Comparative Perspectives to Inform Digital Leadership Qualities for SMEs in Developing Countries

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Abstract

As technological advancements, including emerging technologies like artificial intelligence, reshape business landscapes, SMEs face unique challenges in adapting to volatility, uncertainty, complexity, and ambiguity (VUCA). Digital transformation (DT) has become a critical strategy for sustaining competitiveness, particularly for SMEs, which play a significant role in driving economic growth and innovation. While research has focused on digital-native and large organisations across both developed and developing regions, significant opportunities remain to further explore the leadership attributes essential for DT within SMEs This study aims to identify key leadership qualities necessary for navigating DT complexities through comparative analysis across different contexts. Using an inductive qualitative approach that combines an extensive literature review with survey-based empirical insights, this paper proposes a digital leadership framework that contributes to the existing knowledge base. In addition, this framework aligns with the unique needs of SMEs in developing contexts, supporting their resilience, adaptability, and potential for growth.

Keywords: Digital Leadership, Digital Transformation, Leadership Qualities, Small and Medium-sized Enterprises, Developing Countries, Emerging Technologies

1.0 Introduction

Technological advancements and their implications have been fundamentally reshaping businesses (Benitez et al., 2022). Organisations are increasingly required to enhance their creativity, flexibility, and resilience to address the growing volatility, uncertainty, complexity, and ambiguity (VUCA) in the business landscape (Santarsiero et al., 2019; Schiuma, 2012). To thrive, they must adapt their strategies and behaviours, transforming challenges into opportunities for growth (Schiuma et al., 2022).

In this context, digital transformation (DT) has emerged as a crucial factor for sustaining organisational competitiveness, particularly for small and medium-sized

enterprises (SMEs) (Fachrunnisa et al., 2020; Kokot et al., 2023; Li et al., 2016; Scuotto et al., 2021). DT is defined as the strategic adoption of digital technologies, such as mobile, big data, cloud computing, Internet of Things (IoT), and emerging technologies like artificial intelligence (AI), to drive business model innovation and create new revenue-generating and value-creating opportunities (Malodia et al., 2023; Parida et al., 2019; Verhoef et al., 2021). DT involves profound changes across an organisation's operations, products, processes, and business models, necessitating a shift in organisational culture, leadership, mindsets, attitudes towards risk, and adaptability to continuous change (Kane et al., 2015; Kraus et al., 2022). AI, in particular, enhances leadership effectiveness by providing data-driven insights, optimising decision-making, and automating routine tasks (Al-Bayed et al., 2024).

SMEs represent a significant pillar of most economies, accounting for approximately 90% of businesses and over half of global employment (Faye & Goldbulm, 2022). Their contributions extend to socio-economic goals such as fostering economic growth, job creation, and innovation, particularly in developing countries. Given their importance, governments and stakeholders place substantial emphasis on supporting SME growth.

For SMEs, DT offers significant opportunities to develop high-value products and services, enhance existing offerings, and expand market reach while improving operational efficiency (Li et al., 2016). However, prior studies indicate that SMEs in developing countries have been slow to adopt DT, which hinders their survival and growth (Hai et al., 2021; Malodia et al., 2023; OECD, 2021). The success of DT is frequently attributed to strong leadership, especially within SMEs (AlNuaimi et al., 2022; Fachrunnisa et al., 2020; Li et al., 2016; Promsri, 2019). Leaders play a pivotal role in driving DT initiatives by recognising digitalisation as essential to business activities and cultivating a digital mindset that aligns IT with business strategy (Sia et al., 2016). As DT introduces substantial organisational change, leaders must develop new capabilities that enable adaptability, innovation, and resilience. However, leadership attributes may vary based on organisational size, economic environment, and leadership levels. Understanding how leadership qualities differ across these contexts is crucial to informing a digital leadership framework tailored to SMEs in developing countries.

Despite extensive research on DT in developing countries, further studies can still be undertaken with a particular focus on leadership within the SME context, given its significance in fostering economic growth. Previous research has explored the

conceptualisation and analysis of digital leadership, as well as the role of digital leaders in the digital economy (Avolio et al., 2000; El Sawy et al., 2016; Li et al., 2016), often concentrating on digital-native enterprises and large organisations in developed economies (Belitski & Liversage, 2019; Malodia et al., 2023). However, as highlighted by Erhan et al. (2022), there remains an opportunity to explore the specific leadership qualities that contribute to the development of a digital leadership framework. Therefore, this paper seeks to address the research question: *What digital leadership qualities are essential for SME leaders in developing countries?*

This paper is structured as follows: Section 2 reviews the literature on leadership in the digital era, while Section 3 outlines the research methodology. Section 4 presents the results, including comparative insights across different contexts, followed by a discussion in Section 5 on how these findings inform the digital leadership framework. Finally, Section 6 concludes with research implications, limitations, and recommendations for future research.

2.0 Leadership in the Digital Era

2.1 Digital Leadership

The concept of digital leadership has emerged, blending conventional leadership with digital competencies (De Waal et al., 2016; Kane et al., 2019; Schiuma et al., 2022), while incorporating essential qualities such as agility, creativity, and stakeholder collaboration to address the VUCA business landscape (Kazim, 2019). Digital leaders manage transformation by employing diverse leadership styles, including transformational, servant, and transactional (Sow & Aborbie, 2018). They are instrumental in developing digital strategies aligned with organisational goals (Can, 2021), promoting cultural change, securing stakeholder buy-in, and fostering enthusiasm (Benitez et al., 2022; Hinings et al., 2018). Ko et al. (2022) suggest that digital leaders' commitment fosters a cohesive environment supportive of transformation, while their focus on talent development enhances employees' digital knowledge (Vial, 2019). Digital leaders also act as change facilitators, addressing resistance and managing transformation-related tensions, which helps organisations navigate turbulent environments (Benitez et al., 2022; Leso et al., 2023). Essential attributes for digital leaders include digital vision, the ability to envision and

communicate a digital future, and digital knowledge, or an understanding of technology's business impact (Cortellazzo et al., 2019; Imran et al., 2020).

Other key traits are agility, empowerment, and the capacity to "fail fast," learning quickly from setbacks to redirect efforts productively. Empowerment involves creating a supportive environment for employee growth, and managing diverse teams is vital as leaders must integrate expertise across business and IT domains. Klus and Müller (2021) identify core digital leadership traits such as predicting the future, motivating others, and digital proficiency, while agility enables leaders to respond rapidly to new challenges (Erhan et al., 2022; Fachrunnisa et al., 2020). Thus, digital leadership blends traditional qualities with new digital capabilities, positioning leaders to effectively guide organisations through transformation. This approach is particularly suited to the current landscape, where anticipating and adapting to technological advancements is crucial for success.

2.2 Transformational Leadership

Transformational leadership is widely examined in the context of digital transformation (AlNuaimi et al., 2022; Karippur & Balaramachandran, 2022; Schiuma et al., 2022). This leadership style enhances followers' performance and personal growth by encouraging them to exceed expectations through four key dimensions: charisma, inspiration, intellectual stimulation, and individualised consideration (Northouse, 2021). Charisma establishes leaders as role models, while inspiration secures followers' commitment through clear communication of the organisational vision. Intellectual stimulation promotes innovative thinking by encouraging followers to approach problems from multiple perspectives. Individualised consideration involves empowering followers with opportunities for growth and socio-emotional support.

Transformational leaders foster a culture of innovation and open dialogue by reshaping followers' beliefs, attitudes, and behaviours (Karippur & Balaramachandran, 2022; Northouse, 2021). This approach cultivates an experimental mindset and collaborative environment, both essential for digital transformation.

In the context of digital transformation, Sow and Aborbie (2018) find that transformational leadership drives more favourable outcomes than other styles. Supporting studies indicate that this leadership approach strengthens an organisation's innovation capabilities (Ardi et al., 2020; Lei et al., 2020), fosters creativity (AlNuaimi et al., 2022), promotes e-business adoption (Alos-Simo et al., 2017), and enhances

agility (Lin, 2011; Veiseh & Eghbali, 2014; Wanasida et al., 2020). In light of these findings, his study argues that transformational leadership has a positive impact on digital transformation.

