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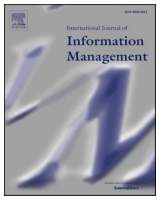

Research article

Digital transformation leadership competencies: A contingency approach

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ABSTRACT

Practitioners and researchers are increasingly engaged and interested in digital transformation leadership. However, the existing literature is fragmented and we lack knowledge of the competencies required by business leaders to facilitate digital transformation. In response, we rely on a literature study and draw inspiration from the Competing Values Framework to identify digital transformation leadership competencies. We theorize four archetypical competency portfolios, which are labeled according to the types of leaders who personify the constituent competencies: the challenger, the bricoleur, the organizer, and the competitor. We draw inspiration from the Competing Values Framework in advancing a contingency perspective on archetypical these portfolios. By theorizing competency portfolios, we contribute new insights into the role of leadership in digital transformation, which requires different competencies depending on the transformation drivers and goals. Our proposed competency portfolio framework serves as a valuable tool for identifying the required competencies and making decisions on whether to upskill existing leaders or hire new ones to drive transformation efforts.

1. Introduction

The rising interest in digital transformation spans both academia and organizations (Markus & Rowe, 2023). The number of publications on this topic has tripled over the past decade (Hanelt et al., 2021), and organizations are constantly faced with new digital technologies that have the potential to transform business models and organizational identities (Wessel et al., 2021). The growing importance of these technologies has placed digital transformation at the top of business agendas (Imran et al., 2020; Zulu & Khosrowshahi, 2021) and produced an increased awareness of the need for new competencies among business leaders who are strategizing and spearheading digital transformation (Bennis, 2013; Imran et al., 2020; Klein, 2020; McCarthy et al., 2021; Schiuma et al., 2021). Business leaders are increasingly playing a pivotal role in driving the digital transformation agenda (Adie et al., 2022; Preston et al., 2008; Wolff et al., 2019) not only by strategizing and influencing the behavior of employees (Bunjak et al., 2022; Nguyen & Hooi, 2020) but also by leading by example in the pursuit of change (Imran et al., 2020; Zulu & Khosrowshahi, 2021). In short, digital transformation requires skilled leaders (Skare et al., 2023). By focusing on the role of business leaders, we adopt a view of "leadership as a social influence process" (Banks et al., 2022, p. 1) that emphasizes "the activities of an organized group in its efforts toward goal setting and goal achievement" (Stogdill, 1950, p. 4).

Previous studies of digital transformation leadership emphasize that business leaders must be able to recognize when digital transformation is needed (Bharadwaj et al., 2013; Cortellazzo et al., 2019), foster an environment that supports this transformation (Singh & Hess, 2017; Imran et al., 2020; van Toorn et al., 2019), understand the influence of organizational culture on a company's ability to participate in digital transformation (Müller et al., 2019), take into account how digital transformation impacts organizational structures and leadership (Engesmo & Panteli, 2021), and empower employees to turn strategic initiatives into new work practices (Andriole, 2018; Nielsen et al., 2023; Sousa & Rocha, 2019). McCarthy et al. (2021) identify eight characteristics of digital transformation leadership and provide an initial mapping between these characteristics and C-suite roles. Klein (2020) expands the number of digital leadership characteristics to 23, and Schiuma et al. (2021) present a model, the transformative leadership compass, outlining six competencies "distinguishing a digital transformative leader capable of driving continuous company innovation and specifically digital transformation entrepreneurship" (p. 1273).

Although these studies form the basis for understanding digital transformation leadership, the existing literature is fragmented, and

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many questions about the required competencies have remained unanswered until now. In fact, digital transformation research is described as being at an early stage (Kraus et al., 2022) and Wolff and colleagues (2019) conclude that we still lack knowledge about the competency profiles needed to support digital transformation. Although scholars have identified many competencies that are relevant for digital transformation leadership (Klein, 2020; McCarthy et al., 2021; Schiuma et al., 2021), they do not consider how different leadership competencies depend on what drives the transformation. Given the fragmented literature, it is relevant to take stock of state-of-the-art knowledge and theorize the need for different sets of leadership competencies under varying circumstances, something we refer to as leadership competency portfolios. With this objective in mind, we review the existing literature and take steps toward theorizing digital transformation leadership competencies guided by the following research question: *What competencies do business leaders need to facilitate digital transformation?*

Based on our review and categorization of the literature (Okoli, 2015), we identify four archetypical leadership competency portfolios, which we label according to the types of leaders who personify the constituent competencies: the challenger, the bricoleur, the organizer and the competitor. We gather these four portfolios into a competency portfolio framework, which constitutes our theoretical contribution. In theorizing these competency portfolios, we decided on a contingency approach inspired by the Competing Value Framework (Cameron & Quinn, 2006) to show how different competency portfolios are needed depending on the digital transformation drivers and goals. Our study focuses on leaders in organizations that already are or plan to embark on a digital transformation journey rather than born-digital organizations. We contribute new insights into the leadership competencies needed in support of digital transformation under varying circumstances.

The article is structured as follows. In the next sections, we present background information and the review methodology followed by insights into digital transformation leadership competencies, which provide the basis for developing a competency portfolio framework. Then we present the four archetypical portfolios as a basis for discussing our contributions and proposing a future research agenda.

2. Background

Addressing the research question requires conceptual clarification of, on the one hand, how we understand digital transformation and, on the other hand, what constitutes competency. There is no commonly accepted definition of digital transformation (Markus & Rowe, 2023). However, there is consensus in the academic literature that it denotes a comprehensive change process through which an organization relies on digital technologies to transform its business model, services, products, or organizational identity (Noesgaard et al., 2023; Wessel et al., 2021). In this article, we subscribe to Hanelt et al.'s (2021) broad definition of digital transformation as "organizational change that is triggered and shaped by the widespread diffusion of digital technologies" (p. 1160). Meanwhile, we argue and demonstrate throughout the article that digital transformation is a multifaceted phenomenon (Tekic & Koroteev, 2019), which requires different leadership competencies depending on the drivers and goals of transformation efforts.

We adopt Feeny & Willcocks' (1998) definition of competency as "a generic unit of ability" (p. 16). As a starting point for our categorization of digital transformation leadership competencies, we distinguish between technical, business, and people-oriented competencies (Adie et al., 2022; Balcar, 2016). Technical competencies relate to working with hardware, data, software, etc. (Laker & Powell, 2011), having technical expertise, and being knowledgeable of emerging technologies (Adie et al., 2022; El Sawy et al., 2016). Business competencies have to do with developing visions and strategies, understanding the business environment, and facilitating benefit realization (Adie et al., 2022; Valentine & Stewart, 2015). People-oriented competencies are the ability of leaders "to manage oneself as well as […] how one handles one's interactions with others" (Laker & Powell, 2011, p. 112), which requires relationship-building and communication skills (Adie et al., 2022). Hence, competency is a multidimensional construct that encompasses experiences and knowledge related to the application of technical, business, and people-oriented abilities (Adie et al., 2022; Bassellier et al., 2003; Feeny & Willcocks, 1998).

