Leadership in a Digitalized and Crisis-ridden World: Towards a Comprehensive Overview of Relevant Competencies for Leaders

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Abstract

Our environment is increasingly characterized by digitalization and crisis. Consequently, the competence requirements for executives are changing. Since they are critical to the success of companies, identifying talents and developing necessary leadership competencies is essential. To accomplish this in a targeted manner, a competency overview is needed that considers digitalization and crisis. However, current literature indicates that digital and crisis leadership are investigated separately. To address this research gap, this study develops a competence overview based on a systematic literature review considering both research streams. The analysis of 38 studies reveals 21 competence areas. For a structured analysis, these competence areas are considering the competence categories of self-, people-, and business management. The literature review shows that there is overlap in the two areas regarding competencies related to decision-making, communication, and learning. Differences occur, for example, regarding leaders' health awareness or technical literacy, which are only addressed in digital leadership.

Keywords: Digital Leadership, Crisis Leadership, Competencies.

1. Introduction

For a target-oriented talent identification as well as education and skill development of executives in a digital and crisis-ridden environment, a state-of-the-art overview of relevant competencies is necessary. Leadership competencies can be critical success factors for companies. Research on leadership competencies has therefore been conducted for decades (Muir, 2014), but the world is changing rapidly as it becomes increasingly digitized (Schiuma et al., 2021) and crisis-ridden (Hertelendy et al., 2021). Accordingly, the required competencies of leaders have also changed significantly (Dirani et al., 2020) and the need for leadership development might has never been more urgent than in the current volatile, uncertain, complex, and ambiguous world (Moldoveanu & Narayandas, 2019).

In response to this development, two research streams have been established and have gained importance: 1) Digital Leadership (DL), which takes up the demand to counter the challenges of the progressing digitalization. 2) Crisis Leadership (CL), which addresses the increase in crises and their effects. The current state-of-the-art reviews highlight the importance of DL (Eberl & Drews, 2021) or CL (Wu et al., 2021) and call for further research on required leadership competencies to counter current and future challenges. However, current research projects on DL and CL are so far addressed stand-alone without considering each other (Eberl & Drews, 2021; Wu et al., 2021). Given the current environment, this paper explores the need to no longer consider the research streams of DL and CL separately. Therefore, this paper aims to systematically analyze the literature of both research streams to provide a more holistic overview of the required leadership competencies. Using a systematic literature review, we address the research question: *Which insights regarding required competencies for executives in a digitized and crisis-ridden world emerge from the state-of-the-art literature on DL and CL?*

By answering this question, this study contributes in three ways. It 1) provides an overview of required leadership competencies; 2) presents starting points for target-oriented recruitment as well as education and training of executives; 3) offers inspiration for future development and research on both DL and CL by considering identified competencies of each other.

2. Theoretical background

2.1 Digital leadership

DL is not clearly defined (Zeike et al., 2019). The first understanding relates to DL as a term for "doing the right things for the strategic success of digitalization for the enterprise and its business ecosystem" (El Sawy et al., 2016). The focus in this context is primarily on business-related management aspects (e.g., defining a new business strategy, business model, or workplace design)

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and their adaptation for a successful digitalization strategy of an organization (El Sawy et al., 2016). Furthermore, this understanding includes the ability to create a vision for the digitalization process, competencies leaders need in the digital age, and that drive digital transformation (Zeike et al., 2019). A second understanding focuses more on the influence of digital technologies on the leader-follower interaction, as technology affects the way leaders and followers are connected (Pabst von Ohain, 2019). In this regard, skills, roles and leadership styles are seen as important characteristics of digital leaders (Eberl & Drews, 2021). Since the focus of this paper is on individual leadership competencies rather than on the digital transformation of an organization, we define DL for the purpose of this paper as the skills, roles, and leadership styles that leaders use to fulfill their leadership function in a digitized organizational environment.

2.2 Crisis leadership

CL is used in different contexts such as healthcare, military, critical infrastructure, or aviation domain and addresses the challenges of leaders in crisis situations (Deitchman, 2013). In the current literature, different opinions on the appropriate leadership style in crises exist. Especially the context (e.g., lack of time) influences the appropriateness of a rather authoritarian, transformational, collaborative (Heide & Simonsson, 2021; Kapucu & Ustun, 2018), or situational leadership style (Wisittigars & Siengthai, 2019). Kapucu and Ustun (2018) state that task-oriented leadership styles increase CL effectiveness. However, the lack of appropriate CL competencies can cause poor crisis management (Kapucu & Ustun, 2018). In contrast to CL, crisis management focuses on preparation strategies and getting organizations ready for crises (Grissom & Condon, 2021) and is a top-down process how to organize and solve certain problems (Heide & Simonsson, 2021).

