

A systematic literature review exploring the impact of digitalisation on leadership towards a new style of leadership

Abstract

The literature shows that leadership and digitalisation has been mostly examined by consultancy firms and institutions in a pragmatic fashion and reveals that exploring the impact of digitalisation on leadership actions and behaviours is an important endeavour. This research took the form of a systematic literature review that contextualises the continuing discussion on the impacts of digitalisation on leadership style and behaviour. It aimed to establish how employees should be led in an increasingly digitalised business environment and to ascertain what skills and competences are needed to succeed. By systematically synthesising previous related literature, the study design consists of recognising relevant publications. It was found that technological developments have changed our social life in many ways, including leadership style and behaviour. It has been suggested that the next generation of leaders will need to develop strategic and conceptual thinking, will have to demonstrate high intellectual integrity and openness, but also find new ways to influence and generate loyalty among employees. Given the dominance of digital technologies, leadership has become a process of social influence, which is enhanced through the use of advanced information technology and managerial innovation and leadership transformation. Nevertheless, the new capabilities of digital leaders do not displace traditional leadership traits and skills. In fact, leadership in the future must combine traditional leadership competences with new competences that allow leaders to lead their organisations into the digital era.

Keywords: Systematic Literature, Digitalisation, Leadership

1. Introduction

Digitalisation is widely recognised as the use of advanced technology in social infrastructures, especially in communications (Kumar & Dash, 2015). It is re-structuring our social life in many different ways (Backhaus & König, 2019), and affects all sectors with new models, uses, services, players and technologies (Lambrou, et al., 2018). The widespread effects of the digitalisation are therefore difficult to dispute (Han, 2020).

These new technologies also have an impact on both the styles and behaviours of leadership (D'Amato & Macchi, 2019). The role of a leader is to inspire excellence and success in others (Lindblom, et al., 2017; Sposato, 2019). Alfaqeeh et al. (2019) emphasise the effect of culture and the social-context on leadership style, in which the factors are enablers and inhibitors of a leader's ability to inspire and influence other people's behaviours, attitudes and actions. Zighan and Ahmed (2020) argue that today's organisations expect leaders to have many advanced skills and qualities, and suggest that digital skills are one of the most important attributes of a leader. White et al. (2013) mention that leadership in the future will be exercised with digital attitude and technical ability. The literature reveals an increasing interest in this matter from researchers and professionals, most of whom are grounded in the confidence that the move toward digitalisation is clear, straightforward and inevitable (Brosig et al., 2019).

Since the 1990s, when the impact of digitalisation became clearer (Behera et al., 2020), there has been a significant increase in papers and studies that address the effect that digitalisation has on leadership (Kane et al., 2019). A range of authors from different disciplines have discussed the development and implications of digitalisation on leadership (Foerster-Metz et al., 2018; Sheninger, 2019; Kane et al., 2019; Zeike et al., 2019; Strielkowski & Chigisheva, 2019). According to these studies, leaders of today must use advanced technology to interact,

communicate with and inspire others in terms of style, strategy, communications, behaviours, culture, capabilities and excellence, within every discipline influenced by digitalisation. Nevertheless, the contributions of these papers have not yet been summarised. Thus, a literature review of the effect of digitalisation on leadership is valuable. Kane et al. (2019, p. 34) argue that many core leadership skills are not changed, even the digital disruption calls for certain new skills as well. D'Amato and Macchi (2019) indicate that effective leadership styles change over time due to the external environment, which influence how leaders act and behave. They have to challenge the status quo. Nevertheless, leadership in the 'digital era' has received limited attention in the literature. Therefore, this research took the form of a systematic literature review (Antony et al., 2019; Gupta et al., 2019; Sharma et al., 2020), with a view to contribute to the discussion of the effects of digitalisation on leadership style, behaviour, and competences. It synthesises the fragmented literature of digitalisation and leadership, aims to construct a critical literature review that can identify the effects of digitalisation on leadership, and address the competencies leaders have to possess. By conducting a systematic literature review, this research contributes to the theory of leadership by synthesising the various contributions in the previous literature, and provides suggestions for key areas that require further research.

This article is organised in three parts. In the next section, the paper offers an analysis of the available literature, starting with a general view of leadership, schools and theories, and then provides an overview of digitalisation and its impact on leadership. Then, the research method is outlined. This is followed with a data analysis, discussion and summarisations, in order to draw a conclusion on the impact of digitalisation on leadership.

2. Literature review

2.1 General context of leadership

Leadership is often considered the act of leading, commanding, stimulating, and managing

others (Finkelstein et al., 2009; Grossman & Valiga, 2016; Kim et al., 2017; Simsek et al., 2018; Isfahani, et al., 2019). According to Mendenhall et al. (2017), the concept of leadership has different meanings and it is difficult to define, given it has many situational meanings. A leader's characteristics, behaviours and actions heavily depend on the situation and context (Alfaqeeh et al., 2019).

Further, Northouse (2018) argues that the definitions of leadership vary due to external influences and the personal characteristics of leaders. Nevertheless, to provide a widely accepted definition, leadership is a relationship by which an individual (leader) affects the practices and behaviours of other people (House et al., 2002; Higgs & Dulewicz, 2016; Northouse, 2018). Throughout history, researchers have tried to find out what makes a leader. Over the last eighty years, six main schools of leadership have been developed (Landis et al., 2014). In the Industrial Revolution, management studies focused on the structure, productivity and efficiency of operational systems that can produce large quantities. In this era, companies grew from hundreds of employees to thousands of employees, and from craft production to mass production. Studies of leadership focused on effective leadership and specialised skills, and also focused on those leaders who had the power to lead people and stimulate high performance and productivity (Bass & Bass, 2009; Smothers, 2011; Storey, 2016).

