

From Transformational Leadership to Digital Transformation: The Role of Employee Engagement in Islamic Banking

Suhaib Ahmed¹, Tauqir Ahmad Ghauri², Syed Muhammad Javed Iqbal³

¹ PhD Scholar, Department of HRM & Management, The Islamia University of Bahawalpur, Pakistan.

Email: suhaibahmad@gmail.com

² Lecturer, Department of Management Sciences, The Islamia University of Bahawalpur, Pakistan.

Email: tauqir.ahmad@iub.edu.pk

³ Associate Professor, Department of HRM & Management, The Islamia University of Bahawalpur, Pakistan.

Email: javed.iqbal@iub.edu.pk

ARTICLE INFO

Article History:

Received: March 17, 2026

Revised: June 12, 2026

Accepted: June 22, 2026

Available Online: June 30, 2026

Keywords:

Transformational Leadership

Digital Transformation

Employee Engagement

Islamic Banking

PLS-SEM

Funding:

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

ABSTRACT

The changing landscape of financial services driven by customer expectations, financial technologies, regulations, and competition has made digital transformation a strategic priority for banks. This study examines whether transformational leadership facilitates digital transformation in Pakistan's Islamic banking sector and whether employee engagement explains this relationship. Based on the Transformational Leadership Theory and the Social Exchange Theory, the researchers suggest that leaders who present a clear vision, catalyze thinking, show caring behavior, and provide personalized attention can increase employees' commitment to and involvement in technology-mediated organizational change. The study adopted a quantitative, cross sectional survey design and the data were collected from employees of Islamic banking institutions in Pakistan. The collected data was analyzed using partial least squares structural equation modeling (PLS-SEM) in Smart-PLS 4 by employing bootstrapping for testing direct and indirect effects. The findings show that transformational leadership has a positive and significant effect on employee engagement ($\beta = 0.569$, $p < 0.001$) and digital transformation ($\beta = 0.354$, $p < 0.001$). The indirect effect of transformational leadership on digital transformation through employee engagement is also positive and significant ($\beta = 0.276$, $p = 0.004$), indicating that employee engagement represents an important mechanism through which leadership contributes to digital change. The model explains 32.3% of the variance in employee engagement and 17.3% of the variance in digital transformation. The findings of the study contribute to the literature by combining leadership, engagement, and digital transformation in a not well-studied context of Islamic banking, and it emphasizes that banks should go beyond investing in technologies to ensure that leadership development, employee engagement, communication, learning opportunities, and organizational support are all in place throughout a digital transformation journey.



© 2026 The Authors, Published by iRASD. This is an Open Access article under the Creative Common Attribution Non-Commercial 4.0

Corresponding Author's Email: tauqir.ahmad@iub.edu.pk

Citation: Ahmed, S., Ghauri, T. A., & Iqbal, S. M. J. (2026). From Transformational Leadership to Digital Transformation: The Role of Employee Engagement in Islamic Banking. *iRASD Journal of Management*, 8(2), 57–77. <https://doi.org/10.52131/irasd-jom.2026.v8i2.3251>

1. Introduction

The journey of digital transformation is no longer just about technology; it has become an organizational priority in the global banking sector. Digital banking with mobile apps, AI, data analytics, financial technology, digital payment systems, and cloud-based services are transforming customer interactions, internal operations, information

management, and value creation in the banking industry. Digital transformation thus goes beyond implementing individual technologies and entails profound changes in organizational strategy, structure, processes, capabilities, and culture (Vial, 2019; Verhoef et al., 2021). For financial institutions, in particular, the more expansive view is true – digital initiatives could include changing the customer experience, business operations, employee capabilities, decision making and even the way the organization operates. Thus, digital transformation is not just about technology investment, it's about shifting people and influencing employee behaviors to achieve digital outcomes.