In theorizing leadership competency portfolios, we decided on a contingency approach inspired by the Competing Value Framework (Cameron & Quinn, 2006) to show how combinations of different leadership competencies are needed depending on the digital transformation drivers and goals. The framework proved particularly useful, as it explicitly focuses on (value) drivers of organizational effectiveness and change, which are organized into four clusters across two dimensions.

The Competing Values Framework, developed by Cameron & Quinn (2006), identifies two dimensions that distinguish organizations; flexibility versus stability, and external versus internal focus. The first dimension emphasizes that some organizations prioritize stability, order, and control, while others emphasize flexibility, dynamism, and trust in human judgment. The second dimension distinguishes organizations that focus on internal integration and unity from those that prioritize external adaptation and market differentiation. These two dimensions form the basis for four distinct types of organizational culture: Clan, Adhocracy, Market, and Hierarchy. These four culture types are considered archetypes, and most organizations possess elements of each (Cameron & Quinn, 2006).

The Clan type resembles a family-like organization with shared values, internal cohesion, participation, and mentoring leadership (Müller & Nielsen, 2013). It values commitment, teamwork, and consensus. The Adhocracy type is innovative and thrives on pioneering new products. It prioritizes adaptation and flexibility in uncertain and ambiguous environments. The Market type is externally oriented and focuses on strategic planning, competitiveness, and productivity. The Hierarchy type operates under a rules-based system, emphasizing efficiency, reliability, and predictability in production. It thrives in stable environments that allow for standard operating procedures and control mechanisms. Cameron & Quinn (2006) also identify the leadership competencies of effective middle managers and top management, The latter is of particular relevance to our focus. They describe the leadership competencies for each of the four culture archetypes, and thus create a link between the two.

Although the Competing Values Framework has frequently been used in information systems research to study, for example, the impact of organizational culture on the deployment of systems development methodologies, software processes, and software process improvement (Iivari & Huisman, 2007; Müller & Nielsen, 2013; Shih & Huang, 2010), we use it in the context of digital transformation leadership. More specifically, we use the Competing Values Framework as inspiration in advancing a contingency perspective on archetypical competency portfolios. According to this perspective, the portfolios needed by a leader depend on whether transformation efforts are driven by goals related to (1) flexibility or stability and (2) an internal or external focus on outcomes. Hence, although our theorizing is inspired by (Cameron & Quinn, 2006), we have adapted it to the specific context of digital transformation leadership.

Instead of organizational culture archetypes (Cameron & Quinn, 2006), we focus on archetypical competency portfolios for digital transformation leadership. Fig. 1 shows our theorized competency portfolio framework. Each portfolio consists of leadership competencies related to (a) exploring market innovation, (b) supporting operational efficiency, (c) ensuring active stakeholder involvement, and (d) improving competitive positioning. We label the four portfolios according to the types of leaders who personify the constituent competencies: the challenger, the bricoleur, the organizer, and the competitor. As such, our theorizing is based on the premise that digital transformation is not a single, but multifaceted phenomenon with unique

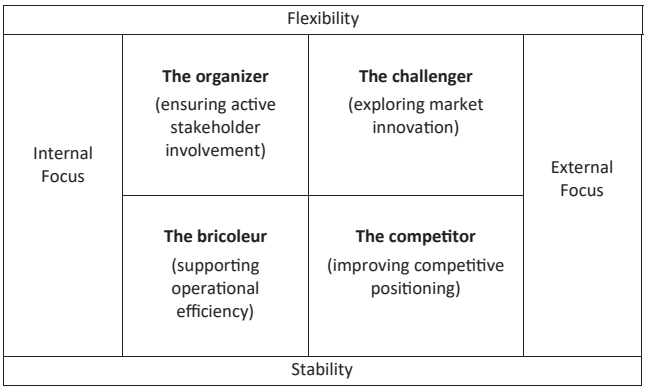

Fig. 1. Digital Transformation Leadership: Archetypical Competency Portfolios. Inspired by Cameron & Quinn (2006).

leadership requirements depending on contexts. As stated by Tekic & Koroteev (2019): "For one group of companies, it is about adopting new technologies, like the Internet of Things…, [another group] see[*s*] digital transformation as a way to optimize processes and cut costs, while others view it as an opportunity to create new value by offering products and services that have never existed before; some companies see digital transformation as a change in a profile of people they employ, while others view it as a need to find and serve new customers. All these perspectives could be valid and correct" (p. 684).

3. Methods

As a starting point for identifying digital transformation leadership competencies, we conducted a systematic literature review (Webster & Watson, 2002) inspired by Okoli's (2015) eight-step model to establish a comprehensive and reproducible account of state-of-the-art knowledge of the competencies business leaders need to strategize and spearhead digital transformation. We (1) identified the purpose of the review, (2) established a search protocol, (3) searched the literature in selected databases, (4) screened the literature for inclusion and exclusion of studies, (5) extracted data, (6) appraised quality, (7) synthesized studies, and (8) wrote the review.

Having identified the overall purpose, that is, to examine digital transformation leadership competencies, we developed a search protocol to ensure a reliable review strategy shared by all members of the research team. We identified relevant keywords (Fig. 2), and the final search strings included "digital transformation" and "digital innovation" in combination with "competencies" and "skills". We also included a broader search for "leader" in combination with "competencies" and "skills" to ensure that our search captured relevant literature. We searched the Web of Science and Scopus databases for journal articles and conference papers. We included conference papers to ensure that the most recent knowledge of digital transformation leadership competencies was included in our review.

This search resulted in a total of 1.119 papers, which were subsequently screened based on the selection criteria mentioned below. 67 papers (Appendix A, Table A1) were included in the final dataset. During the selection process, we initially read abstracts to determine whether to include or exclude papers. We only included papers if they explicitly focused on digital transformation competencies of business leaders. Papers that did not focus on leadership competencies but rather on, for example, organizational capabilities, business strategies, IT projects, and digital technologies were removed. Both journal articles and conference papers were included to ensure that results from the most recent studies, as well as research in progress, were incorporated into the subsequent analysis. Papers written in other languages than English were discarded. Due to our broad search strategy, only a smaller percentage (approximately 6 %) of the candidate papers met these criteria. We used backward and forward searches to broaden the pool of relevant papers. An overview of the literature search and selection process is presented in Fig. 2.