2.3 Servant Leadership

While transformational leadership focuses on organisational goals, servant leadership prioritises followers' well-being, viewing it as an end in itself. Servant leadership is a moral approach that provides both tangible and emotional support, creating an environment where employees can reach their full potential, thereby helping the organisation achieve its goals (Jin et al., 2022; Liden et al., 2014). Servant leaders trust their followers to act in the organisation's best interests (Van Dierendonck, 2011), prioritising collective needs, showing empathy, and supporting personal and professional growth (Northouse, 2021). Van Dierendonck (2011) identified ten attributes of servant leadership, including listening, empathy, healing, awareness, and stewardship. Mittal and Dorfman (2012) added humility, authenticity, and interpersonal acceptance. Collins (2009) suggests that humility is a critical factor for long-term organisational success.

Research indicates that servant leadership positively impacts employees' engagement, with commitment and empowerment as mediating factors (Jin et al., 2022; Larjovuori et al., 2016). In the context of digital transformation, servant leadership enhances individual creativity and innovation by fostering a service-oriented culture, psychological empowerment, and job autonomy (Jin et al., 2022; Liden et al., 2014). Additionally, servant leadership reduces stress and enhances well-being during demanding processes like digital transformation (Jin et al., 2022). Thus, this study argues that organisations demonstrating higher levels of servant leadership are better positioned for successful digital transformation.

2.4 Inclusive Leadership

Literature indicates that inclusive leadership has become a popular approach among digital leaders to address the challenges of a diverse organisational landscape, a common scenario in digital transformation (Bourke, 2016). As Northouse (2021) argues, to remain competitive, firms must proactively foster inclusive environments that value and embrace differences. Such environments allow individuals to contribute

based on their unique abilities, fostering motivation and leading to optimal performance (Cox & Blake, 1991).

Inclusive leadership is defined as the behaviour of leaders that promotes both belonging and individuality, encouraging active employee participation in group processes (Simmons & Yawson, 2022). This leadership style leverages diverse knowledge, perspectives, and skills to promote organisational learning and growth (Northouse, 2021). Inclusive leaders value diverse viewpoints, appreciate contributions, and are accessible and available to their teams (Ye et al., 2019).

Research consistently highlights the benefits of inclusive leadership. Inclusive environments allow full utilisation of talent, align focus on shared goals, and lead to stronger group performance (Dixon-Fyle et al., 2020). Northouse (2021) notes that inclusion enhances innovation, enabling individuals to share ideas freely. In digital transformation contexts, diverse teams have demonstrated success in creative problem-solving (Tidd & Bessant, 2020), improved decision-making, and meeting the needs of varied stakeholders (Mosher et al., 2017; Ye et al., 2019). A study from Deloitte (2013) similarly found that employees who perceive their organisations as inclusive are more likely to develop innovative solutions, meet customer needs, and collaborate effectively towards common goals.

3.0 Research Methodology

This study employed an inductive qualitative approach, as outlined by Saunders et al. (2019), to explore the emerging phenomenon of leadership in digital transformation and was conducted in two stages. First, an extensive literature review was undertaken to theoretically examine the qualities and attributes associated with digital leadership, inspired by the four key leadership styles outlined in Section 2 (see Table 1). This review served as the foundation for designing the survey used to collect primary data in the second stage.

The survey consisted of a mix of open- and closed-ended questions. Measurement employed a five-point Likert scale, ranging from “strongly disagree” (1) to “strongly agree” (5). A total of 32 questions comprised the questionnaire, with 30 being closed-ended and two open-ended, each accompanied by definitions or examples to ensure clarity and consistency in participants' understanding. The survey was developed as a self-administered, internet-mediated questionnaire, providing participants the

flexibility to respond at their convenience and enhancing control over data collection quality. Departmental research ethics approval was obtained prior to data collection.

Qualities	Attributes	Sources
Agility	Agile culture	(Abbu et al., 2022; Belitski & Liversage, 2019; Eller et al., 2020; Erhan et al., 2022; Kane et al., 2019; Karippur & Balaramachandran, 2022; Larjovuori et al., 2018; Li et al., 2016; Wrede et al., 2020)
	Agile strategy	
	Proactiveness	
	Adaptive and flexible	
Digital literacy	Digital skills	(Abbu et al., 2022; Eller et al., 2020; González-Varona et al., 2020; Kane et al., 2019; Kokot et al., 2023; Malodia et al., 2023; Schiuma et al., 2022; Wrede et al., 2020)
	Digital knowledge	
	Digital attitude	
Digital visionary	Clear digital vision and strategy	(Abbu et al., 2022; Eller et al., 2020; Kane et al., 2019; Karippur & Balaramachandran, 2022; Larjovuori et al., 2018; Li et al., 2016; Schiuma et al., 2022; Weber et al., 2022; Wrede et al., 2020)
	Digitalisation as a strategic imperative	
	Data-driven	
Digital entrepreneurship	Multi competent	(Abbu et al., 2022; G. Kane et al., 2019; Karippur & Balaramachandran, 2022; Larjovuori et al., 2018; Li et al., 2016)
	Creative and disruptive	
	Growth mindset	
	Risks taking	
Foster innovation	Cultivate innovative culture	(Karippur & Balaramachandran, 2022; Larjovuori et al., 2018; Weber et al., 2022)
	Encourage innovative thinking	
	Provide support and resources	
	Appreciate achievements	
Empowerment	Encourage to do more	(Kane et al., 2019; Larjovuori et al., 2018; Schiuma et al., 2022; Weber et al., 2022; Wrede et al., 2020)
	Coaching	
	Empathy	
Inspire and motivate	Effective communication	(Larjovuori et al., 2018; Schiuma et al., 2022; Wrede et al., 2020)
	Enthusiast	
	Role modelling	
Collaboration and partnership	Strategic partnership	(Eller et al., 2020; Karippur & Balaramachandran, 2022; Larjovuori et al., 2018; Li et al., 2016; Schiuma et al., 2022; Wrede et al., 2020)
	Cultivate sharing culture	
Foster inclusivity	Value diversity	(Abbu et al., 2022; Larjovuori et al., 2018; Schiuma et al., 2022; Weber et al., 2022; Wrede et al., 2020)
	Promote participation	
Other intrapersonal qualities	Trustworthy	(Abbu et al., 2022)
	Commitment	
	Humility	

Table 1. Digital Leadership Qualities and Attributes

A pilot survey was conducted with five individuals to confirm the survey's effectiveness and the reliability of the data, following Hardy and Ford (2014). Two rounds of

adjustments were made until the researcher was confident that respondents faced no difficulties in understanding or responding to the questions. For sample recruitment, a combined approach of snowball sampling and the maximum variation technique from Palinkas et al. (2015) was utilised. This non-probability sampling method aimed to reach rare or hard-to-find populations.

The study's sample included individuals from companies of various sizes, industries, and countries, with varying levels of experience in digital-related projects. This diverse inclusion aimed to provide a comprehensive, multifaceted, and unbiased perspective on leadership. First, incorporating respondents from different organisational backgrounds and experience levels allowed for a broader understanding of leadership dynamics. Employees at different levels (e.g., executives versus staff) were expected to offer distinct perspectives on the traits and qualities they consider essential in a leader.

Second, involving firms of varying sizes facilitated comparative analysis, enabling the identification of best leadership practices or attributes from larger, well-resourced organisations that could be adapted to benefit SMEs. As noted by Hyvönen (2018), examining a phenomenon from multiple perspectives enhances research robustness and validity.

