



# Digital transformation: A model of transformational leadership in an organisation

**Authors:**

Sello E. Mmakau<sup>1</sup>   
Tebogo Sethibe<sup>1,2</sup> 

**Affiliations:**

<sup>1</sup>Department of Digital Transformation and Supply Chain Management, Graduate School of Business Leadership, University of South Africa, Midrand, South Africa

<sup>2</sup>Department of Information Systems, Agriculture Research Council, Pretoria, South Africa

**Corresponding author:**

Tebogo Sethibe,  
sethibet@arc.agric.za

**Dates:**

Received: 12 July 2025  
Accepted: 18 Dec. 2025  
Published: 26 Feb. 2026

**How to cite this article:**

Mmakau, S.E. & Sethibe, T., 2026, 'Digital transformation: A model of transformational leadership in an organisation', *South African Journal of Information Management* 28(1), a2057. <https://doi.org/10.4102/sajim.v28i1.2057>

**Copyright:**

© 2026. The Authors.  
Licensee: AOSIS. This work is licensed under the Creative Commons Attribution 4.0 International (CC BY 4.0) license (<https://creativecommons.org/licenses/by/4.0/>).

**Read online:**

Scan this QR code with your smart phone or mobile device to read online.

**Background:** Digital transformation has become essential for improving public-sector efficiency and service delivery. Despite growing investment in digital initiatives, many government entities struggle to achieve meaningful transformation. This is partly due to a limited understanding of how leadership styles, organisational culture, and digital maturity interact in developing-country context models.

**Objectives:** This study identifies and determines the causal relationships among transformational leadership, digital leadership, organisational culture, and digital maturity for digital transformation. In addition, it empirically fits, tests, and validates the proposed digital transformation model.

**Method:** A quantitative research design was employed. A structured survey was administered to 380 employees across four government entities in Gauteng, producing 299 valid responses (79% response rate). Structural equation modelling was used to analyse the direct, indirect, and mediating relationships among the study constructs.

**Results:** Findings indicate that although digital maturity is positively associated with digital transformation, it does not significantly predict transformation outcomes. Transformational leadership shows a negative relationship with digital transformation, suggesting contextual constraints in hierarchical public institutions. However, both transformational and digital leadership positively influence organisational culture. Organisational culture emerges as the strongest determinant of digital transformation and serves as a central mediating mechanism. A negative correlation between organisational culture and digital maturity further suggests that entrenched cultural traits may inhibit digital readiness.

**Conclusion:** The study contributes a validated multidimensional model integrating leadership and cultural and technological factors. It offers a context-specific African perspective, demonstrating that adaptive leadership and cultural alignment are critical for achieving successful digital transformation.

**Contribution:** The findings provide actionable insights for policymakers and public-sector leaders seeking to strengthen digital governance capability.

**Keywords:** digital transformation; digital maturity; transformational leadership; organisational culture; digital leadership; Structural Equation Modelling.

## Introduction

The efficacy of digital transformation is heavily contingent upon skilled leadership, particularly leadership that embodies the essential digital competencies and innovative mindsets required to navigate the complexities of the digital environment (Breuer & Szillat 2019; El Sawy et al. 2020; Mandagi et al. 2023). In this context, leadership theory provides critical insights by examining the qualities and behaviours that set successful leaders apart and the methods they employ to inspire and guide their teams. As a result, this theoretical framework holds particular significance in digital transformation, which fundamentally alters organisational operations and the way value is delivered to customers (Verhoef et al. 2020). Moreover, the competencies associated with leadership consist of a synthesis of knowledge, skills, attitudes, values and norms that exceed mere task management (Shah & Patki 2020). Effective leadership, therefore, seeks to shape the collective beliefs and behavioural norms within an organisation. By emphasising this dimension, leaders can nurture, preserve and adapt organisational culture to support transformation initiatives more effectively (Xenikou & Furnham 2022).

Supporting this perspective, Kihara, Bwisa and Kihoro (2016) assert that organisations aiming to enhance performance and retain a competitive advantage need to adopt superior leadership

practices throughout the implementation of business strategies, beginning with transactional leadership and progressing towards transformational leadership. In addition, Yoon, Lee and Schniederjans (2016) highlight the importance of innovation in refining operational procedures, enabling organisations to fulfil their visions and achieve established objectives. Consequently, leadership encompasses various styles that significantly influence how ideas are generated and reconfigured, steering organisations towards successful innovation (Mantzaris 2016).

While previous studies offer valuable insights into leadership, organisational culture, digital maturity and digital transformation (Hartl & Hess 2017; Kane et al. 2017), many have examined these constructs independently without sufficiently considering how they interact to shape transformation outcomes (El Sawy et al. 2020; Wang, Ran & Ma 2025). This gap is particularly significant in developing economies, where resource constraints and organisational dynamics affect digital transformation efforts. The purpose of this study is therefore to develop and empirically test a model that explains the relationships among transformational leadership, digital leadership, organisational culture, digital maturity and digital transformation.

### Problem statement

Despite the growing recognition of digital transformation as a strategic imperative, its implementation within the public sector remains inconsistent and fragmented (Layton-Matthews & Landsberg 2022). Many public entities invest heavily in technology infrastructure yet struggle to achieve meaningful transformation because of weak leadership alignment, entrenched bureaucratic cultures, and limited digital maturity (Mhlanga 2023; Nkuna & Sebola 2022). The absence of a unified theoretical and empirical model that explains the interrelationship between these constructs continues to hinder the development of sustainable digital strategies.

Existing studies (Alshammari, Carter & Alharthi 2021; Kargas et al. 2023) have predominantly examined digital transformation through isolated perspectives, focusing either on leadership behaviour, organisational culture, or technological capability. This fragmented approach overlooks how these elements interact to influence transformation outcomes. In hierarchical public institutions such as those in South Africa, transformational and digital leadership often operate within rigid governance frameworks that limit agility, innovation and cultural change (Naidoo 2022; Philip 2021). Consequently, even well-intentioned digital initiatives fail to translate into systemic transformation.

A clear gap in understanding how leadership styles and organisational culture jointly influence digital maturity and, ultimately, the success of digital transformation in the public sector is therefore apparent. The current body of knowledge lacks an empirically validated model that captures these interdependencies in a developing-country context, where

constraints such as limited resources, legacy systems and policy rigidity persist.

This study addresses this gap by developing and empirically validating a contextual model that explains the relationship between transformational leadership, digital leadership, organisational culture and digital maturity in achieving digital transformation.

### Aim

This study aimed to develop and validate a model of transformational leadership in an organisation for digital transformation.

### Objectives

**RO1:** *To identify and determine the causal relationships among transformational leadership, digital leadership, organisational culture, and digital maturity for digital transformation.*

**RO2:** *To empirically fit, test, and validate the proposed conceptual digital transformation model.*

## Literature review and hypothesis development

The following section begins with a literature review on leadership and organisational culture, which is crucial as organisations navigate digital transformation. This is followed by a review of previous studies that explored the relationship between different constructs and digital transformation. Finally, proposed hypotheses for the study will be presented.