We analyzed the literature in a two-stage process and used NVivo for coding purposes. During the first stage, the literature was coded inductively through two cycles with a focus on identifying patterns in

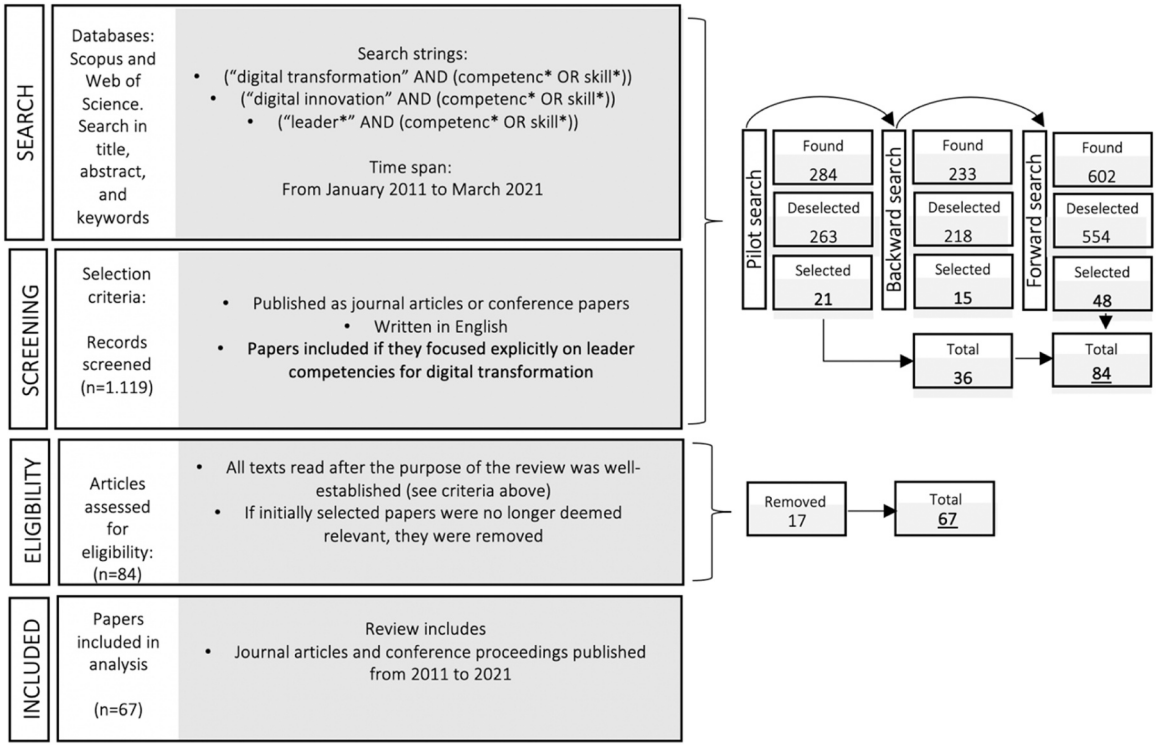

Fig. 2. Literature Search and Selection Process.

the literature (Miles et al., 2014). During first cycle coding, we compiled a gross list of competencies with 145 different labels. During second cycle coding cycle, we merged codes into categories of competencies, distinguishing between technical, business, and people-oriented competencies. While these distinctions helped us categorize the different leadership competencies, they did not help us analyze them as contingent upon the drivers and goals of digital transformation efforts. Hence, we wanted to move beyond a summary of existing research and make a theoretical contribution (Post et al., 2020).

During the second stage of the analysis, we, therefore, moved to a process of theorizing. The assumption underlying our theorizing is that certain leadership competencies contribute to successful digital transformation efforts under varying circumstances and that these competencies can be grouped into sets that we refer to as archetypical competency portfolios. Our theorizing involved moving away from the mechanics of literature searches and analyses to the creativity associated with discovery (Swedberg, 2014). The aim was to challenge habitual thinking and identify new patterns, not only between categories of competencies but also between competencies and the context of digital transformation. We revisited the description of digital transformation competencies needed by business leaders such as members of the board of directors, top management team members, and Chief Digital Officers. These leaders are referred to by various names in different organizations, but when we compared their required digital transformation competencies, patterns emerged that allowed us to describe the archetypical competency portfolios that leaders need in varying circumstances. We then experimented with different theoretical conceptualizations of these portfolios in the form of, e.g., personas that communicate needed digital transformation competencies of different leader types. Similarly, we experimented with different distinctions between digital transformation drivers, e.g., emerging versus established technologies, and digital transformation goals, e.g., business innovation and business support. The reviewers became an integral part of this process by challenging us to clarify and justify our claims. We are indebted to one of the anonymous reviewers for suggesting the Competing Values Framework (Cameron & Quinn, 2006) as a foundation for our theorizing.

At the end of the second stage of literature analysis, we, therefore, recoded and analyzed the literature deductively (Miles et al., 2014) based on the archetypical competency portfolios for digital transformation leadership (Fig. 1) and drawing on the Competing Values Framework (Cameron & Quinn, 2006). During this process, we coded the papers according to leadership competencies as they relate to one or more of the archetypes. Two researchers independently coded the papers, and disagreements were discussed and reconciled at meetings between the authors. This process of check-coding (Miles et al., 2014) helped ensure the reliability of the resulting links between archetypes and papers. Some of the identified competencies are coded as "general" because they focus on basic leadership competencies rather than those specific to any of the four archetypes. Finally, the papers were linked to the competency categories (Table 1) and we identified the specific competencies for each category and key quotations that exemplify them. We have documented the result of the coding in Appendix A, Table A2.

4. Leadership competency portfolios

Most of the 67 selected papers (62 %) have been published between 2018 and 2020, indicating that the interest in leadership competencies in digital transformation is a research topic that has recently attracted interest among scholars. 55 % of the papers are published in peer-reviewed journals and 45 % in conference proceedings. The papers have been published in a wide variety of outlets across different research streams, suggesting that state-of-the-art knowledge is fragmented and dispersed. It underscores the need for a review that synthesizes previous studies into a coherent body of knowledge.

Our synthesis of the reviewed literature yields important insights into the broad range of leadership competencies needed for digital transformation. The literature stresses that leaders, in general, must be good at communicating, be able to establish a vision for change, and have strong interpersonal competencies, especially those related to motivating employees and managing people issues. Therefore, digital transformation leaders need different combinations of technical, business, and people-oriented competencies to facilitate digital transformation.