A systematic framework on leadership competencies with a focus on crisis situations is defined by Savanevičienė et al. (2014). The framework defines 1) self-management (SM) competencies which help leaders to "be stable in unspecified environment and to adapt to rapidly changing circumstances" on an individual level and 2) people-management (PM) competencies "which allow warranting of efficient people management". Furthermore, the framework also differentiates 3) business-management (BM) competencies that ensure "business decision-making and efficient business communication". To enable a systematic analysis in this paper, we rely on this framework.

2.3 Competencies

To define competencies, the definition of El Asame and Wakrim (2018) is valid for this paper. They define competencies as "a set of personal characteristics (skills, knowledge, attitudes, etc) that a person acquires or needs to acquire, in order to perform an activity inside a certain context with a specific performance level".

3. Systematic literature review

Our systematic literature review follows vom Brocke et al. (2015): The process of our literature review is sequential, as the literature search is the defined initial step at the beginning of our reviewing process. To identify intersubjectively comprehensible and quality-assured articles, we choose five bibliographic databases as sources: ABIinform, ACM, AISel, PubPsych, EBSCOhost. By applying our search string to the abstracts, we aim for comprehensive coverage: "abstract: ("digital leadership" OR "crisis leadership") AND abstract: (skill* OR competenc* OR abilit*)".

The search in March 2022 revealed 62 articles, with 7 of them being duplicates. Applying the inclusion criteria *derivable conclusions of the leadership competencies*, 17 studies are excluded, resulting in 4 conference and 34 journal articles. In the resulting sample of 38 articles, all studies can be clearly distinguished between DL (19 studies) and CL (19 studies). No study addresses both. Figure 1 depicts the number of published studies by year and shows that research on CL and DL has increased significantly over the past decade.

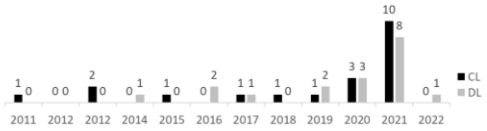

Figure 1. Identified studies per year.

4. Analysis of leadership competencies

Based on the analysis of the 38 articles, we identified 288 individual mentions of required leadership competencies and categorized them according to the competence categories SM, PM and BM. Table 1 provides an overview of identified mentions on competencies and their distribution.

	SM	PM	BM	Total
DL	43	87	39	169
CL	24	54	41	119
Total	67	141	80	288

Table 1. Number of mentions.

After categorizing the identified leadership competencies, we clustered the topics resulting in 21 competence areas. Table 2 shows two examples of the clustering assignment in the competence category PM

Competence area "communication"
Sample of supporting quotes CL: "In general, during a crisis, leaders who demonstrated […] the ability to make and engage in consistent and responsible […] communications, and a transparent communication process were able to inspire and influence change." (Sriharan et al., 2021) DL: "It is important for leaders that during virtual communication, he or she is well organized, the message is clear, and feedback mechanism can avoid mistake and ambiguity."(Soon & Salamzadeh, 2021)
Competence area "emotional intelligence"
Sample of supporting quotes CL: "Emotional intelligence enables the leaders to motivate followers by changing and moderating their own and teams' emotions to function effectively and be efficient in crisis situations." (Wisittigars & Siengthai, 2019) DL: "Displaying empathy provides leaders with knowledge of how to understand follower feelings, influence follower emotions and anticipate employee behavior. (Pabst von Ohain, 2019)

Table 2. Exemplary cluster assignment.

Table 3 presents the resulting competence overview of the identified competence areas and shows which competencies are addressed in which research stream (DL/CL) and competence category (SM/PM/BM).

Competence areas	DL			CL		
	SM	PM	BM	SM	PM	BM
Communication		■	■		■	■
Decision-Making		■	■	■	■	■
Learning	■	■		■	■	
Collaboration		■	■		■	
Agility	■	■		■		
Emotional Intelligence		■		■	■	
Sense-Making		■		■	■	
Situational Awareness				■	■	■
Global Thinking		■	■			
Influence Others		■			■	
Innovation Management			■			■
Digital Transformation		■	■			
Problem Solving	■					■
Self-Regulation	■			■		
Building Trust		■			■	
Social Media Usage	■	■				
Technical Literacy	■					
Open Mindset	■					
IS Governance			■			
Infrastructure		■				
Health Awareness	■					

Table 3. Identified competence areas.