This transformation is especially significant in Pakistan's booming Islamic banking industry. According to the Pakistan Economic Survey 2025–26, the total assets of Islamic Banking Institutions increased to PKR 14.467 trillion by the end of December 2025, while deposits reached PKR 11.037 trillion. Islamic banking was, therefore, 22.9% of the total assets of banking sector and 27.8% of total deposits (Government of Pakistan, 2026). Meanwhile, the State Bank of Pakistan (SBP) has been actively pushing for digitalization of financial services by launching initiatives to encourage Raast-based transactions, onboarding digital merchants, and enhancing self-service banking facilities (State Bank of Pakistan, 2025). Due to the growth of Islamic banking and the speed at which the financial system is digitalizing in Pakistan, Islamic banks are going under pressure to adapt to the disruption of technology, customers' increasing expectations, the toughening competition, regulators' requirements, and the need to upskill their workforce to function effectively in the new digital financial system.

While there has been significant investment in digital platforms and technologies, organizational transformation often proves challenging as digital transformation is as much a human as it is technological process. New digital goals will require employees to learn new skills, change existing work habits, work collaboratively across organizational structures, and be willing to try new and unknown technologies. However, organizational resistance, lack of communication, lack of employee participation and poor strategic alignment can impact the success of otherwise technically successful digital efforts (Cortellazzo et al., 2019; Vial, 2019). This shows that leadership is a key organizational competency that enables banks to convert investments in technology into employee behavior and organizational process changes.

Transformational leadership is especially relevant in this context because it involves a leader developing a vision, offering individualized consideration to followers, stimulating followers to think in new ways, and inspiring followers to transcend conventional thinking (Bass & Riggio, 2006). These practices are especially well suited to the requirements of digital transformation. Leaders need to communicate the need for digital change, minimise uncertainty around new technologies, challenge employees to think and question existing routines, and foster an environment where learning and experimentation are welcomed. The key role of leadership in fostering digital culture and aligning people, technology, and organizational strategy is underscored in a systematic review conducted by Cortellazzo et al. (2019). Similarly, Ly (2024) demonstrates the role of transformational types of leadership in supporting organizational digital transformation and improving organizational capabilities to adapt to technological changes. Leadership is therefore a key organisational process by which digital projects can transition from technology purchases to organisational change.

However, the impact of leadership on digital transformation is not necessarily first order. Employee engagement is a psychological and behavioral process that plays a crucial role in the transformational leadership's ability to create organizational change. Employee engagement is a measure of how much employees put into their work in terms of energy, commitment, attention and involvement. When employees are engaged, they are more likely to give discretionary effort, acquire new skills, join in with organisational initiatives and respond positively to change. This engagement can be enhanced by the transformational leaders through communicating an inspiring vision, recognizing employee contributions, giving employees autonomy and creativity, and giving individual development support. A consistent relationship between transformational leadership and work engagement has been reported in various studies (Bakker et al., 2023; Tims, Bakker, & Derks, 2011). Similarly, in digital environments, Hooi and Chan (2023) also show the positive role of transformational leadership as a precursor of employee engagement;

Winasis et al. (2021) reveal that the positive relationship between transformational leadership climate and employee engagement in the banking sector during a digital transformation process.

Employee engagement can then support the process of digital transformation; the more employees are engaged, the more likely they are to be engaged in technology-driven organizational change. Digital transformation often involves employees giving up established habits, mastering new systems, sharing knowledge, working with different tech teams, and sharing ideas for how to make digitally supported processes better. These behaviours must go above and beyond the formal compliance. Hizam et al. (2023) highlights the role of workforce engagement within the digital transformation of the organization, and organizations should hire employees who are both psychologically willing and behaviorally active in digital change. Hence, employee engagement may be a missing link between employees' transformational leaders' behaviors and how much digital transformation is embedded in organizational practices.

The research on Digital transformation, Leadership, and employee engagement has grown significantly but there are significant gaps. First, the focus of many of the studies on digital transformation is on technological capabilities, digital strategies, organisational agility, or innovation outcomes, while much less research has focused on the mechanism at the level of the employee that makes leadership a part of digital transformation. Second, there are several studies that explore the relationship between transformational leadership and employee engagement as well as the relationship between leadership and digital transformation separately. Further empirical study is thus needed to examine the integrated pathway through which transformational leadership stimulates employee engagement to improve digital transformation. Third, there is still a high context dependence in relevant empirical evidence. For example, Winasis et al. (2021) examine leadership and engagement during digital transformation in the Indonesian banking industry, while Hooi and Chan (2023) investigate workplace digitalization and employee engagement among Malaysian organizations. The findings of the study are helpful, but they are not necessarily transferable to the Islamic banking industry in Pakistan because of differences in the financial, regulatory, institutional and organizational environment.