2.2 The evolution of leadership theories and styles

Leadership theories aim to define how leaders function within the existing business environment (D'Amato & Macchi, 2019). The initial theories of leadership focused on the merits that differentiated leaders from other people, such as "The Great Man Theory" and "The Trait Theory". Those theories mainly emphasise the character and personality of leaders, along with how they behave (Northouse, 2018). Previous research on leadership that was based on the great man theory and the trait theory focused on the features of leaders,

such as their emotional maturity, intelligence, self-assurance, power, confidence, integrity, resolve and sociability (Yukl, 1999). Management studies of this period began to focus on leadership with the appearance of the great man theory (Van Seters & Field, 1990). The great man theory argues that leaders are born and not made and that leadership traits and qualities are inherited (Amanchukwu et al., 2015). The trait theory also accepts that a leader is born, not made, and attempts to define distinctive features by explaining how leadership is effective, by differentiating good leaders from other ineffective ones (Bor, 2019). The qualities of leaders include the establishment of a very strict control system that ensures that their methods are followed by all employees without deviation, with the objective of eliminating unnecessary movements and downtime and increasing productivity (Tang, 2019).

However, during the second-half of the 20th century, Stogdill (1975) shifted the study of leadership to leaders' behaviours and actions, rather than focusing on hereditary characteristics and leadership qualities (Bass & Stogdill, 1990). The behavioural approach refutes the hypothesis of the existence of common traits for leaders and finds its theoretical foundation in the School of Human Relations, which supports the importance of relational factors, the needs of individuals and the individuals' behaviour and motivation (Judge & Bono, 2000). Based on the behavioural approach to leadership, a leadership framework was developed with two core dimensions - the courtesy to people and the courtesy to results. These two core dimensions were redeveloped later to "People-Oriented Leader" and "Task-Oriented Leader" (Mangundjaya & Wulandari, 2019). A people-oriented leader focuses on individuals and supports the personal development of their team members. This type of leader is considered more participatory, and is an individual who focuses on creating mutual trust and a relationship with followers that is based on respect. Whereas, a task-oriented

leader focuses on the task itself, where goals are achieved and work is done well. This style of leadership focuses on setting and defining goals, objectives, and responsibilities that are compulsory (Gartzia & Baniandrés, 2016). Nevertheless, according to Peña-Acuña (2017), both styles should not be seen as opposite poles of leadership, rather they should be seen as two individual styles, where each style works better in specific business conditions.

In the 1980s, the visionary school of leadership became prevalent. It was grounded in generating and expressing a truthful vision that is attractive and reliable and has a positive influence on the future (Northouse, 2018). Visionary leadership defines leaders who use their charisma and personal merits to increase ambitions and secure the commitment of others. A visionary leader acts as a role-model for all other individuals and establishes relationships on an emotional level with them (Kaplan & Owings, 2017). Bass (1990) divided visionary leadership into the categories of “transactional” and “transformational” leadership. Transactional leadership is a mode of leadership based on sanctions and rewards, depending on the level of the task that needs to be completed. Thus, it is an exchange-based leadership, i.e. based on a reciprocal exchange between the leader and their subordinates, where subordinates accept the leader’s promises of rewards and incentives and avoid punishment in return for doing the required work (Kark et al., 2018). On the other hand, transformational leadership is defined by a leader who forms an appreciated and constructive change among their followers (Warrick, 2011). This mode of leadership emphasises the link between leaders and the people in charge. According to Divya and Suganthi, (2018), a transformational leader motivates and inspires individuals by handling and supporting the interests of people and the interests of the individual. However, Baškarada et al. (2017) suggests that the same leader can behave in both transactional and transformational ways, using different methods of influence and motivation.

Finally, leadership research has analysed other factors, such as situational factors and the

leader's skill level and ability to adapt (Zaccaro et al., 2018), which has led academics to investigate the potential compatibility between the style of the leader and the internal context of the organisation (DuBrin, 2015). Based on the above foundation, the contingency theory and situational theory of leadership were developed. Contingency theory and situational theory assume that a leader is expected to be operative in diverse circumstances only if he or she is sufficiently flexible to undertake the best style of leadership that is suited to each circumstance (Amanchukwu et al., 2015; Zigarmi & Roberts 2017). Nevertheless, being able to cope with the situation is no longer sufficient for leaders of today. According to Nguyen and Hooi (2020), leadership of today plays an increasingly essential role in the survival and growth of organisations. Those leaders must possess strategic thinking, entrepreneurial attitudes and superior communication skills (Mascareño, et al., 2020).

In general, two perspectives on leadership prevail in the academic managerial literature. The first is focused on the leader's traits and those elements that explain the ability of a leader to influence the performance of individuals or the work group. The second perspective focuses on leaders' behaviour and the creation of an exchange relationship between the leader and his/her subordinate, thereby forming a mutual relationship and influencing people's behaviours and actions. Table 1 summarises the evolution of leadership theories and leaders' qualities, competences and roles, according to each school of management.

Table 1: The evolution of leadership theories adopted from Northouse (2018)

