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Article

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Leadership behaviours to promote organisational performance in private sector digital transformation – A systematic literature review

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ABSTRACT

Research on digital transformation leadership is growing rapidly, yet its behavioural foundations and performance effects remain unclear. This study conducts a systematic literature review from a micro-level behavioural perspective, while detaching the context from established leadership patterns. A comprehensive search was conducted across major academic databases, including Scopus and Web of Science, resulting in 65 studies that met the inclusion criteria. A total of 65 peer-reviewed articles published between 2000 and 2024 were analysed to identify how leadership behaviours influence organisational performance in digital transformation. Most studies were published between 2021 and 2024, reflecting the novelty and rising interest in the topic. Leadership behaviours were classified into task-, relation-, change-, and external-oriented behaviours. These behaviours were linked to four performance dimensions: effective leadership, digital acceptance, digital competence, and digital innovation. Simultaneous use of diverse behaviours is essential, as different behaviours affect different outcomes. Emotional intelligence supports behavioural balance, and behavioural variance is key due to the synergistic nature of performance dimensions. The review applies Vial's (2019) digital transformation framework to structure the synthesis. The findings aim to operationalize leadership practices that precede the dynamic system outlined in the framework. The study concludes with 15 propositions for future research.

1. Introduction

Today's digital technologies are pushing companies to keep a constant eye on the external environment, looking for established or emerging technologies that they can utilise. The use of modern digital technologies in an organisation's digital transformation (DT) can be considered as a threshold for business success today and in the future because of their potential for operational effectiveness, customer orientation, digital innovation, and more. If a company does not keep up with technology, its competitors may drastically change the competitive landscape (Chawla & Goyal, 2022; Singh, Srivastava, Chatterjee, Durana, & Kliestik, 2024; Tigre, Curado, & Henriques, 2023). By nature, DT changes the current actions of an organisation, transforming not only processes but also the ways that humans work. New digital technologies must also be internally aligned with employees, culture, and structure (Osorio-Gómez, Herrera, Prieto-Osario, & Pellicer, 2024; Wang, Guo, Zhang, & Schaefer, 2024).

DT is a highly technological change process that permeates an entire organisation, and comprehensively influences its technologies,

processes, and employees. The starting point of DT studies can be seen as the year 2000 (Verhoef et al., 2021) or 2011. However, research on the human dimension of DT did not receive significant attention until the 2020s (Peña & Caruajulca, 2022). Most DT studies have traditionally adopted technological and processual outlooks (Coopasamy & Botha, 2022; Meitong, Choi, Ma, Cai, & Cui, 2024; Peña & Caruajulca, 2022). The human DT dimension focuses on the interplay between humans and technology (Korherr, Kanbanch, Kraus, & Mikalef, 2022; Peña & Caruajulca, 2022). One of the main research domains in this dimension is leadership, which involves a human leader guiding their subordinates. Leadership is sometimes considered to be the main success factor in DT implementation (Gao & Gao, 2024; Philip, Gilli, & Knappstein, 2023; Weber et al., 2022a). With their actions, the leader promotes or decreases, say, the trust, psychological safety, voice behaviours, commitment, motivation, satisfaction, or creativeness of individual employees. This may positively influence organisational performance, such as self-efficiency, productivity, and innovativeness (Cahyadi et al., 2022; Majumdarr, Dasgupta, Hassan, Behl, & Pereira, 2024; Marashdah & Albareen, 2020; Mikkelsen, York, & Arritola, 2015; Tortorella et al.,

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2023). Yet, an understanding of the full potential of DT leadership remains elusive (Abbas, Latif, & Sarwar, 2024). Some researchers have considered leadership styles. These studies have especially focused on transformational leadership (Hooi & Chan, 2023; Matsunaga, 2021), transactional leadership (Hussein et al., 2024; Rademaker, Klingenberg, & Süß, 2023), and the new, unsettled concept of digital leadership (Tigre et al., 2023). Leadership styles can be seen as behavioural patterns. These are comprehensive concepts which should be adjusted according to organisational contexts and environments (Müller, Konzag, Nielsen, & Sandholt, 2024; Zoppelletto, Orlandi, Zardini, Rossignoli, & Kraus, 2023). For example, several studies show that transformational leadership is a suitable leadership style for DT (AlNuami, Kumar Singh, Ren, Budhwar, & Vorobyev, 2022; Matsunaga, 2021; Yela Aránega, Gonzalo Montesinos, & del Val Núñez, 2023). However, it is most suitable for organisations with relatively high digital maturity (Tortorella et al., 2023). Digital leadership, a leadership style tailored for the DT context, is usually seen as a mix of different styles, supplementing them with a digital orientation (Abbu, Mugge, Gudergan, Hoeborn, & Kwiatkowski, 2022). Some evidence shows that DT leadership should not rely on only one behavioural pattern (Hussein et al., 2024, Huang, Jiang, & Chang, 2023).

Some DT researchers have adopted competency-based approaches to leadership. For example, Schiuma, Santarsiero, Carlucci, and Jarrar (2024) identified six complementary competencies for DT leaders. Živković (2022) organised the competencies based on the questions ‘Why?’, ‘What?’, and ‘How?’ to enable the leader’s self-reflection. Ongena, Morsch, and Ravesteijn (2024) identified core management dimensions for leaders to capture DT essentials. Conversely, Müller et al. (2024) approached competencies from a contextual perspective and named different leadership roles for different purposes. Abbu et al. (2022) focused on the traits of a human-centric digital leader and identified 15 common traits of such a leader. Interestingly, McCarthy, Sammon, and Alhasson (2024) found that DT leaders themselves perceived their responsibilities to be mainly as business-strategic, with lesser attention given to the human dimension.

Regardless of the leadership perspective, it affects the ones being led: subordinates. Changing the status quo may negatively influence employees because of, say, technological stress, fear of losing work, or unclear objectives (Rademaker et al., 2023). Leaders act as role models, and transfer knowledge and skills through their personalities and skills (Ahmed, Naqshbandi, Waheed, & Ain, 2024; Weber et al., 2022a). The effects of a single leader’s actions may be understood in the most concrete sense by examining the single behavioural practices that they perform. In the general leadership literature, leadership behaviours have been a topic of interest for over half a century. Behavioural and situational theories highlight the behavioural importance and contextual dependency of leadership, focusing on how leaders may use situational combinations of behavioural practices to lead effectively (Derue, Nahrgang, Wellman, & Humphrey, 2011; Thompson & Vecchio, 2009). Behaviours not only directly affect employee performance but also indirectly through well-being (Aubouin-Bonnaventure, Chevalier, Lahiani, & Fouquereau, 2024; Kaluza, Boer, Buengeler, & van Dick, 2020; Wang et al., 2024). Overall, research on the topic has also taken general (Collins, Hair Jr., & Rocco, 2009; Yadav & Chaudhari, 2024) and intra-personal (Gelaidan, Al-Swidi, & Mabkhot, 2018; Halliwell, Mitchell, & Boyle, 2022) perspectives. Behaviours has also been studied as a part of leadership styles (Bommer, Rubin, & Baldwin, 2004; Gregory, Moates, & Gregory, 2011; Nielsen & Cleal, 2011; Stenmark, 2024). In addition to the inherently multidimensional nature of leadership behaviour, the ways that others perceive behaviours are not objective, but subjective and contextual (Sørensen et al., 2023; Thompson & Vecchio, 2009).

On leadership’s behavioural variance, Yukl (2012) formed a behavioural taxonomy comprising task-, relation-, change-, and external-oriented leadership behaviours. Task-oriented leaders emphasise specific tasks to efficiently achieve organisational goals. Meanwhile,

relation-oriented leaders focus on leader-subordinate-relationships and well-being to foster trust, support, and collaboration. Change-oriented leadership behaviour is partly visionary and creative, and is pursued for innovation, organisation-wide learning, and environmental adaptation. External-oriented leaders simultaneously pursue networking and monitor the external environment to grab on to new tangible and intangible resources, which would ensure the organisation’s relational interests in the market (Gil, Rico, Alcover, & Barrasa, 2005; Øygarden, Olsen, & Mikkelsen, 2020; Yukl, 2012; Yukl, Mahsud, Prussia, & Hassan, 2019; Yukl, O’Donnell, & Taber, 2009). Transformational and transactional leaderships, as examples for well-established leadership styles, are not clearly about specific taxonomy-based behaviours, but rather form their own entities (Molero, Cuadrado, Navas, & Morales, 2007; Yukl et al., 2009). However, transformational leadership is most closely related to change- and relation-oriented leadership behaviours. Meanwhile, transactional leadership is more related to task orientation (Detert & Burris, 2007; Hoogeboom, Saeed, Noordzij, & Wilderom, 2021). Research shows that transformational leadership is positively related to DT (AlNuami et al., 2022; Matsunaga, 2021; Yela Aránega et al., 2023). This hints at the potential positive relationships of change- and relation-oriented leadership with DT. However, viewing DT leadership through the rigid formality of transformational leadership may not provide an accurate picture of the micro-level behavioural variance needed for successful DT implementation.

Apart from the general leadership literature, some researchers have examined leadership behaviours. Several studies have examined behavioural patterns related to DT in the context of specific leadership styles (AlNuami et al., 2022; Matsunaga, 2021; Philip, 2021; Yela Aránega et al., 2023). However, few studies identify leadership behaviours apart from leadership styles. Lin (2024) and Philip et al. (2023) included behavioural competence as one of the core competencies of digital leaders. Several DT researchers have focused on task- and relation-oriented behaviours (Rademaker et al., 2023; Tortorella et al., 2023; Weber et al., 2022a, Weber et al., 2022b). The relatively novel topic area of the human dimension of DT may explain the limited and scattered nature of DT behavioural studies.

This study underlines leadership’s high importance in the DT context in particular and generally as well because of its heavy impact on organisational performance. Organisational performance includes not only financial performance but also operational dimensions such as operational effectiveness and innovation (Ahmed et al., 2024; Katebi, Hosseinkhah Eghdam, Baseri, & Salehi, 2024; Philip et al., 2023; Venturini & Benito, 2015). In DT initiatives, leadership plays an essential role in navigating complex transitions but often faces substantial challenges. These include employee resistance to change (Felipe, Torres de Oliveira, Toth-Peter, Mathews, & Dulleck, 2025; Sharma, Nigam, Jha, & Xu, 2024; Valtonen & Holopainen, 2025; Bausch et al., 2024), skill gaps (Fernandez-Vidal, Antonio Perotti, Gonzalez, & Gasco, 2022; Liu, Zeng, Papadonikolaki, Maritshane, & Chan, 2024; Maley et al., 2024; Mukhty, Upadhyay, & Rothwell, 2022; Seppänen, Ukko, & Saunila, 2025), resource constraints (Caliskan, Eryilmaz, & Ozturkoglu, 2025; Xu, Li, Sun, & Peng, 2023), and misalignment between leadership strategies and the technological or cultural demands of transformation (Arroyabe, Arranz, Fernandez de Arroyabe, & Fernandez de Arroyabe, 2024; Chen et al., 2024; Fernandes & Burcharth, 2024; Siwach, Gulia, Yadav, Malik, & Gahlawat, 2025). By focusing on the DT context, this study aims to strengthen the theoretical and empirical understanding of the relationship between leadership and organisational performance. Addressing these leadership challenges is essential for achieving competitive advantage and enhancing operational effectiveness. We consider organisational performance to encompass any financial or non-financial dimension that influences an organisation’s competitiveness or promotes its operational processes.