4.1 Self-management DL competencies

The thinking and behavior of digital leaders requires **agility**, corresponding adaptability, and flexibility when conditions change. This helps digital leaders, e.g., to switch leadership styles, take over new tasks, lead remotely, reshape existing capabilities, and adapt to changing processes (Claassen et al., 2021; Pabst von Ohain, 2019), or perform multiple tasks (Freitas Junior et al., 2020). In this regard, digital leaders use digital solutions to recognize business opportunities or to choose appropriate actions (Pabst von Ohain, 2019). Moreover, digital leaders need **problem-solving** competencies and therefore skills related to critical thinking and to creativity (Karakose et al., 2021), e.g., to evaluate new business opportunities. Digital leaders know how to use **social media** to build up knowledge and to use its transformational effect (Ahlquist, 2014; Prince, 2017) to foster change and improvement (Moorley & Chinn, 2016). Furthermore, an **open mindset**, e.g., toward new digital concepts is necessary to adapt to the digitalization-induced changes in leadership processes, tasks, or styles (Pabst von Ohain, 2019). Digital leaders are explicitly open to **learning** (Karakose et al., 2021). Digital leaders' **health awareness** summarizes competencies in establishing personal virtual boundaries concerning privacy, time management, and leaders' overall wellness (Ahlquist, 2014). This is also related to the requirement to be resilient (Freitas Junior et al., 2020). Self-leadership skills help to deal with challenges like the dissolution of boundaries between work and private life, distractions, constant accessibility, information overload, and work intensification (Mander et al., 2021). In this regard, digital leaders need competencies in **self-regulation** in general (Prince, 2017; Saputra & Hindriari, 2021). This includes the ability to take care of oneself based on self-confidence and a responsible approach to trust-based working time and time off compensation. Digital leaders need self-discipline and a good way of dealing with disruptions, especially in the home office (Mander et al., 2021). Furthermore, digital leaders need a broad scope of **technical literacy** (Ahlquist, 2014; Freitas Junior et al., 2020; Prince, 2017; Soon & Salamzadeh, 2021) including the ability to analyze digital content (Ahlquist, 2014). These competencies comprise digital knowledge and technical literacy (Claassen et al., 2021; Karakose et al., 2021; Zeike et al., 2019), but also enjoy using technology and digital tools (Zeike et al., 2019). By doing so, digital leaders can encourage digital technology usage (Karakose et al., 2021) and thereby improve performance (Prince, 2017). Digital leaders represent digital and technology experts (Abbu et al., 2020; Zeike et al., 2019). This is associated with the demand to keep up to date regarding technologies and further development (Ahlquist, 2014; Zeike et al., 2019).

4.2 Self-management CL competencies

Leadership in crisis situations demands **agility** to work across organizational functions (Wicker, 2021) and flexibility to respond to different situations (Kapucu & Ustun, 2018). **Emotional intelligence** is important in crisis situations (Joniaková et al., 2021; Kim, 2021; Kostić-Bobanović & Bobanović, 2013) to maintain clear judgement and decision-making by recognizing, regulating, managing, (Grissom & Condon, 2021), acknowledging, and addressing own emotions (Standiford et al., 2020). Emotional intelligence can be trained, e.g., for speaking clearly and with confidence during crisis situations (Balwant, 2021). **Situational awareness** includes integrating internal and external information in decision-making to create a comprehensive picture of the situation (Deitchman, 2013; Dixon et al., 2017). Situational awareness can be an integral part of **sense-making**. On an individual level, this is a key task to get an understanding of a crisis and take appropriate action (Tham et al., 2020; Wicker, 2021) at any stage of a crisis (Dixon et al., 2017) by analyzing also high volumes of gathered information (Grissom & Condon, 2021). After a crisis, leaders should make sense of decisions and events during the crisis to improve future leadership (Dixon et al., 2017). The willingness to **make decisions** is important in CL (Kapucu & Ustun, 2018) and includes seeking information from various sources to make decisions timely and based on a broad base of information (Deitchman, 2013). In crises, **self-regulation** is important, including having a new vision as well as self-confidence (Joniaková et al., 2021). Leaders need to **learn** from crises and see them as an opportunity to learn from others and themselves also by reflecting on experiences and adapting findings to future leadership (Standiford et al., 2020). Wicker (2021) states that the ability to learn from crisis situations is critical.