Management school and leadership theory	Description	Leaders' qualities, competences and roles	Period
Scientific management & the trait theory and the great man theory of	This school of thought suggests that particular individuals' features (traits) distinguish those who are considered leaders from those who are not. Some of the personal qualities characterising a leader include intelligence, intuition, energy, capacity of foresight and	The leader's main roles are planning, organisation, direction and control. Leaders have a responsibility to achieve the objectives of their organisation and increase productivity by making good initiatives of control to ensure that	1904 - 1947

leadership	encouragement.	all tasks are well executed within their organisation.	
The behavioural management school and the task-oriented and people oriented leaders	This school of thought focuses on an analysis of leaders' behaviours and the relationship between the individual and leadership itself. The originator of these studies was the Ohio State University, which produced two models of leadership - leaders who are concerned about people and leaders who more concerned about the final results.	Leaders start to address the human dimension of work. They were forced to intensify their efforts in the search for efficiency through the motivation of workers, greater job satisfaction and an improved group dynamic.	1950s
Contemporary school of management and the visionary school of leadership based on transactional and transformational leadership	This is one of the most developed and studied approach to leadership today. The theory of charismatic leadership takes into account both the leader's personality and behaviour and the situational factors, giving rise to a more comprehensive perspective than any of the competing theories.	People Management is an amalgam of leadership and management. It is argued that people are not just looking for a pay-check, they are looking for meaningful work and opportunities to develop their skills. Leaders should be clear about what they believe and must understand the needs of both the organisation and its members. The role of leaders involves the ability to apply conceptual skills to make the decision of "what to do", and to apply technical skills to make the decision of "how to do". Additionally, leaders must apply relational skills to engage in democratic decision making.	1970s
Contemporary school of management and situational theory and contingency theory of leadership	This is based on the impression that the diverse patterns of behaviours could be more effective in diverse situations, while the same behaviour is not optimal for all situations. It suggests that an individual becomes a leader not only because of his/her personality, but also because of several situational aspects and his/her interactions with these aspects.	The dynamic change in the external environment requires the leader to be able to deal with several situations and quickly make different decisions in different situations, based on the surrounding circumstances. Leaders must be able to integrate all circumstances into a solution that is most appropriate for a specific context.	1990s

Despite these variations in leadership theories, there are at minimum four central implications of these theories (Northouse, 2018). First, many of these schools of thought

agree that leadership is a procedure of effect that takes place between a person (the leader) and other people (the followers). It is agreed that this procedure of effect results from certain features and behaviours in a leader (Bass & Riggio, 2006). Also, leadership involves other individuals (followers), who are influenced by the leader and are willing to behave according to that influence. Consequently, followers formalise the leader's power by making the leadership practise conceivable (Bastardo & Van Vugt 2019). Thirdly, the purpose of leadership is mainly concerned with objective accomplishment (Tourish, 2019). This implies that leaders attempt to directly influence their subordinates and look to guide their actions in order to reach a target level of achievement and performance (Divya & Suganthi, 2018). Finally, the theories of leadership in management are context-based, which means these theories have evolved to match the characteristics of the external business environment and its requirements (Seidel et al., 2019). According to D'Amato & Macchi, (2019, p. 437). "Leaders have to challenge the status quo, since staying with it cannot be acceptable in a long-term perspective"

2.3 Digitalisation and Leadership

Digitalisation, which is also known as digital transformation, is a concept that is defined differently by various academics and practitioners (Grunig, 2009). For instance, IT professionals refer to digitalisation as the procedure of changing from an analogue to a digital system (Brennen & Kreiss, 2016). Others characterise digitalisation as the changes introduced by digital technologies in all aspects of human life (Stolterman & Fors, 2004). Another perspective considers digital transformation as the radical exploitation and use of technology, such as mobility, advanced communications, social media and the internet of things (Lampropoulos et al., 2019). In general, digitalisation is a new approach to adapting technology and it is considered network-centric (Tsai, 2003). Nevertheless, it is important to understand that digital transformation is much more than just the introduction or adoption of

new digital technology (Nambisan, 2017). It involves radical changes to social life, people's behaviours, interaction and communication styles, and also influences leading and guiding (Anderson et al., 2017).

Digitalisation is multidisciplinary by nature (Verhoef et al., 2019), and leadership has been impacted by digital technology in several ways (Roman et al., 2019). Digitalisation changes the roles of leadership, along with its associated actions and behaviours (Cortellazzo et al., 2019). It is believed that knowledge and information have become a new form of power in the digital revolution (Schwab, 2017). Furthermore, digital development enables new means of interaction and communication (Thompson, 2020). In this era, organisations move from individual-based to teamwork-based, while leading and motivating others become more complicated (Zighan, 2020).

Today, leadership often emphasises dialogue, mutual influence, and participation. This has been greatly influenced by advanced technology in the present digital era (Sheninger, 2019). Digital transformation, therefore, involves new leadership styles that challenge the classic models of leadership. It requires versatile leaders who are multi-talented, and who also continue to master their professional coaching instruments (Sanders, 2011). Nevertheless, additional skills are also necessary (Kane et al., 2019). A modern leader must master several languages in order to evolve with confidence in different cultures. They must also have sufficient knowledge of information technology (Bontis, 2001; Schein, 2010; Thompson, 2020). Although the digital environment does not change the core requirements of an effective leader, it does challenge traditional ideas of what approaches should be used to become a leader and also challenges how quickly a leader should gain influence (Kane et al., 2019). In the modern era, leaders should develop new means that allow them to stimulate people's creativity and innovation (Nguyen & Hooi, 2020). Leaders need to have an adaptive capacity, coupled with resilience and openness (Venter, 2019). As a result, leaders of today

appear more like cultural-mediators (Northouse, 2018). The role of a leader is therefore complex, and it cannot be fulfilled on the basis of the ready-made formulas of management, rather it is founded on the basis of a social construction (Thomas et al., 2018), and open communication with people who construct, create and invent meanings that they give to encounters with others and their perceptions of their leaders (Brink, 2020).

Effective communication with people is essential in order for a leader to be personally successful (Cross et al., 2004; Fisk, 2002; Duncan, 2017; Luhmann, 2018; Northouse, 2018).

Table 2 describes the key skills and capabilities of modern leaders. These are adopted from the works of Brock and von Wangenheim (2019).