### Leadership, culture and digital transformation

The successful navigation of digital transformation is intricately linked to the presence of a robust organisational culture and effective leadership. Research by Kane et al. (2018) indicates that digitally mature organisations embody specific cultural traits that foster a conducive environment for transformation. This assertion is echoed by Paltu and Brouwers (2020), who characterise organisational culture as a system of shared values, beliefs, and behavioural norms that serve as a guiding framework for employees. Given this context, it becomes evident that an adaptable organisational culture is essential for supporting digital change, as highlighted by Hartl and Hess (2017). Moreover, companies that prioritise their organisational culture consistently achieve superior productivity levels and better financial outcomes compared to those that overlook this critical aspect (Hemerling et al. 2018).

In this environment of change, transformational leadership stands out as an effective strategy for inducing significant innovation and motivating team members through a collective sense of purpose (Park et al. 2022). Sow and Aborbie (2018) underscore the impact of leadership style on how organisations deal with the complexities of digital

transformation, accentuating the importance of effective leadership in fostering employee engagement and managing change.

Transformational leadership not only contributes to individual success but is also linked to positive organisational outcomes (Khan, Nawaz & Khan 2016). As Mmakau & Sethibe (2023) contend, digital leadership involves nurturing employees with a visionary and collaborative spirit, which is crucial for devising long-term strategies that emphasise both people and culture. This focus on collaboration empowers leaders to employ agile methodologies to effectively implement digital initiatives while leveraging digital communication skills to facilitate knowledge exchange. Consequently, Brodtkorb, Skaar and Slettebø (2019) emphasise the essential role leadership plays in the innovation process, highlighting the need for future research to prioritise leadership within the realm of innovation studies.

El Sawy et al. (2020) argue that digital leadership necessitates essential changes in organisational design to ensure effective digital transformations. In addition, Van Ee et al. (2020) stress that digital leadership is critical for an organisation's growth, enabling leaders with digital skills to extract valuable insights that enhance organisational performance. Similarly, Abbu et al. (2020) assert that digital leaders possess the ability to align resources with strategic objectives, thereby demonstrating that digitally mature organisations tend to operate more effectively than those still emerging in the digital landscape.

## Hypothesis development

### Digital maturity and digital transformation

The research conducted by Aras and Büyüközkan (2023) investigates critical success factors essential for effective digital transformation, utilising a systematic literature review methodology. The findings indicate that digital maturity models are integral to the digital transformation process, serving as catalysts that propel organisations forward in their transformation journeys. Moreover, the study highlights a robust and affirmative correlation between digital maturity and the formulation of digital transformation strategies. This study concludes by stressing the significance of enhancing digital maturity as a fundamental element in successful digital transformation initiatives.

Similarly, Kargas et al. (2023) further explored the relationship between digital maturity and strategy as well as the organisational factors that contribute to successful digital transformation. This investigation employed quantitative research methods, analysing a sample of 147 small and medium-sized enterprises (SMEs) in Greece. The results reveal a strong interconnection between digital maturity, digital transformation strategies, and digital business models. Ultimately, cultivating a culture of digital maturity and ensuring strategic alignment are essential measures to overcome these obstacles. This reinforces the notion that the

enhancement of digital maturity is crucial for achieving successful digital transformation across various contexts.

The following hypothesis for digital maturity and digital transformation is proposed:

**H1:** Digital maturity has a positive impact on digital transformation.

*Operationalisation rationale:* Higher levels of digital maturity correlate with improved transformation outcomes because of stronger alignment between strategy, technology, and people (Kargas & Loumos 2023).

### Organisational culture and digital transformation

Widespread empirical studies have been conducted on the influence of organisational culture on digital transformation. Research by Ghafoori et al. (2024) examines the relationship between organisational culture, digital transformation, and operational performance in the manufacturing sector. By analysing data from 317 survey respondents, the study demonstrates that organisational culture has a significant impact on digital transformation initiatives, which in turn affects the overall performance of the organisation. The findings highlight the critical role that organisational culture plays in facilitating data-driven digital transformation. It is essential for organisations to understand how their cultural attributes can contribute to success in the digital landscape.

In a similar vein, Alshammari, Alshallaqi and Al-Mamary (2024) examined the relationship between organisational culture and the success of digital transformation initiatives. This research systematically assessed various dimensions of organisational culture to elucidate their impact on the effectiveness of digital transformation projects. Employing a sample of 264 employees from diverse firms, the study utilised a structured questionnaire to collect relevant data, which were subsequently analysed using Structural Equation Modelling (SEM) with AMOS software. The results revealed that specific dimensions of organisational culture, particularly employee empowerment, significantly contribute to the success of digital transformation efforts. Ultimately, this study highlights the importance of cultivating a supportive organisational culture to enhance the outcomes of digital transformation initiatives.

The following hypothesis for organisational and digital transformation is proposed:

**H2:** Organisational culture has a positive impact on digital transformation.

*Operationalisation rationale:* A culture that supports openness, risk-taking, and collaboration enhances the adoption and integration of digital initiatives (Alshammari et al. 2021).

### Transformational leadership and digital transformation

The relationship between leadership style and digital transformation has been the subject of broad empirical research. A notable focus of this inquiry is the impact of

transformational leadership on digital transformation initiatives. Philip (2021) conducted a study emphasising the behavioural changes associated with digital transformation through the lens of transformational leader behaviours (TLB). Employing a case study method, the research revealed that, in the context of planned digital transformations, leaders often exhibit a highly positive and enthusiastic attitude, largely because such transformations are typically initiated by top management. Moreover, the transformational behaviours of motivating employees and fostering a supportive climate were found to significantly correlate with the success of planned digital transformations. Supporting these insights, Prince (2017) explored the interplay between Industry 4.0 and leadership through a quantitative study involving 181 top executives from Australia's top 500 companies. This research underscored that transformational leadership has evolved in response to digitalisation, thereby facilitating a leader's ability to inspire through technological advancements and to articulate a higher purpose to their teams. Mutually, these studies highlight the essential role of transformational leaders during digital transformation processes.

The following hypothesis for transformational leadership and digital transformation is proposed:

**H3:** Transformational leadership has a positive impact on digital transformation.

*Operationalisation rationale:* Transformational practices may inhibit agility when applied within highly structured environments that prioritise compliance over innovation (Philip 2021).