For data analysis, all survey attributes were ranked by average scores to identify those with higher consensus and those considered less significant by respondents. Responses were also compared across different contexts, including job level and industry, to identify any supporting or conflicting perspectives. This comparative analysis ensures the applicability of digital leadership qualities and attributes for SMEs across diverse industries. Results were tabulated, and visual representations generated in Microsoft Excel supported the analysis. Content analysis, as outlined by Weber (1990), was employed to examine open-ended responses, which later informed the development of the digital leadership framework.

4.0 Results

4.1 Demographics

A total of 102 survey responses were collected and analysed. The demographic characteristics covered several key dimensions, including firm size, country classification, job level, project experience, and industry sectors, as shown in Figure 1.

4.2 Digital Leadership Qualities

The survey results indicate a high level of agreement across all digital leadership qualities, with each average score exceeding 4 on a 5-point scale (see Figure 2). The top three leadership qualities considered essential by respondents are *other intrapersonal*, *foster inclusivity*, and *foster innovation*. These qualities received high average scores of approximately 4.3, indicating strong agreement from over 50% of respondents, with minimal disagreement. In contrast, attributes related to digital skills, such as *digital literacy*, *digital visionary*, and *digital entrepreneurship*, received relatively lower emphasis.

Demographic variable	Category	Frequency [N=102]	Percentage
Size of firm	**Small** *(10 - 49 employees)*	27	26%
	Medium *(50 - 249 employees)*	40	39%
	Large *(>250 employees)*	35	34%
Country classification	**Developed** *(Australia, Chile, Germany, Singapore, Switzerland, Taiwan, United Kingdom, United States of America)*	25	25%
	Emerging *(Brazil, China, India, Indonesia, Malaysia, Philippines, Vietnam)*	77	75%
Job level	**Staff-level** *(intern, entry-level staff, senior staff/supervisor)*	43	42%
	Manager-level *(inc. project manager)*	25	25%
	Executives *(C-level, owner/entrepreneur/partner)*	34	33%
Project experience (count)	None	10	10%
	1 to 3	22	22%
	4 to 10	20	20%
	More than 10	50	49%
Sectors	**Technology/IT, Telecommunication**	15	15%
	Engineering *(manufacturing, engineering/construction)*	31	30%
	Service industries *(financial services, professional services, education)*	24	24%
	Specific industries *(healthcare, agriculture, hospitality/tourism, transportation/logistics, environmental services, non-profit organisations)*	13	13%
	Consumer industries *(automotive, retail, food and beverage)*	19	19%

Figure 1. Demographics of Survey Respondents

Although these qualities still scored relatively high (around 4.1), fewer than half of the respondents expressed strong agreement. The results also show a notable proportion of respondents who were neutral, suggesting that personality and interpersonal traits of leaders may hold greater importance than specific digital competencies. Each attribute is ranked in descending order by average score in Figure 3.

Rank	Qualities	Average score	Composition				
			Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
1	Other intrapersonal	4,4	0%	1%	7%	34%	59%
2	Foster inclusivity	4,3	0%	0%	6%	42%	51%
3	Foster innovation	4,3	0%	0%	9%	37%	54%
4	Agility	4,3	1%	0%	7%	38%	54%
5	Collaboration and partnership	4,3	0%	0%	8%	41%	51%
6	Inspire and motivate	4,2	0%	1%	8%	37%	54%
7	Empowerment	4,2	0%	1%	10%	40%	49%
8	Digital literacy	4,2	0%	1%	10%	41%	48%
9	Digital visionary	4,1	1%	0%	13%	42%	45%
10	Digital entrepreneurship	4,1	0%	1%	14%	37%	48%

Figure 2. Overall Rating of Digital Leadership Qualities

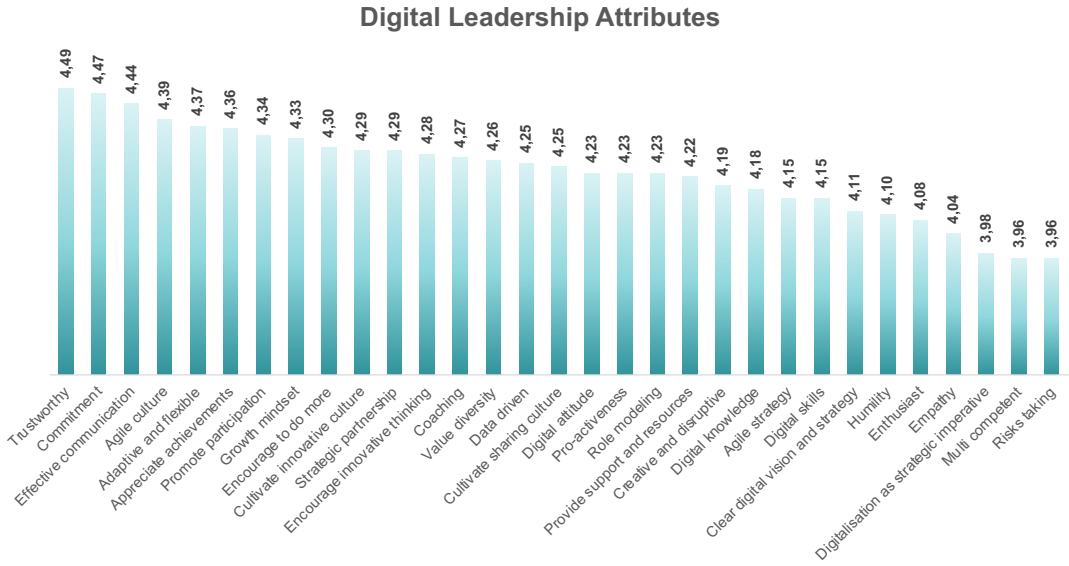

Figure 3. Ranking of Digital Leadership Attributes

Other intrapersonal is perceived as the most important quality of digital leadership, with an average score of 4.4. A significant majority (59%) strongly agreed on the importance of this quality, while only about 1% disagreed. Among the attributes contributing to this quality, *trustworthy* was particularly valued, with 62% of respondents strongly agreeing and 28% agreeing. It ranked first out of 31 attributes overall, underscoring the importance of leaders who establish and maintain trust with their teams. Ranked as the second most important attribute, *commitment* scored an average of 4.5, with 56% of respondents strongly agreeing on its significance. In contrast, *humility* emerged as the least important attribute in this group, ranking 6th from the bottom overall, as shown in Figure 3.

4.3 Comparisons of Leadership Qualities Across Different Contexts

4.3.1 Comparison Between SMEs and Big Firms

The ranking of leadership qualities as perceived by SMEs and large firms is presented in Figure 4, with percentages representing the distribution of responses. Overall, the results reveal a distinct pattern in the qualities valued by each group. Both groups emphasise the importance of leaders with a positive personality (i.e., *other intrapersonal* qualities). For SMEs, *agility* is among the most valued leadership qualities, while respondents from big firms view *innovation* as more essential. Additionally, the qualities of *inspiring and motivating* emerge as key priorities for SME leaders. The concept of diversity (*fostering inclusivity)* is highly valued by respondents in large firms. However, this quality is regarded as less important by SME leaders. Furthermore, the quality of *empowerment* is rated relatively low in importance for SMEs, as respondents expressed doubts about its relevance in supporting digital transformation.