Table 1
Digital transformation leadership competency categories.

Archetypical Competency Portfolio	Competency Category	Illustrative Reference
The challenger	• Technology scouting for market innovation • Stimulating alternate business futures • Promoting an entrepreneurial spirit	Kane et al., 2019; Shoop et al., 2015; Singh & Hess (2017).
The bricoleur	• Ensuring technology-culture fit • Managing process-technology alignment • Coordinating stakeholder engagement	Coertze & von Solms, 2014; Peppard et al., 2011; Singh & Hess (2017)
The organizer	• Utilizing (digital) communication tools • Encouraging team collaboration • Building trust in digital technologies	Cortellazzo et al. (2019); Roman et al. (2019); van Wart et al. (2019).
The competitor	• Analyzing for competitive positioning • Cultivating competitive capabilities • Stimulating product co-creation	Correia & Joia, 2014; Van Peteghem et al., 2019; Valentine & Stewart (2015)

Whereas Table 1 summarizes the competencies into competency categories, Table A2 in Appendix A provides a more fine-grained mapping between the competencies and the archetypes.

A recurring theme in the reviewed papers is that business leaders do not need to be technology experts to facilitate digital transformation (Imran et al., 2020; Tahvanainen & Luoma, 2018; Valentine & Steward, 2013). Valentine and Steward (2013), for example, argue that they "don't need to understand the details of technology as much as they need to understand how management should be dealing with technology" (p. 8). Tahvanainen & Luoma (2018) agree that technical competencies are not a top priority and that all-around technological know-how is sufficient if others within the organization have deep technical knowledge. Imran et al. (2020) similarly conclude that "leaders are not required to possess hardcore technical knowledge for this purpose; rather a good understanding of digital tools is enough" (p. 83). Although business leaders do not need to be technology experts, there are different perspectives in the literature on the importance attributed to technical competencies. For example, Liu et al. (2018) state that "for leadership today technology-related skills have become one of the core competencies" (p. 830). These differences do not raise the question of *whether* technical competencies are needed. Instead, they raise the question of *when* and *how* they should be combined with other competencies, such as business and people-oriented competencies, to facilitate digital transformation. This is in congruence with Balcar (2016), who argues "that the productivity of hard skills stems from their combination with soft skills" (p. 453).

Following this line of reasoning, we suggest that there is a need for different combinations of technical, business, and people-oriented competencies depending on the drivers and goals of digital transformation efforts. Next, we unfold the four archetypical competency

portfolios, which contain the competencies needed when leading digital transformation by exploring the potential for market innovation (the challenger), supporting operational efficiency (the bricoleur), ensuring active stakeholder involvement (the organizer), and positioning the organization on the market and strengthening it vis-à-vis its competitors (the competitor). Table 1 provides a summary of our findings and contains the key references used as a basis for theorizing archetypical competency portfolios and proposing the competency portfolio framework (Fig. 1).

4.1. The challenger

The challenger's goal is to explore the market innovation potential of digital technologies. This leader challenges – as the name suggests – the status quo, is externally oriented, and leverages emerging technologies like AI, blockchain, and IoT to realize first-mover advantages when entering new markets, disrupting existing markets, or creating entirely new markets. This may be a high-risk strategy in the sense that it is uncertain whether these technologies, some of which are at the cutting edge of technological development, will benefit the organization.

The challenger's leadership competency portfolio is characterized by technological know-how that makes it possible to spot new technological opportunities and market trends. This includes knowledge of emerging technologies, an understanding of the potential and limitations of different technologies from a market perspective, and insight into adoption successes and failures in other organizational settings (Singh & Hess, 2017; Sousa & Rocha, 2019). The challenger must "establish a level of technical domain credibility as to help team members or clients have a clarity and direction on their technical efforts" and must have "foundational knowledge of how technology works together to create a product or produce results" (Shoop et al., 2015, p. 9). Imran et al. (2020) emphasize that "leaders of DT [digital transformation] must have a basic knowledge of these emerging new digital technologies, how these technologies can influence their businesses and operations, and how they can utilize these technologies" (p. 84). We label this competency category as *technology scouting for market innovation,* which encapsulates the ability to identify disruptive digital technologies for market innovation purposes.

The challenger is future-focused, promotes risk-taking behavior in the organization, and challenges conventional thinking at all organizational levels (Kane et al., 2019). This translates into a category of competencies for *promoting an entrepreneurial spirit*, similar to that of Silicon Valley founders, which is often summarized in the "fail fast" mantra (Imran et al., 2020). As stated by Cortellazzo et al. (2019): "Under increasing pressure to innovate, leaders need to undertake an active role in identifying the need for change, as well as handling, and initiating change within their teams and organizations. [They] tend to show more entrepreneurial and risk-taking characteristics than leaders in traditional contexts" (p. 12). In a competitive and turbulent environment, "leaders need to develop their capabilities to try out new things and recognize fast whether it is working for them or not" (Imran et al., 2020, p. 85). This means that this leader should be willing to take risks and capable of dealing with the risks associated with changing, for example, the company's value propositions or targeted customer segments (Sousa & Rocha, 2019).

To increase the likelihood of success despite these risks, the challenger should possess the competencies to analyze and communicate both internally and externally why a particular strategy should be pursued. This is achieved through, for example, scenario planning and impact analyses that demonstrate its market innovation potential and by presenting a vision that all stakeholders can rally around. As noted by Kane et al. (2019): "The most important leadership skill to possess in a digital organization is a transformative vision, which includes the ability to anticipate markets and trends, make savvy business decisions, and solve tough problems in turbulent times" (p. 35–36). We label this competency category *stimulating alternate business futures,* which captures this leader's ability to focus on competition and technology trends.

In summary, the challenger is a technology entrepreneur who possesses the technical, business, and people-oriented competencies to identify, analyze, and justify the adoption of emerging technologies as drivers of the organization's digital transformation. This leader is concerned with business flexibility and ensuring that the organization benefits from these technologies to enhance customer satisfaction, which means that the challenger is externally oriented rather than focused on the internal environment of the organization.

4.2. The bricoleur

The goal of the bricoleur is to support operational efficiency by using digital technologies. This leader focuses on how the organization can utilize mature digital technologies, such as commercial off-the-shelf (COTS) systems, in pursuit of business excellence. The bricoleur is a skilled coordinator and has an internal focus on reconfiguring, combining, and adapting well-established digital technologies to facilitate new ways of operating. The name "bricoleur" communicates the ability of this leader to weave a patchwork of digital technologies that respond to identified business needs and help solve existing problems. This is a comparatively low-risk approach to digital transformation that predominantly relies on tried and tested technologies, helps minimize risks, and increases the likelihood of positive outcomes from a cost-benefit perspective. However, by focusing on well-established digital technologies, this leader type risks losing sight of technology trends, market developments, and competitor moves that may render current problems irrelevant while giving rise to new ones.