Table 2: Modern Leaders' Skills and Capabilities (Brock & von Wangenheim, 2019)

<i>Visionary Qualities</i>	It is essential for a leader to set goals and offer directions to their followers. The leader is the one who is capable of making pioneering instructions that make-sense to their followers. For Edgar Morin, "this vision may be more or less precise, but it must offer people a perspective of the future that is realistic, attractive and credible".
<i>Communication Skills</i>	A good vision can only be effective when it is successfully communicated. Thus, a leader must have good communication skills that reflect consistency in the leader and his/her philosophies, particularly in order to generate enthusiasm.
<i>Listening and Openness Skills</i>	A leader can no longer be self-centred. Openness with followers involves the capability to consider everyone, which facilitates reflexivity through feedback and self-examination.
<i>The Need To Share Power</i>	Leaders have the responsibility to empower their followers. The delegation of authority is an influential aspect in the development of followers. This involves a leader who deputies his/her powers, infers collaborations and is concerned with behaviours.
<i>Hard Empathy</i>	In addition to their technical skills, all leaders have a high level of emotional-intelligence. Respectable leaders demonstrate a form of "hard empathy" that consists of providing employees with what they need to develop their projects and be effective, rather than providing them what they want. A leader cannot be the friend of all his or her collaborators. They must guide, inspire, facilitate, practice constructive feedback, and convince followers by developing a partnership with their colleagues, and by having respect for both the individual and for the work that needs completing.

Digital is a state of mind as much as it is a technological marvel. It is best used in the pursuit of making new acquaintances and generating value through novel means (Fisk, 2002). A leader should re-calibrate his/her leadership style in this domain (Luhmann, 2018). A digital

leader needs to understand how the technology works, and must learn how to use it to lead and motivate people. These features are essential for modern leaders and their behaviours (Rivard, 2004). A contemporary leader should be talented and hold numerous points of view, without being infested by complication, and must develop a convincing vision of the future, and direct others toward that vision (Cross et al., 2004). Leaders are entering the digital era, which has disrupted the traditional economic and social order. Nowadays, leadership aims to ratify credibility in information, create value, and fuel business with more diligent business decisions, and further, it aims to effectively communicate these decisions to inspire excellence and success in others (Zeike et al., 2019). Nevertheless, leaders of today should not only be concerned with having high-tech skills (Kane et al., 2019). Therefore, by utilising a structured literature review, this study contributes to the understanding of the impacts of digitalisation on leadership style and behaviour, with a view to illuminate what has been outlined so far.

3. Research Methodology

This study is a systematic literature review that explores the impact of digitalisation on leadership. Systematic literature reviews have developed considerably in recent years and have been extended to several scientific areas (Sharma et al., 2020). Systemic literature reviews consist of a synthesis of the scientific literature in response to a specific question (Gupta et al., 2019). Once the research question has been defined, it is necessary to specify the study's eligibility criteria. These specifications are used to select the studies to be included in the review. This process is the result of a rigorous scientific approach, made up of several well-defined steps (Antony et al., 2019). In this study, the three-stage SLR process proposed by Tranfield et al. (2003) was adopted, as illustrated in the figure below.

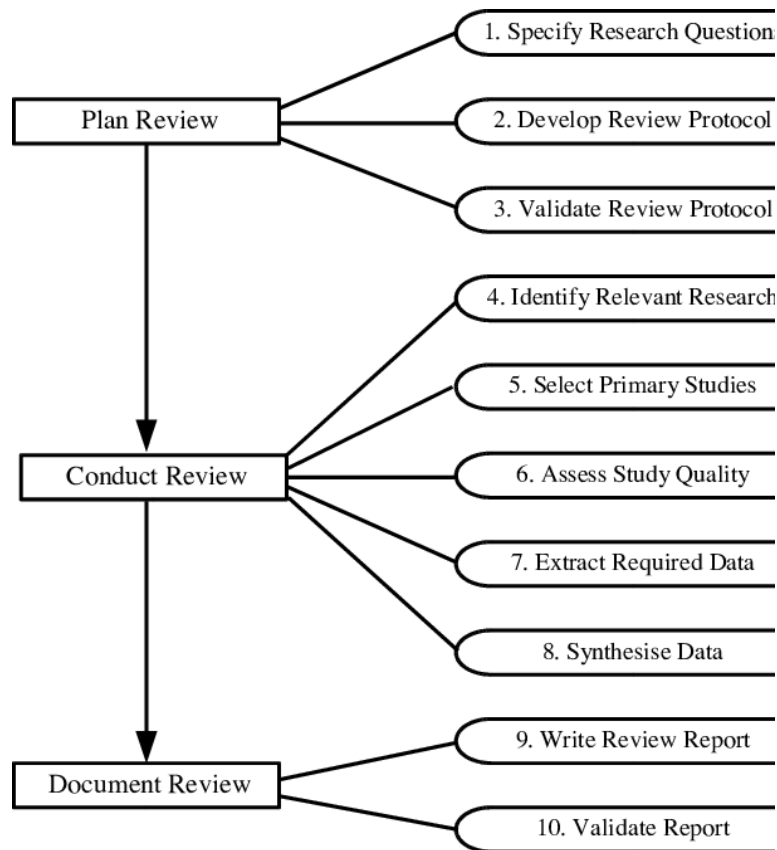


Figure 1: Systematic Literature Review Process

To direct this literature review, two questions were set –how digitalisation effects leadership and how should leaders lead their employees in an increasingly digitalised business environment, and what skills and competences are needed for them to succeed? The purpose of this study is that these questions should help make sure a comprehensive and thorough literature review is provided. First, the search strategy has been determined by recognising the related data source, timeframe, and keywords. In setting the study’s scope, the emphasis was on articles that are recent, relevant, and within the context of the impact of digitalisation on leadership. A broad collections of databases were utilised to cover a various array of periodicals (e.g. published articles, books, e-books, conference proceedings and theses). The timeframe has been set for the last ten years, in particular those articles published since 2010. This has been set in order to acquire the latest data on the impact of

also been addressed.

