Leading Through Transformation: A study on the interplay of Digital Transformation, Digital Leadership Capabilities and Employee Digital Literacy

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Abstract

This research explores how digital transformation (DT) enables digital leadership capabilities and how this enhances employee digital literacy in the context of Dutch mental healthcare. Facing critical challenges like workforce shortages and long patient waiting times, healthcare organizations are increasingly relying on DT to improve efficiency and quality of care. However, a successful DT not only depends on technological adoption but also on effective leadership and employee digital literacy levels. Using a qualitative approach with a case study at a Dutch mental healthcare organization with the Gioia method for data analysis, this research uncovers how leadership at strategic, tactical, and operational levels influences the readiness for DT and the digital literacy of employees. Key findings highlight the importance of intuitive technology, shared vision, accessible training, and Digi coaches to support employees. These insights offer a framework for healthcare organizations to guide their DT efforts more effectively, emphasizing on the human aspect of DT.

Keywords: Digital Transformation, Digital Leadership Capabilities, Employee Digital Literacy, Healthcare, Organizational levels

Contents

1. Introduction

The Dutch mental healthcare is facing urgent challenges, such as long waiting list, and shortage of mental health psychologists, while the demand is still rising for its services (W.Gotink, 2022; Nationale Zorggids, 2024). To address these systematic challenges and ensure patients of sustainable and accessible care, Digital Transformation (DT) has become significantly urgent across the entire healthcare industry (Bucci et al., 2019). DT has been seen as a solution to this problem (Bucci et al., 2019), however leadership on different organizational levels is necessary to successfully implement this change (Fitzgerald et al., 2013). DT is defined by Vial (2021, p.3) as "*a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies".* DT has been affecting many aspects of companies including acquisitions of digital resources, development of new digital growth strategies and the change of the organizational structure (Verhoef et al., 2019). Because of that, DT has now been widely acknowledged as a necessity by managers and strategists (Warner & Wäger, 2018). This means that managers face growing pressure to adopt and implement modern technologies that have the potential to fundamentally reshape the core principles of business operations (Sergei et al., 2023).

Many researchers emphasize the need for organizations to develop DT capabilities that span further than the IT department to redefine their value proposition, including a digital-first mindset, digitised practices and operations, empowered talent and the effective use of data access and collaboration tools (Bonnett et al., 2015; Braojos et al., 2024). While much attention has been brought towards the technological and strategic dimensions of DT, earlier research neglects human and leadership aspects of DT (Seo et al., 2012). Three main issues can be identified that require further investigation.

First, while many researchers have identified the need for research on DT and the individual level, this is still under researched (Braojos et al., 2024). As changes in organizations are more likely to fail because of the neglect of human elements (Seo et al., 2012), identifying potential mediators and understanding the impact of DT on the individual level will create more knowledge on DT (Braojos et al., 2024).

Second, leadership plays an important role in bridging the gap between DT and employee digital literacy, meaning that new digital leadership capabilities must be developed and are seen as a success factor to drive DT in an organization (Fitzgerald et al., 2013; Husing et al., 2015). Leaders at the strategic level are responsible for setting the organizational vision and aligning DT with organizational goals (Gutierrez & Lycett, 2011), while tactical and operational managers translate that vision into actionable steps and ensure its execution through employee engagement and system alignment (Kerr, 2014; Laukka et al., 2021).

Third, at the frontline of the DT are the healthcare employees, who are expected to adapt workflows, decision-making and communication towards the new digital environment (Carboni et al., 2021). Yet around 81% of healthcare professionals lack digital literacy, leading to negative attitudes towards new digital technologies (Kuek & Hakkennes, 2019). A low digital literacy effects many parts of an organization as it reduces employee engagement and job satisfaction and creates resistance to change (Sundermeier, 2022). The disconnection of strategic DT initiative and employee digital literacy present a significant challenge for organizations (Warner & Wäger, 2018).

To understand the relationship between DT, digital leadership capabilities and employee digital literacy, the following research question was created: "How is digital transformation enabling digital leadership capabilities to enhance employee digital literacy?" To answer this question, a qualitative case study will be conducted in the healthcare industry where key stakeholders, such as healthcare providers, will be interviewed.

The importance of DT in healthcare has been widely acknowledged, however existing literature is often more focused on the technological factors, overlooking the critical role of leadership in mediating DT and employee digital literacy (Kraus et al., 2020). This research contributes academically to the already existing literature by focussing on the impact on an organization who is going through a digital transformation, the mediating role of digital leadership capabilities on a strategical, tactical and operational level, and how these capabilities influence employee digital literacy.

By exploring the implementation of DT in healthcare, the practical implications of this research guide organizations by addressing the challenges that come with the implementation of DT and understanding the impact of digital leadership capabilities on employee digital literacy.

2. Background

2.1 Digital transformation in healthcare

As highlighted before, DT affects many aspects of an organization (Verhoef et al., 2019). It involves a shift in not only technology aspects, but also in processes, culture, and organizational structures (Vial, 2019; Parviainen et al., 2022). According to Klewes et al. (2016), DT comes with the implementation of new digital technologies into various levels of the organization. DT is rooted into the use of information and communication technologies (ICT) and has been impacting healthcare since the 20th century (Ford et al., 2016).

In the context of the RBV. DT capabilities are seen as strategic organizational resources, which are valuable, rare, inimitable ad non-substitutable (Barney,1991). They give the organization the ability to sense technological opportunities, seize new digital innovations, and reconfigure internal structures and processes accordingly to the DT (Teece et al., 1997). DT capabilities are the abilities of an organization leveraging their resources to redefine their value proposition (Braojos et al., 2024). Bonnett et al. (2015) came up with a four dimensions to transform an organization into a digital organization; abilities of a digital-first mindset, digitised practices and operation, empowered talent, and data access and collaboration tools. These four dimensions align with findings in healthcare DT literature, where the ability to coordinate people, processes and technology is seen as a critical part of the organization to have a successful DT (Chatterjee et al., 2023).

A foundational element of healthcare DT is the Medical Information Systems (MIS), which integrates electronic health records, clinical decision support systems, patient portals and resource planning systems, which are often exceptionally long (Osipov & Skryl, 2021). The MIS is a framework of the entire IT infrastructure of an organization, where all the software to automate processes are mapped (Osipov & Skryl, 2021). In Figure 1, the reader can see the MIS of healthcare, where the lengthy process is described.

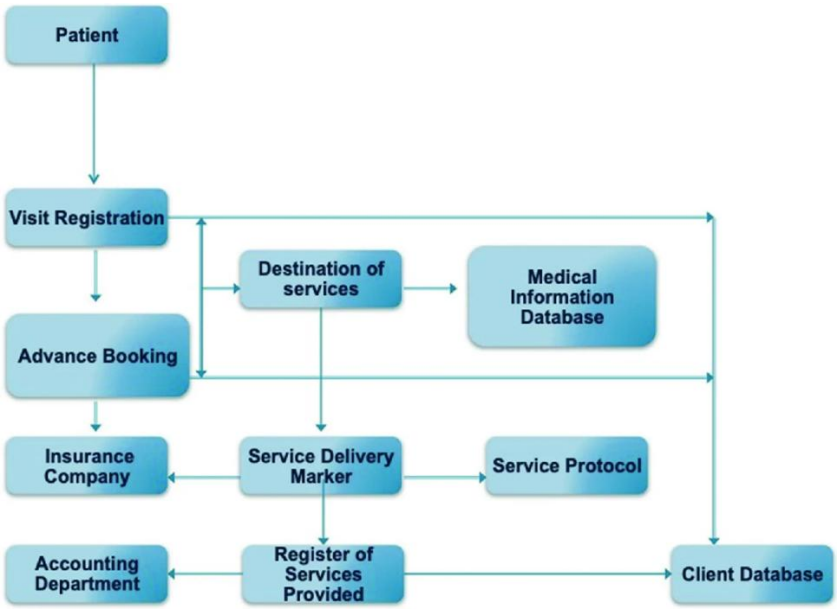

Figure 1: Architecture of MIS (Osipov & Skryl, 2021)

2.2 Digital Transformation Capabilities and Resource Based View

DT Capabilities have become a focal point in research, seeking to understand how organizations derive strategic value from digital initiatives (Vial, 2019). The Resource-Based View (RBV) offers a theoretical foundation for conceptualizing how leveraging internal resources and capabilities drive sustained competitive advantage (Barney, 1991; Teece, 2007). Applying RBV in healthcare, it supports an understanding of how health systems can develop and deploy digital capabilities to enhance service delivery, improve outcomes, and achieve long-term efficiency (Pagani, 2013).