Rank	SMEs (65%)	Big firms (35%)
1	Other intrapersonal	Foster inclusivity
2	Agility	Foster innovation
3	Inspire and motivate	Other intrapersonal
4	Foster inclusivity	Collaboration and partnership
5	Foster innovation	Empowerment
6	Digital literacy	Inspire and motivate
7	Collaboration and partnership	Agility
8	Empowerment	Digital visionary
9	Digital entrepreneurship	Digital entrepreneurship
10	Digital visionary	Digital literacy

Figure 4. Comparison of Leadership Qualities Between SMEs and Big Firms

4.3.2 Comparison between Developing and Developed Countries

Regarding countries, notable variations in perceptions of leadership qualities exist between developed and developing nations. One prominent difference is the importance of *inclusivity*, which is highly valued by respondents in developed countries (ranked 1st) but ranked lower in developing countries (ranked 5th), as shown in Figure 5. In developing countries, *other intrapersonal* qualities are seen as the most important for digital leaders, followed by *agility* and *collaboration and partnership*. In contrast,

respondents from developed countries place higher importance on *fostering innovation* and *empowerment*. Additionally, both groups share a less favourable perspective on digital-related attributes, such as *digital literacy, digital visionary,* and *digital entrepreneurship.*

Rank	Developing countries (75%)	Developed countries (25%)
1	Other intrapersonal	Foster inclusivity
2	Agility	Foster innovation
3	Collaboration and partnership	Empowerment
4	Foster innovation	Other intrapersonal
5	Foster inclusivity	Inspire and motivate
6	Inspire and motivate	Collaboration and partnership
7	Digital literacy	Agility
8	Empowerment	Digital literacy
9	Digital visionary	Digital entrepreneurship
10	Digital entrepreneurship	Digital visionary

Figure 5. Comparison of Leadership Qualities Between Developing and Developed Countries

4.3.3 Comparison Among Different Seniority Levels

The Executives category, comprising C-level leaders and entrepreneurs/owners/partners, represents 33% of survey respondents. As shown in Figure 6, *other intrapersonal*, *inspire and motivate*, and *collaboration and partnership* emerge as the top three qualities deemed important for digital leaders in SMEs. Although *other intrapersonal* ranks highest overall, its perceived importance varies across industries. Specifically, this quality is highly valued by leaders in the engineering, service, and consumer industries but less so in the Technology/IT & Communication and Specific Industries sectors (see Figure 7). Both *inspire and motivate* and *collaboration and partnership* are considered important across four industries, with the exception of the Engineering sector. This suggests that engineering leaders may prioritise individual expertise and technological proficiency over interpersonal qualities.

Rank	Executives (33%)	Manager-level (25%)	Staff-level (42%)
1	Other intrapersonal	Other intrapersonal	Foster inclusivity
2	Inspire and motivate	Agility	Agility
3	Collaboration and partnership	Collaboration and partnership	Digital literacy
4	Foster innovation	Foster innovation	Other intrapersonal
5	Foster inclusivity	Empowerment	Foster innovation
6	Agility	Foster inclusivity	Collaboration and partnership
7	Empowerment	Digital literacy	Inspire and motivate
8	Digital entrepreneurship	Digital visionary	Empowerment
9	Digital visionary	Inspire and motivate	Digital visionary
10	Digital literacy	Digital entrepreneurship	Digital entrepreneurship

Figure 6. Comparison of Leadership Qualities Among Different Seniority Levels

In the fast-paced Technology/IT & Telecommunication sector, the quality of *foster innovation* ranks as the most important. Additionally, the results reveal increased awareness of *foster inclusivity* among leaders, particularly in the Engineering and Service industries. A noteworthy observation is that executives across all sectors assign relatively lower importance to the quality of *empowerment* (see Figure 7).

Executives (33%)					
Rank	Technology/IT, Telecommunication (18%)	Engineering (18%)	Service industries (29%)	Specific industries (15%)	Consumer industries (21%)
1	Foster innovation	Other intrapersonal	Other intrapersonal	Collaboration and partnership	Inspire and motivate
2	Inspire and motivate	Foster inclusivity	Collaboration and partnership	Inspire and motivate	Agility
3	Agility	Digital visionary	Foster inclusivity	Agility	Other intrapersonal
4	Collaboration and partnership	Digital entrepreneurship	Inspire and motivate	Digital literacy	Collaboration and partnership
5	Digital literacy	Foster innovation	Foster innovation	Foster innovation	Foster innovation
6	Digital visionary	Agility	Empowerment	Foster inclusivity	Digital entrepreneurship
7	Foster inclusivity	Inspire and motivate	Agility	Digital visionary	Foster inclusivity
8	Empowerment	Empowerment	Digital entrepreneurship	Empowerment	Digital literacy
9	Digital entrepreneurship	Collaboration and partnership	Digital literacy	Other intrapersonal	Digital visionary
10	Other intrapersonal	Digital literacy	Digital visionary	Digital entrepreneurship	Empowerment

Figure 7. Comparison of Leadership Qualities Among Executives Across Different Industries

A notable similarity in perceptions is observed between managers and executives (see Figure 6). Specifically, *other intrapersonal*, *collaboration and partnership*, and *foster*

innovation are ranked highly by both groups. However, managers, slightly differing from executives, consider *agility* as the second most important quality, with this attribute ranking first across three different industries (see Figure 8). Interestingly, managers in the Technology/IT & Communication sector consider agility to be of lesser importance, a finding that contrasts with responses from both staff and executives in the same sector, where it ranks within the top three qualities. The importance of *collaboration and partnership* is also notable. Although this is generally regarded as a key aspect of managerial responsibilities, managers in three industries (Engineering, Service, and Consumer industries) appear to view it as less significant. Additionally, unlike the perspectives of both executives and staff, *inclusivity* has not yet emerged as a prominent theme for managers across industries.

Manager-level (25%)					
Rank	**Technology/IT, Telecommunication** (20%)	**Engineering** (48%)	**Service industries** (8%)	**Specific industries** (16%)	**Consumer industries** (8%)
1	Inspire and motivate	Other intrapersonal	Foster innovation	Agility	Agility
2	Empowerment	Foster inclusivity	Agility	Collaboration and partnership	Foster innovation
3	Foster innovation	Empowerment	Other intrapersonal	Digital visionary	Digital entrepreneurship
4	Collaboration and partnership	Digital literacy	Digital entrepreneurship	Inspire and motivate	Inspire and motivate
5	Other intrapersonal	Foster innovation	Foster inclusivity	Digital entrepreneurship	Empowerment
6	Digital entrepreneurship	Agility	Digital literacy	Other intrapersonal	Other intrapersonal
7	Agility	Collaboration and partnership	Empowerment	Empowerment	Foster inclusivity
8	Foster inclusivity	Digital visionary	Digital visionary	Foster innovation	Digital literacy
9	Digital literacy	Inspire and motivate	Collaboration and partnership	Foster inclusivity	Collaboration and partnership
10	Digital visionary	Digital entrepreneurship	Inspire and motivate	Digital literacy	Digital visionary

Figure 8. Comparison of Leadership Qualities Among Managerial-Level Roles Across Different Industries

Staff-level respondents, including interns, entry-level, and senior staff, represent the majority in this study (42%) and therefore offer perspectives that warrant attention. According to this group, the top three qualities they value in leaders are *fostering inclusivity*, *agility*, and *digital literacy*, as shown in Figure 9. *Inclusivity* is recognised as important across all industries except the Consumer sector. *Agility* ranks second, receiving particular emphasis in the Technology/IT & Communication, Engineering, and Service industries. At the bottom of the rankings are *empowerment*, *digital*

visionary, and *digital entrepreneurship*. *Empowerment*, in particular, shows notable variation: it ranks highly in the Specific (1st) and Consumer (2nd) industries but is less valued in others.

Staff-level (42%)					
Rank	**Technology/IT, Telecommunication** (9%)	**Engineering** (30%)	**Service industries** (28%)	**Specific industries** (9%)	**Consumer industries** (23%)
1	Digital literacy	Foster inclusivity	Digital literacy	Empowerment	Other intrapersonal
2	Agility	Foster innovation	Foster inclusivity	Digital visionary	Empowerment
3	Inspire and motivate	Collaboration and partnership	Agility	Inspire and motivate	Digital literacy
4	Foster inclusivity	Agility	Foster innovation	Foster inclusivity	Foster innovation
5	Other intrapersonal	Other intrapersonal	Inspire and motivate	Digital entrepreneurship	Agility
6	Foster innovation	Digital literacy	Other intrapersonal	Collaboration and partnership	Inspire and motivate
7	Digital visionary	Digital entrepreneurship	Digital visionary	Agility	Collaboration and partnership
8	Collaboration and partnership	Empowerment	Collaboration and partnership	Foster innovation	Foster inclusivity
9	Digital entrepreneurship	Inspire and motivate	Empowerment	Other intrapersonal	Digital entrepreneurship
10	Empowerment	Digital visionary	Digital entrepreneurship	Digital literacy	Digital visionary

Figure 9. Comparison of Leadership Qualities Among Staff-Level Roles Across Different Industries

4.4 Additional attributes

The questionnaire included optional open-ended questions, inviting respondents to share their perspectives on leadership characteristics, skills, or behaviours not covered in the survey. Out of 102 participants, 35 provided responses. Content analysis identified ten new attributes: integrity (n=8), respect (n=4), teamwork (n=3), resilience (n=2), listening (n=2), confidence (n=1), self-efficacy (n=1), responsibility (n=1), gratitude (n=1), and charisma (n=1), as shown in Figure 10.