Through searching the selected databases and using the set keywords, a large number of articles were revealed. These articles were then revised to eliminate any redundancy and edited to ensure they were relevant to the study. This editing process involved the article title, abstract and the article's main body. The articles were then considered appropriate, unless they thought that the impact of digitalisation on leadership was inappropriate.

The examination found 155 published papers that varied between PhD theses, master theses, reports, books, conference papers, and articles. By following references and cross-checking citations, this list increased to 175 papers, which were then sensibly clarified. However, the focus of this study was oriented towards recent studies. Only articles that have been published in the last 10 years (since 2010) have been considered. Thus, only 37 articles, books and papers have been considered, which are summarised in table 3.

Table 3: The most recent published papers addressing the impact of digitalisation on leadership

	Title	Sours	Authors
1.	“5 Considerations for Digital Age Leaders: What Principals and District Administrators Need to Know about Tech Integration Today”	<i>Learning & Leading with Technology</i>	Larson et al., 2010
2.	“Literature review: e-Leadership”	<i>Emerging Leadership Journeys</i>	DasGupta, 2011
3.	“Leaders make the future: Ten new leadership skills for an uncertain world”	Book by Berrett-Koehler Publishers	Johansen, 2012
4.	“Leadership in a digital world: embracing transparency and adaptive capacity”	Mis Quarterly.	Bennis, 2013
5.	“Breakthrough leadership in the digital age: Using learning science to reboot schooling”	Book	Hess & Saxberg, 2013
6.	“Leadership challenges in the context of Web 2.0 solutions”	<i>Polish Journal of Management Studies</i>	Kozłowski & Kania, 2013

7.	“The 21st century principal: A study of technology leadership and technology integration in Texas K-12 schools”	The Global elearning Journal	Fisher & Waller, 2013
8.	“Leading Digital- Turning technology into business transformation”	Harvard business review press	Westerman et al., 2014
9.	“Is Your Leadership Style Right for the Digital Age?”	Knowledge@ Wharton.	Libert et al., 2015
10.	“E-leadership: Re-examining transformations in leadership source and transmission”	<i>The Leadership Quarterly</i> ,	Avolio et al., 2014
11.	“Academic library leadership in the digital age”	Library management	Le, 2015
12.	“The challenges of digital leadership”	Independent School	McLeod, 2015
13.	“Leveraging leaders: A literature review and future lines of inquiry for empowering leadership research”	<i>Group & Organisation Management</i> ,	Sharma & Kirkman, 2015
14.	“Leadership in the digital age: A study on the effects of digitalisation on top management leadership”	Master thesis	Khan, 2016
15.	“Digital leadership: The objective- subjective dichotomy of technology revisited”	In 12th European Conference on Management, Leadership and Governance ECMLG	Waal et al., 2016
16.	“Rethinking Leadership and Its Practices in the Digital Era”	Management international conference	Jakubik & Berazhny, 2017
17.	“Digital Innovation Management: Reinventing innovation management research in a digital world”	Mis quarterly	Nambisan et al., 2017
18.	“Integrating ICT adoption issues into (e-) leadership theory”	Telematics and Informatics	Van Wart et al., 2017
19.	“Leadership in the Digital and Social Era. A Theoretical Review and Digital Gamification for Employee Development”	Master thesis Lund University Publications	Balan & Cavendish, (2017).
20.	“Digital business leadership”	Digital Transformation– Geschäftsmodell- Innovation–agile Organisation– Change- Management.	Kreutzer et al., 2017
21.	“In digitalisation we trust? an exploration of the impact of digitalisation on the trustworthiness of the leader”	Dutch start-ups from the perspective of managers and	Cetrez et al., 2018

		employees	
22.	“Leading public sector innovation: Co-creating for a better society”	Policy Press	Bason, 2018
23.	“Digitalisation and Leadership-How Experienced Leaders Interpret Daily Realities in a Digital World”	In Proceedings of the 51st Hawaii International Conference on System Sciences	Hesse, 2018
24.	“Leadership in Digitalisation Employees’ Perception of Effective Leadership in Digitalisation”	Master thesis Jonkoping University	Böck & Lange, 2018
25.	“The Digital Age Leadership: A Transhumanistic Perspective”	Journal of Leadership Studies	Dimitrov, 2018
26.	“News and information leadership in the digital age”	Information, communication & society	Habel et al., 2018
27.	“CIOs and the digital transformation: a new leadership role”	Springer, Cham	Bongiorno et al., 2018
28.	“Leadership Styles and Entrepreneurship”	Springer, Cham.	Jordán et al., 2018
29.	“ <i>Leadership: Theory and practice</i> ”	Sage publications.	Northouse, 2018
30.	“E-leadership: an empirical study of organizational leaders’ virtual communication adoption”	<i>Leadership & Organization Development Journal</i>	Liu et al., 2018
31.	“ <i>Digital leadership: Changing paradigms for changing times</i> ”	Corwin Press	Sheninger, 2019
32.	“How Digital Leadership Is (n’t) Different”	<i>MIT Sloan Management Review</i>	Kane et al., 2019
33.	“Digital Leadership Skills and Associations with Psychological Well- Being”	<i>International journal of environmental research and public health</i>	Zeike et al., 2019
34.	“Research and Academic Leadership: Gaming with Altmetrics in the Digital Age”	<i>Sustainable Leadership for Entrepreneurs and Academics</i>	Strielkowski & Chigisheva, 2019
35.	“Theory of practice architectures to understand possibilities and constraints in principals’ improvement practices”	In Nordic Educational Research Association	Nehez, 2019).
36.	“Leadership and digitalisation: contemporary approaches towards leading in the modern day workplace”	Working paper. Fontys International Business School, Venlo, Netherlands	Breuer & Szillat, (2019).

37.	Digitalisation and school leadership: on the complexity of leading for digitalisation in school.	The international journal of information and learning technology.	Lindqvist & Pettersson, (2019).