The contextual gap is important because the development of Islamic banking in Pakistan continues to advance and the ability of banks to align Technological Development with workforce readiness is critical. However, little empirical study has focused on the impact of leadership styles on employee engagement in digital transformation in Islamic banks in Pakistan. This study of the relationship can be used as a chance to step beyond technology-driven narratives of digital transformation and explore the human and leadership-oriented processes used to enact transformation.

Hence, this study explores the impact of transformational leadership on digital transformation in the Islamic banking sector of Pakistan and studies the role of employee engagement as a mediator. The concept of this study is mainly based on Transformational Leadership Theory (Bass, 1985) and Social Exchange Theory (Blau, 1964). According to Transformational Leadership Theory, leaders can motivate their employees by conveying an inspiring vision, showing concern for the individual, fostering innovative thinking, and exemplifying conduct to be emulated. Social Exchange Theory adds to this theory by suggesting that employees who feel supported, recognised, and invested in by their leaders are more likely to respond by engaging and behaving constructively in their organisation. These perspectives provide a parsimonious theory-based explanation, which posits that transformational leadership can influence employee engagement to greater involvement in digital transformation.

This study makes three significant contributions. Theoretically, it brings together the notions of transformational leadership and Social Exchange Theory to explain the process of a behaviour through which leadership enables digital transformation, which is not to say that leadership is the cause of digital transformation. Empirically, it explores how employee engagement is the link between the constructs of transformational leadership and digital-transformation, thereby connecting the previously scattered studies of leadership, employee engagement and digital-transformation. In this context, the study adds to this literature by

focusing on the growing Islamic banking industry in Pakistan, where the leadership–employee–digital change dynamics are still relatively under-researched. The study also offers a managerial perspective on the digital transformation strategies, indicating that it is not only about acquiring technology. Leadership development, employee involvement, communication, learning opportunities, and organizational support are important contributors in the process of transformation and can add value to digital investments for Islamic banks.

2. Literature Review

This section clarifies the basic concepts that anchor the study transformational leadership (TL), digital transformation (DT) and employee engagement (EE) explains how they interrelate in the Islamic Banking Sector in Pakistan. Each concept summarizes main evidence and then presents the theoretical framework and hypotheses that guide the analysis.

2.1. Transformational leadership (TL)

Transformational leadership (TL) is a type of leadership that “inspires followers to exceed routine expectations by appealing to higher order needs and a shared vision (Bass & Riggio, 2006; Prabowo et al., 2018)”. The model includes 04 dimensions: inspirational motivation, idealized influence, individualized consideration and intellectual stimulation.

Idealized influence involves the ethical role models that leaders become, gaining the trust and respect of their followers and encouraging them to follow the leader's example and accept the collective mission (Gomes, 2014). Intellectual stimulation involves improving employees to “question assumptions, reframe problems, and experiment with new approaches, thereby enhancing problem-solving and creativity (Cahyono, 2024; Khan & Khan, 2019; Yusuf et al., 2023)”. Inspirational motivation is defined as “the ability of leaders to communicate an energizing vision, coupled with meaningful expectations, which are critical in public organizations where work must be connected to the positive outcomes in society (Al Dari et al., 2018; Salas-Vallina et al., 2020)”. Individualized consideration involves “coaching, mentoring and paying attention to each employee's needs and development, which strengthens the leader–follower bond and which supports sustained performance (Bass & Riggio, 2006)”.