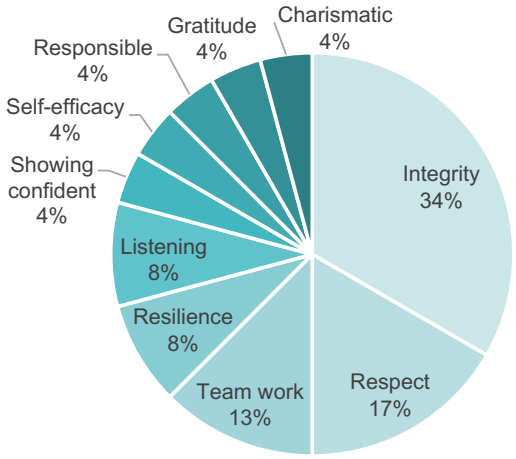

Figure 10. New Attributes Identified from Open-Ended Responses

4.5 Summary of Findings

In conclusion, the empirical findings strongly validate the significance of all ten digital leadership qualities. However, the priority of these qualities varies among different contexts. Within the context of this study, which focuses on SMEs in developing countries, Figure 11 presents the overall ranking of these qualities according to responses from participants in developing countries.

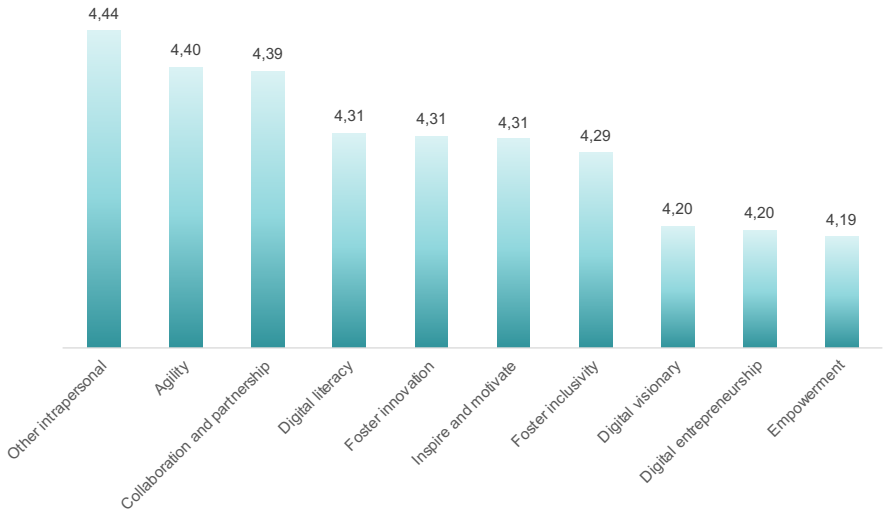

Figure 11. Ranking of the Digital Leadership Qualities of SMEs in Developing Countries

Among digital leadership qualities, *other intrapersonal*, which comprises leaders' personal traits such as *trustworthiness*, *commitment*, and *humility*, emerges as the most

universally valued quality. This prominence remains consistent across different contexts, including SMEs, executives, managers, and respondents from developing countries. The quality *foster inclusivity* ranks second, though its prioritisation varies; it is rated highest among staff-level respondents but is considered less important by executives, managers, and SMEs in developing countries. *Foster innovation*, ranked third in importance, is particularly valued by respondents from large corporations and developed countries. In contrast, for SMEs in developing countries, *agility* and *collaboration and partnership* take precedence, ranking second and third, respectively. This highlights the pivotal role these qualities play for SMEs in developing countries as they navigate shifting market dynamics and resource limitations.

Placed sixth overall, *inspire and motivate* is notably significant for executive respondents but is seen as comparatively less important by managers and staff members. Additionally, the quality of *empowerment* is generally lower in priority across all respondent groups, especially within SMEs in developing countries, where it is rated as the least important quality. As a consistent trend, digital-specific qualities such as *digital literacy*, *digital visionary*, and *digital entrepreneurship*, rank lower across most groups. However, this pattern shifts in SMEs from developing countries, where *digital literacy* holds a notable fourth-place position, reflecting its growing importance on par with *foster innovation* and *inspire and motivate*.

5.0 Discussions

Given the new insights derived from the survey results, it became necessary to further refine the digital leadership qualities and attributes outlined in Table 1 to ensure that the digital leadership framework more accurately reflects the findings. Therefore, additional analysis was conducted. As a result, several attributes were added, merged, or reassigned to more suitable categories. For example, attributes such as *digital skills*, *digital knowledge*, and *data-driven* were consolidated into a single attribute, *digital proficiency*, as the literature indicated they are closely related concepts. Additionally, some attributes, such as *coaching* and *cultivating a sharing culture*, were removed due to a lack of perceived importance in the survey results and insufficient supporting evidence from the literature. A summary of this process is presented in Figure 12. Ultimately, this process led to the development of 21 attributes (reduced from 31) and

7 digital leadership qualities (reduced from 10), proposed as the digital leadership framework for SMEs in developing countries (see Figure 13).

Previous attributes	Action	Modified attributes
Agile culture; agile strategy; adaptive and flexible	Merged	Develop agile culture
Pro-activeness	Merged	Continuous learning
Digital skills; digital knowledge; data driven	Merged	Digital proficiency
Digital attitude, clear digital vision and strategy, digitalisation as strategic imperative	Merged	Strategic digital vision
Multi competent	Altered	Develop hybrid skills
Creative and disruptive; risks taking	Merged	Disruptive and innovative
Cultivate innovative culture; encourage innovative thinking; provide support and resources; appreciate achievement	Merged	Innovation champion
Encourage to do more	Altered	Encouraging
Empathy; humility	Merged	Empathetic and listening
Effective communication	Altered	Communicated vision
Strategic partnership	Altered	Foster collaboration and partnership
Coaching; cultivate sharing culture	Removed	