4.3 People management DL competencies

Digital leaders foster **collaboration** (Karakose et al., 2021; Pabst von Ohain, 2019). In doing so, digital leaders shape teams into a coherent and integrated work unit (Soon & Salamzadeh, 2021). They encourage employees to embrace a culture of collaboration and experimentation (Prince, 2017) and foster knowledge sharing and exchange (El Sawy et al., 2016). Digital leaders recognize the benefits of platforms that enable collaboration and knowledge sharing and promote and support their launch and use (Ahlquist, 2014; El Sawy et al., 2016). They also strengthen the employees' possibilities of collaboration regardless of place, time and culture (Claassen et al., 2021). Moreover, digital leaders create a structure where responsibility can be shared among team members (Karakose et al., 2021). **Communication** and human relations competencies are central components of digital leaders' interpersonal skills (Karakose et al., 2021; Moorley & Chinn, 2016; Prince, 2017; Soon & Salamzadeh, 2021). Digital leaders have the ability to use different means of communication (Freitas Junior et al., 2020) and use social media to listen to followers on a micro-level as well as for data exploration and crowdsourcing (Moorley & Chinn, 2016). By clear communication and listening (Moorley & Chinn, 2016), digital leaders appear sympathetic (Pabst von Ohain, 2019) and provide clear messages and feedback mechanisms to reduce mistakes and ambiguity. They are not afraid to share information on a personal level (Moorley & Chinn, 2016). On a professional level, digital leaders communicate the essence of digital transformation (Schiuma et al., 2021). When receiving information, they focus on the meaning of the message, not the message itself (Prince, 2017). Through communicating shared purpose and meaning, they integrate diverse employees and partners (El Sawy et al., 2016). Thereby, digital leaders focus on **sense-making** (Prince, 2017). Furthermore, they communicate adequately concerning different cultures (Rüth & Netzer, 2020). In this regard, DL includes **global thinking**. This requires a conscious commitment at the global level (Moorley & Chinn, 2016). With the help of digital platforms, digital leaders overcome restrictions such as location or time and promote collaboration between employees, even from different cultures (Claassen et al., 2021). If necessary, digital leaders make their ideas and visions palatable to followers in different countries (Rüth & Netzer, 2020). They also take into account cultural heterogeneity and are aware of different values and beliefs (Karakose et al., 2021). PM in the context of DL includes adequate **decision-making** and decisiveness: By promoting and deploying flat hierarchies, digital leaders delegate decision-making authority (El Sawy et al., 2016). They consider democratic principles and encourage employer participation in decision-making (Karakose et al., 2021). When making decisions, digital leaders take digital transformation into account and consider ethical aspects of **digital transformation** (Schiuma et al., 2021). DL includes the ability to shape a knowledge-creating context for the digital transformation, e.g., by creating virtual and real opportunities for knowledge exchange (Schiuma et al., 2021). Furthermore, leaders are able to make the digital transformation to everyone's job. This includes, e.g., empowering followers and being a role model (Schiuma et al., 2021). This means engaging people to act with the digital transformation, e.g., by inspiring and giving a common purpose, but also fostering dialectic thinking about certain solutions and showing empathy (Schiuma et al., 2021). Digital leaders need **emo-**