Despite the growing body of literature on DT, the human dimension, especially leadership, remains fragmented. While leadership is inherently contextual, subjective, and situational, existing research has

largely overlooked the behavioural aspects of leadership in DT context. This represents a significant research gap, as leadership outcomes are known to be highly dependent on context-specific behaviours (Oc, 2018; Yukl, 2012). Current studies often generalise leadership constructs without adequately addressing how specific behaviours manifest and influence performance in digitally transforming organisations. To address this gap, we conduct a systematic literature review to examine which types of DT leadership behaviours influence specific dimensions of organisational performance. By doing so, we respond to the research need for a more nuanced, behaviourally grounded understanding of DT leadership: an understanding, which can inform both theory development and practical challenges in DT initiatives. In doing so, we respond to the research calls of de Pacheco and Iwaszczenko (2024) and Heubeck (2023), who emphasise the need to deepen understanding of leadership approaches and human-technology interaction as antecedents to performance in DT. We also respond to the call by Liden, Wang, and Wang (2025) to conduct behaviour-focused leadership research. Specifically, we pose the following research questions:

RQ1: What are the dimensions of organisational performance that DT leadership behaviours have influence in?

RQ2: What types of DT leadership behaviours affect certain dimensions of organisational performance?

RQ3: What are the future research priorities in the given topic?

The remainder of this article is structured as follows. Section 2 presents the methodology. Section 3 presents a thematic analysis and theme-specific future research directions. Section 4 discusses the answers to the research questions via a cross-theme discussion. Further, future research directions are extended and summarised. Section 5 presents the conclusions, including theoretical and practical implications, and limitations.

2. Methodology

2.1. Search strategy

A systematic literature review (SLR) was conducted to review and synthesise the current body of knowledge on the topic. This SLR follows the principles of the PRISMA 2020 guidelines (Page et al., 2021), including a transparent search strategy, defined eligibility criteria, and a structured screening process. Certain items from the expanded PRISMA checklist, such as statistical synthesis and protocol registration, were not applied due to the qualitative nature and scope of this study.

To guide the review process, a structured search strategy was developed for literature screening. Scopus and Web of Science were selected as the primary databases due to their status as leading, most widely recognized citation indexes that are both interdisciplinary and comprehensive. This makes them well-suited for the scope of this systematic literature review. (Zhu & Liu, 2020) The search was limited to peer-reviewed journal articles published in English between 2000 and 2024. The year 2000 was chosen as the starting point, as it marks the beginning of scholarly interest in DT (Verhoef et al., 2021).

To obtain a comprehensive initial sampling of the literature, the keyword combination “digital*” AND “leadership” was used. The wildcard asterisk * was applied to capture variations such as digitalisation, digitalization, and digitally. The rationale for using such exploratory keywords was based on the broad and fragmented nature of the topic; studies related to DT behaviours are dispersed across contexts. Therefore, it was considered appropriate to avoid overly restrictive search terms and instead adopt a broad initial query to ensure inclusivity and coverage of relevant literature. The Boolean operator AND ensured that both concepts were present in the retrieved documents.

Given the interdisciplinary nature of the topic, the initial search was intentionally inclusive. After the initial scanning, subject area-based delimitation was applied to focus on relevant disciplines while

maintaining a comprehensive scope. Table 1 presents the search algorithms and filters applied in each database.

2.2. Eligibility criteria

To systematically gather the data, we set the following eligibility criteria for screening the articles:

- 1) The article is related to the context of *planned* DT.
- 2) The article is related to such leadership behaviours which can be narrowed down to the actions of an individual leader.
- 3) The article has evidence on the effects of leadership behaviours.
- 4) The article is based on the context of small-, medium- or large-sized organisations

Planned DT refers to the voluntary organisational transformation process in which the firm invests in and implements novel digital technologies. The term originates from strategic business objectives. The excluded form of DT, *forced* DT, refers to the sudden, unpredictable need to digitalise business processes because of sudden crises, such as COVID-19 (Philip, 2021). *Leadership*, understood as a social, human-centric guiding process between organisational leaders and subordinates (Yukl, 2012), is different to be from *management*, which is considered to focus on managing organisational processes, resources, and workflows (Kotterman, 2006). Therefore, management was excluded from the given topic, as the focus is on human behaviour. The leader was considered as someone who has subordinates and works in an employment relationship within an organisation at any level of the organisational hierarchy. Leadership behaviours are the behavioural actions of an individual leader, including for example task- and relation-oriented behaviours, strategic thinking, conflict management, emotional affection and empathy, leading by example, and self-management (Rademaker et al., 2023; Rehan, Thorpe, & Heravi, 2024; Yukl, 2012). This study focuses on small-, medium-, and large-sized organisations. Articles concerning micro-businesses with fewer than ten employees are excluded, as leadership in such contexts tends to be informal, highly personalised, and predominantly owner-driven, with authority rooted in ownership and personal investment. Additionally, resource constraints may significantly influence leadership decisions in micro-businesses. (Nalweyiso, Mafabi, Kagaari, Munene, & Abaho, 2023).

This review focuses on DT as a complex and evolving phenomenon

Table 1
Search algorithms and filters.

Search algorithm:	TITLE-ABS-KEY(“digital*” AND “leadership”)
Scopus	
Filters applied:	
Document type:	Journal articles
Language:	English
Publication years:	2000–2024
Subject areas:	Business, Management and Accounting; Social Sciences; Engineering; Decision Sciences; Computer Science; Economics, Econometrics and Finance
Web of Science	
Filters applied:	
Document type:	Journal articles
Language:	English
Publication years:	2000–2024
Subject areas:	Management; Business; Communication; Social Sciences Interdisciplinary; Economics; Engineering Industrial; Multidisciplinary Sciences; Computer Science Interdisciplinary Applications; Operations Research Management Science; Engineering Multidisciplinary; Engineering Manufacturing

closely linked to leadership. Therefore, this SLR is categorised as a *phenomenon-focused* review. Instead of limiting the scope to specific theories or methods, it takes a broad approach to understand how leadership both influences and is influenced by DT in various organisational contexts. By centring on the phenomenon itself, the review highlights diverse experiences and interpretations. The aim is to offer insights that are relevant both in theory and practice. This approach can also help reveal dynamics that narrower reviews might miss. (Block, Brändle, Limbach, Röth, & Sabel, 2025)

2.3. Data collection

The search strategy was first deployed in early September 2024, and again for supplementary results in late October 2024. In Scopus and Web of Science, the strategy resulted in 3303 and 2741 initial hits, respectively. After removing duplicates, the search strategy resulted in 2886 hits. We collectively considered this sample appropriate for the data-screening phase. During data screening, one researcher conducted the formal selection of articles based on the collectively established eligibility criteria. Following this, the other researchers reviewed the final sample to assess its appropriateness. Discrepancies were resolved through discussion. As a result, the sample was accepted in its original form.

In the initial screening phase, article eligibility was assessed based on their titles. Consequently, 2004 articles were excluded. The reasons for exclusion included a focus on leadership emphasis but not on its relationship with DT, an emphasis on technology but with no sought implications on leadership, or a focus on the societal, but not the organisational domain.

In the second phase of screening, the abstracts of the 882 articles from the first screening phase were reviewed. Here, articles focus on the

context of the public sector, such as education or healthcare, were excluded. Private sector organisations are funded through sales and private investments, and typically pursue profit-driven performance targets. In contrast, public organisations operate with publicly allocated budgets and do not primarily aim to generate profit. Consequently, leadership in these sectors is guided by different performance objectives, necessitating distinct approaches. (Blaskovics, Maró, Klimkó, Papp-Horváth, & Csiszárík-Kocsir, 2023; Raharjo & Eriksson, 2017) To ensure analytical rigour and contextual consistency, studies focusing on the public sector were therefore excluded. Consequently, 677 articles were excluded, resulting in 205 articles. Notably, the public sector was the reason for the exclusion of 197 articles. Other reasons for exclusion were related the article emphasising organisational management instead of leadership or an excessively broad leadership approach.

Next, in the third screening phase, the full texts of 205 articles were reviewed. The articles were carefully reviewed to determine whether their content met the established criteria. Consequently, 146 articles were excluded. Articles were excluded due to a lack of detailed evidence on leadership behaviours or their effects, as well as clear methodological or conceptual weaknesses. This screening resulted in a total of 59 articles which met the inclusion criteria.

To identify any potentially missing relevant articles, backward and forward snowballing methods were employed. This process primarily involved examining the forward citations of the final sample articles, complemented by an extended search using Scopus, Web of Science, and the AIS Library, a database focused exclusively on the information systems discipline. Snowballing was conducted in December 2024 and repeated in August 2025. As a result, six additional studies were included in the final analysis.

Fig. 1 outlines the data collection process.

Although the screening process already excluded studies deemed

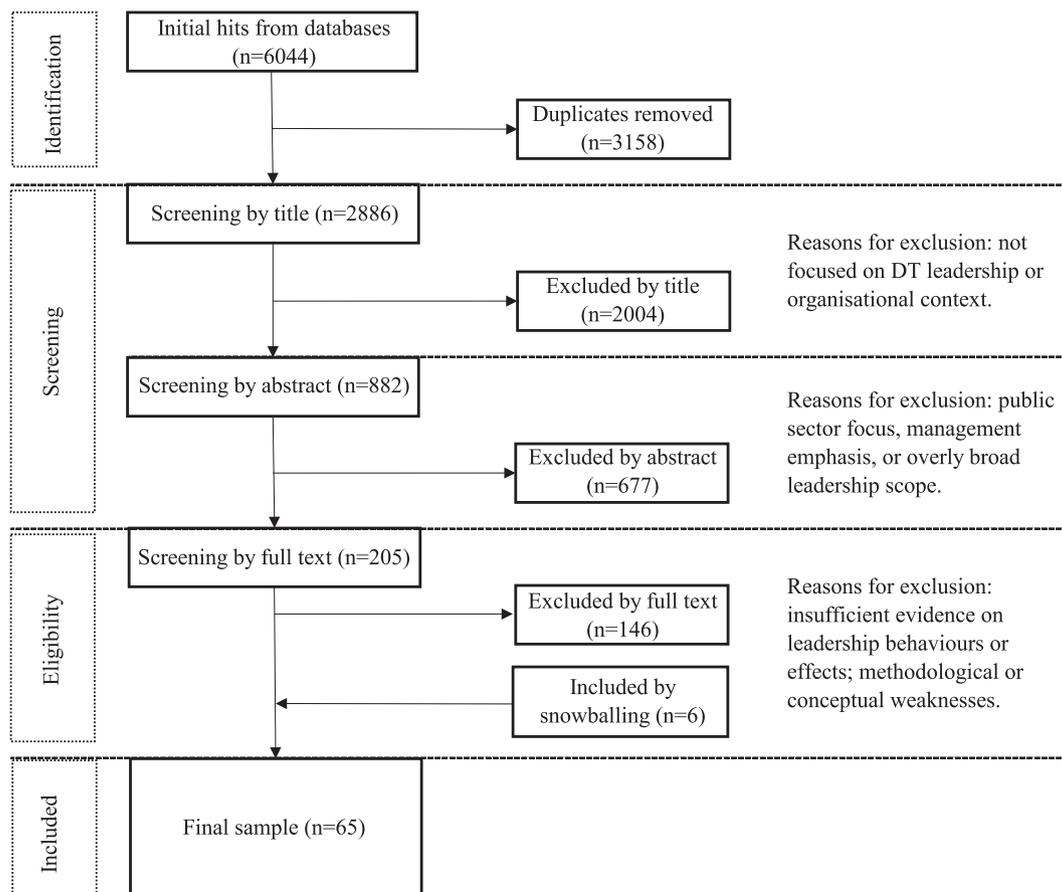


Fig. 1. Flow diagram of literature screening.

methodologically weak, a retrospective quality assessment was conducted for all articles included in the final sample to formalize and document the evaluation procedure. A custom rubric, adapted from the established CASP appraisal tool, was used to assess each article across six dimensions: clarity of research aim, methodological transparency, data collection rigour, analytical depth, theoretical integration, and overall contribution. Each dimension was scored on a scale from 0 to 2, yielding a maximum total of 12 points. To remain in the final sample, articles were required to score at least 7 points. This assessment was not applied to excluded articles, which were removed based on evident deficiencies identified during initial screening. All retained articles met the quality threshold, with each scoring at least 8 points, most scoring significantly higher. This retrospective assessment was conducted by one researcher. The other authors reviewed the assessment, and no major concerns were raised.