The bricoleur's leadership competency portfolio is characterized by a deep understanding of the business domain to identify how well-established digital technologies can be adopted and adapted to redesign organizational practices (Grigore & Coman, 2018; Prince, 2017). This leader has a deep knowledge of the different business processes throughout the organization (Ravarini et al., 2020) and is able to align a limited IT budget with business needs (Benaroch & Chernobai, 2017). We label this competency *ensuring technology-culture fit*, which is the ability to support digital transformation through the integration of technologies that are compatible with the existing values and identity of the company. The role of the bricoleur is to "successfully inspire people, a corporate culture shift is usually needed [and] to convince the workforce across all departments and hierarchy levels to pull together" (Singh & Hess, 2017, p. 10). As such, integration management competencies are needed, as they enable this leader to combine various digital technologies to address business needs and experienced problems, such as known customer pain points or performance issues related to the core activities of the business.

The bricoleur's approach to digital transformation is rooted in detailed financial analyses and thorough planning of digital transformation efforts that ensure technology implementation and project-by-project achievement of business goals. Each project contributes to varying degrees to the organization's digital transformation journey (Peppard et al., 2011; Valentine & Stewart, 2013). This is a matter of *managing process-technology alignment*, which is a category of competencies that enables this leader to recognize and realize the potential for digital transformation by incrementally improving existing business processes with already available technologies. The bricoleur is, in other words, "responsible for the supply of technology and systems to support an organization in which demand is being defined as an everyday occurrence by the business" (Peppard et al., 2011, p. 37).

The bricoleur motivates the need for digital transformation among employees and other stakeholders by pointing to the customer value and each project's contribution to the bottom line. To enable stakeholder participation in project planning and subsequent execution, the bricoleur needs competencies that can be summarized as *coordinating stakeholder engagement*. As stated by Zupancic et al. (2016), leaders can: "a)

stimulate members of the organization to consolidate knowledge from their individual activities; b) consolidate and share knowledge within the team or group to develop a deeper understanding and c) brokerage knowledge between members of the organization but also bring external knowledge into the organization" (p. 34). The leader demonstrates these competencies by convincing employees of the need for digital transformation and by helping them to visualize the resulting benefits (Singh & Hess, 2017).

In summary, this leader is internally oriented with existing business processes as a point of departure, and the bricoleur draws on technical, business, and people-oriented competencies to coordinate digital transformation projects in collaboration with relevant stakeholders. The leader is concerned with efficiency and stability and ensuring that experienced problems are addressed by adopting and combining mature technologies as drivers of the organization's digital transformation.

4.3. The organizer

The organizer's goal is to facilitate digital transformation through active involvement of relevant stakeholders. The name "organizer" alludes to the ability of this leader to enable digital transformation through a people-oriented approach with participation and openness as a point of departure. The organizer is internally oriented with a focus on interpersonal relationships, emphasizing flexibility and trusting in the judgment of employees rather than unilaterally giving directions from a top-management perspective.

The organizer's leadership competency portfolio is characterized by a deep understanding of how to establish and nurture relationships during digital transformation. This leader seeks to involve employees and other stakeholders in problem-solving and decision-making and relies on strong communication skills. We label this competency category *utilizing (digital) communication tools* to emphasize the use of communication tools to facilitate involvement. Hence, business leaders need to master different communication tools to engage stakeholders in the digital transformation (Cortellazzo et al., 2019). These include remote online collaboration tools and communication platforms in the form of, e.g., enterprise social networking applications and web conferencing software (Kodama, 2020; Roman et al., 2019). Therefore, the organizer needs both technical and people-oriented competencies to effectively use these tools to motivate change among employees (Aksal, 2015). As such, this is a leader type that manages the communication flow (van Wart et al., 2019) and "communicates clearly, provides adequate social interaction, and demonstrates technological know-how" (Roman et al., 2019, p. 853).

The organizer drives digital transformation efforts by paying close attention to motivating collaboration across the organization and trying "to create a positive work environment and to improve communication and collaboration through a variety of virtual communication methods" (Roman et al., 2019, p. 857). To that end, this leader leverages competencies in the category of *encouraging team collaboration* to establish and support high-performing teams as vehicles for digital transformation efforts. The organizer must be competent in "organizing activities for team work and continual development, using information technology in the leadership process, providing quality communication links among groups, providing for the inclusion of all stakeholders" (Aksal, 2015, p. 82). This also includes virtual team collaboration, which underscores the importance of this leader's ability to foster a positive work environment and improve collaboration through a variety of digital communication tools (Roman et al., 2019).

The organizer is aware not only of the transformative potential of digital technologies, but also that work breakdowns and user resistance are to be expected during digital transformation. Therefore, the organizer needs competencies in the category of *building trust in digital technologies*. Cortellazzo et al. (2019) argue that "some of the most common problems generated by the digitalization of organizations are worker alienation, weak social bonding, and poor accountability. It is therefore extremely important that leaders support and help followers in dealing with the challenges of greater autonomy and increased job demands, by adopting coaching behaviors that promote their development, provide resources, and assist them in handling tasks" (p. 12). That means that the organizer not only needs to be able to inspire and motivate employees, but also to use technologies to create trust by being perceived as honest, consistent and fair as a leader.

In summary, the organizer has technical, business, and people-oriented competencies related to utilizing digital communication tools, encouraging team collaboration, and building trust in digital technologies in increasingly digitalized organizations. To that end, the organizer needs to be able to communicate clearly, must be well-regarded as a leader, and possess enough technical and business insight to know how to use these tools effectively to drive digital transformation.

4.4. The competitor

The competitor's goal is to improve the competitive positioning of the company by using digital technologies. The label "competitor" alludes to the focus of this leader on managing competitiveness and generating new business opportunities by leveraging data and digital technology. This leader focuses on bringing in new technologies to support existing business operations (stability) rather than trying to disrupt existing markets.

The competitor's leadership competency portfolio is characterized by extensive knowledge of the role of digital technologies and market competition as a basis for business strategizing and growth. Hence, *analyzing for competitive positioning* is a key category of competencies that this type of leader draws on in identifying and exploring new ways of using digital technologies for value-creation purposes, for example, to enrich existing products and services and to create new products and services. As a consequence, the competitor must be "knowledgeable about current and emerging digital business technologies and their potential to add organizational, customer and stakeholder value. Skilled in business, environmental and competitive analysis including how industry sector and similar organizations are using new and emerging technologies" (Valentine & Stewart, 2015, p. 4517). Coertze and von Solms (2014) add that this leader must "have a sound business understanding and skill set, given that it would become its duty to ensure that IT both supports and sustains the competitive advantages of the organisation" (p. 4432).