Collectively, these behaviors position leaders as catalysts for change, including large-scale reforms such as digital transformation (DT) (Sihite et al., 2020; Yukl et al., 2019). However, in public sector contexts, constraints such as rigid procedures, bureaucratic cultures, and resource limitations can hinder the consistent enactment of TL (Boukamcha, 2023; Irianto & Basbeth, 2021; Mishra et al., 2023). We thus view our study through the prism of pragmatism and consider how TL functions within real-world conditions, namely, in the context of DT.

2.1.1. Transformational leadership (TL) in the Islamic Banking Sector in Pakistan

In Islamic Banking Sector, TL is viewed as vital for improving public sector effectiveness by aligning employees with a clear vision, enhancing motivation, and encouraging innovation (Harb & Sidani, 2019; Tanović, 2023). The four TL dimensions have been related to stronger commitment (Alamri, 2023; Bhatti et al., 2021), more innovative behavior (Yusuf et al., 2023), and better performance (Cahyono, 2024; Moynihan, 2013). In addition, TL can be used to address resistance to change, create a shared vision of the future (Harb & Sidani, 2019; Sihite et al., 2020), and facilitate digital governance efforts (Dema et al., 2023; Mulyani, 2024), which helps to achieve the engagement and transformation outcomes (Bentaleb, 2024; Saadah, 2024).

Meanwhile, Islamic Banking Sector has established bureaucratic norms, resistance to change and limited resources, which can hinder the impact of TL (Nugroho & Muslim, 2024). There may be a negative effect of hierarchical structures on autonomy and bottom-up initiative. In this context, effective TL should then not only inspire, but also be agile, move through institutional barriers and adapt practices to local contexts.

2.2. Digital transformation (DT)

There are three related but distinct terms that are frequently confused: digitization, digitalization, and digital transformation (DT). Digitization is the conversion of analog information into digital form. Digitalization means applying digital technologies to enhance processes and service models. Digital transformation (DT) goes further, entailing a fundamental redesign of strategies, processes, and culture to fully leverage digital capabilities across the organization (Gradillas & Thomas, 2023; Onesi-Ozigagun et al., 2024).

Digital transformation (DT) aims to enhance effectiveness, efficiency, transparency, and citizen experience through e government platforms, data-driven decision-making, and automation (Kattel & Mergel, 2019; Wirtz & Daier, 2018). It also involves the need for a new culture of agility and lifelong learning (Kattel & Mergel, 2019). Implementation issues include the ability to obtain qualified leadership, ensuring stakeholder buy-in, and determining organizational readiness (Dahlström et al., 2017), in addition to managing employee work and interaction changes (Meske et al., 2020). International examples (e.g., Estonia, Singapore) show how vision and coherent policy lead to large scale digital government (Joo, 2023; Kattel & Mergel, 2019).

2.2.1. Digital transformation (DT) in Islamic Banking Sector in Pakistan

Digital transformation (DT) in the Islamic Banking Sector in Pakistan is viewed as a multi-dimensional transformation aimed at enhancing the public value, optimizing the operations, and creating innovation (Bouaziz, 2020; Mkrtchyan & Melkumyan, 2023; Nurfadilah & Haliah, 2024). The main objectives of the national strategies include expanding e government, bridging the digital divide and promoting entrepreneurship (Nabi, 2019). However, there are still implementation gaps, and there are concerns about inclusion, especially for marginalized groups (Arman, 2023; Ikwuanusi et al., 2024; Nurfadilah & Haliah, 2024). The introduction of digital vaccination solutions and the development of new digital payment systems illustrate advancements, while initiatives like Gov Tech aim to enhance equitable, user-centric service delivery (Youssef, 2024). Scalable solutions, cloud computing, data analytics, and automation play a crucial role in enhancing productivity and accountability, as noted by Ikwuanusi et al. (2024). Overall, Islamic Banking Sector progress will depend on closing implementation gaps and ensuring inclusive, effective rollout (Mkrtchyan & Melkumyan, 2023; Nurfadilah & Haliah, 2024).