2.4. Final sample

The final sample comprised 65 articles published between 2018 and 2024. The concentration of articles published between 2018 and 2024 underscores the novelty and emerging nature of the topic. The number of sample articles has also rapidly increased each year. For instance, 94 % of the sample articles were published between 2021 and 2024, while 66 % were published between 2023 and 2024. Fig. 2 shows the number of years during which the sample articles were published.

The 65 articles were published in 51 peer-reviewed scientific journals. The journals, their impact factors, and article counts are listed in Table 2. The impact factors were retrieved from the Clarivate Journal Citation Reports database (2023). Journals with more than one article are presented separately, while those with only one article are presented by calculating their average impact factor and combined article count. Approximately half of these articles were published in business and management journals. In addition, journals in engineering, information technology (IT), and psychology disciplines are highlighted. Table 3 lists the disciplines of these journals.

Most of the sample papers were empirical (93.8 %), with quantitative methods being highlighted (52.3 %). Table 4 presents the types of articles and methods used. Methodological representations seem to align with general leadership research in which quantitative methods are most commonly used, with a considerable emphasis on mixed methods as well (Gumus, Bellibas, Esen, & Gumus, 2018; Stentz, Plano Clark, & Matkin, 2012).

2.5. Data analysis

The data were analysed qualitatively using abductive analysis. In abductive analysis, the researcher tries to explain their observations by

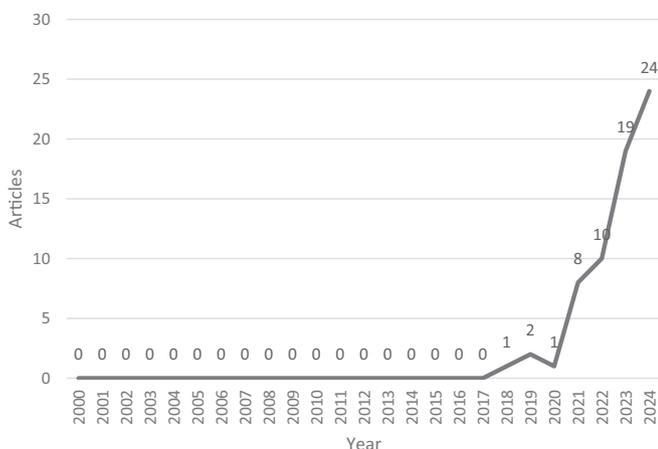


Fig. 2. Publication volume from 2000 to 2024.

Table 2 Journals and their impact factors.

Journal	Impact factor	No. articles
Journal of Business Research	10.5	6
California Management Review	6.3	3
Journal of Organisational Change Management	2.7	2
Business Horizons	5.8	2
Behavioural Sciences	2.5	2
European Journal of Innovation Management	5	2
Journal of Enterprise Information Management	7.4	2
Engineering, Construction and Architectural Management	3.6	2
IEEE Transactions on Engineering Management	4.6	2
Others	3.7 (average)	42

Table 3 Journal disciplines.

Discipline	Journals	No. articles
Business and management	22	32
Engineering/IT or engineering/IT with business and management	13	16
Psychology or psychology with business and management	5	6
Other (economics, communication, material sciences, social sciences, industrial relations)	11	11

Table 4 Article types and methodologies.

Paper type	Method	No. articles	Percentage
Empirical	Qualitative	17	26,2 %
	Quantitative	34	52.30 %
	Mixed	10	15.40 %
	Total	61	93.80 %
Theoretical	Literature review	4	6.20 %

finding the most plausible explanation (Timmermans & Tavory, 2012). The authors' aim was to identify what is already known about organisational performance and leadership, explore what is not known about DT leadership, and utilise knowledge from the former to explain observations from the latter. The purpose was to identify and describe the relationships between leadership behaviours, employee effects, and organisational performance in the context of private sector DT. Two guiding principles were set for data analysis.

- 1) Leadership behaviours are single, unique events; thus, they cannot initially be bundled. Therefore, behaviours are analysed individually until their effects are determined.
- 2) Behaviour effects relate to an organisation's employees and organisational performance; therefore, the known aspects of organisational performance should be categorised. After performance categorisation, it is possible to look for similarities in their preceding behaviours.

For the data analysis, all relevant substantive information from the sample articles was first extracted into an MS Excel sheet. The extraction was guided by the following research questions: To answer RQ1, the behaviours of the DT leaders were extracted. To answer RQ2, the effects of the given behaviours were extracted.

Next, the data were coded. Leadership behaviours were coded using process coding, which is a traditional approach to scientifically analyse social interaction (Hewes, 1979). Specifically, the leadership behaviours from each article were coded as one or more behavioural processes.

Then, using process coding, the behaviours could be transformed into infinitive forms. The data extraction and coding were done by one researcher.

Then, the coding was accepted and iteratively categorised based on collaborative discussions among the authors. Discrepancies were resolved through discussion. Performance categorisation was guided by the second guiding principle of data analysis. Performance categorisation was performed by the authors with in-depth knowledge of the discipline while referring to the business and management literature. After comprehensively and iteratively examining the links between behavioural processes and their effects, four main performance themes were identified: effective leadership, digital acceptance, digital competence, and digital innovation. Based on the first guiding principle of data analysis, behavioural processes were individually linked with performance dimensions. After the performance dimensions were determined, we iteratively categorised the behaviours. The purpose was to determine the similarities between the behavioural processes that precede certain performance dimensions. Leadership behaviours were classified based on Yukl's (2012) behavioural taxonomy. A taxonomy was utilised because it involves varying and contradictory leadership behaviours. Importantly, the framework was not imposed on the data. The categorisation of behaviours emerged from the literature, and only observations that aligned naturally with the taxonomy were included. This approach ensured analytical rigour while preserving the integrity of the findings. As this study aimed to generate DT-specific leadership knowledge, an open-ended and flexible leadership approach was found appropriate, rather than relying on packaged leadership styles or theories.

Finally, by coding behavioural processes into an infinitive form and categorising the codes based on the literature, the relationship between leadership behaviours and organisational performance in DT could be identified. The thematic findings based on the four main performance categories and theme-specific behavioural predecessors are discussed next.

3. Thematic analysis

3.1. Theme 1: effective leadership

Studies related to effective leadership were identified as the first main theme ($N = 17$). Publications on the theme relate indirectly to the theme, noting that they usually do not literally mention effective leadership. By coding and qualitatively analysing the studies, a thread on the given theme was found, making it clear that academic interest lies in effective DT leadership behaviour. Two separate research streams for the given theme were identified: *effective strategic* and *effective operational leadership behaviours*. The strategic level can be defined as long-term visionary leadership, for which the top management team (TMT) is usually mainly responsible. The operational level concerns short-term planning and day-to-day actions in which middle and project managers, and supervisors lead and guide the actions of grassroots-level subordinates (Khalifa, 2021; Phillips, 2011).

Effective leadership is defined as a leader's ability to effectively influence others in a manner that facilitates the achievement of shared goals (Yukl, 2012). Effective leadership may involve the straightforward use of power or delegative transfer of decision-making (Sloof & von Siemens, 2021). Leaders need credibility to influence others. Hence, they must behave ethically and focus on relationships (Ahmed et al., 2024; Williams, Raffo, Randy Clark, & Clark, 2023). At the individual level, important traits for effective leaders include skills based on both cognitive and emotional intelligence (Goleman, 1998a; Malik, Raziq, Sarwar, & Tariq, 2024). From an organisation's perspective, effective leadership depends on leadership behaviour at different organisational levels. Thus, based on systems theory, effective leadership may be seen as a leadership system, with leaders at different organisational levels being interrelated to each other (Luciano, Nahrgang, & Shropshire,

2020; Uhl-Bien, Marion, & McKelvey, 2007). According to modern leadership theories, effective leadership cannot be seen as universal nor objective, but rather as contextual and situational (Derue et al., 2011; Thompson & Vecchio, 2009; Yukl, 2012).

3.1.1. Literature overview

At the *strategic level*, the TMT lays the groundwork for effective leadership. It is responsible for constructing mutual strategic coherence towards DT so that the leaders at lower management levels have consistent objectives to implement. Zoppelletto et al. (2023) claimed that organisational size must be considered in TMT line-ups. Thus, executives can perform formal or informal roles in carefully considered strategic and operative contexts, balancing the strategic leadership with reach to daily organisational activities. Weber et al. (2022b) argued that DT leadership may have internal versus external, and task-oriented versus relation-oriented behavioural emphasis. The authors claimed that organisations must choose from partially competing leadership behaviours to implement chosen strategic plans and utilise leadership to pursue the desired employee outcomes (Weber et al., 2022b). Korherr et al. (2022) and Peng and Jia (2023) found that differences in the TMT's backgrounds and positions help diversify and comprehend digital vision. However, Bendig, Wagner, Piening, and Foege (2023) found that technological backgrounds within the TMT facilitate the organisation's orientation towards digital strategic priorities. Meanwhile, Malodia, Mishra, Falt, Papa, and Dezi (2023) found that in small- and medium-sized (SME) enterprises, DT should be led by professional and general executives to decrease substance-based bias. According to Evans, Miklosik, Bosua, and Mahmood Ahmed Qureshi (2022) and Peng and Jia (2023), the CEO is the uniter and owner of the DT who should be brave enough to break the status quo and hold the line. By doing so, the perspectives of the TMT may be united and the vision can be coherently communicated, thereby effectively onboarding employees and preventing them from backing up. Butt, Imran, Helo, and Kantola (2024) underlined culture's strategic importance in the strategic planning of DT. Human-centric technology adoption and employee ownership should be pursued to proactively prepare and adapt the culture for DT.

At the *operational level*, leadership coherence with organisational objectives is essential for effective DT leadership. From an employee perspective, coherence helps preventing the signals from mixing up and aiding them in putting in the effort to achieve the desired targets (Porfirio, Carrilho, Felício, & Jardim, 2021). Target coherence does not imply that the DT process is easy to implement within a specific frame. Imran, Shahzad, Butt, and Kantola (2021) and Leso, Cortimiglia, and Ghezzi (2023) emphasised DT as a socio-technical construct. These sets of authors argued that DT leaders should pay attention to the surrounding culture and structures of a given organisation to fit leadership behaviours in an intra-organisational context. Leaders and organisations form a two-way learning route through which the organisation may learn from its leaders and vice versa, leading to a two-way transfer of vision and knowledge (Yoo, Roh, Tripathi, & Jang, 2024). Thus, the leader has the ability to shape the organisation and vice versa, creating a dynamic sociotechnical construct.