The RBV explains how organizations achieve a competitive advantage by acquiring and deploying valuable, rare, inimitable, and non-substitutable (VRIN) resources (Barney, 1991). In healthcare, this includes digital assets such as interoperable IT infrastructures, skilled personnel, data governance frameworks, and organizational culture that supports innovation (Pagani, 2013). The ability to combine and reconfigure these aspects in response to environmental changes is central to achieving digital maturity and transformation (Teece, 2007). Dynamic capabilities, a refinement of the RBV, further emphasize on the organization's ability to adapt these resources in response to environmental changes (Teece et al., 2016). For healthcare providers, navigating through their every changing and complex environment such agility is incredible importance (Benazzouz & Auhmani, 2023).

In the healthcare sector, DT capabilities underpinned by RBV are incredibly relevant given the knowledge-intensive, regulated, and multi-stakeholder nature of the industry

(Warner & Wäger, 2018). Research shows that healthcare institutions with higher IT-ambidexterity – the balance between exploitation of existing systems and exploration of new technologies- perform better in clinical and operational outcomes (Wang et al., 2016).

Recent empirical studies have validated the RBV's assertion that internal capabilities, rather than mere technology adoption, drive digital success. For instance, Pagani (2013) found that in Moroccan hospitals, DT capabilities significantly enhanced organizational agility and service quality. Similarly, Wang et al. (2016) demonstrated that big data analytics capabilities improved both care coordination and patient engagement.

2.3 Digital Transformation Capabilities

DT capabilities are seen as critical for organizations aiming to thrive in the ever changing and increasingly digital environment, as they help organizations understand how to change business process according to DT (Teece et al., 1997). As highlighted by Braojos et al. (2024), successful DT depends on aligning technological advancements with organizational factors. This section explores four key capabilities that support DT: a digital-first mindset, digitized practices and operations, empowered talent, and enhanced data access and collaboration tools.

2.3.1 Digital first mindset

A digital first mindset helps organizations by searching for digital solutions to problems and by embracing digital opportunities (Braojos et al., 2024). This digital first mindset can be created by voluntary upskilling programs, as employees who are willingly embracing this digital first mindset are more likely to internalize the DT easier and will incorporate this way of working in their job (Neeley et al., z.d.). Learning new digital skills are of incredible importance for DT, but even more important is that employees and leaders must be motivated to use these new skills towards new digital opportunities (Neeley et al., z.d.). A digital first mindset has been proven useful as employees who are implementing it are more successful in their job and are thus being promoted quicker and have a higher job satisfaction. The same is for leaders as this mindset enables them to have a successful organization with a resilient workforce (Neeley et al., z.d.).

2.3.2. Digitised practices and operation

Digitised practices and operations involve the integration of automation technologies and data-driven decision-making (Braojos et al., 2024). New digital technologies such as Internet of Things and AI have given secure access to internal and external stakeholders

(Mas et al., 2023). New digital technologies increase innovation within organization on and individual level as well as an organizational level (Dana et al., 2022).

2.3.3. Empowered talent

Empowered talent relates to the employee level and is the ability of employees to develop new digital skills (Braojos et al., 2024). DT shortens work cycles by reducing repetitive work but requires employees to efficiently fulfil complex tasks (Marion & Fixson, 2020). To do this, employees must develop new digital skills (Braojos et al., 2024). The empowerment of talent has been studied by Cetindamar et al. (2021) and shows that there is a positive relationship between employees' digital literacy and the use of technology in organizations. Especially for managers, digital skills and leadership are of incredible importance to formulate new digital strategies for DT and control this transformation process (Zhen & Ding, 2024).

2.3.4. Data access and collaboration tools

Lastly, data access and collaboration tools use real time patient data to effectively implement collaboration tools (Braojos et al., 2024). DT, where technology improves organizational processes, can help mental health organizations with efficiency in this process as well as efficiency in knowledge management, process and strategy by enabling real-time access to accurate data of patients (Mas et al., 2023). Besides that, a well aligned MIS can help organizations with reducing administrative burdens and minimize potential errors, allowing professionals to spend more time on patients and thus reducing barriers in the mental healthcare sector (Osipov & Skryl, 2021).

2.4 Digital leadership capabilities

To have an effective DT, organizations need to change in many parts of its operations (Fitzgerald et al., 2013). To do this new digital capabilities need to be developed in areas such as leadership, operations, customer needs and innovation (Fitzgerald et al., 2013). Leaders must acknowledge these new capabilities to understand that DT is an integral part of the business activities and thus that it is important to the firm's strategy (Sia et al., 2016). Digital leaders need to have a broad portfolio of digital, market, business and strategic leadership capabilities and they need to be able to have all of them to drive the DT within the organization (Husing et al., 2015).

Underpinning the DT is the Dynamic Capability View (DVC) and the RBV, as said before (Barney, 1991; Teece et al., 1997). The DVC suggests that organizations must possess the ability to sense, seize and reconfigure opportunities and resources to stay

competitive in changing environments (Teece et al., 1997; Teece, 2014). In parallel the RBV posits that organizational resources such as employee skills, IT capability, ad innovation capacity must be valuable, rare, inimitable and non-substitutable (VRIN) to generate sustained competitive advantage (Barney, 1991).

The article from Benitez et al. (2022) emphasizes on how many businesses already acknowledge that digital transformation is something that must be implemented in the business strategy. Around 90% of businesses acknowledge this need (Sia et al., 2021). Benitez et al. (2022) did a qualitative study to find out which digital leadership capabilities are needed to successfully integrate a digital transformation. They found out that two IT capabilities are of incredible importance for the integration of a digital transformation: digital leadership capability and platform digitization capability. These two capabilities have a positive impact on innovation performance within the company. They also suggested that this digital leadership capability has a positive relationship with the platform digitization capability, which then again has a positive influence on innovation. Besides that, they argued that the platform digitization capability can help the firm with their business agility which helps firms with their efficiency. It helps firms with responding quickly to changes which helps them with their competitive position in their market (Roberts & Grover, 2012). From this the conclusion is drawn by Benitez et al. (2022) that platform digitization capability mediates the relationship between digital leadership capability and innovation performance.

2.4.1 Digital leadership capabilities on the strategic level

Successful leaders need to understand how the adoption of DT can influence and transform their organization (Alanazi, 2022). Even though an IT project related to DT is conceived and clear at a strategic level and is aligned with organizational strategy, information asymmetry might occur which will lead to a loss of the original objectives of this DT implementation explaining why strategical leaders are responsible for setting a vision and direction for DT (Gutierrez & Lycett, 2011).

DT capabilities play a crucial role in an organizations ability to integrate digital technologies and practices to improve employee performance and work-life balance (Chatterjee et al., 2023). Employee performance and a positive work-life balance in turn have a positive impact on organizational performance (Skare & Soriano, 2021). The study from Chatterjee et al. (2023) focusses on the fact that digital leadership capabilities (DLC) are seen as a moderator that enhances the outcome of the DT. DLC are associated with steering the organization towards a DT to become more adaptive in rapidly changing digital environments (Chatterjee & NS, 2019). DLC is defined as the organizational capacity to guide, support, and motivate employees through technological change (Chatterjee & Kar, 2018). DLC involve being able to provide vision, support and training structures. This fosters a workplace culture that prioritizes

continuous learning, digital upskilling, and open communication (Chatterjee et al., 2023).

According to Alanazi (2022), leadership attributes needed on the strategical level of an organization can be categorized in three categories: Turnaround leaders, Strategic management and Communication, and Interpersonal Skills. Turnaround leaders have been defined by Day and Moorman (2013) as leaders who rapidly carry out changes throughout the organization when it needs to respond to environment changes. For this to be successful, support from the strategical level is needed, as it requires resources but also impacts the sustainability of the organization (Alanazi, 2022). Alanazi (2022) defined good strategic management in digital organizations as the requirement of digital leaders to have analytical ability, foresight and decisiveness. Lastly, Communication and Interpersonal skills are especially important according to Alanazi (2022) as effective leaders can explain their vision and inspire people to follow this transformation which will increase employee digital literacy.