### Leadership style and organisational culture

Prakasa, Raharjo and Wiratama (2019) conducted a study aimed at examining the impact of transformational leadership style on organisational culture, focusing on a sample of 50 workers from Telkomsel GraPARI Malang, one of Indonesia's leading technological corporations that provides cellular telecommunications services. Utilising questionnaires for data collection, the study revealed that the implementation of transformational leadership styles significantly influences organisational culture. Additionally, the findings highlighted that both transactional and transformational leadership styles play crucial roles in the development of organisational culture, which is essential for enhancing digital maturity through ongoing digital transformation processes. In a similar vein, Abuqadumah and Azam (2021) explored the effects of transformational leadership on organisational culture within institutions of higher learning in Libya. This research employed a quantitative analysis, gathering data from a random sample of 224 respondents, which was subsequently evaluated using the SPSS software package and AMOS SEM software. The results of this study by Abuqadumah and Azam (2021) affirmed that transformational leadership exerts a powerful influence on organisational culture. This underscores the potential for educators within the Libyan academic system

to enhance leadership practices in their institutions. Furthermore, the research indicated that transformational leadership, alongside effective management, has a positive and direct impact on organisational culture in Libyan higher education, reinforcing the validity of similar studies conducted in diverse educational contexts worldwide. This body of research collectively emphasises the critical relationship between transformational leadership and organisational culture across distinct settings, advocating for the integration of these leadership practices to foster a more conducive organisational environment.

The relationship between digital leadership and organisational culture is explored through studies by Deloitte University with MIT Sloan in 2017, as well as research by Breuer and Szillat (2019) and Stana, Fischer and Nicolajsen (2018). A systematic literature review method and a hermeneutical approach were adopted. The Deloitte study at Walmart found that organisations are more successful in digital initiatives when leaders have a clear vision for introducing digital transformation, with 72% of respondents supporting this view. Effective leaders should foster collaboration, risk-taking, and experimentation rather than merely enforcing change, while also focusing on areas where digital maturity can have a significant impact. Breuer and Silla (2019) highlight that digital leadership has evolved and has become essential as work dynamics change. IBM's journey into digital leadership required a cultural transformation to adapt to technological advancements. Stana et al. (2018) contribute to this discussion by demonstrating that the rapid pace of technology demands new leadership approaches, known as digital leadership. Their research indicates that cultural differences greatly influence the effectiveness of various leadership styles, emphasising the interplay between digital leadership and organisational culture in achieving successful digital transformation.

The following hypotheses for leadership style and organisational culture are proposed:

**H4:** Transformational leadership has a positive impact on organisational culture.

*Operationalisation rationale:* Leaders who promote empowerment and vision foster adaptive cultural norms that support collaboration and innovation (Bass & Avolio 1985; Naidoo 2022):

**H5:** Digital leadership has a positive impact on organisational culture.

*Operationalisation rationale:* Visionary leadership enhances organisational readiness by aligning resources, competencies, and strategies towards technological innovation (Kane et al. 2017).

### Organisational culture and digital maturity

Kane et al. (2017), in collaboration with MIT Sloan Management Review and Deloitte, conducted a comprehensive investigation into the influence of organisational culture and

human resources on digital maturity. Their research involved surveying and interviewing over 3500 business executives, managers, and analysts. The results highlighted a reciprocal relationship between organisational culture and digital maturity, indicating that each factor significantly affects the other. This finding emphasises the necessity for leaders to foster a suitable culture to attain digital maturity, as organisational culture plays a vital role in determining an organisation's readiness to adopt digital technologies.

Simić and Matovic (2018) conducted a study examining the relationship between organisational culture and digital maturity using a qualitative method. Their findings indicate that organisational culture significantly influences various aspects of an organisation's effectiveness, including its level of digital maturity. Organisational culture is specifically identified as a critical variable that shapes the success of the digital transformation process, ultimately determining the extent of digital maturity an organisation can achieve.

The following hypothesis for organisational culture and digital maturity is proposed:

**H6:** Organisational culture has a positive impact on digital maturity.

*Operationalisation rationale:* Digital leaders shape a culture that values experimentation, continuous learning, and cross-functional collaboration (Mmakau & Sethibe 2023).

### Leadership style and digital maturity

Truter (2016) investigated the impact of transformational leadership on the digital maturity of South African businesses. The study focused on whether specific leadership behaviours influence digital maturity. Using an online survey, the findings revealed that two behaviours, individual consideration and idealised influence, positively affected digital maturity. In contrast, inspirational motivation had a negative impact. In a related study, Kieser (2017) examined the relationship between digital maturity, leadership, innovation, and organisational learning. Through a quantitative approach, the author analysed responses from 136 organisations related to improving their digital skills. The results indicated that a mix of transactional and transformational leadership styles and digital leadership development activities enhances digital skills and positively contributes to digital maturity. This highlights the essential role of effective leadership in achieving digital growth.

The relationship between digital leadership and digital maturity is critically examined in several studies. Heriansyah, Zufadil & Maulida (2025) conducted a study utilising a sample of 207 employees and employing SEM analysis through the Smart PLS 4.0 program. The findings reveal that digital leadership exerts a significant positive influence on the attainment of digital maturity within organisations. Furthermore, digital maturity itself demonstrably enhances organisational performance, underscoring its strategic importance.

In a complementary study, Kane et al. (2017) collaborated with MIT Sloan Management Review to conduct its sixth annual survey focusing on digital maturity and leadership, in partnership with Deloitte. In the autumn of 2016, more than 3500 business executives, managers, and analysts from a diverse array of organisations across the world were interviewed, revealing significant findings regarding the dynamics of digital transformation. Achieving digital maturity is specifically characterised as a continuous process whereby digitally mature organisations intentionally cultivate their digital cultures to support and advance critical business initiatives. Leaders within these organisations appreciate the necessity of a long-term perspective, advocating for the recruitment of skilled professionals and digital leaders who can drive digital maturity efforts. Such digital advocates are not only more likely to invest the requisite effort but are also less prone to resist change, thereby fostering a conducive environment for sustained digital growth.

The following hypotheses for leadership style and digital maturity are proposed:

**H7:** Transformational leadership has a positive impact on digital maturity.

*Operationalisation rationale:* Effective digital leaders accelerate organisational learning and technical competence by prioritising technology adoption and skills development (De Araujo et al. 2021).

**H8:** Digital leadership has a positive impact on digital maturity.

*Operationalisation rationale:* The synergy between transformational and digital leadership strengthens institutional alignment, bridging strategic vision with technological execution (Philip 2021).

### Digital leadership and digital transformation

An investigation into the nexus between digital leadership and digital transformation has been conducted by Klein (2020), who analysed the essential traits of leadership in the context of digital transformation using a literature review method. This review synthesised 60 sources and discerned that a digital leader must adopt the role of an inspiring coach throughout the digital transformation process. Notably, given that digital transformation involves adapting to socio-technical innovations, the ability to embrace change becomes a critical trait for digital leaders. Such leaders must not only adapt to rapid technological evolutions but also effectively guide their organisations through these transitions.

In the same vein, De Araujo et al. (2021) examined the impact of digital leaders' characteristics and knowledge on the digitalisation process by using a case study approach focused on globally active companies. Their findings elucidate that digital leadership is paramount for organisational survival in the contemporary digital landscape, with leaders undertaking the responsibility to acclimatise and reshape business strategies accordingly.

By leveraging and enhancing the company's digital assets, digital leaders can effectively drive business goals forward, thereby accelerating the digital transformation journey. Collectively, this body of research articulates the critical importance of both transformational and digital leadership in ensuring the successful implementation and sustainability of digital transformation initiatives.