In direct leader/subordinate interactions, DT leaders play a key role in aligning others with vital organisational objectives and overcoming disagreements. Leaders hold power over subordinates, which may be utilised in shaping attitudes and mindsets, as well as in directing straightforward tasks related to important organisational goals (Worley & Beaujolin, 2023; Yao, Tang, Liu, & Boadu, 2024). Philip et al. (2023) claimed that relation- and task-oriented leadership behaviours should be aligned in a cultural-contextual manner to enhance effectiveness while considering the differences between subordinates. In task-oriented behaviour, leaders are responsible for supporting employees hands-on. According to Matsunaga (2022), a leader's digital competence is important for employees' perceptions of the support they receive. Thus, leaders with high digital competence are perceived as more credible in terms of technological support, making the support more effective. If

leaders also find ways to highlight positive traits in digital tools, such as their ease of use and usefulness, employees will be more willing to adopt these tools (Arumugam, Khazaei, Bhaumik, & Kanesan, 2022).

3.1.2. Discussion and future research directions

Research on effective DT leadership has adopted a diverse approach from a traditional business-strategic perspective. However, it has paid little attention to the complex, highly technological, and comprehensive nature of DT. Today's complex environments form a special context for leadership research (Schneider & Somers, 2006; White, Currie, & Lockett, 2016). Indeed, leadership in complex contexts has attracted research attention (Rosenhead, Franco, Grint, & Friedland, 2019). Further, DT is a complex organisational transformation (Ghobakhloo & Iranmanesh, 2021; Jedynak, Czakon, Kuźniarska, & Mania, 2021). Here, considering the general contextuality of leadership is important (Oc, 2018). Further in-depth exploration of effective leadership specifically in the DT context is needed.

Notably, future research should deepen our knowledge of effective leadership behaviours at different organisational levels, especially regarding power distance, and task- or relation-oriented behaviours. Task-oriented leaders emphasise specific tasks to achieve organisational goals efficiently, while relation-oriented leaders focus on well-being and leader-subordinate relationships to foster trust, support, and collaboration (Yukl, 2012). Power distance refers to how appropriate hierarchies and power differences are considered within an organisation or other social system. It has cultural features and differences; however, individuals within a single social system differ in their perceptions of power distance. Leaders operating in systems with high power distances have a greater ability to command subordinates (Tang, Chen, van Knippenberg, & Yu, 2020). TMT leadership lays the ground for organisation-wide effective leadership, as a coherent vision can be formed and communicated. A real-world example is Satya Nadella's leadership at Microsoft. As CEO, Nadella used clear and empathetic communication to align leadership and operations around the company's DT strategy. This strengthened internal cohesion, improved engagement, and supported Microsoft's renewed market success. (Murtuza Ali & Begum, 2024) The top management must exhibit clear and confident behaviour towards chosen digital objectives. However, they must also pay attention to strategy-related matters at the operational level, such as organisational culture. Thus, TMT executives should maintain a low power distance from the operational level by involving operational leaders in strategic decision-making; meanwhile, they should engage in task-oriented behaviour towards operational leaders. Thus, top leaders and middle managers can complement each other in decision-making in a straightforward and task-oriented manner. A real-world example of this is ING's DT. Instead of enforcing a rigid top-down plan, ING's executives supported bottom-up experimentation and gradually shaped a shared strategic direction. They actively engaged with operational teams, removed barriers, and helped build a common language across departments. This open and task-focused communication between top and middle management fostered trust, encouraged collaboration, and accelerated ING's shift towards technology-driven banking. (Calnan & Rozen, 2019) In contrast, operational leaders should maintain a high power distance but conduct relation-oriented behaviour towards grassroots-level employees. Thus, leaders should be able to maintain coherence with organisational objectives, promote mutual understanding, and break disagreements in a harmonic manner, which minimises negative side effects such as those on motivation or creativity (Rademaker et al., 2023; Weber et al., 2022a). By focusing on the development of operational leaders' digital competence, organisations can ensure that middle- and frontline leaders are perceived as trustworthy and credible in digital matters. Within the TMT, the literature suggests that task-related diversity expediently supplements decision-making, as the team is not harmed by overlapping but supplemented by diversifying substances. Thus, sufficient knowledge may be exploited for top-level decision-making, which is balanced and

directed by the CEO. Research outside the DT discipline provides ambiguous evidence on top management diversity, noting that task-related diversity does not necessarily have a clear connection with performance and effective leadership (Hashmi, Voinea, Caniëls, Ooms, & Abbass, 2023; Kanchanabha & Badir, 2021; van Knippenberg et al., 2010). However, McKinsey's findings suggest that successful transformation requires the effective integration of diverse perspectives (McKinsey & Company, 2017a; McKinsey & Company, 2021). Also from the authors' perspective, this subject should be explored in the DT context.

Based on aforementioned discussion, we draw the following propositions regarding strategic level leadership:

P1.1: TMT executives' low power distance to operational leaders and task-oriented behaviour are positively related to effective strategic-level DT leadership.

P1.2: TMT's task-related diversity is positively related to effective strategic-level DT leadership.

On operational level leadership, we form the following propositions.

P1.3: Operational leaders' high-power distance to subordinates and relation-oriented behaviour relate positively to operational-level effective DT leadership.

P1.4: Operational leaders' high digital competence is positively related to effective operational-level DT leadership.

3.2. Theme 2: digital acceptance

The second theme is digital acceptance ($N = 21$). This theme relates to the emotional, psychological, and social impacts that DT arouses in employees, and which cause them to either want to advance or move back in the process. This concept differs from the established notion of technology acceptance, which primarily concerns an individual's cognitive evaluation of technology (David, Nwulu, Aigbavboa, & Adepoju, 2022; Wang, Tan, Yuan, Ooi, & Dwivedi, 2022). While technology acceptance focuses on individual assessments of specific technologies, the concept of digital acceptance introduced in this study encompasses the emotional, psychological, and social dimensions of how individuals respond to DT as a holistic change process. Accordingly, whereas technology acceptance is mainly concerned with the instrumental use of technology, digital acceptance emphasises the underlying psychological processes that precede and shape such use.

This theme can be considered as the most human-centric of the four main themes. The number of studies was relatively high, representing the interest in the DT human dimension in its purest sense. Three research streams were identified for this theme: *leaders' digital acceptance*, *employees' digital acceptance*, and *contextuality of digital acceptance*.

Organisational transformation changes something familiar. In employees, such changes awaken emotional, cognitive, and behavioural reactions (Gao & Gao, 2024; Sharma et al., 2024). Both external environment and individual traits affect how employees react to change. For example, some employees are open-minded, self-confident, and flexible, while others are routine-seeking and cognitively rigid (Hubbart, 2023). Meanwhile, some organisations excel, for example, in support, communication, trust, and participation, while others face changes with deficiencies in the organisational climate or leadership (Erwin & Gorman, 2010). These antecedents of organisational and personal variables give rise to expectations of how a change initiative will succeed. However, an organisation can influence organisational variables and conduct actions to guide individuals in a manner that is most suitable for them (Derue et al., 2011; Thompson & Vecchio, 2009). Leaders' behaviours and leader-subordinate relations influence reactions during organisational change, making leadership an important mediator (Furst & Cable, 2008).

3.2.1. Literature overview

Leaders' digital acceptance in DT is crucial because leaders are responsible for planning change and harnessing the entire organisation behind the transformation process. Thus, leaders must be aware of the risks of being resistant to change themselves. According to Zulu et al. (2023a), old-school mentality and risk avoidance are traits of a change-resistant DT leader, while Zulu et al. (2023b) claimed that a leader's long tenure predicts old-school mentality. Bagrationi and Thurner (2023) argued that leaders who seek tradition, conformity, and security are prone to DT resistance. Shortcomings on leadership characteristics must be noted and intervened by leaders on above levels; here, trainings and recruitments can be utilised to modify the leadership base. In doing so, the organisation prevents resistance from shifting from leaders to employees (Bagrationi & Thurner, 2023; Zulu et al., 2023a, b). Building and developing an appropriate organisational climate for DT success is in leaders' interest. According to Sestino, Leoni, and Gastaldi (2024), the foundation of DT-focused leadership positions pushes DT forward by promoting socio-technological transformations. Leaders may pursue being role models, showing exemplary behaviours to promote change-oriented culture and employee engagement (Winasis, Djumarno, Riyanto, & Ariyanto, 2021). Thus, noticeable DT leaders, who are positioned visibly and lead by example, transform the organisational culture for DT interests. However, cultural means will not help if employees are not competent enough to implement digital initiatives, leading to possible resistance due to employee skill gaps (Kokkinou, van Kollenburg, Mathijssen, Vissers, & van Doren, 2024).

On employees' digital acceptance, Hooi and Chan (2023) and Heim and Sardar-Drenda (2021) claimed that employee participation and autonomy promote their acceptance of digital technologies. Heim and Sardar-Drenda (2021) underlined employee perceptions of meaningfulness towards DT and suggested that leaders should focus on cognitive sense-making, especially for digitally insecure employees, to promote sentiments of meaningfulness and gain acceptance. Hwang and Seo (2024) likewise underlined employee perceptions of technology value and found that informative interaction within interactive technology promotes the first digital tool's perceived value, leading to technological acceptance. According to Yang, Li, Li, and Li (2024), autonomy and empowerment can also lead to increased employee voice behaviour, meaning that employees are more willing to speak up and develop a common work environment. Murphy (2024) and Li, Yang, Yang, and Zhao (2024) found that digitally focused yet humane and emotionally intelligent leadership behaviour is related to employee well-being and empowerment, with reduced insecurity, and increased commitment and engagement. According to Cahyadi et al. (2022), humane and inclusive leadership behaviour promotes employee interaction with their own work, resulting in improved individual performance. Kind, empathic, and emotionally intelligent leadership styles are emerging in the DT context (Yela Aránega et al., 2023). Supportive, relation-oriented leadership behaviour alone may still not be the best, at least for all DT contexts. Weber et al. (2022a) argued that relation-oriented leadership can rather make the objectives unclear; therefore, DT leadership should be more task-oriented and buffered with relationship orientation to reduce resistance and enhance trust. Behaviours should be fit for individual needs, as employees differ by mindset and digital savviness. However, Rademaker et al. (2023) found that task-oriented DT leadership can increase technological stress; therefore, leadership behaviours should, at least in this sense, be supportive and empowering. Ertiö, Eriksson, Rowan, and McCarthy (2024) also claimed that relation-oriented behaviour, along with leaders' self-knowledge and emotional intelligence, results in reduced employee technological stress.

Contextuality of digital acceptance is also highlighted in this research stream. It specifically underlines individual perceptions of DT, even if the external context is exactly the same. Some researchers suggest that DT leadership should be diverse so that everyone can be guided individually. Shahrudin, Sonet, Azmi, and Zainordin (2024) argued that leaders should match their behaviours based on the needs of individual

employees and teams to offer expedient practical and emotional support. Individual variance may be due to varying digital mindsets. While some employees avoid DT and others engage in it, the form of leader guidance cannot be fit-for-all. Some employees may need to pair with digitally savvy colleagues, some should be given the chance to shine and guide others, and some should immerse themselves deeply in technology (Solberg, Traavik, & Wong, 2020). However, leaders should interact with subordinates without preconceptions, as Hampel and Kunze (2023) claimed that ageist stereotypes can be harmful in themselves, resulting in reduced digital performance. According to Matsunaga (2021), employees may also have groundless negative preconceptions of DT, leading to uncertainty and reduced performance. Through psychological and emotional support, leaders can turn the uncertainty into positive, excited DT associations and change performance through empathy (Matsunaga, 2021).