For the competitor, the success of the digital transformation effort depends in part on the ability to inspire employees to be proactive in supporting the company to surpass the performance of competitors. We label this competency category as *cultivating competitive capabilities*. This involves, for example, the integration of data and digital technology into decision-making processes. As stated by Valentine & Stewart (2015), this leader "provides strategic leadership of an organizational culture that champions digital business technologies, and uses data and information for decision-making [and] demonstrates an understanding of technologies for identifying, tracking, mining and exploiting the data and information relevant to the organization's needs" (p. 4517).

The competitor pushes the organization's digital transformation agenda through a customer-oriented focus on value creation. Across the organization, increased data use generates insights into customer preferences, which in turn enables closer customer relationships. The competitor uses these insights to stabilize and improve the competitive position of the company by managing the development and marketing of customized services and products that are personalized to the needs of customers. To this end, this leader relies on competencies categorized as *stimulating product co-creation*, which underscores the external orientation of the competitor, who is always on the lookout for new opportunities and collaborations with different stakeholders in the surrounding environment (Gadasina et al., 2017). As stated by Peppard et al. (2011), the competitor "identifies and develops opportunities to deploy new

IT-enabled processes and product/services that give the organization a clear source of competitive differentiation over its rivals" (Peppard et al., 2011, p. 35). Understanding the needs and collaborating with the customer who consumes those products and services is important and, therefore, this leader must be "knowledgeable about value creation through digital product, system or service development" (Valentine & Stewart, 2015, p. 4519).

In summary, the competitor integrates data and digital technology into decision-making processes and has the technical, business, and people-oriented competencies needed to analyze the competitive positioning of the organization, cultivate competitive capabilities, and stimulate the co-creation of products. This leader is concerned with utilizing digital technologies as means to stabilize and improve the competitive position of the organization.

5. Discussion

Leading digital transformation requires a particular combination of competencies (Andriole, 2018). We have identified four archetypical competency portfolios that reveal digital transformation as a multifaceted phenomenon (Tekic & Koroteev, 2019), which requires different leadership competencies under varying circumstances. By drawing on the Competing Values Framework (Cameron & Quinn, 2006) and distinguishing between goals related to flexibility or stability and also separating transformation efforts with an internal orientation from those with an external orientation, we have identified four archetypical leadership portfolios of digital transformation competencies. We have gathered these portfolios into the competency portfolio framework in Fig. 1. The portfolios consist of competencies related to (a) exploring market innovation, (b) supporting operational efficiency, (c) ensuring active stakeholder involvement, and (d) improving competitive positioning. In the following, we relate the four archetypical portfolios to the existing literature as a basis for discussing our contribution, the implications of our theorizing for research and practice, and the limitations of our study. As part of this discussion, we offer an agenda for future research.

5.1. Theoretical contribution

Our study reveals that business leaders do not need to be technology experts to facilitate digital transformation. Instead, they need different combinations of technical, business, and people-oriented competencies, depending on the drivers and goals of the transformation efforts. From this perspective, digital transformation efforts need to be aligned with the organization's overall goals and strategies. If the goals are focused on external adaptation and market differentiation, the digital transformation initiative should aim to enhance customer experience, market innovation, and competitiveness. In contrast, if the goals emphasize internal integration and unity, the digital transformation initiative should focus on enhancing internal collaboration, communication, and efficiency. Inspired by prior work (Andriole, 2018; Cameron & Quinn, 2006; Tekic & Koroteev, 2019), we therefore propose a contingency approach in the absence of a one-size-fits-all portfolio of digital transformation leadership competencies. Hence, we suggest the following:

Proposition 1:. *Leaders need a combination of technical, business, and people-oriented competencies depending on the drivers and goals of the organization's digital transformation efforts.*

We further argue that digital transformation leadership competencies can be conceptualized through four archetypical competency portfolios that we have labeled according to the types of leaders who personify the constituent competencies: the challenger, the bricoleur, the organizer, and the competitor (Table 1). The digital transformation leadership competency portfolios are inspired by the work of Cameron & Quinn (2006), but whereas their competency categories are general to management, our portfolios are specific to digital transformation.

The challenger archetype possesses exceptional leadership competencies that enable this individual to motivate and generate excitement around how digital transformation enables the organization to capture market shares or create entirely new markets through the novel use of emerging technologies. This leader type strives to foster an entrepreneurial spirit by incentivizing risk-taking behavior and rewarding experimentation with digital technologies that have business potential but as of yet no demonstrated value. This type has similarities with Cameron & Quinn's (2006) adhocracy leaders who should communicate a vision of the future, encourage innovation, and manage continuous improvement. Accordingly, we put forward the following:

Proposition 2:. *When an organization prioritizes flexibility and discretion and focuses on external adaptation and market differentiation, the challenger is the preferred leader to spearhead digital transformation efforts.*

The bricoleur archetype has strong leadership competencies in relation to the adoption and deployment of well-established digital technologies in alignment with the organizational culture and processes. The bricoleur is capable of identifying and implementing a suite of mature technologies that present few if any risks, are comparatively inexpensive, and serve existing business needs. In turn, this calls for the coordination of stakeholder interests both internally and externally in digital transformation efforts. This compares to Cameron & Quinn's (2006) hierarchy leader who needs to coordinate information and manage behavior according to organizational culture, internal procedures, performance measurements, and monitoring systems. Based on these insights, we suggest the following:

Proposition 3:. *When an organization prioritizes stability and control and focuses on internal integration and unity, the bricoleur is the preferred digital transformation leader.*

The organizer archetype possesses exceptional leadership competencies that empower this individual to engage stakeholders and cultivate digital transformation through a participatory and people-centric approach. This requires a portfolio of leadership competencies related to communication tools, team collaboration, and building trust in digital technologies, grounded in a failure-friendly culture. This type has commonalities with Cameron & Quinn's (2006) clan leaders who should facilitate high-performance teamwork, nurture interpersonal relationships, and manage employee development. Hence, we advance the following:

Proposition 4:. *When an organization prioritizes flexibility and discretion and focuses on internal integration and unity, the organizer is the preferred leader to spearhead digital transformation efforts.*