Therefore, the following hypothesis for digital leadership and digital transformation is proposed:

**H9:** Digital leadership has a positive impact on digital transformation.

*Operationalisation rationale:* Organisational culture mediates the relationship between leadership and transformation outcomes, as a supportive culture translates leadership intent into practice (Alshammari et al. 2021).

### Conceptual digital transformation model

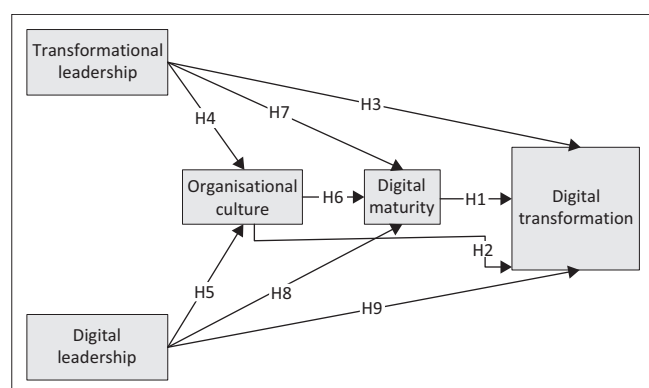
Considering the theoretical background mentioned in the previous sections, the conceptual framework as illustrated in Figure 1 is hereby proposed.

### Methods

This section outlined the sampling technique and the methods employed for data collection, thereby providing a foundation for understanding the research design. Following this, an overview of the instruments used to assess the constructs is presented. The discussion concludes with an elucidation of the data analysis and interpretation processes undertaken in the study.

### Research paradigm

This study was guided by a positivist research paradigm, which assumes that social phenomena can be objectively measured, quantified, and modelled. The positivist stance was appropriate because the study sought to test hypothesised relationships among transformational leadership, digital leadership, organisational culture, digital maturity, and digital transformation using measurable constructs. This paradigm supports the use of structured instruments, statistical modelling, and generalisation of findings, all of which are aligned with the aims of the study.



**FIGURE 1:** Conceptual digital transformation model.

## Research methods and design

A quantitative, cross-sectional research design was adopted. This design was selected because the purpose of the study was to develop and empirically validate a model that explains the causal relationships among the constructs of interest. A cross-sectional approach enables the collection of data at a single point in time and is well-suited to model testing using multivariate techniques such as factor analysis and structural equation modelling (Hair, Page & Brunsveld 2019).

Although mixed methods can provide deeper qualitative insights, they were not appropriate for this study because the objective was not to explore subjective meanings, but instead to test the strength and direction of predefined relationships using validated measurement scales.

### Population and sampling

The target population consisted of employees working in four government entities in the Gauteng province of South Africa. These organisations were selected because they are actively engaged in digital transformation initiatives, making them suitable contexts for examining the constructs of interest. The accessible population included employees across multiple functional departments, excluding executive leadership (chief executive officer, director general, deputy director general, chief director and equivalent levels) to prevent bias related to strategic oversight roles.

A probability stratified sampling technique was employed. This method ensured that different organisational levels, departments, and demographic groups were proportionately represented. The sample size of 380 employees was determined using established guidelines for multivariate analysis, which recommend a minimum of 10 respondents per item or per parameter estimated (Goodboy & Kline 2016). After removing incomplete responses, 299 valid cases remained, which exceeds the minimum threshold for robust structural equation modelling.

### Data collection method and justification

Data were collected through a structured self-administered questionnaire. This method was selected because it allows for efficient collection of standardised data from a large sample, supports anonymity, and minimises interviewer bias. The questionnaire consisted of validated instruments and employed a five-point Likert scale, which is appropriate for measuring perceptions and attitudes.

Data collection took place over 2 months, allowing sufficient time for distribution, follow-up reminders, and completion.

### Data analysis and justification

Data analysis followed a multistep process consistent with best practice in quantitative model validation:

- *Preliminary screening* ensured completeness and suitability for analysis.
- *Factor analysis* (exploratory and confirmatory) was used to examine the underlying structure of the constructs, consistent with the study's aim of model development.
- *Reliability and validity* were assessed using Cronbach's alpha, composite reliability, the Kaiser-Meyer-Olkin (KMO) statistic, Bartlett's Test of Sphericity, average variance extracted (AVE), and discriminant validity criteria.
- These methods were selected because they provide rigorous evidence of measurement quality and are widely used in digital transformation and organisational studies (Hair et al. 2019).

## Ethical considerations

Ethical clearance to conduct this study was obtained from the Graduate School of Business Leadership\_RERC (No. 2023\_SBL\_DBL\_014\_FA\_0621). Participation was voluntary, informed consent was obtained, and anonymity and confidentiality were assured. Only aggregated results were reported, and no information that could identify individual participants or organisations was collected.

## Results

The means, standard deviations, reliabilities, and correlations among the study variables are presented in Table 1. The Cronbach's alphas are shown in parentheses. The constructs exhibited reliable Cronbach's alpha values exceeding 0.70, which affirms the strength of these findings. Analysis of the data reveals that respondents hold a positive view of digital maturity, as indicated by a mean score of 4.092. Similarly, transformational leadership and digital leadership received commendable ratings with mean scores of 3.868 and 3.813, respectively. In contrast, organisational culture has a moderate perception, with a mean score of 3.472, while digital transformation is perceived as significantly inadequate, achieving a mean score of only 2.870. Notably, there are strong correlations between digital maturity and both leadership and culture constructs. Transformational leadership correlates significantly with organisational culture ( $r = 0.860^{***}$ ) and digital leadership ( $r = 0.858^{***}$ ), suggesting that robust leadership and a supportive culture can enhance an organisation's digital readiness. However, the lower correlations associated with digital transformation indicate challenges in effectively translating leadership and cultural strengths into actionable transformation strategies,

thereby highlighting a critical gap that calls for organisations' attention.

## Model fit assessment

The theoretical model was tested by applying SEM path analysis using the 'lavaan' package version 0.6–17 in R software. The maximum likelihood Robust method was used for estimating the models. The analysis involves two structural models (Model 1 and Model 2), which were assessed based on their goodness-of-fit indices to determine the adequacy of the models. The fit of the models was assessed using several fit indices, which provide insights into how well the model represents the data. The key goodness-of-fit statistics for both models are shown in Table 2.