tional intelligence to understand and influence followers' emotions, e.g., to foster motivation towards the digital transformation goals. Furthermore, they need to build up and establish **trust** among their followers rather than to exert control (Karakose et al., 2021; Pabst von Ohain, 2019). In this regard, it is important for digital leaders to know how to influence followers (e.g., by being an authentic role model) rather than using hierarchical power (Prince, 2017). This includes establishing an adaptive and willing mindset, e.g., by engaging employees to join digitalization events (El Sawy et al., 2016) and also taking ethical considerations into account (Phillips, 2021). Digital leaders consider the training of competencies related to cyber conflict recognition among followers and its mediation (Ahlquist, 2014). Empathy allows leaders to act as a coach, to guide followers on the challenges of digitalization, to support employees' well-being, and to motivate them to be innovative (Pabst von Ohain, 2019). In this regard, digital leaders need to recognize, for example, the right time to lead or coach a follower (Prince, 2017). Digital leaders lead in an authentic and transparent way, as this reduces follower resistance and increases their willingness to follow digitalization goals (Pabst von Ohain, 2019; Prince, 2017). Trust helps digital leaders to identify and reduce followers' negative emotions and strengthens collaboration (Pabst von Ohain, 2019). Furthermore, it influences the effectiveness of digital collaboration in teams (Soon & Salamzadeh, 2021). Digital leaders are honest and transparent towards their followers, which means to show an open and comprehensible behavior to increase their trust and support (Pabst von Ohain, 2019). DL means offering followers an adequate **infrastructure**. This includes investing in digital platforms which enable remote work, provide a constant technology support service, and provide personalized and user-friendly apps. These technologies allow followers to decide when and how to work and make access to information independent from followers' location (El Sawy et al., 2016). The usage of **social media** allows leaders to make their behavior visible and to act as role models as well as mentors (Moorley & Chinn, 2016). This means, that digital leaders use social media for social good (Ahlquist, 2014). Digital leaders are aware of the potential of social media for crowd-sourcing (e.g., for innovation purposes) or articulating a vision, and can leverage its benefits (Moorley & Chinn, 2016). Moreover, digital leaders have a certain degree of online self-awareness and reflect their digital profile (Ahlquist, 2014). Digital leaders implement a fail-fast **learning** culture where followers learn from their mistakes (Abbu et al., 2020) and set up a personal learning network (Ahlquist, 2014). They train followers to accept failures and encourage them to share these (El Sawy et al., 2016). Moreover, they provide adequate opportunities to develop new skills (El Sawy et al., 2016). This includes supporting a digital learning culture and followers' technology-based professional development (Karakose et al., 2021). Digital leaders **influence** by demonstrating an entrepreneurial mindset (Abbu et al., 2020) and showing passion for their business domain (Moorley & Chinn, 2016). **Agility** in DL not only refers to the flexibility of leaders, but is also important for managing employees: Digital leaders use agile principles and promote transparent communication of project progress to all relevant employees (Abbu et al., 2020).

4.4 People-management CL competencies

Adequate **communication** competencies of leaders are important before and during crisis situations (Kapucu & Ustun, 2018; Wisittigars & Siengthai, 2019; Zhuravsky, 2015). Leaders promote the exchange of information, create and maintain an open atmosphere, clarify communication (Deitchman, 2013), and know when to delegate communication tasks to ensure rapid decision-making and also a quick decision conversion (Wisittigars & Siengthai, 2019). They need skills in negotiation, authority delegation, and relationship building (Wisittigars & Siengthai, 2019), e.g., to use effective communication as a means to build a team and enhance its task performance in critical situations (Zhuravsky, 2015). Effective communication skills are necessary to communicate a clear vision for creating a shared sense of purpose (Sriharan et al., 2021). Leaders avoid a negative impact on organizational performance (e.g., caused by rumours) through clear, fast, and frank communication (Kim, 2021). Openness in communication has a positive effect on employees' feelings of safety and satisfaction (Wisittigars & Siengthai, 2019). Leaders in crisis situations should be able to communicate internally and externally (Zhuravsky, 2015), whereby internal communication is not just a message service, but also a means to make sense of ambiguous situations (Heide & Simonsson, 2021) to reduce anxiety among followers (Kim, 2021), to move people to action and to enable followers to act as a sender for receivers outside the organization (Heide & Simonsson, 2021). To enable effective communication with stakeholders (Ladak et al., 2021), leaders need adequate communication systems and should be trained in communication and media usage (Grissom & Condon, 2021) to create a precise and constant flow of information (Kapucu & Ustun, 2018). In crisis situations, leaders use different means of communication (e.g., social media) to alter behavior or establish new social norms (McGuire et al., 2020). Instant messaging allows a rapid reorganization of the workforce, e.g., by creating chat groups (Tham et al., 2020). Crisis situations demand a high degree of leadership competencies in **collaboration** (Kapucu & Ustun, 2018;