2.4.2. Digital leadership capabilities on the tactical level

Translating strategic vision into action is incredibly important to create urgency in an organization (Kerr, 2014). This underscores the need for managers of the tactical level to effectively translate the vision and strategical plan into operational actions for an organization to achieve its strategical objectives (MacLennan, 2010). Gutierrez and Lycett (2011) argue in their article about Information Systems (IS) alignment factors that managers from the tactical level are perceived to have the highest level of IS alignment maturity related to the strategic and operational levels. Meaning that managers on this organizational level are required to have the most understanding of the impact of DT to meet strategical visions and operational needs (Gutierrex & Lycett, 2011).

From the article of Gutierrez and Lycett (2011), it can be concluded that Business metrics and formal assessment are important to achieve high IS alignment maturity. Business metrics are quantifiable measurements that are used to track organizational performance (Van Looy & Shafagatova, 2016). Besides that, multiple attributes of IT Governance are important to achieve high IS alignment maturity (Gutierrez & Lycett, 2011). Lastly, standards articulation and compliance and business perception of IT value are important digital leadership capabilities (Gutierrez & Lycett, 2011). Overall, it can thus be concluded that project management, resource allocation, stakeholder engagement and performance monitoring are important tactical level digital leadership capabilities for managers on the tactical level of the organization (Laukka et al., 2021).

2.4.3. Digital leadership capabilities on the operational level

Operational level managers manage day-to-day tasks and are essential for improvement of healthcare operations (Swensen et al., 2013). These managers, just like strategical and tactical managers, also need a specific digital skill set to manage the changing environment causes by DT (Verhoef et al., 2019). While many scholars have argued that transformational leadership, where change is seen as opportunity (Laukka et al., 2021), is useful in healthcare when going through DT (Tremblay, 2017; Alwazzan, 2019), Laukka et al. (2021) argue that DT in mental healthcare is more complex than other organizations as it involves more management elements such as financing.

According to Laukka et al. (2021), nurses and practitioners, who work in the operational level of an organization, play a significant role in the implementation of DT and leaders in this level are required to have interprofessional and intersectoral collaborations with other organizational levels. Meaning that they are expected to have close relations with senior management as well as IT department implementing DT (Laukka et al., 2021). DT implementations often fail when operational level leaders are inexperienced with ICT, meaning that this is also a capability of incredible importance to DT (Sharpp et al., 2019). Overall, we can conclude that digital leadership capabilities needed on the operational level are interprofessional and intersectoral collaborations as well as ICT capabilities.

2.5 Employee digital literacy

DT involves a change in organizational culture and employees play a significant role in shaping and adapting to these changes, meaning that employees are the core of this transformation (Braojos et al., 2024). Employees abilities to adapt to DT determines the success of failure of these initiatives. Resistance from staff, particularly when they feel excluded from the digital vision that is inadequately prepared, can lead to dissatisfaction and disconnection from the strategic goals of the organization (Sundermeier, 2022).

Employee literacy is a broad term referring to the essential competencies that employees need to perform effectively in the workplace (Nikou et al., 2022). While the term literacy traditionally refers to basic reading and writing skills, in modern academic contexts it has expanded to include aspects such as the range of competencies, knowledge, and skills needed by employees to navigate through different organizational activities in relationship to colleagues and the environment (Nikou et al., 2022).

A crucial factor influencing employee acceptance of DT is digital literacy (Kuek & Hakkennes, 2019). Digital literacy has been defined by Reddy et al. (2020, p. 83) as: *"An individual's ability to find and evaluate information, use this information effectively, create new content using this information and share and communicate this newly*

created information using appropriate digital technologies". A digital literate person must have the following capabilities (Reddy et al., 2020):

1. Knowledge of ICT technologies and being able to use them efficiently.
2. A variety of skills to locate digital information and understanding how to judge this knowledge.
3. Understanding and being able to communicate and collaborate with others via digital technologies.
4. Participation in civic society.
5. Consideration of the impact of digital information to others.

The level of digital literacy impacts employees' behaviours towards IS and can become a barrier towards DT when digital literacy among employees is too low (Kuek & Hakkennes, 2019). Among healthcare professionals, around 81% have poor digital literacy leading to inadequate workflow integration, patient record management and interdisciplinary communication (Kuek & Hakkennes, 2019). As of right now, studies about healthcare professionals have indicated that these professionals are often frustrated when it comes to new implementations of IS and DT as they are disagreeing that it improves patient care and efficiency (Chow et al., 2011; Schenk et al., 2016; Zadvinskis et al., 2013).

DLC plays a pivotal role in transforming the resistance into engagement. Effective leaders are able to moderate the relationship between employee capabilities and organizational performance by providing support, vison and training structures (Chatterjee et al., 2023). Digital leaders must change employee behaviour towards the implementation of DT and a great way to do this is by improving employee digital literacy (Kuek & Hakkennes, 2019).

2.6 Table of Key Definitions

To support the clarity of this research, Table 1 provides definitions of key terms related to DT in healthcare.

Term	Definition
Digital Transformation	a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies
Digital Transformation Capabilities	organization's ability to effectively orchestrate and deploy digital technologies, skills, and processes to innovate business models, enhance performance, and respond to environmental change
Resource Based View	a strategic management theory that posits that an organization's internal resources and capabilities—when they are valuable, rare, inimitable, and non-substitutable (VRIN)—can lead to sustained competitive advantage
Digital Leadership Capabilities	that organizations must possess the ability to sense, seize and reconfigure opportunities and resources to stay competitive in changing environments
Employee Digital Literacy	An individual's ability to find and evaluate information, use this information effectively, create updated content using this information and share and communicate this newly created information using appropriate digital technologies

Table 1: Key definitions

3. Method

3.1 Research design

The aim of this research is to understand how Digital Transformation enables digital leadership capabilities to enhance employee digital literacy. This research has been designed as a qualitative study and was conducted via interviews in a case study. Qualitative research gives the researcher room for deviation and unusual findings in research meaning that it gives the researcher a broader knowledge on the topic (Eriksson & Kovalainen, 2015). Besides that, Case-studies have been identified as especially useful in practise-oriented fields such as management (Starman, 2013). Meaning that this research design will help with the significancy of this research.

The interviews will be done within a mental healthcare organization in Enschede where several stakeholders will be interviewed regarding their DT. The interviewees will be from various positions in the organization, meaning that leaders from the three organizational levels will be interviewed, as well as employees to assess the influence of the digital leadership capabilities on the employee digital literacy. This gives access to data about the direct influence on the influence of DT on digital leadership capabilities and how these capabilities influence employee digital literacy. The interviews will be semi-structured interviews as these types of interviews give access to open answers from the interviewees instead of narrow answers (Ilovan & Doroftei, 2017).

3.2 Data collection and sampling

3.2.1 Research Object

As highlighted before, the data collection for this research will be done by conducting semi-structured interviews. Starman (2013) argues that it is important that both an object and subject must be clearly identified at the end of the research. However, it is possible for this to change during the research when needed (Starman, 2013). In this case it means that the research object is employee digital literacy where digital leadership capabilities might be the link between DT and employee digital literacy.

3.2.2 Sampling Technique

This research can be described as exploratory research. Exploratory research is a subset of observational research and consists of an inductive qualitative approach where the research is open-ended (Edgar & Manz, 2017). As this research is exploratory, Saunders et al. (2009) suggest that the best way collecting data is through non-probability sampling. With non-probability sampling, the sample is created by the researcher's

subjective judgement and the research goals (Saunders et al., 2009). This way of sample selection is useful for when the researcher is trying to identify key themes related which can be observed (Saunders et al., 2009). As the goal of this research is to understand how Digital Transformation enables digital leadership capabilities to enhance employee digital literacy, this is an appropriate sampling technique.

3.2.3. Sample selection criteria

Since the sample will be selected by non-probability sampling, it is important to make sure that the sample reflects features of the group (Ritchie et al., 2003). Sample chosen because of non-probability sampling are chosen by the characteristics of the population making them well suited for small scale studies (Ritchie et al., 2003). For this research, the sample will contain of several people from different organizational levels, in total having done at least 16 interviews All these stakeholders will be from the same mental healthcare organization which is in Enschede. For this research, personal connections within the organization were utilized to obtain relevant information about stakeholders who would be worthwhile to interview. Since these people all have experience with DT and are relevant stakeholders according to the research question, it makes them “experts” in their fields. Meaning that their opinions will be valuable and thus good for this qualitative research (Ilovan & Doroftei, 2017).

