skills to make a competitive difference with technology and strengthen the personal value of knowledge, (3) implementing digital technology to create strong domestic and global networks and enable collaboration, and (4) inspiring loyal participation in an overall vision. Also, we see in the study of (Zhu, 2015), that he found five similar characteristics: (1) being creative (2) continuously looking to make a difference, (3) participating in a global vision to drive change and collaboration, (4) remaining inquisitive to learn and adapt to change, and (5) acquiring in-depth knowledge and competence. Other studies claimed the importance of collaboration to seize opportunities by the leader, and not just being creative and innovative (L. Mihardjo, Sasmoko, Alamsyah, & Elidjen, 2019; Sandell, 2013). The so-called digital leader has a double role, on one hand, he needs to ensure high flexibility especially with stakeholders and works in networked and distributed organization structures, on the other hand, he must ensure a competitive advantage by managing the digital transformation of the organization so not to be disrupted by new entrants. The capability of leading people in the digital transformation is considered as a key success factor (Burmeister et al., 2016) and an imperative (Schwab, 2017). In the study of (Klein, 2020) he found 23 characteristics of digital leadership after conducting a content analysis method of 60 articles, the most mentioned characteristic is “innovative visionary”, the founded characteristics of digital leadership are divided into three groups: characteristics especially related to digital business, characteristics concerning social leadership attitude and general mindset characteristics as shown in figure 2.

Figure 2: Digital leadership characteristics



Source: (Klein, 2020, p. 895)

Neubauer et al. (2017) proposed that the skills, competencies, and behaviors that leaders require to succeed are found in agile leaders who are humble, adaptable, visionary, and engaged. They described the leaders' personality characteristics as accepting feedback, acknowledging that others know more, being willing to change their minds, having a clear vision, and being open to communication and interaction from all stakeholders (Neubauer, Tarling, &

Wade, 2017). Lanza and Bernthal (2016, p.8) argued that “there is not a’ one size fits all’ personality model for leadership” (Parr, Lanza, & Bernthal, 2016), in their study of assessing personality to determine the character profile of 2461 executive-level leaders and they concluded that power players have emotional stability, are agreeable and conscientious, have socially creative communication, and are open to new ideas. We also identified in the study of Kane et al. (2018) the common traits that develop leaders’ skills to lead DT across their organizations effectively. Traits cited were direction (providing vision and purpose), innovation (conditions to experiment), execution (empowering people), collaboration (across boundaries), inspirational leadership (getting people to follow), business judgment (making decisions in uncertainty), building talent (self-development), and influence (persuading and influencing stakeholders) (Ward et al., 2018). Moreover, Mclean and Mayer (2011) interviewed and reviewed 1,000 studies on leadership and analyzed 3,000 pages of transcripts to determine the profile of a good leader. They stated that their team was startled to see no identifiable or universal characteristics, traits, skills, or style that led to their success (George, Sims, McLean, & Mayer, 2011). El Sawy et al. (2016) stated that leaders do the right things for the strategic success of digitalization, by thinking differently across complexities pertaining to business strategies, business models, enterprise platforms, mindsets, and skillsets along with the IT function and the workplace (El Sawy et al., 2020).

After reviewing the literature on leadership in the digital age, we can say that digital leaders have certain characteristics that are suitable for the digital transformation, in addition, we examined how leaders can develop other characteristics, traits and skills that were not required before the development of digital technologies, and also develop the individual capacity to better lead this transformation, leaders again prepare their organizations to develop strong dynamic capabilities that are a must to achieve the wanted degree of digital maturity. In order to understand that correctly, we formulate the following research questions related to digital leadership in order to verify them in empirical studies as future works:

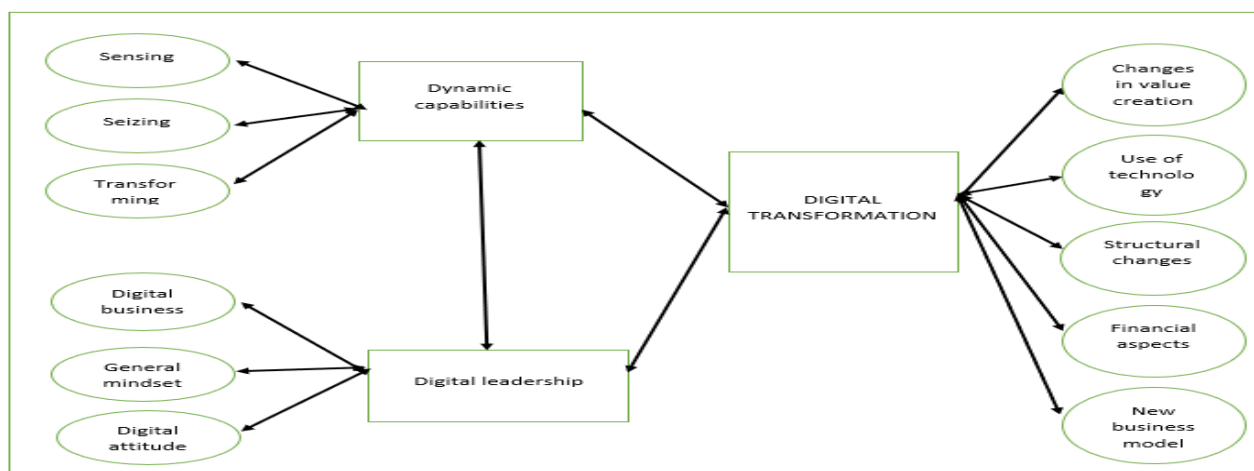
RQ3: *what do leaders of digital transformation consider as key elements for the successful implementation of digital transformation initiatives in organizations?*

RQ4: *how do digital leadership characteristics enable the successful implementation of digital transformation programs in business organizations?*

RQ5: *To what extent do leaders use organizational dynamic capabilities to lead to and support digital transformation in their organizations?*

To capture the interlink between digital transformation, digital leadership and dynamic capabilities and to answer the proposed research questions, we propose the following tentative theoretical framework:

Figure 3. tentative theoretical framework



Source: elaborated by authors.

4. Theoretical Implications and limitations

The main issue addressed by this study is that executives and managers are not able and weary to successfully address challenges associated with the execution of DT in their organizations. We have seen that digital transformation imposes change on the characteristics of leaders, and on the use of strong dynamic capabilities; involving the use of digital capabilities to support business model innovation, the improvement of customer experience, and the digitalization of

processes. Leaders of today need to master digital capabilities to sense the change in the external environment, seize the opportunities, and transform their organizations. The double role of digital leaders resides in leading the process of digital transformation and in the same time deal with the daily decision related to the ancient form of organization, he must ensure a competitive advantage by managing the digital transformation of the organization so not to be disrupted by new entrants. Digital Leadership has a significant impact on dynamic capabilities that are required in the transforming of organizations in the digital era as verified by previous studies (see (L. W. W. Mihardjo & Rukmana, 2018; Schoemaker et al., 2018; Zhu, 2015)). The above diagram represents the link between digital transformation and its five dimensions (changes in value, the technology, structural changes, financial aspects and new business model) and the characteristics of digital leaders regrouped in three categories (digital business, general mindset, digital attitude) on how to sense, seize and transform the organizations.

However, our research is limited by several factors including the chosen keywords, we would have added other keywords for example “business model innovation” or “customer experience” or “business process” or “CIOs” (Chief Information Officer).

5. Conclusion

Digital Transformation process leads companies to disruptive changes and affects all business processes. A new mission for companies’ leaders today is to manage the process of digital transformation and the resulted digitalized company. We analyzed the literature on digital transformation, digital leadership, and dynamic capabilities. The proposed theoretical model suggests the link between digital transformation, digital leadership characteristics and the micro-foundations of dynamic capabilities. The present study intends to advance the knowledge in this field. Digital transformation is essential to better answer to the new requirements set by Industry 4.0 to enable the agility of organization that improve business performance. In a constantly changing markets, Leaders need to create strong dynamic capabilities for organizations that lever them to digitally transform, this requires leaders to master and develop digital skills and competencies. Due to limitations in terms of articles selection process and criteria, proposed research model and the lack of primary data sources, future research are recommended. We suggest that future researchers need to explore the Digital Transformation within organizations covering different sizes, industries and regions using our proposed theoretical model, we believe that an empirical study to verify the proposed model is foreseeable, this can be achieved using different methodologies including qualitative, quantitative or mixed methods approach. A study on digital leadership could be conducted taking into consideration the gender variable to explore differences in leadership styles, traits and characteristics in the process of implementing digital transformation process, a study on the major effect that digital leadership and digital transformation process could have on the organizational culture dimension should be deepened.

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