Kim, 2021). Leaders need to accept information input from followers and promote information sharing (Deitchman, 2013). The ability to enable collaboration by cultivating interpersonal relationships is essential for making information exchange and consensus on crucial decisions possible (Ladak et al., 2021; Suhadianto et al., 2021). The team-building behavior of leaders enhances collaboration. Leaders take also the potential of team members into account, motivate them, and communicate with them (Kapucu & Ustun, 2018). **Decision-making** and decisiveness are key competencies in crisis management as strong and timely decision-making processes have an impact on employees' abilities (Kapucu & Ustun, 2018; Kim, 2021). Leaders need the ability to stay self-aware in crisis situations and subjugate distressing feelings (Dixon et al., 2017). Participatory decision-making is an important leadership skill during a crisis as it can foster quick decisions (Joniaková et al., 2021). Furthermore, active requests for follower assistance create collaborative and active team decisions, even in the case of leaders' absence (Dixon et al., 2017). Leaders analyze different alternatives also by considering ethical aspects and follow a value consistency to give followers a feeling of certainty and transparency (Joniaková et al., 2021). **Emotional intelligence** is a key component of CL and involves recognizing, regulating, and managing the emotions of followers (Grissom & Condon, 2021; Joniaková et al., 2021; Wisittigars & Siengthai, 2019). Leaders need the ability to show interpersonal warmth and sensitivity (Deitchman, 2013), recognize stress, and create a positive, reassuring, and courageous attitude to promote coping among team members (Grissom & Condon, 2021). They need to listen actively, develop authentic relationships, and accept criticism (Grissom & Condon, 2021). To engage others for collective action, demonstration of empathy, emotional presence, and caring about the well-being of others is essential (Caringal-Go et al., 2021; Sriharan et al., 2021). Emotional intelligence enables leaders to motivate followers by changing and moderating teams' emotions to function effectively and be efficient in crisis situations. It allows influencing self-confidence, courage, and the stress- and conflict-management capabilities of followers (Wisittigars & Siengthai, 2019). Ignoring negative emotions could risk the ability of a team to work together (Standiford et al., 2020). **Learning** is included in different CL tasks (e.g., for sense-making or decision-making processes) and has therefore a central role (Tham et al., 2020). During a crisis, leaders need to make sure that theoretical CL practices support the cognitive skills and processes of team members and foster their learning ability regarding the improvement of crisis strategies during and after a crisis (Schulman & Roe, 2011). After a crisis, leaders need learning competencies to reflect critically on past crisis preparation as well as their own decision-making and communication during the crisis to be better prepared for the next crisis (Grissom & Condon, 2021). The **sense-making** ability of leaders is crucial in crisis situations. It enables the transformation of complex situations into comprehendible and actionable information (Dixon et al., 2017; Heide & Simonsson, 2021; Henning et al., 2011). Leadership is also about influencing the sense-making of team members. This process is called sense-giving and in crisis situations, it can occur simultaneously with the leaders sense-making (Dixon et al., 2017). Sense-making is thereby not just providing more information, but addressing questions, making sense of them, and initiating actions (Heide & Simonsson, 2021). Leaders need to know how to use digital information technologies, e.g., for collective sensemaking, but also with a sense of avoiding an "infodemic", which is an overload of accurate and inaccurate information (Tham et al., 2020). The ability to build **trust** is a core competence in CL (Kim, 2021). In the context of decision-making processes in crisis situations, leaders can build trust by leveraging cognitive diversity and considering the different knowledge and perspectives of team members with different professional backgrounds (Joniaková et al., 2021). Behaving with integrity is important for leaders in crisis situations (Joniaková et al., 2021). Leaders need competences in the business domain to make decisions based on professional judgement and to earn the trust of colleagues and followers (Deitchman, 2013). Leaders inspire followers to trust their colleagues and leaders even in difficult circumstances (Deitchman, 2013). The determination, courage, and responsibility leaders show influences the ability of followers to manage a crisis and their willingness to follow a leader. Respect for employee concerns and acceptance of responsibility by leaders builds trust and encourages employees to act proactively (Kim, 2021). Creating transparency by sharing information, including own emotional vulnerabilities in uncertain environments can increase trust and credibility among followers (Standiford et al., 2020). Moreover, leaders need **situational awareness** including the ability to act with respect to the crisis contexts. This means, that leaders need the ability to recognize the phase of the crisis, e.g., to adapt framing and tone of messaging in different crisis stages. Otherwise, leaders could be unaware of their actions' risk (Schulman & Roe, 2011). Leaders should be able to **influence** and inspire others (Sriharan et al., 2021). This includes showing authenticity and charisma, using an appropriate leadership style, respecting the diversity of skills, and creating a motivating culture for systematic thinking (Buhagiar & Anand, 2021; Joniaková et al., 2021). In doing so, leaders show the way forward and thus sustain the spirit in the team even in difficult situations (Buhagiar & Anand, 2021).