2.3. Employee Engagement (EE)

Employee engagement (EE) as defined by Bakker et al. (2023) is the extent that an employee feels emotionally and cognitively connected to their organization and work, and is willing to put in discretionary effort toward shared goals, as supported by Swarnalatha and Prasanna (2012); Shaik and Makhecha (2019); Alagarsamy et al. (2023). Broader engagement relates to higher quality of work life, improved performance, and more effective delivery of public services (Rahmadani et al., 2025). A widely used conceptualization includes three dimensions: vigor (energy and resilience), dedication (significance, enthusiasm, pride), and absorption (deep concentration) (Nikolova et al., 2019).

There is a strong relationship between engagement and performance and job satisfaction (Bussin & Nienaber, 2015). Transformational leadership (TL) tends to stimulate engagement more effectively than transactional approaches (Al-Hawari et al., 2016). Job characteristics (such as autonomy, task variety, adequate resources) also play a role (Trivellas et al., 2017). Public service motivation also reinforces engagement, with public-service-motivated employees exhibiting more commitment (Kim & Vandenabeele, 2010). In post bureaucratic settings, the "public interest" ethos underscores how public servants' commitment differs from private-sector motivations centered on economic gain; ethical and social considerations play a larger role (Kouadio, 2023). From a social exchange perspective, engagement can be seen as a reciprocal response to perceived leader support and investment (Sabekti & Setiawan, 2023).

2.3.1. Employee engagement (EE) in Islamic Banking Sector in Pakistan

In Islamic Banking Sector, engagement is a vital driver of performance and motivation. Job autonomy and social support are positively correlated to engagement (Fletcher, 2016; Sabekti & Setiawan, 2023). Engagement also mediates the effects of training and rewards on performance, underscoring its role in improving service delivery (Sabekti & Setiawan, 2023). Meanwhile, engagement can be decreased by hierarchical and bureaucratic cultures (Alnaqbi et al., 2025). A supportive culture and transformational leadership (TL) are therefore crucial enablers of successful digital transformation (DT) (Walter, 2024). The management that supports public service motivation (Dahmani, 2021), job satisfaction (Arifin, 2024), and career adaptability (Handayani et al., 2023) can facilitate conditions for innovation and a continuous improvement process (Lidman et al., 2023).

2.4. Theoretical Foundation

This study is based mainly on two theories, namely Transformational Leadership Theory (Bass, 1985) and Social Exchange Theory (Blau, 1964). Transformational Leadership Theory is one that explains the idealized influence, inspirational motivation, intellectual stimulation and individualized consideration a leader utilizes to affect the followers. These behaviours are especially pertinent in the context of digital transformation, as technological shifts bring uncertainty, a need to develop new skills, and often disrupt established routines. In this context, transformational leaders can contribute, doing so by communicating a vision of digital transformation, enabling experimentation, offering learning opportunities for their people, and demonstrating a commitment to change (Bass & Riggio, 2006; Cortellazzo et al., 2019).

Social Exchange Theory is the main theory that explains the engagement of an employee as a mediator. The theory suggests that relationships are formed through the exchange of people and organizations (Blau, 1964). Employees who feel that leaders are interested in their growth, acknowledge their efforts and are willing to share and help them take part in change are more likely to return that support and to put in more cognitive, emotional and behavioral energy into their work. Employee engagement therefore can be crucial behaviour associated with transformational leadership. In the context of digital transformation, that engagement can mean the difference between buying from staff to new digital skills, new technologies, changed work practices, and proactive participation in a digital program. Thus, the integration of the theories provides a succinct explanation for the sequence proposed in this study: employees' strong commitment (mediated by transformational leadership) results in digital change.

2.5. Transformational Leadership and Employee Engagement

Transformational leadership can improve employee engagement by providing meaningfulness, psychological support, and employee development opportunities. Inspirational motivation provides direction and purpose for employees, and the individualized consideration provides communication that employees and their development are valued. Idealized influence builds trust in leadership and intellectual stimulation fosters employee ideas and alternative ways of problem solving. These behaviors can all help to get workers involved with their work and make them more willing to put in the effort.