Participant	Gender	Role in the organization	Nationality	Language of interview
P1	M	CEO	Dutch	Dutch
P2	M	Psychiatrist/ Board member	Dutch	Dutch
P3	F	Manager DT	Dutch	Dutch
P4	F	Manager Financial facilities and ICT	Dutch	Dutch
P5	M	Manager innovation and e-health	Dutch	Dutch
P6	F	Team manager youth	Dutch	Dutch
P7	F	Nurse	Dutch	Dutch
P8	F	Clinical Psychologists/ Digi coach	Dutch	Dutch
P9	M	Manager operations	Dutch	Dutch
P10	M	ICT employee Manager business operation youth and extern	Dutch	Dutch
P11	M	Nurse/Digi coach	Dutch	Dutch
P12	F	Secretary/ Digi coach	Dutch	Dutch
P13	F	Learning and development advisor	Dutch	Dutch
P14	F	Management assistant / Digi coach	Dutch	Dutch
P15	F	Manager business operation youth and extern	Dutch	Dutch
P16	F	Clinical psychologist/ manager business operations youth and extern	Dutch	Dutch
P17	M	Operation manager	Dutch	Dutch

Table 2: demographics of participants

3.3 Research instruments

Since this study is done in a qualitative way, it is important for the researcher to obtain quality answers to its questions (Newcomer et al., 2015). A significant way to do this is by having a semi-structured interview guide with open questions, as these questions will give the researcher detailed information on key themes as well as obtaining reactions to innovative ideas from interviewees (Newcomer et al., 2015). The interview guide can be found in Appendix A.

To make sure that the raw data obtain would not miss any new data, interviews need to be done until the data reaches data saturation (Bernard, 2013). Many scholar have highlighted the importance of data saturation, as it impacts the quality of the research as well as the content validity when this is not reached (Kerr et al., 2010). Guest et al.

(2005) argued the saturation is achieved after 12 interviews, however according to them, basic themes were already visible after six interviews. Other scholars such as Bernard (2013) believe that data saturation is not something that can be quantified since the researcher should include all the information it can get. Namey et al. (2016) argued that at least 16 interviews are needed to achieve at least 90% data saturation. They recommended a sample size between 8 and 16 interviews. For this research, a minimum of 16 interviews will be done to ensure at least 90% data saturation according to Namey et al. (2016), with leaders of the different organizational levels and employees from their teams. The interviews will be taken individually to ensure interviewee freedom of speech.

3.4 Data analysis

For this research, the data analysis approach will be done by doing a Thematic Analysis (TA). Braun and Clarke (2016, p.1) defined a thematic analysis as: *"A method for identifying, analysing, and interpreting patterns of meaning ('themes') within qualitative data."* TA gives the researcher access to systematic procedures of making codes, the smallest unit of data helping the researcher with identifying themes and interpreting the data (Braun & Clarke, 2016). TA is useful for experiential research as it gives information to the researcher about how the interviewees feel, think and do (Braun & Clarke, 2016). As the goal of this research is to understand how Digital Transformation enables digital leadership capabilities to enhance employee digital literacy, this is an appropriate technique.

Besides that, the Gioia method will be used. The Gioia Method is a qualitative method where the researcher develops a data analysis that can be used for trustworthy research and balances often conflicting theories inductively (Magnani & Gioia, 2022). The Gioia method structures data in three stages; first the data in analysed into 1st-order codes, then in 2nd-order themes and lastly the data is structured into aggregate dimensions which then helps with making a grounded theoretical model and creating a data-based narrative for the data (Gioia, 2020). With the Gioia Method, the researcher starts theorizing early in the coding process where intercorrelations are considered early on providing opportunities to creatively interpretate data (Magnani & Gioia, 2022). Because of the systematic research approach, the Gioia Method is more accurate than other unstructured case study designs thus contributing to making a grounded theory (Magnani & Gioia, 2022). Meaning that the Gioia Method will systematically interpret data leading to a well substantiated result. The data will be collected through interviews from the case study. Using the Gioia method will help by identifying common themes among interviews.

4. Results

This section presents the findings of the study, which investigates the central research question: "How is digital transformation enabling digital leadership capabilities to enhance employee digital literacy?" Using the Gioia method (Magnani & Gioia, 2022), three aggregate dimensions were revealed. Therefore, the findings can be divided into three parts, Organizational readiness for Digital Transformation, Digital Leadership Capabilities and Employee Digital Literacy, as can be seen in the Table below.

1st order constructs	**2nd order themes**	**Aggregate dimensions**
Advantages of DT Strategy and vision of DT	Digital first mindset	
AI tools to reduce workload Adequate funding as enabler DT	Digitised practices and operations	
Autonomy of employees Giving room for innovation	Empowered talent	Organizational readiness for DT
AI reduces consult times Clutching programs to enable information sharing	Data access and collaboration tools	
Lack of employee digital literacy skills Difficult technology	Barriers to organizational readiness DT	
Creating vision Leading with clear direction	Digital leadership capabilities on a strategic level	
IS alignment maturity Project management Monitoring performance	Digital leadership capabilities on a tactical level	Digital Leadership Capabilities
Person-oriented plans Early adaptors of DT	Digital leadership capabilities on an operational level	
Digi coach as enabler digital literacy Skills to locate digital information	Employee digital literacy on an individual level	
Technology as enabler digital literacy Clear training structures	Employee digital literacy on an organizational level	Employee Digital Literacy

Table 3: Analysis of data

4.1 Organizational readiness for Digital transformation

The data analysis shows that there are ten factors influencing Organizational readiness for DT. These eight factors are divided into five 2nd order themes: Digital first mindset, Digital practices and operations, Empowered talent, Data access and collaboration tools and Barriers to organizational readiness for DT. As these ten factors all influence the aggregate dimension, organizational readiness for DT, no distinction is made between the level of analysis for the factors.

4.1.1 Digital first mindset

The first group of factors that lead to organizational readiness for DT can be identified as Digital first mindset. The first factor that was mentioned in the interviews was that **advantages of the DT** are important for a smooth transition within the organization. Participants acknowledged that clear advantages of the DT help with the acceptance and implementation of the DT. One participant of this research said: *"DT is a method and a great driver to do more with less people." (p2)* Other participants also touched upon the need for DT in healthcare by acknowledging the long waiting times and heavy workload on practitioners. Besides that, the goal of DT in healthcare is to not only keep the quality of care they have now but also increasing it. This can be seen in the quotes below.

"Not only keep the quality of care we have now but increasing the quality of care with the Digital transformation." (p3)

"Becoming more accessible to more patients by reducing care times and reducing administrative times for practitioners." (p4)

"When looking at the intake process, I see that a lot of patients still get a whole bunch of paper to fill in with questionnaires and consent statements that they have to bring to the consult, and I have to give them to the secretary who then must scan them in. So yes, I think that everything can be done a bit quicker and easier." (p6)

"We want to create a digital first mindset for our practitioners." (p1)

The second factor of the digital first mindset is called **strategy and vision of DT**. The findings of this research show that a shared vision and an inclusive strategy lay the foundation to a successful DT. *"With implementation you often have that you have to convince others and have to say this is what we are going to do. As if you were to go and push a stone up the hill that keeps coming back. Then you must notice that this doesn't work and you have to do it differently." (p2)* This statement shows that convincing is not the way to go as a leadership style with DT. The importance of transparency,

involvement, and purpose was emphasized by several participants. This can be seen in the following statements.

"It is important that people feel involved." (p1)

"There is a lot of need for clarity like why are we changing? What is in it for me? So make sure that they have some kind of perspective." (p3)

"Professionals need trust in the systems we hand them. But they also need to trust that nothing goes wrong with hackers or that kind of things." (p5)

4.1.2. Digitised practices and operations

The second theme relating to organizational readiness for DT is called digitised practices and operations. The first factor in this category is called **AI tools to reduce workload**. AI tools enable practitioners more time to work with patients, as it reduces administrative burdens. Participants acknowledge that a lot of aspects of their job can be more efficient with the use of AI. This can be seen in the quotes below.