Figure 12. Summary of the Modified Attributes

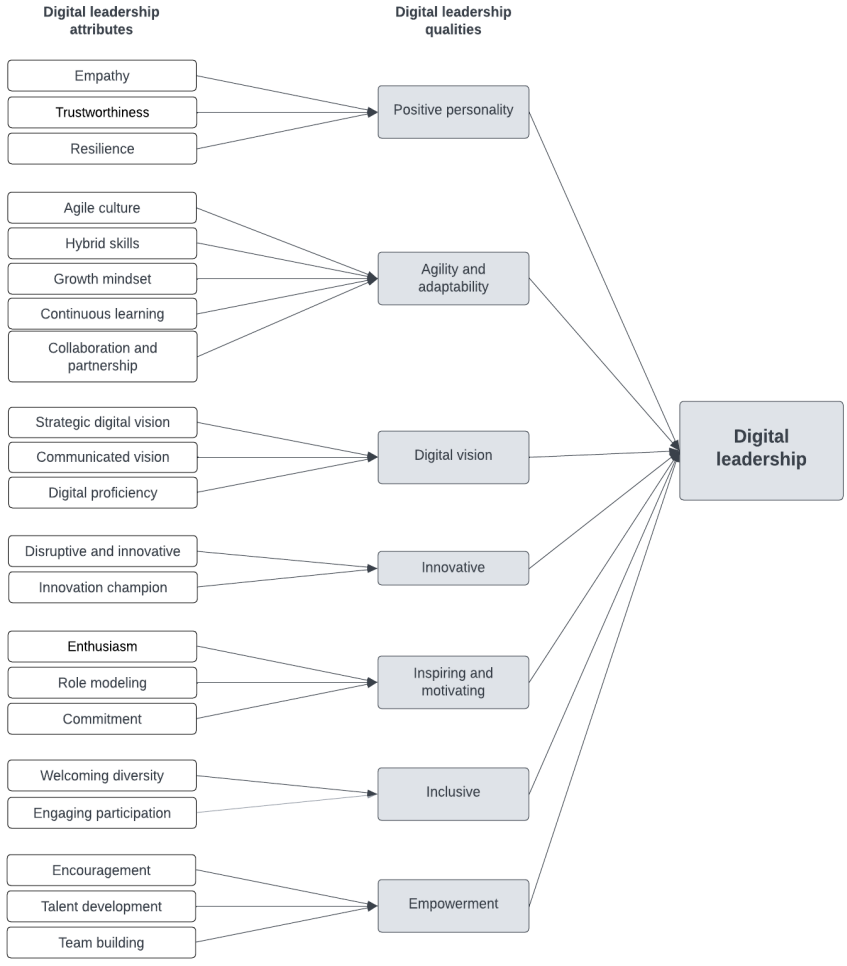

Figure 13. The Digital Leadership Framework

Survey results highlight a *positive personality* as the most valued quality in a digital leader, forming the foundation for effective leadership. Attributes such as *empathy*, *trustworthiness*, and *resilience* shape leaders' interactions, decision-making, and the cultivation of a positive organisational culture.

In SMEs, agility emerges as a crucial organisational quality, linked to a leader's ability to respond swiftly to opportunities and threats (Li et al., 2016). Adaptability, or a leader's capacity to adjust to changing circumstances complements agility (Trenerry et al., 2021). Together, these qualities enable leaders to navigate dynamic, ambiguous situations effectively. Attributes within *agility and adaptability* include fostering an *agile culture*, *hybrid skills*, a *growth mindset*, *continuous learning*, and *collaboration and partnership*.

The *digital vision* quality relates to a leader's ability to envision and communicate a digital future for the organisation. Although survey responses were mixed, literature such as Chen and Chang (2013), Eberl and Drews (2021), and Kane et al. (2019) underscores its significance. This quality involves *strategic digital vision*, *communicated vision*, and *digital proficiency*.

The digital business environment presents challenges across strategies, processes, and operational models (Kane et al., 2018). Respondents, particularly from large firms, favour leaders who act as *innovative champions*, aligning with research that highlights innovation as crucial for organisational survival during disruption (Abbu et al., 2022; Ye et al., 2019). Therefore, SME digital leaders could adopt a similar approach, fostering a *disruptive and innovative* mindset that empowers teams to take risks and develop creative ideas, viewing digital disruption as an opportunity.

Executives identify *inspiring and motivating* as essential for leaders managing digital transformation. Given the substantial changes and uncertainties, employees may see transformation as a threat to their roles (Wrede et al., 2020). Digital leaders need to inspire commitment and instil enthusiasm, as supported by Zoppelletto et al. (2023), fostering employee support through *enthusiasm*, *role modelling*, and *commitment*.

For SMEs, digital transformation calls for an inclusive approach to leadership (Schwarzmüller et al., 2018). Survey findings affirm inclusivity as the top-quality staff desire in leaders. *Inclusive* leaders are open, accessible, and foster engagement by making employees feel valued and empowered to share unique perspectives (Nembhard & Edmondson, 2006). Attributes such as *welcoming diversity* and *engaging participation* help promote creativity and innovation, encouraging diverse viewpoints

and experimentation. This leads to higher engagement in innovative activities, aligning with findings by Choi et al. (2017) and Ye et al. (2019).

Empowerment focuses on enabling individuals, nurturing a proactive and confident mindset, and instilling self-belief (Van Dierendonck, 2011). Empowering leaders recognise the unique skills, knowledge, and potential each employee brings to drive creativity and innovation (Laub, 2000). This quality is supported by studies on digital transformation from Frick et al. (2021) and Imran et al. (2020), showing that empowerment fosters readiness and confidence, enabling employees to take independent action and practice self-leadership. Key attributes of empowerment include *encouragement*, *talent development*, and *team building*.

6.0 Conclusion

6.1 Research Implications

This research makes a significant twofold contribution to the theoretical understanding of digital leadership. First, it extends the existing literature by exploring the role of leaders in the digital transformation of SMEs in developing countries. Second, it proposes a digital leadership framework tailored to the specific needs of SMEs in these regions. This framework is grounded in an extensive literature review and supported by empirical data, outlining essential leadership qualities and attributes needed to navigate the complexities of digital transformation effectively. The research outcomes are especially relevant in the current era of AI, where leadership qualities are crucial for effectively harnessing AI technologies to benefit the organisation.

This study also offers valuable practical insights and recommendations. The findings highlight the pivotal role of leaders in SME digital transformation, shaping the transformative vision, setting strategic direction, and establishing the context within which transformation unfolds. While digital transformation is a collective organisational effort, the commitment and actions of leaders are ultimately decisive in its success. Leaders are crucial drivers of structural and cultural changes, creating an environment that encourages active workforce engagement in the transformation process. Moreover, they play a key role in talent development, ensuring that employees are equipped and ready to contribute meaningfully. These insights provide SME leaders with a guidepost, clarifying their multifaceted roles in fostering successful digital transformations.

Building upon the digital leadership framework, it is essential to consider the three proposed principles as fundamental to effective leadership in the digital era:

- **The centrality of positive personality in digital leadership** – A leader's disposition significantly influences leadership effectiveness. Employees often model their behaviour based on their leaders; thus, leaders must exemplify a positive attitude and mindset, including a growth-oriented approach, enthusiasm, and resilience.
- **An employee-centred approach to digital strategy** – The success of digital transformation is contingent upon securing employee engagement and minimising resistance. Leaders must effectively communicate the vision, mission, and strategic intent of the transformation, ensuring that employees understand its significance. Moreover, fostering inclusivity and demonstrating empathy in addressing concerns enhances employee commitment, thereby facilitating a smoother transition.
- **Establishing a supportive organisational culture** – A conducive environment is integral to the transformation process. Leaders should foster a culture that promotes innovation, agility, and collaboration, ensuring that employees feel supported and empowered to adapt to change.

6.2 Limitations and Future Work

This study introduces several limitations. First, while the research focused on SMEs across various developing countries, a significant proportion of respondents (67%) were from Indonesia, with the remaining participants primarily concentrated in the Asian region. This concentration, along with the limited available literature linking leadership with digital transformation in developing countries, may limit the generalisability of the findings to all developing regions, given potential variations in work culture and regional dynamics. Second, the absence of a validation stage, such as follow-up interviews or statistical tests, may raise concerns regarding the reliability and validity of the findings. Lastly, the cross-sectional nature of this study means its context and outcomes are specific to a particular point in time and may not fully account for the continuously evolving digital technologies and business landscape, potentially impacting the framework's ongoing relevance.

For addressing these limitations, future research could adopt a multi-method approach, combining qualitative and quantitative analysis to validate the framework through statistical measurements. Additionally, an extended analysis could incorporate case studies or follow-up interviews to assess the framework's applicability and effectiveness across diverse contexts, particularly in exploring the reasons why leadership qualities are perceived differently, as discussed in Section 4.3. Broadening the scope to include data from a more varied range of developing countries or industries could further enhance the framework's generalisability. Future research could also consider additional variables, such as the firm's digital maturity level, leaders'

experience, and gender, to deepen understanding of how these factors interact with the framework. Furthermore, a correlation analysis between this framework and the transformation outcomes of SMEs could reveal valuable patterns, particularly in assessing variations across different contexts.