Model 1 presents a Chi-square statistic of 4.341, which is within the acceptable range of 1 to 5; however, its fit indices indicate substantial deficiencies. Specifically, the Comparative Fit Index (CFI) is recorded at 0.754, and the Tucker-Lewis Index (TLI) stands at 0.735, neither of which meets the established criteria of  $CFI \geq 0.90$  and  $TLI \geq 0.95$ . In addition to these indices, the Root Mean Square Error of Approximation (RMSEA) is 0.125, while the Standardised Root Mean Square Residual (SRMR) is 0.129, both values exceeding the acceptable threshold of  $< 0.08$ . These findings suggest that Model 1 inadequately represents the data. To improve the performance of Model 1, an analysis utilising a saturated or unrestricted model was conducted, allowing for the possibility of cross-loading among the variables. This methodological approach provided greater flexibility in examining the interrelationships among the items included in the model. However, the restricted model failed to show significant improvements, particularly regarding the SRMR, which is a critical metric for assessing model fit. To refine the model further and reduce potential sources of measurement error, the correlation of error

**TABLE 2:** Comparison of Goodness-of-Fit Indices for Model 1 and Model 2.

Goodness-of-fit index	Model 1	Model 2	Acceptable model fit
Chi-square/ <i>df</i>	4.34	1.98	Between 1–5
CFI	0.75	0.94	$CFI \geq 0.90$ (Good fit)
TLI	0.73	0.93	$TLI \geq 0.95$ (Good fit)
RMSEA	0.12	0.07	$RMSEA < 0.08$ (Good fit)
SRMR	0.13	0.07	$SRMR < 0.08$ (Good fit)

Source: Hu, L.T. & Bentler, P.M., 1999, 'Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives', *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1): 1–55

$\chi^2$ , Chi-square statistic; *df*, degrees of freedom; CFI, comparative fit index; TLI, Tucker-Lewis Index; RMSEA, root mean square error of approximation; SRMR, standardised root mean square residual.

**TABLE 1:** Means, standard deviations, correlations and Cronbach's alpha.

Constructs	Mean	SD	DM	TL	OC	DL	DT
1. Digital Maturity (DM)	4.09	0.79	(0.74)	-	-	-	-
2. Transformational Leadership (TL)	3.87	1.05	0.69***	(0.97)	-	-	-
3. Organisational Culture (OC)	3.47	1.17	0.59***	0.86***	(0.90)	-	-
4. Digital Leadership (DL)	3.81	1.00	0.67***	0.86***	0.86***	(0.94)	-
5. Digital Transformation (DT)	2.87	0.94	0.47***	0.60***	0.72***	0.66***	(0.83)

Note: Cronbach's alphas are indicated in parentheses.

SD, standard deviation.

\*,  $p < 0.05$ , \*\*,  $p < 0.01$ , \*\*\*,  $p < 0.001$ .

variances was also explored. Consequently, Model 2 demonstrates a superior fit, as evidenced by a Chi-square statistic of 1.980, along with a CFI of 0.944 and a TLI of 0.935, all of which exceed the necessary criteria for model validity. Furthermore, Model 2 reports an RMSEA of 0.067 and an SRMR of 0.066, both of which are comfortably below the recommended cut-off. Thus, Model 2 has been adopted, as it more accurately reflects the underlying relationships present in the data. In addition, it is important to observe that the path between digital leadership and digital transformation was removed because of its lack of significance. Items with loadings below 0.5 were discarded to improve model integrity.

## Hypothesised model testing

The outcomes from the SEM analysis are presented in Figure 2. The analysis of the relationships involving key dimensions of digital transformation in the South African public sector provides valuable insights into the factors that promote or obstruct progress in this critical area.

The first hypothesis examined the relationship between digital maturity and digital transformation. The results revealed a positive association ( $\beta = 0.187$ ). However, the absence of statistical significance ( $p = 0.149$ ) indicates that digital maturity, despite its potential benefits, is not a substantial predictor of successful digital transformation outcomes. This suggests that reliance solely on digital maturity as a criterion for transformation may be misguided. In contrast, the investigation into the impact of organisational culture on digital transformation produced compelling findings.

The relationship was robustly positive ( $\beta = 2.181$ ,  $p < 0.001$ ), signalling that a nurturing and supportive organisational culture serves as a critical enabler of digital transformation initiatives. This emphasis on culture highlights its role in facilitating change, thereby demonstrating that organisations seeking to enhance their digital initiatives should focus on cultivating a conducive environment.

Unexpectedly, the analysis of transformational leadership in relation to digital transformation yielded a significant

negative impact ( $\beta = -1.492$ ,  $p = 0.009$ ). These findings challenge conventional wisdom, which typically positions transformational leadership as a catalyst for positive change. The negative correlation suggests that, within this context, certain characteristics or practices associated with transformational leadership may inadvertently hinder progress in digital transformation, warranting further investigation into the possible contextual factors at play. However, transformational leadership was found to exert a strong and positive influence on organisational culture ( $\beta = 0.560$ ,  $p < 0.001$ ). This result reinforces the idea that effective leadership is instrumental in establishing a vibrant culture that is predicated upon adaptability and responsiveness to digital demands. Coupled with the positive relationship identified between digital leadership and organisational culture ( $\beta = 0.418$ ,  $p = 0.012$ ), it is evident that leaders who leverage digital competencies can significantly enhance the cultural landscape that underpins digital initiatives.

Moreover, the relationship between organisational culture and digital maturity revealed a significant but negative impact ( $\beta = -1.207$ ,  $p = 0.034$ ). This finding suggests a complexity wherein a strong organisational culture might paradoxically impede the adoption of innovative digital practices. The tension between cultural values and the pursuit of digital maturity may indicate that although culture can provide cohesion and identity, it may also engender resistance to change, thereby stifling necessary advancements. Furthermore, both transformational leadership ( $\beta = 0.971$ ,  $p = 0.026$ ) and digital leadership ( $\beta = 0.917$ ,  $p = 0.048$ ) were positively associated with digital maturity. Interestingly, digital leadership was not found to be significant for digital transformation to occur; its impact is mediated through organisational culture.

Finally, the outcome between organisational culture and digital transformation indicates a strong positive coefficient and is statistically significant ( $\beta = 2.181$ ,  $p < 0.001$ ). However, the presence of a dotted line next to this coefficient suggests a notable complexity or potential caveat in the interpretation of this relationship. This visual representation implies that while organisational culture has a strong direct effect on digital transformation, there might be a condition or mediation, such as digital maturity, illustrated by the dotted line that tempers this relationship. Thus, while a strong relationship exists between organisational culture and digital transformation, the negative relationship with digital maturity suggests that cultural frameworks may require refinement to foster digital readiness effectively. The overall findings are summarised in Table 3.

## Discussion

Firstly, the research underscores the complex relationship between leadership and digital transformation within South Africa's public sector. Transformational leadership is often recognised in the literature (Philip 2021; Prince 2017) for its positive impact on digital transformation processes.

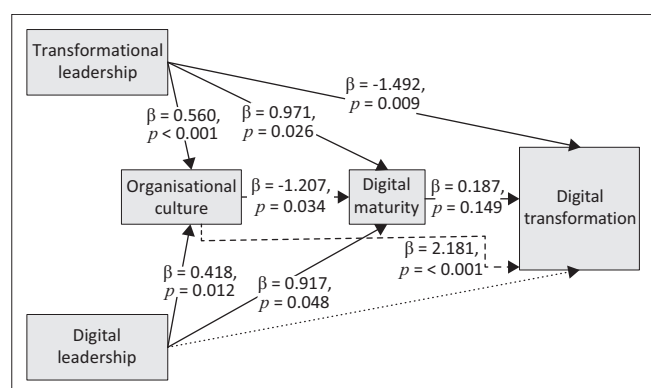


FIGURE 2: Digital transformation model for SA public sector.