The competitor archetype has strong leadership abilities to analyze the competitive positioning of the organization, cultivate competitive capabilities for digital transformation, and inspire product co-creation with customers. This leader is focused on outsmarting competitors and working tirelessly to exceed customer expectations and the performance of others in the industry against which the organization benchmarks itself. This compares to Cameron & Quinn's (2006) market leader who needs to manage competitiveness, energize employees, and manage customer service. Accordingly, we suggest the following:

Proposition 5:. *When an organization prioritizes stability and control and focuses on external adaptation and market differentiation, the competitor is the preferred digital transformation leader.*

5.2. Implications for research

Our study of archetypical competency portfolios contributes to the existing digital transformation leadership literature in several ways. Although Schiuma et al. (2021) propose "the transformative leadership compass" as a framework of six crucial competencies that distinguish a digital transformation leader, they limit their focus to digital

transformation entrepreneurship. Furthermore, although their framework is claimed to help "explain the role that executives can play within organisations to spur, catalyse and sustain digital transformation entrepreneurship" (Schiuma et al., 2021, p. 1287), it is not clear how and what this role is given different circumstances. Our study clarifies the role of business leaders under varying circumstances by distinguishing between, on the one hand, different drivers and goals of digital transformation and, on the other hand, the corresponding competencies needed. Similarly, despite having identified 23 characteristics of digital leadership, Klein (2020) does not offer any insight into their relative importance depending on the transformation drivers and goals of the organization. Our article provides such insights and contributes to IS research by theorizing four archetypical portfolios of competencies that leaders need under varying circumstances to drive digital transformation efforts. Although Bunjak et al. (2022) highlight the importance of transformational leadership and McCarthy et al. (2021) identify eight leadership characteristics, their research is limited to describing the "who" and "what" of digital transformation and does not explain "when" and "why" different competencies are needed. Our study goes one level deeper by showing that leaders ("who") draw on different competencies ("what") depending on contextual and situational needs ("when") because there is no one-size-fits-all solution to leading digital transformation ("why").

Hence, a key insight from our investigation is that digital transformation cannot be guided by an all-encompassing leadership approach. In fact, the four leadership competency portfolios underscore the need for different competencies in varying circumstances. Therefore, the pursuit of both empirical studies and theory-building efforts that distinguish between different types and contexts of digital transformation appears to be the most fruitful way forward for digital transformation as an emerging field of research. Our contingency perspective is one step down that path by theorizing different archetypical leadership competency portfolios that leaders need depending on the drivers and goals of digital transformation. We claim that there is considerable variation in the competencies needed when (a) exploring market innovation, (b) supporting operational efficiency, (c) ensuring active stakeholder involvement, and (d) improving competitive positioning. Technical, business, and people-oriented competencies are needed, but in various combinations, as shown by our analysis. For example, the challenger needs technical, business, and people-oriented competencies to ensure effective scouting of emerging technologies, stimulate alternate business futures, and promote an entrepreneurial and risk-tolerant mindset within the organization. Similarly, the bricoleur also needs technical, business, and people-oriented competencies, but for the purpose of building a patchwork of well-established technologies, which requires process-technology alignment, technology-culture fit, and stakeholder coordination to improve processes and operational efficiency. Therefore, although there is consensus in the literature that digital transformation leaders do not need deep technical knowledge (Imran et al., 2020), we show that different portfolios of technical, business, and people-oriented competencies are needed, depending on the drivers and goals of digital transformation efforts.

Our research contribution is supported by a literature study that allowed us to theorize four competency portfolios for digital transformation leadership. Although we agree with scholars who claim that "digital transformation requires a special set of skills and competencies" (Andriole, 2018, p. 78), such a statement also "raises the question, to what extent is leadership different in a digital era?" (Banks et al., 2022, p. 1). We are careful not to overemphasize the unique characteristics and challenges of digital transformation compared to organizational change in general. From a management literature perspective, digital transformation is, in fact, understood as "organizational change triggered and shaped by the widespread diffusion of digital technology" (Hanelt et al., 2021, p. 1160). There are also similarities between our theorized archetypical competency portfolios and the critical management skills proposed by Cameron & Quinn (2006). The question of similarities and differences between the leadership competencies needed for digital transformation versus organizational change, i.e., change management, is both interesting and relevant, but in this study we have focused narrowly on digital transformation.

5.3. Implications for practice

Our study provides relevant input to the discourse around digital transformation leadership and offers several insights for managers of private companies and public organizations alike. First, our competency portfolio framework can be employed to evaluate any discrepancy in digital transformation leadership competencies between what is required and the current skill sets available. This supports organizations in identifying potential gaps and offers insights into how they can pursue the development of their digital transformation leadership competencies. We advise board members and top management to consider the four archetypical portfolios as mirrors through which they may gaze and reflect upon the leadership competencies they have or need depending on the situation in which they find themselves. Thus, they may use the four leadership competency portfolios as a basis for comparison to determine if their leaders have the competencies needed to strategize and spearhead digital transformation in their organizations, given the drivers and transformation goals. This comparison enables an assessment of the potential gap between the current and needed leadership competencies for digital transformation (Garrett & Ritchie, 2018). The larger the competency gap, the greater the need to upskill existing business leaders or bring new ones on board. This is a crucial matter to consider due to the growing concern surrounding the attraction of skilled labor and experienced managers, who are essential in driving the digital transformation journey of any organization (Skare et al., 2023).

Second, our framework can assist board members and top management in making decisions about whom to hire, specifically identifying leaders with the requisite competencies. When organizations are on the lookout for new digital transformation leaders, the four portfolios can inform internal deliberations and decision-making about desired leadership profiles. For example, an organization looking for a leader to help initiate the digital transformation journey by leveraging company data and digital technology to strengthen its market position should consider the competitor portfolio and determine whether the competencies that such a leader should possess are present in the organization. Conversely, organizations looking to digitally transform their business project by project through a patchwork of well-established technologies to increase operational efficiency may seek inspiration in the bricoleur portfolio when looking for talented leaders. Board members and top management should also consider the need for different portfolios based on the digital maturity of the organization. Maturity models are based on a perspective on digital transformation as a journey (Berghaus & Back, 2016), where an organization enhances its capabilities by using well-established technologies at lower maturity levels and more advanced emerging technologies at higher levels. Although it is beyond the scope of our study, we speculate that the bricoleur competency portfolio may be a better fit for resolving challenges at lower levels, while the challenger portfolio may be more suitable for higher maturity levels. This is predicated upon the assumption that digital transformation goals and drivers are at least partially dependent on the digital maturity of organizations. Future studies are needed to validate this assumption.