The literature review (see Sheninger, 2019; Kane et al., 2019; Zeike et al, 2019; Strielkowski & Chigisheva, 2019; Foerster-Metz et al., 2018) shows that leadership and digitalisation has been mostly examined by consultancy firms and institutions in a pragmatic fashion. Therefore, reviewing the impact of digitalisation on leadership actions and behaviours is significant. However, leadership is a multifaceted concept and it is multidisciplinary (Isfahani, et al.,(2019). The table above shows that there is disjointed and fragmented knowledge, which has been broken down into several perspectives. Therefore, they do not offer a comprehensive picture about the impact of digitalisation on leadership style in terms of leaders' behaviours and competences. This is where this study contributes to the literature, through developing a conceptual framework of leadership in the digital era.

4. Analysis of the literature

A critical analysis of the collected articles forms the bulk of the present study's findings. The critical literature analysis was supported by using the mind-mapping technique to find and gather the main themes within these articles that relate to the impact of digitalisation on leadership. For example, articles that deal with the applications of advanced information technology and/or the effect of digitalisation on leadership and management were considered related. One such article that was obviously within the study scope was written by Khan (2016), who analysed how digitalisation affects contemporary leadership practices and identified six characteristics that affect leadership. These features do not only alter leaders' practices, but also manifest within leadership itself, through the use of various digital

methods, tools, and procedures that improve and enforce their leadership. One further such article was written by Foerster-Metz et al. (2018), who studied the implications of digital transformation on organisational behaviour. Thus, this section of the literature analysis is developed to address two factors: (1) the impact of digitalisation and (2) a conceptual framework towards a new style of leadership

4.1 The effects of digitalisation on leadership

Digital transformation has gone far beyond the professional framework, nowadays, social life is also fully impacted by its developments (Han, 2020). Digital tools have boosted citizens' freedom of expression. The web, and more particularly social networks, offers its users the possibility of expressing themselves more widely and more easily than in the past (Lindqvist & Pettersson, 2019). The practices, abilities and styles of leadership have fundamentally changed as a result of digitalisation (Sharma & Kirkman, 2015). In the digital era, a leader is expected to be able to demonstrate the ability to communicate and motivate his/her teams (and all human resources) within the framework of achieving specific objectives (Sheninger, 2019). Nevertheless, to develop digital leadership competence, leaders must also adopt both traditional and new managerial practices. This involves developing a new strategy based on futurology (conceived differently because the old analysis models no longer work within the current change in the dynamic environment), and a new vision that redefines the mission, objectives, business model, organisation, internal culture and the ecosystem as a whole. At the heart of it, innovation becomes central and global. It is deployed in support of new ways of working (Kane et al., 2019).

Moreover, as an organisation becomes globalised it breaks free from internal borders. Employees become more autonomous, thereby challenging the logic of control and power that hinders creativity, initiative, and risk-taking (Thompson, 2020). Besides, digital

technology eliminates unnecessary intermediate rungs. Silo structures, baronies, and other corporatist systems are challenged, as well as pyramidal and highly hierarchical management. This is undoubtedly the biggest challenge associated with the digital age - to establish cooperative work in a transversal mode to facilitate speed, agility and entrepreneurial spirit. Moreover, it is important to design new breakthrough strategies in order to take on board all trades and streamline interactions between them (Nehez, 2019).

Bennis (2013) emphasises the importance of leaders being open to new ideas, having an adaptive capacity and resilience in adjusting to the digital world, by utilising the speed and transparency that the digital world offers. He argues that a “digital business strategy is a very important issue for leadership because it is going to fundamentally change every leader’s life—whatever type of institution they are leading” (Bennis, 2013, p. 635). In fact, given its universal nature and the speed by which digital technologies are developing, it may now be conceivable that a high level relationship and trust between leaders and followers has been facilitated, wherein a leader has the capacity to maintain more consistent virtual contact with his/her followers (Bongiorno et al., 2018).

Digital technologies have also affected leadership behaviour. In fact, the process of leaders and individuals communicating and creating relationships based on trust has been affected by digitalisation and the uses of advanced technology, primarily in terms of the influence of those relationships on mutual or cooperative leadership styles (Böck & Lange, 2018). Consequently, digitalisation changes leadership style, along with its development and evaluation. In fact, with the integration of technology in leadership, a leader’s intentions and willingness can be communicated clearly. In addition, feedback can be transmitted quickly and actions can be corrected efficiently, if required (Northouse, 2018). However, negative relationships may also develop at an accelerated pace. Thus, the ability to use advanced

technology is not the only ability of contemporary leaders (Hesse, 2018), and various features of leadership should also remain the same. A leader who is more simulative, thoughtful, intelligent, trustworthy, truthful and steadfast will still be seen as a more effective leader (Liu et al., 2018).

Hesse (2018) introduces an important question - “[d]o technological trends change the conditions for leadership?” Hesse further indicates that there is uncertainty regarding the future of digitalisation and advanced technology in terms of the extent of their impact on leadership. Digitalisation changes the practices of communications, coaching, collaboration and decision-making. Advanced technology offers superior transparency in terms of actions, communications and interactions between leaders and followers. Social media serves to connect leaders and followers with irregular favourites (awareness, talents, opinions, standards, etc.) and it permits them to dispute an issue in order to produce a novel understanding of a complex situation, which can promote greater alignment and trust (Avolio et al., 2014).

Cetrez and Van Dam (2018) acknowledge that digital technology has a significant contribution in terms of its velocity and the volume of information, but suggest that the essentials of management have not really changed. Management is still communicative, pressurised, fast-paced, hierarchical and action-oriented. The one technological advancement that has created a difference (although, not necessarily in a positive sense) has been email technology, and with it, the notion of having to be ‘always-on’ (Cetrez & Van Dam, 2018). Hamel and Breen (2007) believe that the practice of management should undergo a revolutionary transformation over the first two or three decades of the 21st century. Hamel (2009) weighs in on the new role of the leaders in the light of technological changes, stating that the impact of the Internet on society is that everyone now has a voice.