**TABLE 3:** A summary of the results.

Hypothesis	Independent variable		Dependent variable	Results	Decision
H1	Digital maturity	->	Digital transformation	( $\beta = 0.19, p = 0.149$ )	Rejected
H2	Organisational culture	->	Digital transformation	( $\beta = 2.18, p < 0.001$ )	Accepted
H3	Transformational leadership	->	Digital transformation	( $\beta = -1.492, p = 0.009$ )	Accepted
H4	Transformational leadership	->	Organisational culture	( $\beta = 0.56, p < 0.001$ )	Accepted
H5	Digital leadership	->	Organisational culture	( $\beta = 0.42, p = 0.012$ )	Accepted
H6	Organisational culture	->	Digital maturity	( $\beta = -1.21, p = 0.034$ )	Accepted
H7	Transformational leadership	->	Digital maturity	( $\beta = 0.97, p = 0.026$ )	Accepted
H8	Digital leadership	->	Digital maturity	( $\beta = 0.92, p < 0.05$ )	Accepted

However, this study reveals a paradox in which transformational leadership can negatively affect digital transformation outcomes. This finding suggests that the relationship between leadership and digital transformation is influenced by specific contextual factors unique to the South African landscape.

Secondly, the surprising lack of a significant relationship between digital leadership and digital transformation indicates that digital leadership does not directly drive transformation but instead functions through the mediating effect of organisational culture. Although digital leadership notably influences organisational culture, the absence of a direct impact on transformation highlights the importance of fostering a culture that encourages digital readiness and adaptability. This perspective contrasts with the findings of De Araujo et al. (2021) and Klein (2020), which emphasise the critical role and direct impact of digital leadership in advancing digital initiatives.

Thirdly, this research suggests that transformational leadership may need to be adapted to align with the hierarchical cultural norms prevalent in many South African organisations. This assertion is supported by Grobler and Grobler (2023) and Grobler and Singh (2018), who argue that established leadership theories may not be universally applicable. They emphasise the need for effective leadership to consider the unique characteristics of its environment, as well as the significant influence of cultural and social factors. In this context, integrating leadership and cultural development becomes essential for sustainable transformation initiatives.

Fourthly, the results highlight the critical role of organisational culture in promoting digital transformation. There exists a strong affirmative correlation between organisational culture and digital transformation, in line with studies by Alshammari et al. (2024) and Ghafoori et al. (2024). These findings illustrate that supportive cultural settings boost employee engagement with digital initiatives. Additionally, the evidence underscores that cultivating a culture that encourages innovation propels digital transformation efforts.

Fifthly, the research also uncovers a negative association between digital maturity and organisational culture, implying that deep-rooted cultural characteristics might obstruct adaptability. This points to the necessity for a more

intricate understanding of how to foster an agile organisational culture that bolsters and enhances digital maturity. While digital maturity is acknowledged as critical for successful digital transformation (Kane et al. 2017), the study observes no significant relationship, challenging prevailing narratives and underscoring the need for an approach attuned to specific contexts.

Lastly, the findings confirm the positive links between transformational leadership, digital leadership, and organisational culture. This finding is consistent with the literature that emphasises leadership's role in fostering a culture that enhances organisational performance (Sethibe & Steyn 2015). The outcomes also validate that both transformational and digital leadership positively influence digital maturity. This is supported by existing literature, which asserts that capable leadership is vital for developing the digital capabilities required for transformation (Magesa & Jonathan 2022; Sow & Aborbie 2018).

## Conclusion

This study offers a valuable empirical contribution to understanding how transformational leadership, digital leadership, organisational culture and digital maturity collectively shape digital transformation within South Africa's public sector. The findings directly challenge prevailing assumptions in the literature, particularly the widely held notion that transformational leadership universally enhances digital transformation. Instead, this study demonstrates that within bureaucratic and hierarchical public institutions, transformational leadership may, in fact, obstruct digital progress. This represents a significant departure from dominant Western-centric leadership models and underscores the urgent need for leadership approaches that are culturally and institutionally congruent with African public-sector realities.

The study makes a further theoretical contribution by validating a multidimensional model that integrates behavioural, cultural and technological constructs into a single, coherent framework. The results affirm that leadership affects digital transformation primarily through its influence on organisational culture and digital maturity, reinforcing the argument that transformation is inherently socio-technical rather than purely technological. This unified model advances the field by moving beyond fragmented analyses and offering a holistic pathway linking leadership practice, cultural adaptation and digital capability.

A central contribution of this study is the identification of organisational culture as the most powerful predictor of digital transformation success. The finding that digital maturity alone does not yield substantial transformation outcomes highlights a critical insight: technology readiness is insufficient without an adaptive and enabling culture. This reframes existing theoretical debates by emphasising that sustainable transformation is achieved only when leadership behaviour, institutional norms and capability development are aligned. The study thus provides a robust and contextually anchored African perspective that strengthens global scholarship regarding digital transformation.

## Implications of the study

### Policy implications

The findings present clear and actionable implications for policymakers. Digital transformation policies must extend beyond infrastructure investment to explicitly prioritise leadership and cultural modernisation. Policy frameworks should mandate leadership competency development centred on digital literacy, collaborative governance and cross-functional integration. Furthermore, reforms must pay attention to entrenched hierarchical practices by promoting decentralised decision-making and governance structures that enable innovation and organisational agility. Without such systemic reforms, digital strategies will continue to underperform.

### Practical implications for public-sector leadership

The study provides unequivocal guidance for public-sector leaders. Successful digital transformation requires a deliberate alignment between leadership development and cultural change. Leadership programmes should cultivate contextual intelligence, enabling leaders to adjust their styles to institutional constraints and socio-cultural conditions. Digital leaders should intentionally shape cultures that support experimentation, inclusivity and collective learning. These cultural shifts are essential for reducing resistance to change and enabling the sustained implementation of digital initiatives.

### Research implications

The validated model introduced in this study opens several avenues for future scholarship. Researchers should examine the model across other sectors and developing-country contexts to test its generalisability. Longitudinal studies may provide deeper insight into how leadership, culture and digital capability evolve over time. In addition, qualitative research could enrich an understanding of the behavioural, political and institutional dynamics that influence transformation trajectories.

### Limitations and future research recommendations

This research has some limitations. Firstly, it utilised a quantitative methodology. Secondly, it focused on a limited

number of government departments in South Africa. In the light of this limitation, multiple directions for future research are suggested. Firstly, researchers should explore longitudinal studies that monitor changes in digital maturity and transformation over time to establish causal relationships more clearly. This method may help to determine whether digital maturity acts as a precursor to transformation or if it is simply correlated without exerting significant influence. Future investigations should consider the traits of transformational leadership that may hinder digital advancement in South African organisations, potentially resulting in the creation of customised leadership models that align more effectively with local cultural practices. Secondly, future research should also explore the mechanisms through which digital leadership influences digital transformation, as well as identify other factors that may mediate or moderate this relationship. Finally, comparative analyses across various cultural contexts, both domestically in South Africa and globally, could provide significant insights into the applicability of leadership theories concerning digital transformation, advancing a more thorough understanding of the public-sector innovation landscape worldwide.