Third, our framework can serve as a reference point when board members and top management strategize and plan digital transformation efforts. It should be adapted to accommodate changing circumstances and shifting demands for specific leadership competencies. It is beneficial to think of the four competency portfolios as archetypes that digital transformation leaders need at different times, depending on the circumstances. For example, as the bricoleur predominantly possesses competencies for adopting and reconfiguring mature digital technologies, a leader with this competency portfolio will most likely be ill-equipped to address the challenges faced by an organization in severe

competitive or financial difficulties, a situation that calls for bold leadership and the application of disruptive digital technologies for market innovation purposes to ensure its survival. In such a situation, the challenger portfolio is likely to be more appropriate. Similarly, the other competency portfolios are better suited for some situations and circumstances than others. An organization's needs for leadership competencies evolve over time as digital transformation is a continuous change process that is influenced and characterized by so-called "episodic bursts" (Hanelt et al., 2021).

Fourth, to ensure alignment between the organizational culture and the digital transformation strategy, board members and top management should use our framework in tandem with the CVF, ensuring that the demand for specific competencies corresponds to the value drivers and strategic directions of the company. Pursuing strategies and leadership styles that are incompatible with the existing culture could potentially pose significant challenges and may lead to cultural incongruence, transformation obstacles, and managerial challenges (Müller & Nielsen, 2013). By implication, business leaders need competencies that are aligned with the culture of the organization. When considering general leadership competencies, including those not related to digital transformation, it is crucial to assess the organization's culture archetype and the corresponding critical management skills required (Cameron & Quinn, 2006).

5.4. Limitations and future research

Although our study constitutes the first attempt at fencing in the digital transformation leadership competencies from a contingency perspective, we recognize that the described archetypical portfolios do not provide the full picture of the sets of competencies that leaders need under varying circumstances. It is plausible to assume that leaders need different competencies before, during, and after digital transformation. We have focused only on the archetypical competency portfolios needed during the transformation process. Even within that scope (the transformation process), other factors than drivers and goals may impact the need for specific competencies, for example, in response to the challenges that arise during change processes (McCarthy et al., 2021). The study is also limited by not considering leadership competencies outside the scope of digital transformation. The scope of this study is furthermore confined to examining the leadership competencies necessary for supporting digital transformation initiatives by drawing on insights from a systematic review of the existing literature. Our theorizing is inherently limited by the existing body of literature and its comprehensiveness. The relatively nascent nature of digital transformation means that the existing body of literature may not fully encompass the diverse range of organizations undergoing various forms of digital transformation, each driven by distinct objectives and technologies and confronting a multitude of challenges unique to their respective contexts. It is important to acknowledge that our theorizing is based on existing literature and does not reflect any original empirical research on digital transformation initiatives. Consequently, our contribution is constrained by the lack of empirical data.

Future research should address these limitations, and we briefly suggest a research agenda to grapple with the unanswered questions related to digital transformation leadership competencies.

First, future research should investigate the competencies used to overcome the different challenges that arise during digital transformation efforts in real-world settings (Wolff et al., 2019). This would serve to validate and extend the results of our study, which are based on a review of the literature.

Second, digital transformation is a sociotechnical change process that requires stakeholder participation and collaboration (Schmid et al., 2017), and therefore it is necessary to broaden the perspective on competencies to study the interaction between leadership and employees, and how they build digital transformation capabilities at the organizational level (Vial, 2019). This aligns well with our perspective on leadership competency portfolios rather than leader types with predefined characteristics.

Third, in an extension of our investigation, future research should study the role of the organizational context, including size (SME or large enterprise), sector (public versus private), and industry (Kraus et al., 2022). For example, what are the challenges that SMEs experience (Skare et al., 2023) compared to large enterprises and to what extent do these challenges translate into the need for different leadership competencies? To what extent do the institutional structures of public sector organizations create barriers to or enable digital transformation compared to private companies, and what are the implications in terms of the needed leadership competencies? And what are the forces underlying digital transformation within different industries and how do they translate into competency requirements? Digital disruption is more pronounced within some industries, for example, the insurance and bank industries, than others, and intuitively it follows that the required competencies differ (Andriole, 2018). Addressing such questions will help move this emerging field of study forward.

Fourth, we encourage researchers to use a variety of methods to study the plethora of cases and projects in which leaders across different sectors and industries are involved to generate insights into their actions and how they draw upon certain competencies to drive the digital transformation agenda. Such case studies may, for example, rely on interviews with leaders of different types and sizes of organizations. Qualitative investigations of this kind facilitate an understanding of how different contexts impact not only the digital transformation challenges, but also the appropriate response strategies and needed competency portfolios. However, qualitative research is limited by its time-consuming nature and the lack of statistical generalizability. Therefore, we also want to encourage researchers to undertake quantitative studies, such as surveys and data analyses of C-suite job postings, which may provide support for or challenge the four archetypical portfolios.

Finally, there is a need for follow-up studies to advance our theorizing toward a framework that can be used for assessment purposes, for example, when companies plan to train or hire managers who can lead or support digital transformation efforts. Harison and Boonstra (2009) have proposed an assessment model that can be used to determine or develop IT and non-IT-related competencies that project managers need to manage the so-called "technochange processes" within and between organizations. We suggest that future research aims to develop a similar assessment model that focuses on higher levels of management, that is, business leaders and the challenges of digitally transforming organizations. Such an assessment model would have practical value and the underlying research would further state-of-the-art knowledge of digital transformation leadership competencies.

6. Concluding remarks

In this article, we describe the competencies that business leaders need to facilitate digital transformation. We argue that relevant leadership competencies depend on the drivers and goals of the organization's digital transformation efforts. Based on a review of the literature, we theorize four distinct sets of competencies that leaders need under varying circumstances, something we refer to as archetypical leadership competency portfolios. These portfolios are gathered into a competency portfolio framework (Fig. 1). We label the portfolios according to the types of leaders who personify the constituent competencies: the challenger, the bricoleur, the organizer, and the competitor. These portfolios relate to the drivers and goals of (a) exploring market innovation, (b) supporting operational efficiency, (c) ensuring active stakeholder involvement, and (d) improving competitive positioning. Although there are other categorizations of digital transformation leadership competencies, for example, Zulu & Khosrowshahi's (2021) taxonomy of different leadership types that range from forward-thinking to visionless leaders, our theorizing constitutes the first attempt at fencing in the digital transformation leadership competencies from a contingency

perspective.

CRediT authorship contribution statement

Sune Dueholm Müller: Writing. **Henrike Konzag:** Writing – review & editing. **Jeppe Agger Nielsen:** Writing – review & editing. **Hafdís Bergsdóttir:** Writing – original draft.

Declaration of Competing Interest

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.ijinfomgt.2023.102734.

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