According to Kozłowski and Kania (2013), the tools of creativity have been extensively disseminated. Thus, the role of leadership has shifted towards a less hierarchical, less bureaucratic, and less centralised position.

4.2 Leadership skills and competences in digital era

Leadership is the ability and willingness to lead other people towards a common purpose, while having a character that inspires confidence (Sposato, 2019). The advancement of digital technologies has changed everything, including leadership styles. Contemporary digital technologies (internet, social media, smartphone, the cloud, big data, and the Internet of Things) have developed fast and provided new sources of information (Libert et al., 2015). Faced with the digital revolution, which no business can escape, leaders are on the front line. They must transform their leadership and management style. As we have seen, digital technology calls into question the legitimacy and role of hierarchies. Leaders are also bullied by the arrival of a new generation of millennials who are familiar with the Internet, but are not familiar with the centuries-old “command-control” model. The crisis of authority, which for forty years has affected the family, school, university, as well as moral, religious and political institutions, has thus now also affected organisations (D’Amato & Macchi, 2019). New leaders become a facilitator and animator of permanent collaborative experimentation. The idea of a coercive solitary leader fades, replaced by a networking coach/inspirer (Lindqvist & Pettersson, 2019). According to the findings of Breuer and Szillat (2019), a leader needs to become influential to promote new logics of value creation, based on co-working and information sharing. This kind of leader also works to embed their teams and contributes to the renewal of the company. Better still, with such a change in mentality, there are gains in consistency and performance, where the best individuals are retained, resulting in greater commitment from everyone, which in turn produces benefits

for customers. However, when a lot of effort and investment is devoted to researching technological competences, such effort should also be devoted to managerial innovations and leadership transformation (Kane et al., 2019).

In addition to these new sources of value, the needs and desires of people and employees have evolved, as digital technologies have created new forms of interaction with leaders. Figures from the business world, governmental, educational and non-profit civil organisations have presented the main trends of the new world of work in both structural and value aspects, such as in the emergence of new forms of organisations, increased diversity in the workplace, the role of teamwork and collaboration, new business models, and new operational technology (Dimitrov, 2018). Table 4 shows the prevailing leadership competences and skills in the digital era.

Table 4: Competences and skills of leadership in the digital era

Skills and competences	Explanation
Adaptability	Leaders must be comfortable in the face of ambiguity, complexity and uncertainty.
Endurance	Leaders must be highly resistant and tenacious.
Intellectual Brilliance	Leaders must be intellectually curious, sharp and must always be learning.
Learn ability and curiosity	In a world that lives fast and frequently breaks, where new skills arise as others become obsolete, what an individual knows is less imperative than what he/she can learn. A leader should be a role model who is always seeking different capabilities.
Digital skills & competence	A leader should have the capability to use technical skills that are vital to effectively transform their ideas and vision.
Futurology	This involves the systematic forecasting of the future and the different possible scenarios of the future, based on technological, economic or social data from the past and present, which are in turn based on techniques and scientific models.

Thus, a modern leader should have several abilities, which are described below.

- 1- All leaders should have the awareness that change is imminent and that it is

necessary to understand reality, to understand the context, and to understand that the curve is disruptive and requires exponential and non-linear thought (Hess & Saxberg, 2013).

2- Leaders need the ability to adapt to the unknown through experimentation processes, without the fear of mistakes and by learning from failures. In an environment as uncertain and complex as the world of today, it is almost impossible to believe that everything will go 100% according to plan. The capacity for adaptation, adjustment and agility in the process of learning and readjusting is key (Khan, 2016). Leaders must support organisations that face various kinds of changes and must support organisational change, restructuring, re-engineering, mergers, and systemic implementations (etc.). In the context of digital transformation, leaders have to co- create with their followers, and introduce new methods throughout the process, by designing ad-hoc solutions to issues created by ongoing change (Hesse, 2018).

3- Innovative thinking is another skill of a good leader in the digital era. They should have the ability to *"think outside of the box"*, that is, to dare to implement new ideas, to think in a disruptive way, and hire and develop talented individuals who are capable of finding solutions in a context rife with change. This necessarily involves changing the *"mindset"* of modern leaders and changing the existing organisational paradigm, where the stable is no longer so stable, where what was previously the core of business now has a supporting role, and what was previously support (such as modern technology) becomes a strategic element in the development of a new business model and leadership style (Johansen, 2012). Innovative thinking also involves changing the mental model of leaders and their conception of digitalisation, with a view to conceive it as a consultation of systems that are balanced within an ecosystem, which facilitate both collaboration and autonomy (such as Google or Amazon). It also involves understanding chaos within a new order that is governed by a thought that is more exponential than linear (Jakubik & Berazhny, 2017).

4 Talented people are essential to support the capabilities of leadership. According to Böck and Lange (2018), in the digital age of knowledge, talent levels within organisations will be an increasingly differentiating aspect. Thus, leaders have to strengthen intra-entrepreneurial spirit, boost learning capacity and act as a coach, which are the main functions of the digital leader (Cetrez & Van Dam, 2018). A leader's successes help employees to understand the importance of their role in helping the organisation also achieve its goals and defend a multifunctional collaboration (Zeike et al., 2019). Thus, a leader should dare to lead, where control over others is expected and technology facilitates an effective communication and transformation of ideas and visions through effective digital media and social media skills (Bason, 2018; Strielkowski & Chigisheva, 2019).