## Acknowledgements

### Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

### CRedit authorship contribution

Sello E. Mmakau: Formal analysis, Writing – original draft, Software, Data curation, Resources, Writing – review & editing. Tebogo Sethibe: Conceptualisation, Methodology, Writing – review & editing, Supervision. All authors reviewed the article, contributed to the discussion of results, approved the final version for submission and publication, and take responsibility for the integrity of its findings.

### Funding information

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

### Data availability

The data that support the findings of this study are available from the corresponding author, Tebogo Sethibe, upon reasonable request.

### Disclaimer

The views and opinions expressed in this article are those of the authors and are the product of professional research. It does not necessarily reflect the official policy or position of any affiliated institution, funder, agency, or that of the publisher. The authors are responsible for this article's results, findings, and content.

## References

- Abbu, H., Mugge, P., Gudergan, G. & Kwiatkowski, A., 2020, 'Digital leadership: Character and competency differentiates digitally mature organizations', in B.O. Abass, S. Ben-Henda & R. Ajmal (eds.), *2020 IEEE International Conference on Engineering, Technology and Innovation (ICE/ITMC)*, IEEE, Cardiff, UK, 15–17 June, 2020, pp. 1–9.
- Abuqadumah, N.M.H. & Azam, S.M.F., 2021, 'Impact of transformational leadership on organizational culture in the higher education institutions of Libya', *Psychology and Education Journal* 58(2), 8246–8256.
- Alshammari, K.H., Alshallaqi, M. & Al-Mamary, Y.H., 2024, 'Digital transformation dilemma in the era of changing dynamics: How organizational culture influence the success of digital transformation', *Human Systems Management* 3(4), 455–472. <https://doi.org/10.3233/HSM-230163>
- Alshammari, S., Carter, L. & Alharthi, A., 2021, 'The role of organisational culture in digital transformation: A systematic review', *International Journal of Information Management* 58, 102430.
- Aras, A. & Büyükköçkan, G., 2023, 'Digital transformation journey guidance: A holistic digital maturity model based on a systematic literature review', *Systems* 11(4), 213. <https://doi.org/10.3390/systems11040213>
- Bass, B.M. & Avolio, B.J., 1995, *Improving organizational effectiveness through transformational leadership*, pp. 230–245, Sage, Thousand Oaks, CA.
- Breuer, S. & Szillat, P., 2019, 'Leadership and digitalization: Contemporary approaches towards leading in the modern-day workplace', *Dialogue* 1(20), 24–36.
- Brodtkorb, K., Skaar, R. & Slettebø, Å., 2019, 'The importance of leadership in innovation processes in nursing homes: An integrative review', *Nordic Journal of Nursing Research* 39, 127–136. <https://doi.org/10.1177/2057158519828140>
- De Araujo, L.M., Priadana, S., Paramarta, V. & Sunarsi, D., 2021, 'Digital leadership in business organizations: An overview', *International Journal of Educational Administration Management and Leadership* 2(1), 45–56. <https://doi.org/10.51629/ijeamal.v2i1.18>
- El Sawy, O.A., Kræmmergaard, P., Amsinck, H. & Vinther, A.L., 2020, 'How LEGO built the foundations and enterprise capabilities for digital leadership', in R.D. Galliers, D.E. Leidner & B. Simeonova (eds.), *Strategic information management*, pp. 174–201, Routledge, New York, NY.
- Ghafoori, A., Gupta, M., Merhi, M.I., Gupta, S. & Shore, A.P., 2024, 'Toward the role of organizational culture in data-driven digital transformation', *International Journal of Production Economics* 271, 109205. <https://doi.org/10.1016/j.ijpe.2024.109205>
- Goodboy, A.K. & Kliene, R.B., 2016, 'Statistical and practical concerns with published communication research featuring structural equation modeling', *Communication Research Reports* 34(1), 68–77. <https://doi.org/10.1080/08824096.2016.1214121>
- Grobler, A. & Singh, M., 2018, 'Leadership in Southern Africa: A regional Afrocentric hierarchical taxonomy', *Insight on Africa* 10(1), 169–193. <https://doi.org/10.1177/0975087818772236>
- Grobler, S. & Grobler, A., 2023, 'Measurement of transformational leadership in South Africa: Assessed from an ethics perspective', *SA Journal of Industrial Psychology* 49(1), 1–11. <https://doi.org/10.4102/sajip.v49i0.2085>
- Hair Jr, J., Page, M. & Brunsveld, N., 2019, *Essentials of business research methods*, Routledge, New York, NY.
- Hartl, E. & Hess, T., 2017, 'The role of cultural values for digital transformation: Insights from a Delphi study', in E. Loiacono & T. Hess (eds.), *Twenty-third Americas Conference on Information Systems*, Association for Information Systems, Boston, 10–12 August, 2017, pp. 1–7.
- Hemerling, J., Kilmann, J., Danoesastro, M., Stutts, L. & Ahern, C., 2018, *It's not a digital transformation without a digital culture*, pp. 1–33, The Boston Consulting Group.
- Heriansyah, T., Zulfadil, Z. & Maulida, Y., 2025, 'The influence of digital leadership, digital innovation and organizational learning on digital maturity to improve organizational performance: Empirical study from PT. Perkebunan Nusantara IV Regional III, Indonesia', *Golden Ratio of Human Resource Management* 5(1), 159–168.
- Hu, L.T. & Bentler, P.M., 1999, 'Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives', *Structural Equation Modeling: A Multidisciplinary Journal* 6(1), 1–55.
- Kane, G.C., Palmer, D., Phillips, A.N., Kiron, K. & Buckley, N., 2017, 'Achieving digital maturity', in D. Kiron & G.C. Kane (eds.), *Research report in collaboration with Deloitte University and MIT Sloan*, pp. 4–16, MIT Sloan Management Review and Deloitte University, Cambridge, MA, New York.
- Kane, G.C., Palmer, D., Phillips, A.N., Kiron, K. & Buckley, N., 2018, 'Coming of age digitally: Learning, leadership, and legacy', in *Research report in collaboration with Deloitte University and MIT Sloan*, pp. 5–11.
- Kargas, A. & Loumos, G., 2023, 'Cultural industry's strategic development: Reaching international audience by using virtual reality and augmented reality technologies', *Heritage* 6(6), 4640–4652. <https://doi.org/10.3390/heritage6060246>
- Kargas, A., Gialeris, E., Komisopoulos, F., Lymperiou, A. & Salmon, I., 2023, 'Digital maturity and digital transformation strategy among Greek small and medium enterprises', *Administrative Sciences* 13(11), 236. <https://doi.org/10.3390/admsci13110236>