4.5 Business management in DL

In a BM context, digital leaders need competencies in open and customer-oriented **communication**, e.g., to develop new products and services or digital processes (Abbu et al., 2020; Claassen et al., 2021; El Sawy et al., 2016). They are able to **think globally**, e.g., by addressing different customer needs across cultures (Karakose et al., 2021; Rüth & Netzer, 2020) and have distinctive competencies in **innovation management** (Prince, 2017). They exploit and implement digital innovation, are aware of possible limitations (Brunner et al., 2021; Pabst von Ohain, 2019), and foster communication for innovation purposes (Erhan et al., 2022; Soon & Salamzadeh, 2021). Furthermore, they **collaborate** cross-functional with business counterparts (Schiuma et al., 2021) and share good employees with the whole organization (El Sawy et al., 2016). To **make decisions** in an evidence-based way, digital leaders have competencies in data analysis (Abbu et al., 2020; Moorley & Chinn, 2016). They take possible side-effects of their decisions into account (Ahlquist, 2014). To lead and define **digital transformation** (Prince, 2017) they provide and promote (Abbu et al., 2020) a clear and comprehensive strategy and vision (Dewi & Sjabadhyni, 2021; Zeike et al., 2019). Digital leaders need competencies related to **IS governance** (Brunner et al., 2021). This summarizes the abilities to implement digital strategies (e.g., bring your own device) (El Sawy et al., 2016) and digital visions (Prince, 2017). In addition, they shape their organizations so that both digital natives and older team members make digital technology an integral and valuable part of their work environment (Phillips, 2021).

4.6 Business management in CL

Leadership in crisis situations from a BM point of view demands competencies in **communication**, especially with external stakeholders, as this influences the perceived effectiveness of CL (Balwant, 2021). This includes networking and partnering to cultivate interpersonal relationships among organizations (Kapucu & Ustun, 2018; Sriharan et al., 2021). Competencies in **decision-making** are central to CL (Tham et al., 2020). Leaders should make quick, accurate, and time-critical decisions without having all information (Kapucu & Ustun, 2018) also under high pressure (Zhuravsky, 2015). Competencies in **situational awareness** like knowledge of different crisis stages (Grissom & Condon, 2021), the ability to evaluate information on their importance (Kapucu & Ustun, 2018), or the recognition of emerging crises (Wisittigars & Siengthai, 2019) including crisis preparation (Wisittigars & Siengthai, 2019) are essential. Competencies in **problem-solving** (e.g., simplifying complexity) enable quick responses to problems (Wisittigars & Siengthai, 2019). Furthermore, leaders in crisis need competencies in **innovation management** to foster the innovation abilities of staff as well as external stakeholders (Kapucu & Ustun, 2018).

5. Discussion

In general, it can be stated that the number of publications concerning the research streams of DL and CL increased steadily over the last years (see Figure 1). This goes in line with an increasingly digitized but also crisis-ridden environment and emphasizes the need for a holistic overview of leadership competencies. The analysis further indicates that DL and CL are research streams, that have not been considered together before. However, by combining both research streams, this study identified commonalities and differences regarding required leadership competencies.

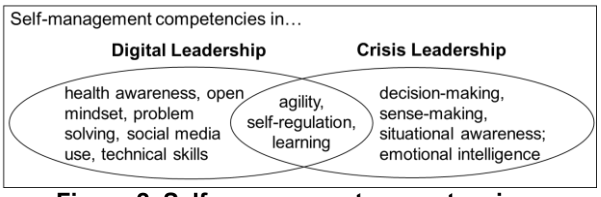

Figure 2. Self-management competencies.

Looking at the competencies in terms of the leader's SM (Figure 2) revealed that several competencies are considered in both research streams: Competencies related to agility (e.g., multi-task execution), self-regulation (e.g., self-discipline), and learning (e.g., learning from past situations). In contrast to these three competencies, health awareness (e.g., creating virtual boundaries), open mindset (e.g., acceptance of new technologies), problem-solving (e.g., critical thinking), social media use (e.g., to build up new knowledge), and technical skills (e.g., data analysis) are exclusively thematized in the DL literature. In CL literature competencies related to decision-making (e.g., considering information from multiple sources), sense-making (e.g., acting appropriately in different crisis stages), situational awareness (e.g., developing a comprehensive picture of the current situation), and emotional intelligence (e.g., managing own emotions) are addressed.