References

Abbu, H., Mugge, P., Gudergan, G., Hoeborn, G., & Kwiatkowski, A. (2022). Measuring the human dimensions of digital leadership for successful digital transformation. *Research-Technology Management*, *65*(3), 39-49.

Al-Bayed, M. H., Hilles, M., Haddad, I., Al-Masawabe, M. M., Alhabbash, M. I., Abu-Nasser, B. S., & Abu-Naser, S. S. (2024). AI in Leadership: Transforming Decision-Making and Strategic Vision.

AlNuaimi, B. K., Singh, S. K., Ren, S., Budhwar, P., & Vorobyev, D. (2022). Mastering digital transformation: The nexus between leadership, agility, and digital strategy. *Journal of Business Research*, *145*, 636-648.

Alos-Simo, L., Verdu-Jover, A. J., & Gomez-Gras, J.-M. (2017). How transformational leadership facilitates e-business adoption. *Industrial Management & Data Systems*, *117*(2), 382-397.

Ardi, A., Djati, S., Bernarto, I., Sudibjo, N., Yulianeu, A., Nanda, H., & Nanda, K. (2020). The relationship between digital transformational leadership styles and knowledge-based empowering interaction for increasing organisational innovativeness. *International Journal of Innovation, Creativity and Change*, *11*(3), 259-277.

Avolio, B. J., Kahai, S., & Dodge, G. E. (2000). E-leadership: Implications for theory, research, and practice. *The leadership quarterly*, *11*(4), 615-668.

Belitski, M., & Liversage, B. (2019). E-Leadership in small and medium-sized enterprises in the developing world. *Technology Innovation Management Review*, *9*(1), 64-74.

Benitez, J., Arenas, A., Castillo, A., & Esteves, J. (2022). Impact of digital leadership capability on innovation performance: The role of platform digitization capability. *Information & management*, *59*(2), 103590.

Bourke, J. (2016). *The six signature traits of inclusive leadership: Thriving in a diverse new world*.

Can, O. (2021). The Role of Leadership in Digital Transformation: A Review and Suggestions for Future Research. ECMLG 2021 17th European Conference on Management, Leadership and Governance,

Chen, Y.-S., & Chang, C.-H. (2013). The determinants of green product development performance: Green dynamic capabilities, green transformational leadership, and green creativity. *Journal of business ethics*, *116*, 107-119.

Choi, S. B., Tran, T. B. H., & Kang, S.-W. (2017). Inclusive leadership and employee well-being: The mediating role of person-job fit. *Journal of Happiness Studies*, *18*, 1877-1901.

Collins, J. (2009). Good to Great-(Why some companies make the leap and others don't). In: SAGE Publications Sage India: New Delhi, India.

Cortellazzo, L., Bruni, E., & Zampieri, R. (2019). The role of leadership in a digitalized world: A review. *Frontiers in psychology*, *10*, 1938.

Cox, T. H., & Blake, S. (1991). Managing cultural diversity: Implications for organizational competitiveness. *Academy of Management Perspectives*, *5*(3), 45-56.

De Waal, B., Van Outvorst, F., & Ravesteyn[1], P. (2016). Digital leadership: The objective-subjective dichotomy of technology revisited. 12 th European Conference on Management, Leadership and Governance ECMLG 2016,

Deloitte. (2013). Waiter, is that inclusion in my soup? A new recipe to improve business performance. In: Deloitte Sydney.

Dixon-Fyle, S., Dolan, K., Hunt, V., & Prince, S. (2020). Diversity wins: How inclusion matters. *McKinsey & Company*, *6*.

Eberl, J. K., & Drews, P. (2021). Digital Leadership–Mountain or molehill? A literature review. *Innovation through information systems: Volume III: A collection of latest research on management issues*, 223-237.

El Sawy, O. A., Kraemmergaard, P., Amsinck, H., & Vinther, A. L. (2016). How LEGO Built the Foundations and Enterprise Capabilities for Digital Leadership [Article]. *Mis Quarterly Executive*, *15*(2), 141-166. <Go to ISI>://WOS:000377109100004

Eller, R., Alford, P., Kallmünzer, A., & Peters, M. (2020). Antecedents, consequences, and challenges of small and medium-sized enterprise digitalization. *Journal of Business Research*, *112*, 119-127.

Erhan, T., Uzunbacak, H. H., & Aydin, E. (2022). From conventional to digital leadership: exploring digitalization of leadership and innovative work behavior [Article]. *Management Research Review*, *45*(11), 1524-1543. https://doi.org/10.1108/mrr-05-2021-0338

Fachrunnisa, O., Adhiatma, A., Lukman, N., & Ab Majid, M. N. (2020). Towards SMEs' digital transformation: The role of agile leadership and strategic flexibility. *Journal of Small Business Strategy*, *30*(3), 65-85.

Faye, I., & Goldbulm, D. (2022). *Quest to better understand the relationship between SME finance and job creation: Insights from new report*. World Bank Blogs. Retrieved 18 April 2023 from https://blogs.worldbank.org/en/psd/quest-better-understand-relationship-between-sme-finance-and-job-creation-insights-new-report

Frick, N. R., Mirbabaie, M., Stieglitz, S., & Salomon, J. (2021). Maneuvering through the stormy seas of digital transformation: the impact of empowering leadership on the AI readiness of enterprises. *Journal of Decision Systems*, *30*(2-3), 235-258.

González-Varona, J. M., Acebes, F., Poza, D., & López-Paredes, A. (2020). Fostering digital growth in SMEs: organizational competence for digital transformation. Boosting Collaborative Networks 4.0: 21st IFIP WG 5.5 Working Conference on Virtual Enterprises, PRO-VE 2020, Valencia, Spain, November 23–25, 2020, Proceedings 21,

Hai, T. N., Van, Q. N., & Thi Tuyet, M. N. (2021). Digital transformation: Opportunities and challenges for leaders in the emerging countries in response to COVID-19 pandemic. *Emerging Science Journal*, *5*(1), 21-36.

Hardy, B., & Ford, L. R. (2014). It's not me, it's you: Miscomprehension in surveys. *Organizational Research Methods*, *17*(2), 138-162.

Hinings, B., Gegenhuber, T., & Greenwood, R. (2018). Digital innovation and transformation: An institutional perspective. *Information and Organization*, *28*(1), 52-61.

Hyvönen, J. (2018). *Strategic leading of digital transformation in large established companies–a multiple case-study*

Imran, F., Shahzad, K., Butt, A., & Kantola, J. (2020). Leadership competencies for digital transformation: evidence from multiple cases. Advances in Human Factors, Business Management and Leadership: Proceedings of the AHFE 2020 Virtual Conferences on Human Factors, Business Management and Society, and Human Factors in Management and Leadership, July 16-20, 2020, USA,

Jin, S., Li, Y., & Xiao, S. (2022). What drives Employees' innovative behaviors in emerging-market multinationals? An integrated approach. *Frontiers in psychology*, *12*, 803681.

Kane, Phillips, A. N., Copulsky, J., & Andrus, G. (2019). How digital leadership is (n't) different. *MIT Sloan Management Review*, *60*(3), 34-39.

Kane, G., Palmer, D., Phillips, A. N., Kiron, D., & Buckley, N. (2015). Strategy, not technology, drives digital transformation. *MIT Sloan Management Review and Deloitte University Press*, *14*(1-25).

Kane, G., Palmer, D., Phillips, A. N., Kiron, D., & Buckley, N. (2018). *Coming of age digitally: Learning, leadership, and legacy*.

Kane, G., Phillips, A., Nguyen, Copulsky, J., & Andrus, G. (2019). How digital leadership is (n't) different. *MIT Sloan management review*, *60*(3), 34-39.

Karippur, N. K., & Balaramachandran, P. R. (2022). Antecedents of effective digital leadership of enterprises in Asia Pacific. *Australasian Journal of Information Systems*, *26*.