- Khan, Z.A., Nawaz, A. & Khan, I., 2016, 'Leadership theories and styles: A literature review', *Journal of Resources Development and Management* 16, 1–7.
- Kieser, H., 2017, 'The influence of digital leadership, innovation and organisational learning on the digital maturity of an organisation', Mini dissertation, pp. 1–114, University of Pretoria.
- Kihara, P., Bwisa, H. & Kihoro, J., 2016, 'Nexus between leadership styles and performance of small and medium manufacturing firms in Kenya', *British Journal of Applied Science & Technology* 18(3), 1–13. <https://doi.org/10.9734/BJAST/2016/29341>
- Klein, M., 2020, 'Leadership characteristics in the era of digital transformation', *Business & Management Studies: An International Journal* 8(1), 883–902. <https://doi.org/10.15295/bmj.v8i1.1441>
- Layton-Matthews, S. & Landsberg, C., 2022, 'The fourth industrial revolution (4IR) and its effects on public service delivery in South Africa', *The Thinker* 90(1), 55–64. <https://doi.org/10.36615/thethinker.v90i1.1173>
- Magesa, M.M. & Jonathan, J., 2022, 'Conceptualizing digital leadership characteristics for successful digital transformation: The case of Tanzania', *Information Technology for Development* 28(4), 777–796. <https://doi.org/10.1080/02681102.2021.1991872>
- Mandagi, D.W., Rantung, D.I., Rasuh, D. & Kowaas, R., 2023, 'Leading through disruption: The role of transformational leadership in the digital age', *Jurnal Mantik* 7(3), 1597–1161. <https://doi.org/10.35335/jmantik.v7i2.4164>
- Mantzaris, E., 2016, 'Innovative leadership against corruption in the public sector: The case for South Africa', *African Journal of Public Affairs* 9(1), 59–69, viewed October 2025, from <http://hdl.handle.net/2263/58185>.
- Mhlanga, D., 2023, 'Digital transformation and public-sector innovation in South Africa: Policy perspectives', *Journal of Public Administration* 58(1), 95–110.
- Mmakau, S. & Sethibe, T., 2023, 'Digital leadership: Systematic literature review', in C.A. Bisschoff (ed.), *2023 International Business Conference*, Swakopmund, Namibia, September 24–28, 2023, pp. 446–462, University of South Africa, Pretoria.
- Naidoo, P., 2022, 'Transformational leadership and innovation in the public sector', *South African Journal of Human Resource Management* 20(1), a1853.
- Nkuna, N. & Sebola, M., 2022, 'Fourth industrial revolution and public sector innovation in South Africa', *Administratio Publica* 30(1), 89–105.
- Paltu, A. & Brouwers, M., 2020, 'Toxic leadership: Effects on job satisfaction, commitment, turnover intention and organisational culture within the South African manufacturing industry', *SA Journal of Human Resource Management* 18(1), 1–11. <https://doi.org/10.4102/sajhrm.v18i0.1338>
- Park, J., Han, S.J., Kim, J. & Kim, W., 2022, 'Structural relationships among transformational leadership, affective organizational commitment, and job performance: The mediating role of employee engagement', *European Journal of Training and Development* 46(9), 920–936. <https://doi.org/10.1108/EJTD-10-2020-0149>
- Philip, J., 2021, 'Viewing digital transformation through the lens of transformational leadership', *Journal of Organizational Computing and Electronic Commerce* 31(2), 114–129. <https://doi.org/10.1080/10919392.2021.1911573>
- Prakasa, Y., Raharjo, K. & Wiratama, I.D., 2019, 'Transformational leadership and digital maturity: The mediating role of organizational culture', in B. Supriyono (ed.), *Proceedings of the 2nd Annual International Conference on Business and Public Administration (AICoBPA 2019)*, Atlantis Press, Malang, Indonesia, 23–24 October, 2019, pp. 224–228.
- Prince, K.A., 2017, 'Association for information systems AIS electronic library (AISel): Industrie 4.0 and Leadership', *PalArch's Journal of Archaeology of Egypt / Egyptology* 14(1), 132–137.
- Sethibe, T. & Steyn, R., 2015, 'The relationship between leadership styles, innovation and organisational performance: A systematic review', *South African Journal of Economic and Management Sciences* 18(3), 325–337. <https://doi.org/10.4102/sajems.v18i3.1193>
- Shah, S.S. & Patki, S.M., 2020, 'Getting traditionally rooted Indian leadership to embrace digital leadership: Challenges and way forward with reference to LMX', *Leadership Education & Personal Development Interdisciplinary Journal* 2(1), 29–40. <https://doi.org/10.1365/s42681-020-00013-2>
- Simić, I. & Matović, I.M., 2018, 'Organizational culture as a factor of digital maturity of organizations in the tourism sector', in V. Bevanda & S. Štetić (eds.), *3rd International Thematic Monograph – Thematic Proceedings: Modern Management Tools and Economy of Tourism Sector in Present Era*, Association of Economists and Managers of the Balkans, Belgrade, Serbia, 15–17 July, 2018, pp. 231–242.
- Sow, M. & Aborbie, S., 2018, 'Impact of leadership on digital transformation', *Business and Economic Research* 8(3), 139–148. <https://doi.org/10.5296/ber.v8i3.13368>
- Stana, R.A.B., Fischer, L.H. & Nicolajsen, H.W., 2018, 'Review for future research in digital leadership', in *Information Systems Research Conference in Scandinavia (IRIS41)*, Århus, Denmark, 05–08 August, 2016.
- Truter, B., 2016, 'Transformational leadership style: The relationship to companies that are digital leaders', Mini dissertation (MBA), University of Pretoria, viewed August 2025, from <http://hdl.handle.net/2263/59790>.
- Van Ee, J., El Attoui, I., Ravesteyn, P.I. & De Waal, B.M., 2020, 'BPM maturity and digital leadership: An exploratory study', *Communications of the IIMA* 18(1), 2. <https://doi.org/10.58729/1941-6687.1414>
- Verhoef, P.C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Qi Dong, J., Fabian, N. et al., 2020, 'Digital transformation: A multidisciplinary reflection and research agenda', *Journal of Business Research* 122, 889–901. <https://doi.org/10.1016/j.jbusres.2019.09.022>
- Wang, Y., Ran, B. & Ma, L., 2025, 'Decoding paradoxes in digital government: Strategies for the pursuit of public value', *Public Administration*. <https://doi.org/10.1111/padm.70008>
- Xenikou, A. & Furnham, A., 2022, 'Leadership and organizational culture', in C. Newton & R. Knight (eds.), *Handbook of research methods for organisational culture*, pp. 23–38, Edward Elgar Publishing Limited, Cheltenham.
- Yoon, S.N., Lee, D.H. & Schrienerjans, M., 2016, 'Effects of innovation leadership and supply chain innovation on supply chain efficiency: Focusing on hospital size', *Technological Forecasting and Social Change* 113, 412–421. <https://doi.org/10.1016/j.techfore.2016.07.015>