"We want people to work with our online modules and make optimal use of AI." (p5)

"Since Thursday we are experimenting with a digital assistant who can help with voice-driven reporting. So, this digital assistant listened to the consult, and it makes a consult report. Yes, teams are lining up for it." (p1)

"What you normally do face to face, we can also digitally." (p9)

The second factor related to Digitised practices and operations is called **Adequate funding**. Adequate funding for digitised practices is of significant importance according to this research. Funding is required for DT as it allows organizations to invest in recent technologies as well as the training of staff. Adequate funding ensures a strategic and sustainable shift in organizational processes that ensure a successful DT. Besides that, without adequate funding, the whole DT programs come to a standstill. This can be seen in the following quotes.

"We hope to get some funding for our digital transformation. Especially if we want to do it on this scale. New technologies require funding to not only buy but also keeping it up to date. Funding enables a lot in our DT" (p17)

"Our goal is to get funding from outside of the organization. It allows us to ensure more technologies leading to an important jump in our digital transformation." (p9)

"It is difficult, right now we see that the funding dominates the agenda. Because of that internal aspects of the digital transformation are on hold." (p4)

4.1.3 Empowered talent

The third themes related to organizational readiness for DT is called empowered talent. **Autonomy of employees** is the first factor in this category. According to this research, giving employees autonomy empowers them to experiment, and improve workflows. It enables them to find out how to improve their own workflows in the new digital environment which accelerates the adoption of the DT. This can be seen in the following quotes.

"It is important to understand the change management aspect of the adoption of the digital transformation. You can use the most amazing technology, but if you don't pay attention to it, then what is the incentive?" [when asked about the role employees play in DT] (p4)

"It is important to give employees room to experiment and fail. It helps with the whole process." (p7)

The second factor in this category is called **giving room for innovation**. Leaving room for innovation is important during DT as it looks beyond just upgrading technology, it gives room to rethink how to improve processes. When organizations give room for innovation it encourages a forward-thinking organizational culture making the DT more sustainable. Besides that, it gets rid of organizational structures which can be seen rigid and frustrating. This can be seen in the following quotes.

"It increases operational processes as I don't have to ask for passkeys to technologies." (p6)

"Organizations are built of structures which can be quite frustrating when going through a digital transformation." (p8)

"When looking at innovation, people often think that they don't have anything to do with it even though this is not true. It is important to understand where I can improve and change my way of thinking." (p5)

4.1.4 Data access and collaboration tools

The fourth theme related to organizational readiness for DT is called data access and collaboration tools. The first factor in this category is called **AI reduce consult time**. Participant emphasized the need for AI driven programs to keep up with the continuing workload as well as the increasing wait times. Because of the so called "intergraal

zorgakkoord," healthcare organizations are forced to reduce these two things. AI can be used to help increase efficiency. As can be seen in the following statements.

"For our client journey, our main goal is to use generative AI." (p2)

"Maybe we are able to let AI do the triage or even look if they are a good fit for mental healthcare." (p9)

"We want to create a digital infrastructure with all kinds of tools. Such as AI where it helps with voice driven reporting." (p10)

The second factor relating data access and collaboration is called **clutching programs to enables information sharing**. Related to the factor above, efficiency is increased when practitioners and nurse have access to data. Giving them data access, it increases innovation on a personal level. As one participant said: *"When thinking about innovation, people often think that they do not have any influence on that, so they will only try our recent technology every once in a while. But that is not correct. The question is where can I change or what can I improve." (p3)* Other participants also acknowledged this but touched upon the importance of easy data access to improve innovation. This can be seen in the following quotes.

"For my department, it is important that for my people, our systems are intuitive and user-friendly." (p6)

"A lot of new things keep getting added. With Microsoft teams that is added right now, but it is unclear again. What goes through email? What via chat? Look, you actually want something overarching where everything can fall into and not all those separate systems and applications." (p8)

4.1.5 Barriers to organizational readiness DT

The first factor in this category is called **lack of employee digital literacy**. When employees have a low digital literacy, this can lead to low adoption of recent technologies. If they are not able to use recent technologies effectively, it reduces efficiency as they spend more time figuring out the systems. It can also lead to resistance to change as it creates frustration and anxiety. However, Digi coaches are seen as a great solution to increase employee digital literacy. This can be seen in the following quotes.

"It is important that the technology does what it's supposed to do as it creates frustration when it doesn't." (p7)

"In our teams, Digi coaches have been appointed who can help their team progress in the digital transformation." (p8)

The second factor relating to barriers to organizational readiness DT is called **difficult technology as barrier for DT**. While most participants said that a lot of people can work with recent technology, it was seen as incredibly important to make sure that this technology can be used intuitively. One participant said: *"You have to make sure that your technology can be used intuitively. One thing we struggle with a lot is the fact that practitioners are not about to use our E-health, as it is hard to use." (p5)* This quote captures the need for intuitive technology. When not having this type of technology, people won't embrace the DT making it harder to move the whole organization into one direction. This can also be seen in the quotes below.

"The problem with healthcare technology is the fact that it will not be used on its own. There is a great learning curve in that. You really need to show people that this is our E-health, and it will help you. Then people won't use it as it takes to much time to search for a right module for a patient." (p6)

"People are eager to use with the new technologies, but it needs to be supportive of their work." (p7)

"What I see on the technical side of healthcare is that a lot of application don't do what they should do. And then you see that the confidence in these applications decreases rapidly." (p10)

4.2 Digital leadership capabilities

The data analysis shows that there are seven factor influencing Digital leadership capabilities. These nine factors are subdivided into three themes: Digital leadership capabilities on a strategic level, digital leadership capabilities on a tactical level and digital leadership capabilities on an operational level. As these seven factors all influence the aggregate dimension, digital leadership capabilities, no distinction is made between the level of analysis for the factors.

4.2.1 Digital leadership capabilities on a strategic level

The first theme related to Digital leadership capabilities focusses on the strategic level on an organization. The first factor in this category is called **Creating vision**. Leaders and practitioners from different organizational level acknowledged the importance of a

clear vision for people to follow when going through a DT. One person said: *"If you set a vision where you say, we want a transformation focussed on the front end of the client journey, this has to be blended." [When asked about giving Digi coaches room to innovate for what is needed in their department.] (p4)* This identifies the need for practitioners and Digi coaches to decide on their own what the need, while giving frameworks to work within. Others also acknowledged this, as can be seen in the following quotes.

"Being clear about the things we can't do. Because that's something we don't do enough." (p6)

"In our organization, little attention has been paid to creating a vision. What are our frameworks?" (p13)

"The vision needs to give clear instructions about the digital transformation." (p1)

The second factor related to digital leadership capabilities on a strategic level is called **leading with clear direction**. Many participants emphasized that an organization needs clear leadership from the top down to have a successful DT. One participant said: *"We need a leader who gives room, but also say, this is the way it is going to go. We are going to do this." (p15)* While this participant said that it is important to give employees some space as a leader, others more focussed on the need for clear leadership. This can be seen in the following quotes.

"You have to stay on course." (p16)

"You must control everything. That is what I noticed. But also control your own behaviour." (p9)

"When looking at Apple for example, they almost have some kind of dictator as their CEO. We email people to ask their opinions but at one point in time you have to say, this is the way it is going to go." (p2)

4.2.2 Digital leadership capabilities on a tactical level

The second theme related to digital leadership capabilities focusses on the tactical level. The first factor in this category is called **IS alignment maturity**. Participants from the tactical level of the organization often had high IS alignment maturity. This is mainly because they push the DT through to the operational part of the organization and have to make that they can help others understand what they can do with recent technologies. One participant said: *"We ensure the systems we use fit the workflows of teams." (p17)* It is important for leaders on this organizational level as IS alignment maturity between IT

systems and care processes helps maximize the effectiveness of DT. Others also acknowledged this as can be seen in the following quotes.

"Alignment between technology and practice is crucial." (p15)

"We have to integrate digital tools with existing systems." (p10)

"We map our digital goals into our care processes." (p13)

The second factor in this category is called **project management**. With this participants meant that strong project management which include aspects such as piloting, and feedback loops, increases effectiveness of DT implementation. Tactical managers need to ensure learning sequences for the organizations regarding their DT, and voice these to strategical and operational levels of the organization. This was supported by participants as can be seen in the following quotes.