Kazim, F. A. (2019). Digital transformation and leadership style: a multiple case study. *The ISM journal of international business*, *3*(1), 24-33.

Klus, M. F., & Müller, J. (2021). The digital leader: what one needs to master today's organisational challenges. *Journal of Business Economics*, *91*(8), 1189-1223.

Ko, A., Fehér, P., Kovacs, T., Mitev, A., & Szabó, Z. (2022). Influencing factors of digital transformation: management or IT is the driving force? *International Journal of Innovation Science*, *14*(1), 1-20.

Kokot, K., Kokotec, I. Đ., & Čalopa, M. K. (2023). Digital Leadership and Maturity as a Key to Successful Digital Transformation: Country Case Study of Croatia. *TEM Journal*, *12*(1).

Kraus, S., Durst, S., Ferreira, J. J., Veiga, P., Kailer, N., & Weinmann, A. (2022). Digital transformation in business and management research: An overview of the current status quo. *International Journal of Information Management*, *63*, 102466.

Larjovuori, R.-L., Bordi, L., & Heikkilä-Tammi, K. (2018). Leadership in the digital business transformation. Proceedings of the 22nd international academic mindtrek conference,

Larjovuori, R. L., Bordi, L., Makiniemi, J. P., & Heikkila-Tammi, K. (2016, Sep 08-10). THE ROLE OF LEADERSHIP AND EMPLOYEE WELL-BEING IN ORGANIZATIONAL DIGITALIZATION. [What's ahead in service research?: New perspectives for business and society]. 26th Annual Conference of the European-Association-for-Research-on-Services (RESAR), Naples, ITALY.

Laub, J. A. (2000). Assessing the servant organization: Development of the organizational. *PhD diss., Florida Atlantic University Boca Raton, Florida*.

Lei, H., Leaungkhamma, L., & Le, P. B. (2020). How transformational leadership facilitates innovation capability: the mediating role of employees' psychological capital. *Leadership & Organization Development Journal*, *41*(4), 481-499.

Leso, B. H., Cortimiglia, M. N., & Ghezzi, A. (2023). The contribution of organizational culture, structure, and leadership factors in the digital transformation of SMEs: a mixed-methods approach. *Cognition, Technology & Work*, *25*(1), 151-179.

Li, W., Liu, K., Belitski, M., Ghobadian, A., & O'Regan, N. (2016). e-Leadership through strategic alignment: An empirical study of small- and medium-sized enterprises in the digital age. *Journal of Information Technology*. https://doi.org/10.1057/jit.2016.10

Liden, R. C., Wayne, S. J., Liao, C., & Meuser, J. D. (2014). Servant leadership and serving culture: Influence on individual and unit performance. *Academy of management journal*, *57*(5), 1434-1452.

Lin, W.-B. (2011). Factors affecting the effects of service recovery from an integrated point of view. *Total Quality Management*, *22*(4), 443-459.

Malodia, S., Mishra, M., Fait, M., Papa, A., & Dezi, L. (2023). To digit or to head? Designing digital transformation journey of SMEs among digital self-efficacy and professional leadership. *Journal of Business Research*, *157*, 113547.

Mittal, R., & Dorfman, P. W. (2012). Servant leadership across cultures. *Journal of World Business*, *47*(4), 555-570.

Mosher, D. K., Hook, J. N., Captari, L. E., Davis, D. E., DeBlaere, C., & Owen, J. (2017). Cultural humility: A therapeutic framework for engaging diverse clients. *Practice Innovations*, *2*(4), 221.

Nembhard, I. M., & Edmondson, A. C. (2006). Making it safe: The effects of leader inclusiveness and professional status on psychological safety and improvement efforts in health care teams. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, *27*(7), 941-966.

Northouse, P. G. (2021). *Leadership : theory and practice / Peter G. Northouse* (Ninth edition. ed.). SAGE.

OECD. (2021). *The Digital Transformation of SMEs*.

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. *Administration and policy in mental health and mental health services research*, *42*(5), 533-544. https://doi.org/10.1007/s10488-013-0528-y

Parida, V., Sjödin, D., & Reim, W. (2019). Reviewing literature on digitalization, business model innovation, and sustainable industry: Past achievements and future promises. In (Vol. 11, pp. 391): MDPI.

Promsri, C. (2019). The developing model of digital leadership for a successful digital transformation. *GPH-International Journal of Business Management*, *2*(08), 01-08.

Santarsiero, F., Carlucci, D., & Schiuma, G. (2019). Understanding the phenomenon of innovation labs. Annual Gsom Emerging Markets Conference 2019,

Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research Methods for Business Students*. Pearson Education, Limited.

Schiuma, G. (2012). Managing knowledge for business performance improvement. *Journal of Knowledge Management*, *16*(4), 515-522.

Schiuma, G., Schettini, E., Santarsiero, F., & Carlucci, D. (2022). The transformative leadership compass: six competencies for digital transformation entrepreneurship. *International Journal of Entrepreneurial Behavior & Research*, *28*(5), 1273-1291.

Schwarzmüller, T., Brosi, P., Duman, D., & Welpe, I. M. (2018). How does the digital transformation affect organizations? Key themes of change in work design and leadership. *Management Revue*, *29*(2), 114-138.

Scuotto, V., Nicotra, M., Del Giudice, M., Krueger, N., & Gregori, G. L. (2021). A microfoundational perspective on SMEs' growth in the digital transformation era. *Journal of Business Research*, *129*, 382-392.

Sia, S. K., Soh, C., & Weill, P. (2016). How DBS bank pursued a digital business strategy. *MIS Quarterly Executive*, *15*(2).

Simmons, S. V., & Yawson, R. M. (2022). Developing leaders for disruptive change: An inclusive leadership approach. *Advances in Developing Human Resources*, *24*(4), 242-262.

Sow, M., & Aborbie, S. (2018). Impact of leadership on digital transformation. *Business and Economic Research*, *8*(3), 139-148.

Tidd, J., & Bessant, J. R. (2020). *Managing innovation: integrating technological, market and organizational change*. John Wiley & Sons.

Trenerry, B., Chng, S., Wang, Y., Suhaila, Z. S., Lim, S. S., Lu, H. Y., & Oh, P. H. (2021). Preparing workplaces for digital transformation: An integrative review and framework of multi-level factors. *Frontiers in psychology*, *12*, 620766.

Van Dierendonck, D. (2011). Servant leadership: A review and synthesis. *Journal of management*, *37*(4), 1228-1261.

Veiseh, S., & Eghbali, N. (2014). A study on ranking the effects of transformational leadership style on organizational agility and mediating role of organizational creativity. *Management Science Letters*, *4*(9), 2121-2128.

Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J. Q., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, *122*, 889-901.

Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems*, *28*(2), 118-144. https://doi.org/https://doi.org/10.1016/j.jsis.2019.01.003

Wanasida, A. S., Bernarto, I., & Sudibjo, N. (2020). The effect of millennial transformational leadership on IT capability, organizational agility and organizational performance in the pandemic era: An empirical evidence of fishery startups in Indonesia. Conference Series,

Weber, E., Krehl, E. H., & Büttgen, M. (2022). The digital transformation leadership framework: Conceptual and empirical insights into leadership roles in technology‐driven business environments. *Journal of Leadership Studies*, *16*(1), 6-22.

Weber, R. P. (1990). *Basic content analysis* (Vol. 49). Sage.

Wrede, M., Velamuri, V. K., & Dauth, T. (2020). Top managers in the digital age: Exploring the role and practices of top managers in firms' digital transformation. *Managerial and Decision Economics*, *41*(8), 1549-1567.

Ye, Q., Wang, D., & Guo, W. (2019). Inclusive leadership and team innovation: The role of team voice and performance pressure. *European Management Journal*, *37*(4), 468-480.

Zoppelletto, A., Orlandi, L. B., Zardini, A., Rossignoli, C., & Kraus, S. (2023). Organizational roles in the context of digital transformation: A micro-level perspective. *Journal of Business Research*, *157*, 113563.