3.2.2. Discussion and future research directions

This theme concerns human-centric DT leadership. The literature reveals that academia has emerging and manifold interest in the emotional, psychological, and social aspects of DT. Consistent evidence shows that relation-oriented leadership behaviours are positively related to employees' digital acceptance (Cahyadi et al., 2022; Heim & Sardar-Drenda, 2021; Shahrudin et al., 2024; Solberg et al., 2020; Weber et al., 2022a). A real-world example is Satya Nadella's leadership at Microsoft. From the beginning, Nadella focused on empathy, clarity, and purpose in how he communicated the company's digital direction. He made sure employees felt heard and involved, which helped rebuild trust and break down silos. This open and respectful leadership style played a key role in improving digital acceptance across the organisation (Murtuza Ali & Begum, 2024; Nadella & Euchner, 2018). However, evidence shows that such supporting leadership should be supplemented with straightforward task-orientation to 'get things done' (Tortorella et al., 2023; Weber et al., 2022a, b). Accordingly, McKinsey's research indicates that successful DT often involves leaders who promote clear task definition, a sense of urgency, and accountability throughout the organisation (McKinsey & Company, 2017b; McKinsey & Company, 2018). Furthermore, research lacks knowledge of the behavioural mixtures. This seems to be the case especially if the behaviours contradict each other but could be utilised together to gain benefits from both by, for example, mixing task- and relation-oriented behaviours. Many DT researchers have taken the perspective of leadership styles, often connecting transformational leadership to employees' positive emotions and reduced resistance, and emphasising its role as a modern leadership style in complex environments (Yela Aránega et al., 2023; Matsunaga, 2021; Winasis et al., 2021; Philip, 2021). Research based on leadership styles usually does not consider the mixing of several contradictory behaviours but instead focuses on leadership styles as behavioural patterns in a way that may be seen as rigid. As research emphasises the contextuality and individuality of leader-subordinate relationship (Sørensen, Harnow Klausen, & Broucker, 2023; Yukl et al., 2009), deepening the knowledge of the mix of contradictory leadership behaviours is important. The importance of this, in the context of this theme, can be seen to result from the practical business reality wherein even if the importance of employee acceptance cannot be over-emphasised, operational tasks should be effectively completed.

Employees differ in their personalities. Traits such as routine orientation and an old-fashioned mentality may be related. One may argue that such personality-based resistance cannot be completely eliminated. However, as demonstrated by real-world examples from LEGO, Maersk, and Microsoft, organisational change can be significantly supported through transparent communication, inclusive practices, effective feedback mechanisms, and the resulting cultural transformation (Dagar, Tate, & Johnstone, 2024; Friis Sommer, 2019; O'Reilly, 2024). In addition, workplaces are becoming more demographically diverse (Bernstein, Bulger, Salipante, & Weisinger, 2020), which may result in more unexpected individual variances in the table. A relevant research

question is how demographic variance in the workforce interacts with leadership behaviour. Mixed leadership behaviours can help in leading employees with varying demographics, as leaders could be more discreet in a behavioural sense. Simultaneously, this assumption relates to the leadership of non-demographic employee variance. Research shows that leaders' high emotional intelligence assists in balancing different behaviours (Goleman, 1998a; Goleman, 1998b). Thus, leaders' emotional intelligence helps them in gaining digital acceptance while simultaneously maintaining efficient employee task performance. Further, emotional intelligence benefits the relationship between demographic variance and organisational task performance.

Based on this discussion, we draw the following propositions.

P2.1: Relation-oriented leadership behaviour is positively related to employee digital acceptance in DT.

P2.2: Leaders' emotional intelligence positively moderates the relationship between employees' digital acceptance and task performance during DT.

P2.3: Leaders' emotional intelligence positively moderates the relationship between demographic variance and organisational task performance in DT.

3.3. Theme 3: digital competence

The third theme is digital competence ($N = 12$). This theme refers to the set of foundational digital skills required to effectively participate, complete tasks, and develop a digital environment. As a competence-based foundation, it is the basis for more advanced and specific digital tasks, such as product development (Falloon, 2020; Murawski & Bick, 2017). Accordingly, this paper defines digital competence as an individual's readiness to appropriately utilise digital tools within business environments.

This theme was found by analysing data based on leadership behaviours which assist an organisation to gain and develop basic digital skills and knowledge which are crucial in today's digital business environment. Therefore, this theme mostly relates to the initial stages of an organisation's DT journeys. In contrast to previous themes, articles on this theme were not divided into subcategories based on separate research streams. Such a clear and expedient distinction between articles cannot be made here as the sample is relatively small. However, the main theme itself was clearly distinct from the other themes. The differences between the articles are discussed in the Discussion section.

3.3.1. Literature overview

In developing digital competence, Wang et al. (2024) claimed that the top management should assess the current skill base before investing in new digital technologies. Competencies are path-dependent. Further, developing distinguishable digital competence takes time and effort. Still, organisations should build competencies on top of current skills while simultaneously build basic competence before aiming for high-level skills (Öberg, 2013; Patel & Pavitt, 1997; Wang et al., 2024). Tortorella et al. (2023) argued that leaders should assess the organisation's digital maturity, and balance the task- and relation-oriented leadership behaviours to it. Organisations with low digital maturity should concentrate on gaining competence step-by-step using task-oriented leadership. Conversely, high digital maturity organisations should be able to grant employees more autonomy and concentrate more on relation-oriented leadership. Employees maintain mental focus when they feel involved and when the change progresses in a controlled manner (Brock & von Wangenheim, 2019). According to Höyng and Lau (2023), the leader's empowering behaviour and employee autonomy promote positive perceptions towards digital technologies, and thus, increase employees' digital change readiness. Perceptions of usefulness and ease of use facilitate technological adoption (Baba, Hag, Dawood, & Aashish, 2023; Höyng & Lau, 2023). However, empowering leadership

is positively related to digital competence specifically through employee autonomy and not through technological support. This emphasises the relation-oriented, but not task-oriented, effects of empowering leadership (Höyng & Lau, 2023). Based on the findings of Singh et al. (2024), leadership support, be it encouraging, empowering, or hands-on, is positively related to individual employees' digital competence, and thus, organisational performance. Regarding leadership support, Chatterjee, Chaudhuri, Vrontis, and Jabeen (2022) found that employees inevitably lack trust in the new technology. Close leader-subordinate social interaction can work as a trust enhancer. This is because in close communicative relationships, leaders are able to explain the background and purpose of digital technologies, thereby supporting employee trust and security (Bencsik, Hargitai, & Kulachinskaya, 2022).

Communication plays a significant role in developing digital competencies. Shao, Li, Luo, and Benitez (2024) argued that the top management can promote employees' digital task performance by actively communicating about digital competence, thereby leading employees to pursue the development of digital skills. According to Ruel, Rowlands, and Njoku (2021), aligning employee learning with organisational long-term digital objectives helps gain the legitimacy and acceptance needed for employees' smooth digital development. Gfrerer, Hutter, Füller, and Ströhle (2021) found that middle managers tend to be more distrustful of new technologies than top executives and employees, although they perceive themselves as more digitally skilled (Gfrerer et al., 2021). DT may be pushed forward bottom-up by employees or top-down by leaders. However, the DT process is the most effective and rapid when it is fostered by everyone, combining digital competencies at all organisational levels (Zhao, He, Guo, & Sarpong, 2024).

3.3.2. Discussion and future research directions

This theme may be considered the most purely technological of the four themes. As it is about leadership behaviours in the build-up of basic digital competence, the theme may not be the trendiest of DT research streams, as current DT research emphasises, for example, digital innovation and the utilisation of the most sophisticated novel technologies. However, a real-world case from Siemens illustrates that basic digital skills are a prerequisite for companies aiming to implement digital innovation strategies. By upskilling their workforce, organisations can enhance digital maturity. That enables them to pursue more sophisticated digital innovations. Thus, focusing on foundational digital skills may be especially critical for companies with low digital maturity (Manufacturers Alliance Foundation, 2024; Wang et al., 2024).

Generally, while DT research is in-depth, it is fragmented (Chawla & Goyal, 2022). Research on intersection of leadership behaviours and digital competence per se lacks depth, which can be interpreted to result of the novelty of human dimension in DT research (Peña & Caruajula, 2022). Interestingly, studies on this theme have placed relatively high emphasis on the leadership's psychological support for employees, with less focus on hands-on technological support and task-oriented competence build-up. This links the antecedent leadership behaviours in this theme to those in Theme 2. This may be because DT research has not considered leadership behaviours related to digital competence in a technological sense, but rather sees technological development more as an issue of process management or digital infrastructure (Chawla & Goyal, 2022). For example, Singh et al. (2024) and Hampel and Kunze (2023) found a positive relationship between practical leadership guidance and employee task-related performance. As such, DT research could further develop an understanding of such leader-subordinate interactions, which pursue the promotion of employee core digital competence and technological performance. For example, the leader may want to allocate certain amount of time on individual technological guidance to 'get things going' and make the workforce competence more scalable (Hampel & Kunze, 2023; Singh et al., 2024). However, as task performance is also a matter of well-being, communication, empowerment, and trust (Cahyadi et al., 2022; Höyng & Lau, 2023), the importance of psychological leadership support for digital

competence should be underlined. Generally, task-oriented leadership relates to digital competence build-up because organisations must prioritise tasks to gain knowledge and competence.

Another point of interest in the literature is the strategic perspective, as researchers such as Zhao et al. (2024), Tortorella et al. (2023), Ruel et al. (2021), and Gfrerer et al. (2021) have taken a broad, organisation-wide view on digital competence. Digital competence can be considered a core competence that lays the groundwork for more distinguished digital technologies. From this perspective, digital competence settles as an organisation's ordinary, non-dynamic capability which lays the foundation for dynamic capabilities, such as innovation capability (Albort-Morant, Leal-Millán, & Cepeda-Carrión, 2016). Dynamic capabilities enable an organisation to learn and build new strategic assets (Akter et al., 2020). *Ambidexterity* research considers the relationship between core activities and innovation (Junni, Sarala, Taras, & Tarba, 2013; Kafetzopoulos, 2021). Duwe (2021) addressed ambidextrous leadership behaviours in the DT context, underlining the importance of leadership communication, which balances core activities and innovation. However, research on ambidextrous DT leadership behaviour is scarce and even tenuous. DT research can open a wider domain on transforming digital competence into digital innovation with the help of ambidextrous leadership behaviours.

Based on this discussion, we draw the following propositions:

P3.1: Task-oriented leadership behaviour is positively related to digital competence.

P3.2: Digital competence is positively related to digital innovation capability.

Further, the acceptance of digital technologies influences how employees engage in digital initiatives (Lichtenthaler, 2020; Oh, Kho, Choi, & Lee, 2022; Solberg et al., 2020). Hence, besides the observations made within theme 2, one may argue that digital acceptance is a prerequisite for the development of digital competence.

P3.3: Digital acceptance is positively related to the development of digital competence.

3.4. Theme 4: digital innovation

The fourth and last theme is digital innovation ($N = 17$). Notably, Shao et al. (2024) has been included in both themes 3 and 4, and Bendig et al. (2023) in both themes 1 and 4. Digital innovation refers to digital products, services, or practices that contain novel value and are utilised to enhance business performance. Made possible by digital technologies, and used to pursue competitiveness and performance in a digital environment, digital innovation is closely related to the core concept of DT. However, DT refers to comprehensive business transformation, while digital innovation refers to value creation in a narrower sense (Hermann et al., 2024; Hinings, Gegenhuber, & Greenwood, 2018). It may still be seen as a major component of DT. A key aspect of digital innovation is the use of digital technologies to create novelty in external markets or internal processes (Cheng, Wang, Xie, & Yan, 2023; Hermann et al., 2024). Accordingly, this paper defines digital innovation as a digitally enabled product, service, or practice. It may be internally or externally oriented and is used by an organisation to improve its performance.