"We run pilots to learn what works and what doesn't." (p2)

"There are sounding board sessions. Just contact where people have the opportunity to say what they think." (p3)

"We ask reflection on our plans from managers, like do you think this will work for your practitioners." (p4)

The third factor relating to digital leadership capabilities on a tactical level is called **monitoring performance**. Tactical managers need to monitor performance actively, as they need to pivot when the DT is not going into the direction, then Transparency and active support of plans is important as was said by several participants. This can be seen in the following quotes.

"Our plan needs to actively be supported by us." (p5)

"If you can't figure out what we meant, our instructions were unclear." (p16)

"Transparency is a great tool to guide your employees in the right direction." (p6)

4.2.3 Digital leadership capabilities on an operational level

The third theme related to digital leadership capabilities focusses on the operational level of an organization. The first factor for this theme is called **Person-oriented plans** on DT. Participants acknowledge the fact for person-oriented plans with regards to DT. This can be on a practitioner basis or a patient basis. One participant said: *"You need to critically assess for who this transformation won't work." (p7)* The main reason for

participants to emphasize this was that in healthcare you have some patients where new technologies can be seen as a disruption of their progress which is something practitioners want to avoid. Another participant also said that it is important for leaders on this level to make connections interprofessional as it helps create shorter learning loops since team can learn from each other. But most practitioners found this factor important because of the situational aspect of their sector. This can be seen in the following quotes.

"There are patients where the transformation won't work." (p11)

"You have to customize it." [When asked about how recent technologies should be implemented in teams] (p15)

"You can't say in bulk, guys this is how it's going to go." (p9)

The second factor in this theme is called **early adopters of DT**. Participants emphasized that it is important for managers on this level to focus on teams who are eager to use the DT to their own good. One participant said: *"There are some teams who want to be early adopters, but there were enough. In the end almost every teams believes that it brings them something." (p3)* Establishing how early adaptors guide DT through teams smoothly. Others also acknowledged that early adaptors for DT help accelerate organization wide change as can be seen in the following quotes.

"Yes, teams are lining up for it." [Asked about the pilot where lots of employees are eager to use] (p1)

"Some teams are very curious and enthusiastic." (p17)

"What I notice with this pilot is that everything happens automatically, ideally that how you want it." (p5)

4.3 Employee digital literacy

The data analysis shows that there are four factor influencing employee digital literacy. These four factors are subdivided into two themes: employee digital literacy on an individual level and employee digital literacy on an organizational level. As these four factors all influence the aggregate dimension, employee digital literacy, no distinction is made between the level of analysis for the factors.

4.3.1 Employee digital literacy on an individual level

The first factor related to employee digital literacy on an individual level is called **Digi coach as enabler digital transformation**. During the interviews, almost every participant said that with the integration of Digi coaches in their teams, digital literacy increased. One participant said: *"Our goal is to help people as close as possible to their workplace by having a colleague help them, or as we call them Digi coaches."* The so-called Digi coaches in this organization are team members from diverse backgrounds who can directly help other team members with practical questions. This can also be seen in the following quotes.

"In all teams, Digi coaches are appointed in their teams to help with the digital transformation. Meaning that a foundation has been made, since we thought that that would be necessary for the big changes." (p1)

"In teams we have the Digi coaches. They are the leading coalition for the DT and digital literacy levels by helping team members understand what they can do with the recent technology. Besides that, they are a point of contact, and they are encouraging as well." (p3)

"To increase the digital literacy, we have the Digi coaches." (p14)

"In our teams, Digi coaches have been appointed who can help their team progress in the digital transformation." (p8)

The second factor related to the individual level of employee digital literacy is called **skills to locate digital information**. Overall, the idea was that new employee have the right skills for DT when they come into an organization, as can be seen in the following quote: *"For a long time, we have thought that people come into the organization with all the right competencies, but this is not always the case." (p4)* This quote identifies that it is important to have skills regarding digital literacy to keep up with the DT on a personal level. In order to help new hires with inadequate digital literacy skills programs such as Digi coaches and trainings were introduced. Other participants also acknowledged this, as can be seen in the following quotes.

"Digital literacy came to the light as an important part of DT." (p2)

"Digital literacy programs are not the same for everyone." (p11)

"Training and supporting with the on and off boarding of employees as part of adoption." [asked about the adoption problem of DT] (p13)

4.3.2 Employee digital literacy on an organizational level

The third theme relating to organizational readiness for Digital transformation is called empowered talent. The first factor for this theme is called **Technology enables talent**. For this research, talent is seen as having digital literacy. Participants emphasized that it is important for people to feel like they can use recent technologies as it makes them embrace the DT more. This can be seen in the following statement. *"Yes, then people feel potent, so then they will embrace the movement a bit more." (p8)* Others also touched upon how talent, or in this case digital literacy differs for everyone and that it is important to have manage talent on a personal level. This can be seen by the following quotes.

"I believe that people have more skills than they would expect." (p11)

"Digital literacy levels are not the same for everyone." (p4)

"You really need a person-oriented plan to help people." (p12)

The third factor related to digital leadership capabilities on a strategical level is called **clear training structures**. Clear training structures help the company to stay on track with their DT as it enables an organization culture where continuous learning is important. One participant told: *"Before starting with the digital transformation, we ensured digital literacy levels." (p1)* This identifies that structured training ensure skills development and addresses gaps in digital literacy. Others also explained that digital literacy levels are not the same for everyone and that person-oriented training is thus important. This can be seen in the following quotes.

"Digital literacy levels are not the same for everyone." (p14)

"Since not everyone's skills are the same, you really need a person-oriented plan to help people." (p15)

"Some people need more help than others, especially in the beginning." (p16)

5. Discussion

The goal of this research is to answer the following research question: How is Digital Transformation enabling digital leadership capabilities to enhance employee digital literacy? The findings of this thesis respond to this research question by addressing the existing research gaps and laying a foundation for future academic research. In this chapter the theoretical and practical implications are discussed of the relationship between these variables and their influencing factors.

5.1 Theoretical implications

According to this research, there are ten factors that influence organizational readiness for DT. These factors influence the organization, as well as leadership of managers that lead the organization through this transformation. Besides that, the findings revealed that these factors influence digital leadership capabilities as leaders are required to quickly adapt to guide the organization successfully through an ever changing and quickly developing environment. Digital leadership capabilities are identified as eight distinct factors, depending on the organizational level. These eight factors positively influence employee digital literacy. Another four aspects beside the original framework were identified that positively influence employee digital literacy. Lastly, where the original framework made it seem as though the relationship between these variables was linear, the findings show that it is circular, as a lack of employee digital literacy is seen as a barrier to a successful DT. By developing this new model, this thesis makes important theoretical contributions to the already existing literature.

5.1.1 Organizational readiness for Digital Transformation

The ten factors that influence organizational readiness for DT makes a theoretical contribution, as it elaborates on the Bonnet et al. (2015) framework to turn organizations into digital organizations. Understanding the factors for organizational readiness for DT helps organizations with identifying if they have the right resources to start this process (Michelotto & Joia, 2024). The original framework for this thesis showed that there were four dimensions to transform an organization into a digital organization: abilities of a digital-first mindset, digitised practices and operation, empowered talent, and data access and collaboration tools (Bonnet et al., 2015). Where many scholars focused on the resources needed for DT, identifying potential individual and organizational barriers to DT helps presenting a more comprehensive framework (Uzule & Verina, 2023). As this research has identified potential barriers, it can thus be concluded that it makes a significant theoretical contribution.

Bonnet et al.'s (2015) framework was a good starting point for this research since these factors were also found during the gathering of data. The findings show that creating a digital first mindset is seen as one of the most important parts of organizational readiness to the DT. It helps understanding the need for change, as waiting lists and the shortening labour market. Without a digital first mindset in an organization, DT can be seen as complex and threatening to employees, leading to failed initiatives (Demirel, 2024). The other factors from Bonnet et al.'s (2015) were also outcomes of this research. Digitised practices and operations lead to a decrease in workload of practitioners making more time available for patients. Besides that, findings show that creating autonomy for employees also has a positive effect on DT, as it empowers them. Lastly making sure that your technologies are aligned and can be used cross-platform ensure a successful DT as it takes almost no resources for practitioners to use it. While this framework captures the need for organizations to create urgency of DT on an individual to ensure a successful DT, it fails to identify barriers to DT.