5 Leaders must have the ability to develop a culture of collaboration, respect, inclusion and diversity, that can support a new organisational model and make it more agile, more flexible and more horizontal. The new digital paradigm enables new forms of work that are diverse and different from the format that we are accustomed to. The home office will no longer be an incentive, but something common, as per co-work models. It will not matter where you are or who you are with, so long as you can do your job or fulfil your objective, because new technologies will enable new ways of remotely working. Leaders must know how to manage these new formats, as well as recruit and retain the best talent through creative and innovative incentives in a highly competitive market (Bason, 2018).

5. Conclusion

This systematic literature review research has covered 37 published since 2010 investigating the impact of digitalisation on leadership. Leadership is an interactive, reciprocal process between the leader and their subordinates. It is socially-constructed and significantly affected by the business environment. Advanced technology has changed many aspects of

social life, and this change has already taken on social aspects, which includes both leadership style and behaviour (D'Amato & Macchi, 2019; Alfaqeeh et al., 2019). The time has come for a systemic and metamorphosis of leadership, with a consideration for several changes in social-culture, including digitalisation, which penetrates all areas of the social life, including leadership. Nevertheless, few studies have been conducted on how digitalisation influences the way leaders lead and interact with their employees. This paper therefore bridges this gap by systematically synthesising previous related literature (Kane et al., 2019).

It has been found that present day leaders think and act differently. The speed and adaptability of the organization depends on the speed and adaptability of its employees. The adaptability of employees is based on their ability to quickly integrate new desired behaviour. This requires competent leaders with a solid digital culture and integrated digital expertise. In contrast with traditional leadership models, a good leader is an integrator, knows how to set goals, motivates, cooperates, gives autonomy, solves problems and knows how to delegate. However, the new skills of digital leaders are not a substitute for traditional leadership. In fact, due to the challenges of digital transformation on the leadership of the future, leaders must combine traditional leadership capabilities with new qualities that will allow them to lead the company into the digital era. A valuable combination of brilliance, adaptability, perseverance and momentum are the proper qualities and a solid foundation for any effective leader. Leaders must be able to adapt and feel comfortable in a volatile, uncertain, complex and ambiguous environment. They must also have a passion for success, perseverance and brilliance, as this will make the leader curious and cunning, and always wanting to learn. Concerning technology, leaders who are ready for the digital world need to be able to consistently demonstrate additional skills related to technology and communication. Nevertheless, other capabilities are also necessary to help them free the

talents of their organisation, cultivate learning capacity, accelerate performance, enhance entrepreneurship and the ability to dare to lead (Kane et al., 2019).

Moreover, the leaders of today must have the ability to discover and develop talent, both inside and outside the company, promote natural learning, lead through innovative ideas, and must be able to accelerate the contribution of the team by helping professionals understand the value of their work in achieving the company's objectives. In fact, in the digital age of knowledge workers, the level of talent within organisations will be an increasingly differentiating aspect. Technology will manage any sensitive processes of automation, leaving the field of human creativity and innovation intact. Therefore, if talent will be a determining factor for the success or failure of an organisation, those responsible for directing the acquisition, development and retention of that talent will begin to take on an increasingly crucial role in their organisations. Thus, leaders need to adopt a strong strategic mind-set to manage the challenges they face when managing their organisations' talent. To lead in the digital era, leaders must combine the best of human intelligence with technology and digital platforms, along with a vision for the future. Digital leaders who can map an operational framework for the new digital world, effectively communicate an inspiring vision and mobilise the digital workforce will be probably be the most successful leaders. This in line with the findings of several studies (see (Foerster-Metz et al., 2018; Sheninger, 2019; Kane et al., 2019; Zeike et al., 2019; Strielkowski & Chigisheva, 2019).

Leaders in the digital era must foster a culture of innovation and experimentation, set forth measures with clear parameters, and they must learn fast. It is also necessary that they are prepared to quickly correct the course and optimise opportunities. They must break up closed work groups and promote collaboration and the seamless exchange of information, and advocate for broader thinking and learning capacity in order to accelerate the development and recycling of the organisation's people. Leaders need to be able to liberate talent, they

need to dare to lead and accelerate performance. Leaders must also develop the ability to boost talent, build a capacity of learning, accelerate performance, and encourage an entrepreneurial spirit. They must build a culture that promotes a continuous career for the development of individuals and provide employees with a sense of purpose. Moreover, for the success of the leaders today, it is essential to build trust in their leadership (D'Amato & Macchi, 2019).

In summary, leaders must know how to manage change, anticipate any required skills, must be analytical, connected and dedicated to fostering a digital culture within the organisation. Adaptability, perseverance, vision and the ability to promote action plans are among the qualities inherent in a traditional leader that should not be abandoned. Meanwhile, the new capabilities of digitally prepared leaders exist to enhance their intra-entrepreneurial spirit, curiosity and learning ability, and help leaders to empower teams as a coach. A digital leader must have the ability to discover and develop talent, both inside and outside the company, promote natural learning, lead through innovative ideas, and must be able to accelerate the contribution of the team, and help professionals understand the value of their work in achieving the company's objectives.

The managerial implications of this study include useful guidelines for leaders in terms of skills and competences needed in order to deal with digitalization. It has been argued that a lot of efforts and investments should be devoted to develop technological competence, such efforts should be also devoted to managerial innovations and leadership transformation. Furthermore, these new competences of leaders related to digitalisation should not displace traditional leadership traits and skills. Thus, the leadership's skills and competences in the digital era are threefold, the use of advanced information technology; managerial innovation and leadership transformation and traditional leadership traits and skills. Finally, this systematic literature review covered article with a focus on literature published in the last 10

years and 37 articles were selected and analysed; thus the search could likely have missed few important research articles that are not included in this study. Thus future research can wide the research sample. Besides, the study demonstrates that leadership evolves continuously, thus it could be beneficial to repeat this research periodically, in order to monitor the effect of digitalisation on leadership.

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