Digital innovation has attracted considerable attention in the research on DT. Researchers have adopted versatile approaches mainly from the technological, strategic, and structural perspectives (Cheng et al., 2023; Kohli & Melville, 2018). Various studies have found vision and innovation as one of the core competencies in DT leaders (Ongena et al., 2024; Philip et al., 2023; Pihlajamaa, Malmelin, & Wallin, 2023; Rakovic, Maric, Milutinovic, Vukovic, & Bjekic, 2024; Živković, 2022). These studies integrate digital innovation as a part of DT, underscoring the vital nature of innovation in organisational transformation. Most digital innovation studies have an organisational or technological

perspective. Further, various studies approach digital innovation from a general DT perspective. Yet, evidence on digital innovation leadership behaviours seems surprisingly scarce. Still, digital innovation clearly emerges as one of the main themes from the literature. Under this theme, two distinct research streams were identified: *role-model* and *close-proximity leadership*.

3.4.1. Literature overview

The literature underscores leaders' empowering and inspiring roles in the pursuit of digital innovation. This digital innovation literature stream concentrates on *role-model leadership*; that is, DT leaders act as innovation-oriented role models to broadly influence employees' mindsets. According to McTaggart and Loonam (2024), a digital mindset—that is, a digital, innovative way of thinking—starts from top management. Bendig et al. (2023) support this perspective, having found that digital mindsets within the top management make the organisation more receptive to digital innovation. Abbas et al. (2024) emphasised that leaders have the power and possibility to influence attitudes, which they should strive for through innovation-oriented interactions. The top management must set mindset changes in motion and act as role models for lower organisational levels. Executives must assess and reconfigure current resources, be creative, think outside the box, and communicate to change mindsets, encourage employees, and harness them behind digital innovation (Ahmad, Teoh, Ramayah, & Halim, 2022; McTaggart & Loonam, 2024). Leaders also need to respond quickly to change and improvise to find suitable innovation strategies. During DT, this kind of improvisation is supported by digital capabilities that help inform decisions. (Levallet & Chan, 2018) In such innovation-oriented leadership behaviour, Wu, Chen, Shao, and Lu (2021) highlighted that leaders must also put a focus on current operations, and balance communication between basic routines and innovation to keep the cash flow safe. Moschko and Blazević (2023) argue that the top management's innovation-oriented behaviour has direct and indirect spillover effects on the entire organisation, promoting creativity, open-mindedness, collaboration, and knowledge sharing. Ramadan et al. (2023) claimed that personal interests should be dismissed in the pursuit of innovation and growth, underscoring that organisational procedures should support organisational interests. Under role-model leadership, the top management differs from supervisory leadership. While the former communicates priorities and shapes mindsets, the latter should offer individual support while promoting employee autonomy and self-efficacy (Shao et al., 2024). Psychological empowerment can predict autonomy and innovative behaviour, underlining the importance of such supportive leadership which positively perceives risk taking and trial-and-error (Gao & Gao, 2024).

Another research stream in this theme is *close-proximity leadership*. It concerns the close interaction between a leader and their subordinates while pursuing support for employee innovation individually or in small groups. Interestingly, Ahmed et al. (2024) found that the presence of a DT leader with a digital innovation agenda, in addition to close interaction, promotes purposive social exchange and positively affects subordinates' learning orientation, creativity, and innovation. In addition, diversity among project team members promotes digital innovation, aligned with research outside the digital innovation domain (Guinan, Parise, & Langowitz, 2019; Mitchell et al., 2017; Nguyen, Sanders, Schwarz, & Rafferty, 2022; Rahmi & Indarti, 2019). Leaders' ethical behaviour, which results in trust in leadership, strengthens the link between close interaction and innovation (Majumdar et al., 2024). When subordinates readjust to old and new work methods, leaders should simultaneously adapt and support both the organisation and subordinates' demands (Ashraf, Triki, & Yalcin, 2024). According to Öngel, Günsel, Gençer Çelik, Altındağ, and Tatlı (2024), some DT leaders may be harmed by ageist stereotypes; however, all leaders should find their potential to strive for supportive and technology-savvy environments that promote employee creativity. As innovation is promoted by emotional balance and positivity (Bammens, 2016;

Honkaniemi, Lehtonen, & Hasu, 2015), leaders may ruin innovativeness in close interactions by using abusive leadership power, leading to the lack of trust and innovation (Ke & Su, 2024; Sumbal, Sahibzada, Ahmed, Russo, & Papa, 2024).

3.4.2. Discussion and future research directions

Clearly, visionary, empowering, inspiring, and autonomy-granting leadership behaviour, which also supports employee well-being, predicts digital innovation. Thus, as these leadership traits are generally included in transformational leadership, the findings are in line with studies which have found transformational leadership to predict organisational innovation (García-Morales, Jiménez-Barrionuevo, & Gutiérrez-Gutiérrez, 2012; Gumusluoglu & Ilsev, 2009; Jung, Chow, & Wu, 2003; Le, 2020). On leadership behavioural taxonomy (Yukl, 2012), the digital innovation literature suggests that relation- and change-oriented leadership behaviours play a major role, while external-oriented behaviour has a minor role in the pursuit of digital innovation. Task-oriented behaviour, in part, seems to have a tenuous role in DI, or at least considerable evidence seems difficult to find. However, as autonomy, well-being, and collaboration predict creativity and innovation, such strong consensus in digital innovation domain seems understandable (Caniëls & Rietzschel, 2015; Daymon, 2001; Khan & Mohiya, 2020).

Role model leadership emerges a research stream in the digital innovation themes. This is reminiscent of transformational leadership, a well-established DT leadership style, which is about broadly inspires and influences employees to act in the organisation's interests (Banks, McCauley, Gardner, & Guler, 2016; Hooi & Chan, 2023; Matsunaga, 2021). Transformational leadership mostly mixes change- and relation-oriented leadership behaviours (Detert & Burris, 2007; Hoogeboom et al., 2021; Yukl et al., 2009; Yukl et al., 2019). As found in the digital innovation literature, role-model leadership differs from established leadership styles and is mainly about innovation-oriented behaviours. Here, it differs from transformational leadership, which is considered a general balanced leadership style (Banks et al., 2016; Judge & Piccolo, 2004). Thus, innovation-oriented role model leadership does not support an organisation's current operations or basic digital competence. The same may be noted for the research stream in this theme, close-proximity leadership, which concerns innovation-oriented hands-on leadership in close proximity between leaders and subordinates.

Real-world cases from Microsoft and ING show how innovation can be driven through a combination of top-down endorsement, bottom-up experimentation, structural and behavioural transformation, and decentralised decision-making. At Microsoft, Satya Nadella exemplified role-model leadership by personally championing a growth mindset and cultural renewal. He reflected strong relation- and change-oriented behaviours and empowered teams to collaborate across silos and experiment with digital technologies (Murtuza Ali & Begum, 2024; Nadella & Euchner, 2018). ING's transformation was shaped by close-proximity leadership, where leaders worked directly with agile teams and actively cleared obstacles to help them succeed. Leaders encouraged autonomy and supported collaboration across functions, while staying close to the work and the people doing it. Through this hands-on approach and flexible structures, ING was able to scale agile practices and embed innovation into everyday operations (Calnan & Rozen, 2019).

In the general leadership literature, relational distance is defined as the perception of structural, social, physical, status, spatial, functional, and psychological distances between the leader and their subordinates (Antonakis & Atwater, 2002; Erskine, 2012). Role-model leadership can be considered as a distant form of leadership in contrast to close-proximity leadership, which refers to close relational distances. Thus, two distinct leadership forms are identified in the digital innovation theme. Based on relational distance, role-model leadership concerns top- and business-management position, while close-proximity leadership is mostly related to direct supervisors. Role-model leadership is a mix of

relation-, change-, and external-oriented behaviours. Close-proximity leadership, in part, is a mixture of relation- and change-oriented behaviours, as it contains creative, innovative, communicative, and psychologically supportive behaviours without an external focus.

Based on aforementioned discussion, we form the following propositions.

P4.1: A mixture of relation, change, and external-oriented leadership behaviours among top and business leaders is positively related to digital innovation.

P4.2: A mixture of relation- and change-oriented leadership behaviours among direct supervisors is positively related to digital innovation.

As presented within theme 3, digital competence can be considered an organisation's core digital capability which is necessary before pursuing more sophisticated digital capabilities; that is, digital innovation. Guided by empirical evidence, theme 3 suggests that task-oriented leadership is positively related to digital competence, contrary to behaviours suggested to be linked with digital innovation. Within the digital innovation theme, both role model and close-proximity leadership are innovation-oriented embodiments of leadership. Business realities must be noted in an effort to place them into comprehensive DT processes and otherwise in general organisational operations. As digital innovation is vital for organisational renewal and is a major part of DT, organisations must effectively cherish their current operational performance and competitiveness (Duwe, 2021; Junni et al., 2013; Kafetzopoulos, 2021). Thereby, innovation-oriented leadership, be the relational distance any, should not take the sole focus in DT leadership. As emotional intelligence assists in finding behavioural balance (Goleman, 1998a; Goleman, 1998b), DT leaders with high emotional intelligence may find it easier to balance behaviours related to both digital competence and digital innovation. Therefore, we further claim the following:

P4.3: Leaders' emotional intelligence helps balance task-, relation-, change-, and external-oriented behaviours to evenly balance leadership's positive relations to both digital competence and digital innovation.

3.5. Summary of findings and conceptual model

Table 5 summarises the thematic findings, including identified sub-streams within each main theme. Additionally, it presents the leadership behaviours found to precede each performance theme, along with other relevant traits. The theme-specific results and antecedent leadership behaviours shown in Table 5 are derived from the literature underpinning each respective theme.

Next, this study introduces a conceptual model based on the constructs identified in the thematic analysis and structured using the DT framework proposed by Vial (2019). Vial's framework offers a comprehensive macro-level perspective on DT. The themes identified in this study, along with their connections to antecedent leadership behaviours, aim to bridge theory and practice by focusing on the underlying constructs that inform Vial's framework. Vial outlines eight foundational building blocks of DT: the use of digital technologies, disruptions, strategic responses, changes in value creation paths, structural changes, organisational barriers, negative impacts, and positive impacts. Importantly, these building blocks are not isolated; rather, they form a dynamic and interdependent system. For example, digital technologies act as catalysts for disruption, which in turn necessitate strategic responses that reshape value creation processes. These transformations require structural changes and are often met with organisational barriers, all of which influence the eventual outcomes, both positive and negative. (Vial, 2019) We proceed to connect these building blocks to our findings, drawing on the following evidence.

Table 5
Relationships between organisational performance and leadership behaviours in DT.