The findings from this research show that difficult technology and a lack of employee digital literacy can be seen barriers to DT. Intuitive technology is of importance to the adoption of DT, as it enables employee digital literacy by being easy to use. Difficult technology was seen as a barrier since it makes employees feel frustrated and transformation efforts stalls. The technology acceptance model (TAM) of Cavalcanti et al. (2022) shows that there are two critical predictors of DT adoption, perceived usefulness and perceived ease of use, ensuring that difficult technology is a significant and thus relevant addition to the Bonnet et al.'s framework. Related to difficult technology as a barrier, is the lack of employee digital literacy. A lack of employee digital literacy leads to the stalling of the adoption of DT and resistance to change. Even though DT is something that is done on an organizational level, organizations need to make sure that a sense of urgency is created on an individual level. This can be explained by the fact that an organizational change can be seen as a shared psychological state, where commitment to change and the belief in collective capability are essential (Weiner, 2009).

Organizational readiness for DT has a significant influence on the development and execution of digital leadership capabilities. The factors not only highlight the conditions necessary for a successful transformation but also guide leaders in setting priorities and allocating resources. It helps leaders understand where organizational gaps exists and what capabilities need to be strengthened, such as aligning technologies with workflows or creating a clear and motivating vision for change. Furthermore, barriers such as difficult technology and a lack of employee digital literacy demands leaders to adopt a more adaptive, inclusive and supportive leadership style. Leaders must reduce resistance and build urgency on an individual level, aligning with Weiner's (2009)

concept of organizational change as a shared psychological state. Understanding organizational readiness for DT helps leaders become strategic visionaries and active enablers of cultural and behavioural change, ensure a sustainable DT.

5.1.2 Digital leadership capabilities

Leadership was found as an important aspect of a successful DT as lots of parts of the organization need to be changed because of DT (Fitzgerald et al., 2013). According to Fitzgerald et al. (2013), DT forces organizations to develop new digital capabilities in areas such as operations, customer needs, innovation but also in leadership. Leaders must acknowledge these new capabilities to understand that DT is an integral part of the business activities and thus that it is important to the firm's strategy (Sia et al., 2016). Leadership is no longer confined to directing from the top as it must evolve into cultural, behavioural and technological adaptation across all organizational levels. To understand the influence DT has on digital leadership capabilities, it is important to make a distinction between the leadership capabilities on the different organizational levels; strategic, tactical, and operational, as each level has unique responsibilities, challenges, and levels of influence.

The findings show that on strategic level leaders must create a clear vision and leading with a clear direction are of great importance. This study shows that leaders and practitioners emphasized the need for a shared and clear vision that not only outlines the destination of the DT but also offers a framework for autonomy. It is important for leaders on this level to articulate a comprehensive and forward-thinking vision that captures DT at the heart of the organization (Warner & Wager, 2018). Besides that, this research clearly shows that in the absence of a clear vision creates uncertainty by employees, again establishing the need for a clear vision. Additionally, leading with a clear direction emerged as an essential strategic leadership capability. While the research acknowledged the importance of autonomy, many stressed the need the need for decisive leadership at the top. Leaders on this level are expected to ensure that the organization stays on course as well as provide boundaries for action. This supports the idea that effective digital leaders must combine transformational leadership, inspiring and empowering, with directive leadership, setting boundaries and creating momentum (Kane et al., 2019).

Where strategic leaders are required to lead with a clear direction and vision, leaders on a tactical level play a crucial role in translating this vision into action that support the DT. Leaders on this organizational level ensure that the digital goals are operationalized through structured planning, alignment of systems and continuous performance monitoring. The findings of this research show that IS alignment maturity is seen as a key capability, as leaders are responsible for ensuring that technologies align with the already existing workflows and support the needs of employees on the operational level.

Such alignment significantly enhances the success of DT initiatives by improving usability, adoption, and overall efficiency (Hoblos et al., 2023). Additionally, effective project management is seen as essential, including practices such as piloting new systems, gathering feedback and incorporating improvements. These approaches create agile learning loops, allowing organizations to redefine digital initiatives based on real-time input (Chukwunweike & Aro, 2024). Furthermore, performance monitoring ensure that DT efforts stay on course with the organizations vision, with tactical leaders adapting plans as needed and maintaining transparency to foster a trusted environment. These findings reflect that tactical leadership is more than implementation but also about actively shaping and sustaining transformation by aligning vision and practice.

The findings from this research show that managers on an operational level need to have person-oriented plans for DT, as well as focussing on early adaptors in their team. Person-oriented planning enables leaders from the operational level to tailor DT efforts to individual practitioners and clients, ensuring that technology integration supports rather than disrupts personalized care. Besides that, levering early adaptors identifies empowering individuals who are naturally motivated to toward digital solutions. These early adaptors often model new behaviours and provide the organization with peer driven credibility for change. Early adaptors play a critical role in DT as they enable a shift in organizational culture and technology adoption (Ahituv & Hasgall, 2019).

These digital leadership capabilities across the different organizational levels directly influence the development of employee digital literacy, a crucial enabler for a successful DT. Leadership sets the conditions for employee digital literacy by shaping organizational learning culture and providing relevant tools and support systems for the DT. Research has shown that digital leadership positively influences employee digital literacy. In this case, employee digital literacy becomes a mediator between digital leadership and a successful DT (Arnaud et al., 2025).

5.1.3. Employee Digital Literacy

This study sets out to explore how DT enables digital leadership capabilities to enhance employee digital literacy. The findings confirm the critical role of digital leadership in fostering employee digital literacy; they also reveal that leadership alone does not fully account for the development of employee digital literacy. Several additional factors emerged from the data, operating both at the individual and organizational levels. These factors shape the conditions under which employees engage with digital tools, develop competencies, and adopt recent technologies. In the following sections, these insights are examined in relation to existing literature.

The findings show two enablers at the individual level that support employee digital literacy, Digi coaches and skills to locate digital information. The integration of Digi

coaches, colleagues in teams that offer personal guidance for digital literacy, emerged as a critical mechanism for enhancing employee digital literacy on an individual level. This aligns with the social learning theory that emphasizes that personal monitoring significantly improves acquiring new skills. Besides that, Digi coaches foster a direct learning experience which also accelerates the acquisition of new skills (Bandura & Walters, 1977). By bringing support directly to practitioner's work context, Digi coaches contribute to a self-reinforcing cycle of employee digital literacy. Beside the Digi coaches, the ability to locate digital information is foundational to individual digital literacy. While many new employees are expected to have these skills, this research shows that such assumptions are often misplaced. Employees vary in their digital literacy, which can hinder their engagement with transformation initiatives. Van Laar et al. (2019) argue that digital literacy is more critical than mere technology familiarity as they form the underlying factor of meaningful digital engagement of employees.

This study shows that employee digital literacy plays a significant role in driving DT. On an organizational level technology and clear training are seen as critical enablers for employee digital literacy. Participants emphasized that when employees perceive themselves capable to use technologies, their openness to change increases, positively influencing the DT. This aligns with the literature of Van Laar et al. (2019), who state that the belief in one's ability to use technology is a strong enabler of employee digital literacy and thus DT. Because of this organizations should make sure that technologies can be used intuitively. Besides that, the role of clear training structures, where they emphasize the need to tailor to the diverse learning needs, proves to be crucial in addressing employee digital literacy.

The findings of this research reveal a circular relationship between DT, Digital leadership capabilities and Employee digital literacy. Rather than following a linear path, these variables interact in a mutually reinforcing cycle. DT serves as an enabler for the development of digital leadership capabilities by influencing the organization on the strategic, tactical and operational level. Additionally, digital leadership capabilities play a crucial role in shaping employee digital literacy by providing vision, support structures, and tailored training. As employees become more digital literate, their ability adopt and integrate DT initiatives improves, thereby accelerating the success of the DT. In Figure 2, the theoretical model is explained.