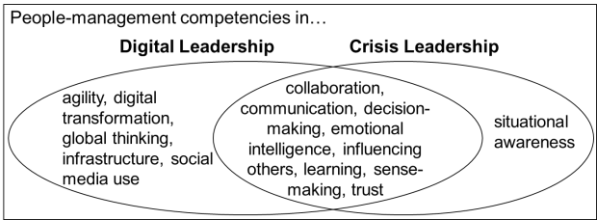

Figure 3. People-management competencies.

Relating to the leader's PM (Figure 3) both research streams address competencies in collaboration (e.g.,

promotion of information exchange), communication (e.g., communication of a shared sense of purpose); decision-making (e.g., promoting and deploying flat hierarchies), as well as emotional intelligence. (e.g., understanding followers' emotions), influencing others (e.g., creating passion), learning (e.g., implementing a fail-fast culture), sense-making (e.g., transformation of complex decision-situations into actionable tasks), and building trust (e.g., among followers).

Competencies in agility (e.g., using agile principles), digital transformation (e.g., engaging followers to act with digital transformation), global thinking (e.g., promoting collaboration between different cultures), infrastructure (e.g., enabling remote work), and social media use (e.g., act as a role model) are addressed exclusively in the DL literature. Competences on situational awareness (e.g., recognizing a certain crisis stage) are mentioned exclusively in the CL literature.

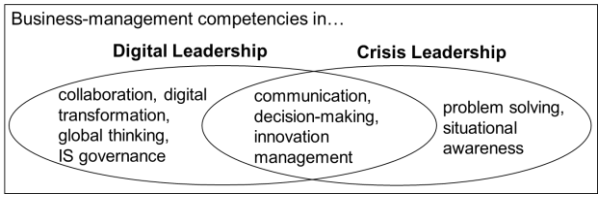

Figure 4. Business-management competencies.

From a BM perspective (Figure 4), there is an overlap of the competencies regarding innovation management (e.g., fostering creativity), decision-making (e.g., using data analysis), and communication (e.g., networking). Competencies in collaboration (e.g., cross-functional working), digital transformation (e.g., providing digital strategy), global thinking (e.g., addressing customer needs across different cultures), and IS governance (e.g., implementing digital strategies) are addressed in DL literature only. In contrast, competencies in problem-solving (e.g., simplifying complexity) and situational awareness (e.g., knowledge of crisis stages) are mentioned exclusively in CL literature.

These findings can be used as a foundation for several managerial/educational implications. Competence areas resulting from the overlap between DL and CL can serve as a starting point in leadership competence development or as a basic requirement for the recruitment of executives. Depending on the focus of the leadership education or the assessment center, competence areas specializing in CL or DL can be added, e.g., to adapt to the requirements of a certain job. The competence overview provided in this work can give orientation for the relevant competence areas that need to be assessed or trained, e.g., for virtual talent development solutions organizations are heavily investing in (Mahapatra & Dash, 2022).

6. Conclusion and future research

DL and CL are two young research streams, that have gained relevance in recent years. While the two research streams have so far mostly been considered separately, this study provides a higher-level overview of relevant competence areas required of leaders in a world characterized by digitalization and crises. It is noticeable that there is an overlap regarding addressed leadership competencies in CL and DL. Nevertheless, the comparison also shows clear differences and points out topics where the other research stream can benefit. Furthermore, the strength of the overlap of CL and DL is different between SM, PM, and BM, where PM has the largest overlap.

Certain limitations are associated with this systematic literature review. By including additional databases, new studies and findings could be identified. There is also a certain subjectivity in the explorative approach to identifying relevant competencies. However, since the findings of the work are already based on a search of abstracts in five databases, a reasonable breadth of the search is given. In addition, the exploratory approach was carried out by two researchers, which gives a certain intersubjectivity.

Merging DL and CL was identified as novel in this study. Further research can pick up on this point and go into more detail about the interactions of DL and CL competencies. Since this study is based only on research contributions, it would be an enrichment to also include practice. Interviews with leaders in companies, consulting firms, or coaches could yield insightful new findings.

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