Performance category:	Effective leadership
Meaning:	For successful DT implementation, leadership must be effective organisation-wide. Effective leadership ensures that leaders can effectively guide individuals and groups to achieve desired strategic targets.
Streams	Effective strategic leadership behaviours Effective operational leadership behaviours
Leadership behaviours:	Task-oriented behaviour (for TMT) Relation-oriented behaviour (for operational leaders)
Other leadership traits:	TMTs' low power distance to operational leaders. Operational leaders' high power distance to subordinates. Operational leaders' high digital competence. Task-related TMT diversity.
Outcome:	With effective leadership, organisation can be appropriately guided towards digital objectives.
References:	Evans et al. (2022); Korherr et al. (2022); Zoppelletto et al. (2023); Peng and Jia (2023); Malodia et al. (2023); Weber et al. (2022b); Porfirio et al. (2021); Imran et al. (2021); Leso et al. (2023); Yoo et al. (2024); Worley and Beaujolin (2023); Yao et al. (2024); Philip et al. (2023); Matsunaga (2022); Arumugam et al. (2022); Butt et al. (2024); Bendig et al. (2023)
Performance category:	Digital acceptance
Meaning:	Digital acceptance refers to employees' mental acceptance towards DT due to positive emotions with reduced insecurity and resistance.
Streams:	Leaders' digital acceptance Employees' digital acceptance Contextuality of digital acceptance
Leadership behaviours:	Relation-oriented behaviour
Other leadership traits:	Leader's emotional intelligence positively moderates the relationship between digital acceptance and employee task-performance. Leader's emotional intelligence positively moderates the relationship between demographic variance and organisational task-performance.
Outcome:	The organisation can develop its employees' digital competence only by first gaining digital acceptance.
References:	Zulu et al. (2023a, b); Heim and Sardar-Drenda (2021); Bagrationi and Thurner (2023); Kokkinou et al. (2024); Sestino et al. (2024); Winasis et al. (2021); Hooi and Chan (2023); Yang et al. (2024); Weber et al. (2022a; Rademaker et al. (2023); Cahyadi et al. (2022); Murphy (2024); Shahrudin et al. (2024); Yela Aránega et al. (2023); Ertiö et al. (2024); Hampel and Kunze (2023); Solberg et al. (2020); Matsunaga (2021); Hwang and Seo (2024); Li et al. (2024)
Performance category:	Digital competence
Meaning:	The organisation can operate in a digital business environment, and has the ability to leverage novel digital technologies for operational processes and innovation
Streams:	N/A
Leadership behaviours:	Task-oriented behaviour
Other leadership traits:	N/A
Outcome:	The organisation can pursue digital innovation only by developing digital competence.
References:	Wang et al. (2024); Shao et al. (2024); Bencsik et al. (2022); Tortorella et al. (2023); Brock and von Wangenheim (2019); Ruel et al. (2021); Zhao et al. (2024); Höyng and Lau (2023); Singh et al. (2024); Chatterjee et al. (2022); Gfrerer et al. (2021); Baba et al. (2023)
Performance category:	Digital innovation

Table 5 (continued)

Performance category:	Effective leadership
Meaning:	The development of new digital products, services or practices which enhance performance and are used for business renewal.
Streams:	Role-model leadership Close-proximity leadership
Leadership behaviours:	Mixture of relation-, change- and external-oriented behaviour (TMT and business leaders). Mixture of relation- and change-oriented behaviours (direct supervisors).
Other leadership traits:	Leader's emotional intelligence helps balance contradictory behavioural requisites between digital competence and digital innovation.
Outcome:	The organisation can successfully exploit new digital technologies for continuous renewal and sustainable competitiveness.
References:	McTaggart and Loonam (2024); Ahmad et al. (2022); Wu et al. (2021); Moschko and Blažević (2023); Abbas et al. (2024); Shao et al. (2024); Gao and Gao (2024); Ramadan et al. (2023); Guinan et al. (2019); Öngel et al. (2024); Ahmed et al. (2024); Sumbal et al. (2024); Shubh et al. (2024); Ke and Su (2024); Ashraf et al. (2024); Bendig et al. (2023); Levallet and Chan (2018)

According to the literature, effective leadership can reshape organisational structures during transformation and formulate strategic responses to external disruptions (Evans et al., 2022; Imran et al., 2021; Leso et al., 2023; Peng & Jia, 2023; Vial, 2019). Digital acceptance is a prerequisite for successful DT; its absence may lead to negative outcomes and act as a barrier due to factors such as stress and employee resistance. Conversely, digital acceptance facilitates positive DT outcomes. (Ertiö et al., 2024; Matsunaga, 2021; Rademaker et al., 2023; Valttonen & Holopainen, 2025; Vial, 2019).

Digital competence enables organisations to leverage digital technologies and transition towards digital value creation, resulting in favourable outcomes. However, a lack of digital competence predicts negative consequences in today's digital business environments. (Falloon, 2020; Singh et al., 2024; Tortorella et al., 2023; Vial, 2019) Digital innovation contributes to positive outcomes by enabling beneficial disruptions. Such innovation is preceded by the ability to adopt and creatively utilise digital tools. (Cheng et al., 2023; Hermann et al., 2024; Ongena et al., 2024; Rakovic et al., 2024; Vial, 2019).

Based on the literature just discussed, this study structures its findings around Vial's framework according to the conceptual model, presented in Fig. 3. In the model, the propositions are also presented. The model aims to link the findings of this study to established framework, as well as to bridge the theory and practice in DT implementation. Ultimately, the model aims to narrow the scope of Vial's macro-level framework by presenting leadership-focused pathways for achieving performance. In doing so, it seeks to operationalize the dynamic system outlined in Vial's framework. Fig. 3 also presents how the findings are mapped to RQ1 and RQ2.

4. Discussion

The first research question asks: *What dimensions of organisational performance are influenced by DT leadership behaviours?* This study identifies four key dimensions: effective leadership, digital acceptance, digital competence, and digital innovation. Of these, only digital innovation is well-established in DT literature, while the others emerge through indirect implications. For instance, leadership styles and competencies (AlNuami et al., 2022; Schiuma et al., 2024; Yela Aránega et al., 2023) relate to effective leadership; technological stress and DT barriers (Rademaker et al., 2023; Zulu et al., 2023a) to digital acceptance; and digital literacy and investments (Wang et al., 2024; Zhao et al., 2024) to digital competence. These connections reveal confluence

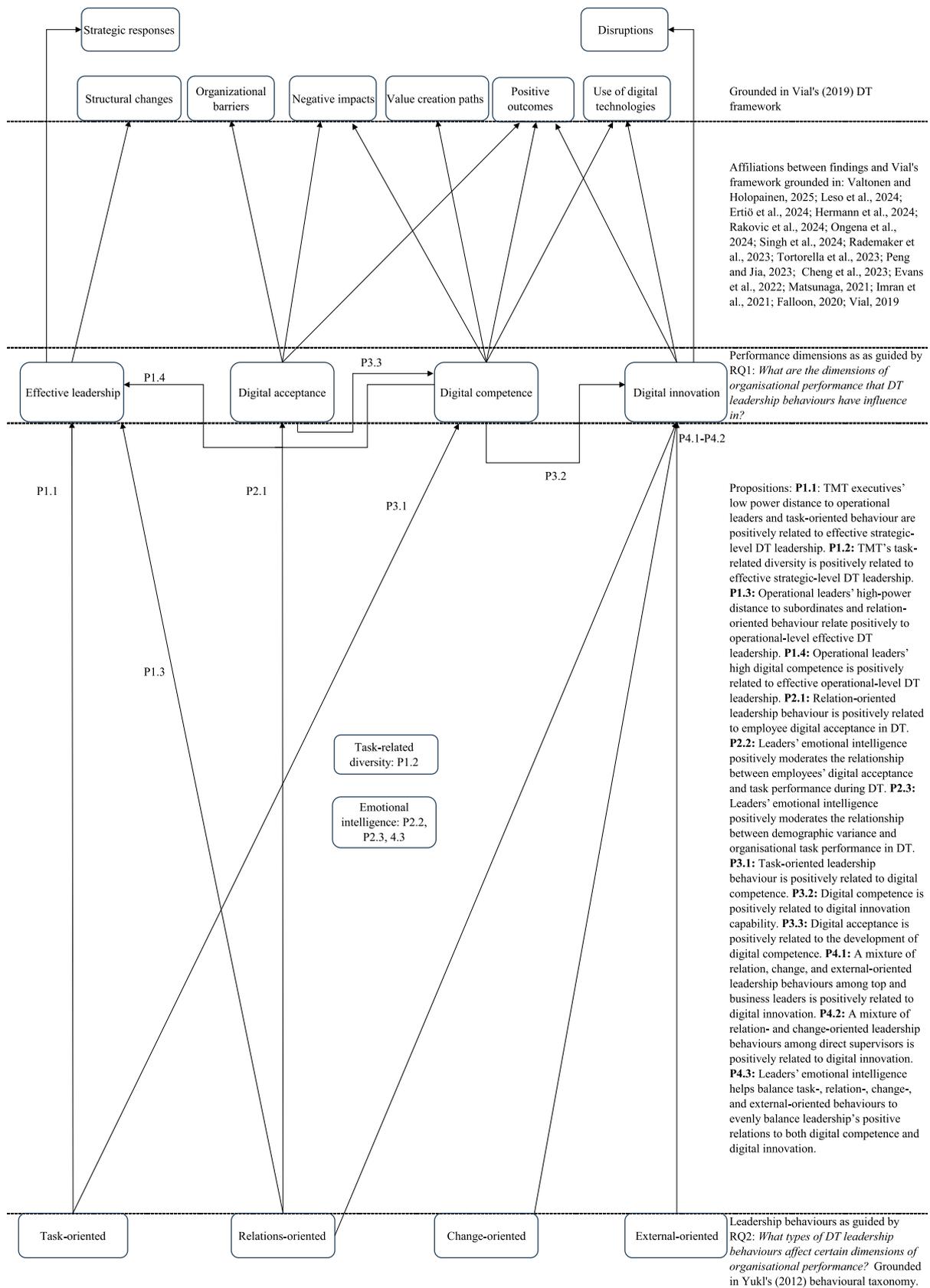


Fig. 3. Conceptual model.

points with prior literature.

The four performance dimensions introduced here appear to be interconnected and may reinforce one another in practice. Recent studies support this connectedness between psychological acceptance, competence, and innovation during DT (de Pacheco & Iwaszczenko, 2025; Valtonen & Holopainen, 2025; Seppänen et al., 2025; Klein, Spieth, & Söllner, 2024; Vu & Lim, 2022). This underscores the need to view DT as a holistic transformation. For example, pursuing innovation without competence or acceptance may jeopardise the entire process. While organisations differ in digital maturity and goals, DT should be tailored to context, yet excessive partial optimisation may harm long-term efforts.

The second research question asks: *What types of DT leadership behaviours influence specific performance dimensions?* Initially analysed separately, behaviours were later classified using Yukl's (2012) behavioural taxonomy. Notably, change- and external-oriented behaviours were linked only to digital innovation, while task-oriented behaviours emerged as key drivers of digital competence, a dimension often overlooked in DT leadership research. This is significant, as DT is frequently framed around change, yet task-oriented leadership appears vital for building digital capabilities. Meanwhile, relation-oriented behaviours were mostly associated with digital acceptance and innovation. That highlights the role of relationships in fostering creativity and emotional engagement. Overall, different aspects of DT are shaped by distinct leadership behaviours. Referring to Yukl's (2012) taxonomy, the importance of all kinds of leadership behaviour in DT must be noted. Empirical research confirms that task-, relation-, and change-oriented behaviours each contribute to leadership effectiveness depending on context (Philip et al., 2023; Rademaker et al., 2023; Weber et al., 2022b; Yukl, 2012). Thus, for DT to be comprehensive and successful, DT leaders should engage in all types of taxonomy-based behaviours. Leadership behaviours should be diversified across the organisation, with role-specific behaviours fine-tuned based on role-related goals.