5.1.4. Theoretical model

The findings of this research reveal a circular relationship between DT, Digital leadership capabilities and Employee digital literacy. DT serves as an enabler for the development of digital leadership capabilities by influencing the organization on the strategic, tactical and operational level. Additionally, digital leadership capabilities play a crucial role in shaping employee digital literacy by providing vision, support structures, and tailored

training. As employees become more digital literate, their ability adopt and integrate DT initiatives improves, accelerating the success of the DT. In Figure 2, the theoretical model is explained.

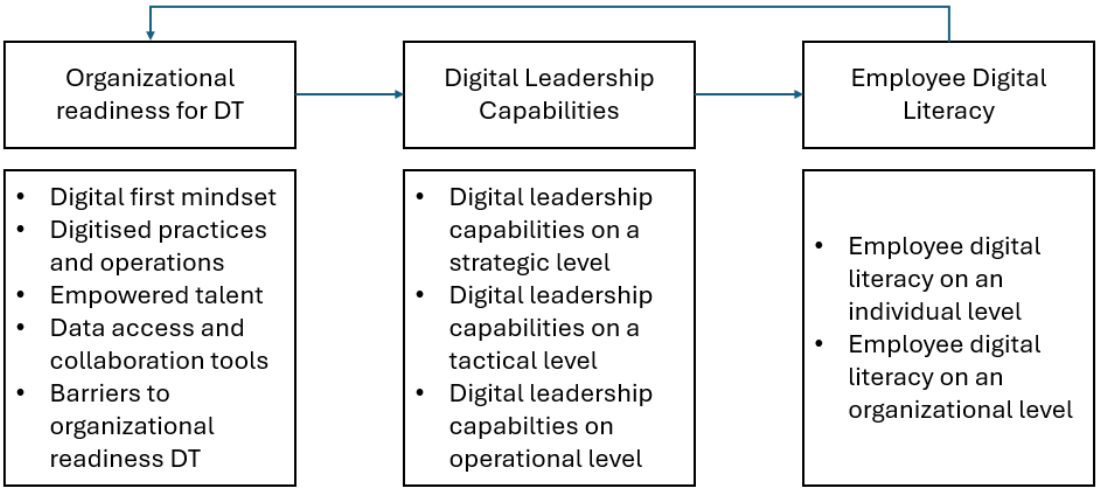

Figure 2: Theoretical model of DT, Digital leadership capabilities and employee digital literacy.

5.2 Practical implication

Besides the theoretical implications, the results also show practical implications. The findings of this research can be used by healthcare organizations who are at the start of their DT trying to implement this in a sustainable way. The findings emphasize that a successful DT requires a multi-level approach, combining digital leadership capabilities and employee digital literacy. This research shows that leadership capabilities of various levels must be aligned with the overall vision of the DT. This vision needs to be established by the strategical level of an organization, meaning that this research acknowledged that leading an organization through DT needs to be done by a top-down approach. However, the importance of hearing what your practitioners and nurses have to say regarding the DT was also acknowledged. In the end it can be concluded that both a top-down and a bottom-up approach are of importance to a successful and sustainable DT. This aligns with Kohnke's (2016) article who argues that a successful DT requires a top-down leadership approach that provides vision and strategy while a bottom-up approach engage acceptance, adaptability ad employee involvement. Organizations can use this findings to understand aspects needed to ensure organizational readiness for DT, and on impact digital leadership capabilities that enable employee digital literacy. Furthermore, the findings show possible barriers to DT, ensuring organizations the importance of these barriers and how to avoid them.

6. Limitations and future research

Even though this study provides rich and actionable insights into DT in healthcare, it is important to recognize its limitations. First, this research is based on a single case study within a mental healthcare organization in Twente. While this allows for in-depth analysis of the research, it limits the generalizability of the findings to other healthcare contexts. Especially those outside of the Netherlands and mental healthcare. Even though case-studies have been identified as especially useful in practise-oriented fields such as management (Starman, 2013), future research should include other comparative studies from other parts of the healthcare industry to assess the credibility of these insights.

Secondly, only 17 interviews were conducted in this organization, where 1300 people work. The interviews were equally spread over the different organizational level to ensure that the data was not skewed. However qualitative interviews lack measurement for concrete outcomes on employee digital literacy levels. To assess how employee digital literacy improves with for example more training options or other leadership, a second case study should be done in this organization to assess if this variable is a constant variable or that it can increase.

Thirdly, with qualitative research, there is potential for researcher bias. Researcher bias occurs when a researcher tends to think a particular way. These pre-judgement might fail to address the research question (Buetow & Zawaly, 2021). The Gioia method offers a structured approach to generalize themes in the research (Magnani & Gioia, 2022), the categorizing of data involves interpretation of the researcher. Including quantitative methods with these qualitative interviews would strengthen the evidence-based arguments. This quantitative research should need to be done in the same organization to make sure that the two methods can be compared and complement each other.

7. Conclusion

This study explored how DT enables digital leadership capabilities to enhance employee digital literacy in healthcare. The findings have demonstrated that DT is more than implementing recent technologies into already existing business operations, but that it requires a multi-level approach. It requires leaders to adopt strategic, tactical, and operational roles that ensure vision, guide change, and support learning. Leaders who create a shared vision, engage early adopters, and structure trainings around individual needs, contribute significantly to digital readiness across teams. Employee digital literacy was found to be shaped by intuitive technology, team member support systems such as Digi coaches and leadership. Ultimately, DT empowers leaders to become enablers of learning and adaptability in their teams. This reinforces the idea that digital progress depends on people, not just systems. Guiding your organization thoughtfully through the DT, it strengthens both leadership and employee digital literacy, creating a resilient and future-ready workforce.

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Appendix A: Interview guide

Before the interview, the interviewer introduces itself and the purpose of the research and consent is asked.

1. Can you tell me a bit about yourself and the role you have in the company?
2. How long have you been working in mental healthcare?
3. Are you familiar with the concept of DT?

Digital transformation in healthcare

4. How would you describe the main drivers and challenges for DT in healthcare?
5. How would you describe the digital maturity of your organization
6. How does DT influence leadership in your organization?

Digital leadership capabilities

Strategical level leaders

7. Which digital leadership capabilities are needed to set DT vision and strategy for you organization and how is this different from other non-DT related projects?
8. Which barriers were presented when DT was announced to the company and how are you going to solve these barriers?

Tactical level leaders

9. Which digital leadership capabilities are needed to translate DT visions into operational plans or projects and how are these different than for other projects?
10. How does your leadership drive your team towards a DT and what are the barriers you encountered so far?

Operational level leaders

11. What is your role in day-to-day management of DT and how has this impacted your team?
12. What are the barriers you encountered so far regarding the DT and which capabilities are needed to tackle these barriers on an operational level?

Employee Digital Literacy

13. How would you describe the digital literacy level of employees in your team/department?
14. What type of training opportunities has your team lead offered to improve digital literacy?
15. Have you noticed any barriers to the DT because of the lack of digital literacy in your team/department?
16. How did you/ how has your leader responded to these barriers?

17. How does digital leadership capabilities influence digital literacy in your opinion?
18. What recommendations would you give to future leaders aiming to improve employee digital literacy through DT?

Reflection

19. Is there anything else you would like to add to the interview?

The interviewee is thanked for their time and insight on the matter.

Appendix B: Information sheet participants

Dear,

My name is Emma Bijker, and I am a master's student in Business Administration at the University of Twente. For my thesis, I am researching how digital transformation influences leadership and how this, in turn, affects the digital literacy of employees. I am conducting this study under the supervision of Karlijn de Groot.

Digital technologies have the potential to improve healthcare processes, reduce workload, and enhance the quality of care. However, in practice, implementing and utilizing digital innovations often proves challenging. Leadership plays a crucial role in this: How do you provide direction, build support, and guide employees in a digitalizing work environment? And what effect does this have on employees' digital skills in the process?

To answer these questions, I am conducting several in-depth interviews with leaders and employees from the same teams at Mediant, across different organizational levels. Your insights and practical experience are essential to gain a comprehensive understanding of this topic. Therefore, your expertise and perspective are highly valuable to this research.

The interview will take approximately 45 minutes and will be scheduled at a time that suits you. It will be recorded for analysis purposes, and all data will be processed confidentially and anonymously. The results aim to provide practical guidance for future leadership in digital transformation projects within healthcare.

Although participation requires a time investment, your contribution will provide valuable insights for Mediant and will greatly support my academic development.

Kind regards,

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