However, implementing such a holistic approach in practice is not without challenges. Leaders often face resource constraints, employee skill gaps, strategic misalignments, and resistance to change (Caliskan et al., 2025; Seppänen et al., 2025; Siwach et al., 2025; Valtonen & Holopainen, 2025; Xu et al., 2023). Organisations with low digital maturity may lack the time, tools, or capacity to build digital competence before initiating innovation efforts, as shown in studies linking maturity to transformation success (Tortorella et al., 2023; Wang et al., 2024). In such contexts, relation-oriented leadership may be difficult to implement effectively, as employees may not yet possess the foundational digital skills required to engage with new technologies. Similarly, digital acceptance may be hindered by emotional resistance, stress, or uncertainty, particularly when leadership fails to provide psychological safety or empathetic support (Ertiö et al., 2024; Li et al., 2024; Murphy, 2024; Valtonen & Holopainen, 2025). These human-centric challenges can be exacerbated by organisational structures that do not allow for flexible or individualised leadership responses. Consequently, relation-oriented behaviours may be underutilised, despite their proven relevance in promoting emotional engagement and reducing resistance (Ertiö et al., 2024; Li et al., 2024; Murphy, 2024). Furthermore, the pursuit of digital innovation may be constrained by a lack of strategic clarity or operational coherence, especially when change-oriented behaviours are not sufficiently embedded in leadership routines (Arroyabe et al., 2024; Chen et al., 2024; Fernandes & Burcharth, 2024; Siwach et al., 2025). These challenges highlight the need for context-sensitive and behaviourally balanced leadership approaches that are adaptable to organisational conditions and maturity levels.

To support practitioners, this study offers guidance on how to implement these behaviours in day-to-day operations. Task-oriented behaviours may be reflected in goal-setting, progress tracking, problem-solving, and the integration of digital tasks into routine workflows, thereby supporting the development of digital competence. Relation-oriented behaviours can be operationalised through regular

team interactions, empathetic leadership, and the creation of psychologically safe environments, which are important to achieve digital acceptance and a safe space for innovation. Change-oriented behaviours may be cultivated by celebrating small wins, sharing innovation narratives, and involving employees in co-creating digital solutions. Thus, digital innovation can be promoted. External-oriented behaviours can be implemented through stakeholder engagement, benchmarking, and collaboration with external partners, which further enrich the innovation process and connect the organisation to broader ecosystems. These behavioural practices should be fine-tuned not only based on organisational roles but also in relation to the performance dimensions they aim to influence. For example, digital competence requires a strong emphasis on task-oriented behaviours, while digital acceptance benefits from relation-oriented leadership. Digital innovation, in turn, is supported by a mixture of change-, relation-, and external-oriented behaviours. However, at the organisational level, it is essential to avoid partial optimisation of behaviour, as this may compromise the performance synergy that arises from a balanced approach.

Constraints such as limited resources and cultural inertia may restrict behavioural flexibility, requiring leaders to act as adaptive agents. Emotional intelligence enables them to adjust behaviours, respond to individual needs, and maintain coherence across transformation. For instance, when resources are tight, empathetic leaders can acknowledge the stress experienced by their team and use self-regulation to stay calm and motivate teams by celebrating small wins. In culturally resistant environments, leaders may co-create such change initiatives that respect existing norms. Emotional agility helps balance innovation and operational stability by flexibly shifting between visionary and pragmatic styles. In diverse teams, emotionally intelligent leaders tailor feedback and foster inclusive dialogue. Such two-way communication can enhance psychological safety and cohesion. Through behavioural diversification, organisations can build competence, foster acceptance, and drive sustainable performance.

The third research question asks: *What are the future research priorities in the given topic?* To answer this, we presented theme-specific future research directions and propositions for future research. Additional future topics can be found by examining the general overview of the main themes. Thematic propositions include all task-, relation-, change-, and external-oriented leadership behaviours. Thus, if an organisation promotes all four performance categories in DT, leadership behaviours should be a mixture of all four taxonomy-based behaviours. In addition, as thematic propositions point out the need for emotional intelligence to help balance the contradictory leadership behaviours, emotional intelligence could be taken as a variable while examining leadership characteristics and organisational performance during DT. Accordingly, to extend the answer to RQ3, we draw the following general propositions.

P5.1: A balanced mixture of leaders' task-, relation-, change-, and external-oriented behaviours is positively related to organisational performance in DT.

P5.2: A balanced mixture of leadership behaviours positively mediates the relationship between the leader's emotional intelligence and organisational performance in DT.

To support and validate the proposed relationships between leadership and performance in DT, future research should adopt a broader range of methodological approaches. Experimental designs, in particular, could clarify causal links by testing how different leadership behaviours influence employee responses to digital initiatives. To connect these responses with tangible performance indicators, such as innovation output, renewal capability, employee engagement, or financial results, mixed methods would be especially useful. Longitudinal studies are also well-suited to reveal how leadership influence evolves over time, offering insights into how DT progresses under specific leadership practices. In addition, future research could explore how leadership behaviours and their performance outcomes may differ across regional

and industry-specific contexts, in order to reveal the context-sensitive nature of DT within different geographical and sectoral settings.

5. Conclusions

5.1. Theoretical implications

Research on DT leadership is relatively new. However, leadership is recognized as one of the most crucial aspects in DT success (Gao & Gao, 2024; Philip et al., 2023; Weber et al., 2022a; Peña & Caruajulca, 2022). This study reviews prior literature to understand how micro-level leadership behaviours influence performance in DT. It diverges from prior research by detaching leadership behaviours from established, rigid leadership patterns and by taking a micro-level look at how different behaviours affect organisational performance in DT. This perspective simultaneously detaches DT leadership from prior leadership knowledge developed in contexts other than DT. Effectively, this study enriches and deepens the knowledge about DT leadership in the following ways.

First, this study draws on four separate dimensions of organisational performance which leadership behaviours can influence during DT. These four main dimensions are further divided into research streams extracted from the literature. This finding illustrates how leadership behaviours interplay with organisational performance, underlining the importance of leaders' everyday behaviours. Recent studies have examined leadership priorities in DT; however, they have primarily focused on business-strategic aspects. As this study relates to leadership behaviours, the four performance dimensions settle mainly in an organisation's operations. Thus, our findings extend the understanding of the effects of DT leadership mainly at the operational level.

Second, for comprehensive DT implementation, all task-, relation-, change-, and external-oriented leadership behaviours are needed. Different types of performance dimensions are pursued under different types of leadership behaviours. As the four DT performance dimensions appear to be interrelated and synergistic, simultaneously pursuing all types of leadership behaviours is important. Further, different behaviours are partially divided across different organisational levels and positions, while contradictory behaviours should yet be conducted concurrently. This finding demonstrates that leadership behaviours should not be seen rigidly as patterns, but more as contextual and situational with different purposes.

Third, because of the effects of varying leadership behaviours on separate yet evenly important aspects of organisational performance, each DT leader should balance their behaviours. Indeed, emotional intelligence is helpful in balancing DT leadership behaviours. As such, this study expands on the emerging interest in emotional intelligence in DT research (e.g. Abbas et al., 2024; Ertiö et al., 2024; Li et al., 2024). However, this balance is not static, it should be adjusted based on organisational maturity, transformation phase, and situational needs. For instance, in early-stage DT, task-oriented behaviours may be prioritised to build digital competence, while relation-oriented behaviours become more critical when emotional resistance or stress emerges. In innovation-driven phases, relation-orientation, added with change- and external-oriented behaviours, may take precedence.

Fourth, the study integrates its findings into Vial's (2019) established DT framework and identifies the underlying constructs that inform the dynamic system within the framework. In doing so, it extends current DT theory especially from a behavioural leadership perspective.

Overall, the findings clarify the multidimensional role of leadership behaviours in DT, paving the way for future behavioural DT leadership studies. These findings also contribute to the conceptualisation of DT leadership and unsettled concept of *digital leadership* (Abbas et al., 2024; Tigre et al., 2023; Tigre, Henriques, & Curado, 2024). This study also links leadership behaviour to an organisation's operational goals in DT. Thus, by deepening the knowledge of leadership as a performance antecedents, the findings also enrich operational DT research.

5.2. Practical implications

The findings provide organisational leaders with a brief to behaviourally guide organisations in DT. First, this study identifies four DT performance dimensions. Organisations can use them to demonstrate the organisational aspects that influence leadership behaviours during DT. Furthermore, performance dimensions can be seen as a set of goals for DT leadership. Thus, this study demonstrates the comprehensive practical essence of leadership behaviour. By underlining the effects of behaviours, practitioners may find it easier to note the importance of leaders' everyday interactions.

Second, this study highlights the importance of DT leadership that balances task-, relation-, change-, and external-oriented behaviours. However, this balance should be sensitive to contextual factors. For instance, task-oriented behaviours, such as goal-setting, problem-solving and progress tracking, are particularly relevant in organisations with low digital maturity, where competence-building is a key priority. Relation-oriented behaviours, such as team interaction, open and empathetic communication and fostering psychological safety, are essential in contexts marked by emotional resistance or stress, often triggered by change. These behaviours are equally important in innovation-oriented environments, where psychological safety and open dialogue support creativity, empowerment and autonomy. Change-oriented behaviours, such as co-creation and innovation discourse, are most effective when there is a clear and shared recognition of the need for transformation. External-oriented behaviours, such as stakeholder engagement and benchmarking, support innovation and facilitate external collaboration. As human behaviours can be rigid and inflexible, especially in situations of change (Malo et al., 2024; Waldeck, Pancani, Holliman, Karekla, & Tyndall, 2021), organisations can utilise this behavioural mapping as a practical tool for guiding leadership development and tailoring role-specific behavioural emphasis. The pursuit of behavioural variance can be seen as a leadership development process. By first understanding behaviours' relationships with organisational performance and then the importance of balanced leadership behaviours, organisations can be more capable of noting the significance of such matters. This can contribute to leadership development.

Third, there are implications for the organisational recruitment of leaders, particularly the need for emotional intelligence. Emotional intelligence enables leaders to adapt their behaviours to different contexts, balance competing demands, and maintain coherence across transformation efforts. Importantly, emotional intelligence can be developed in organisational settings (Clarke, 2006; Clarke, 2010; Sadri, 2012), and thus be one of the goals of leadership training.

5.3. Limitations

First, the public sector was not included while screening the literature screening due to the differences between the private and public sectors on the topic. Thus, this study is not applicable to the public sector. Second, keywords in the literature screening were minimalistic and exploratory-like, as the purpose was pursuing a broad approach and an extensive initial sample. Snowball sampling was used to minimise the keyword-based limitations. However, due to this approach, some relevant literature based on more detailed concepts may have been ignored. Third, behavioural leadership patterns, such as leadership styles, were not considered relevant in the literature search if they were assessed to have too little impact on single and specific behaviours. The exclusion of rigid and established leadership patterns was the core purpose of this study. Still, this methodological choice may have biased the results. Fourth, only English-language publications were included in the review. This language restriction may have excluded relevant research conducted in other languages. Fifth, this SLR screened studies published since 2000, with a particular emphasis on more recent years in the final sample. While this focus reflects emerging scholarly interest in the topic, it may also introduce a recent-publication bias. Consequently, older yet

potentially relevant studies might have been underrepresented.

CRedit authorship contribution statement

Matias Orkamo: Writing – original draft, Visualization, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Juhani Ukko:** Writing – review & editing, Supervision, Conceptualization. **Tero Rantala:** Writing – review & editing, Supervision, Conceptualization. **Minna Saunila:** Writing – review & editing, Supervision, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.digbus.2025.100155>.

Data availability

No new data were created or analysed in this study.

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