This relationship is supported by previous research. This is in line with recent evidence, which shows that transformational leadership is linked to positive employee attitudes and engagement-related outcomes, as Tims, Bakker and Xanthopoulou (2011) found that transformational leadership has a positive impact on followers' daily work engagement. According to Hooi and Chan (2023), transformational leadership is a positive direct influence on employee engagement in the context of the digital workplace. In the banking sector, Winasis et al. (2021) show that the leadership climate is transformational, and if it is, it has a positive impact on employee engagement in digital transformation. Based on these arguments, the relationship between transformational leadership and employees' active participation in organizational activities seems possible.

H1: There is a positive relationship between transformational leadership and employee engagement.

2.6. Transformational Leadership and Digital Transformation

Digital transformation requires more than the acquisition of digital technologies. It requires organizational changes in strategy, structures, processes, culture, capabilities, and value creation activities (Vial, 2019). Therefore, leadership is important as senior and middle managers are responsible for creating strategic alignment between digital technologies and organizational goals. Leaders also must manage uncertainty, respond to resistance, allocate resources, foster co-operation and create an environment receptive to innovation.

In such circumstances, the leadership style should be transformed. Inspirational motivation can assist leadership in effectively communicating the future function of digital technologies in the organisation. Intellectual stimulation gives employees the room to think outside the box and recognize opportunities for improvement with technology. Individualized consideration helps those employees who need new skills, while idealized influence contributes to confidence in the transformation process. According to Cortellazzo et al. (2019), leaders are key actors for building digital culture and for aligning organizational stakeholders in the process of digitalization; Ly (2024) illustrates the importance of transformational approaches to leadership in organizational digital transformation. Finally, transformational leadership should enhance an organization's ability to provide substantive digital transformation.

H2: Digital transformation is positively influenced by transformational leadership.

2.7. Employee Engagement and Digital Transformation

Employees play a critical role in digital transformation, as technological systems have no value for the organization unless they are accepted, used, adapted and integrated into work processes. Transformation means that employees must learn new systems, change old processes, work across functions and participate in ongoing process improvement. This is because people who are more involved at work are more willing to expend the cognitive, emotional and behavioural resources required to perform these activities.

When people are engaged, they are more proactive, more determined and willing to accept the organization's goals. These characteristics are particularly useful when ambiguity is created through transformation and/or when there is a greater requirement for short term learning. Hizam et al. (2023) highlight that workforce engagement is a critical factor in understanding employee reactions to digital transformation. Similarly, evidence of workplace digitalization suggests that there is a strong positive relationship between positive employee engagement and adapting to digitally enabled workplaces (Hooi & Chan, 2023). Therefore, engagement can enable us to translate technological opportunities into real organizational practices.

H3: There is a positive relationship between employee engagement and digital transformation.

2.8. Mediating Role of Employee Engagement

While transformational leadership can directly contribute to digital transformation, leadership alone cannot drive the many behavior changes needed across an organisation. Employees ultimately interact with new digital systems, redesign working practices, acquire new knowledge, and implement digitally enabled processes. Employee engagement thus offers a reasonable linkage between leadership and transformation outcomes.

Social Exchange Theory suggests that transformational leadership offers employees support, recognition, development, and a vision or goal of the organization. These positive transactions are likely to encourage employees to return the gesture with greater

involvement and discretionary effort. This increased engagement can manifest as readiness to acquire the technologies, participate in change initiatives, exchange knowledge, and participate in process innovations in the context of digital transformation. As a result, transformational leadership can directly and indirectly affect digital transformation through employee engagement. Moreover, this mediation argument extends prior banking studies linking transformational leadership to engagement in the context of technological change (Winasis et al., 2021) and examines if engagement leads to transformational leadership's impact on broader digital transformation.

H4: Employee engagement mediates the positive relationship between transformational leadership and digital transformation.

3. Research Model & Framework

3.1. Theoretical Underpinnings

The research model is based on three theories, Digital Transformation Theory (Matt et al., 2015; Vial, 2019), which sees DT as a strategic organizational response to digital disruption; (02) Technology Adoption Theory (TAT) (Bass & Moore, 2011; Rogers, 2003), which serves as a basis for explaining how new technology is adopted; and (03) Innovation Culture (IC) (Damanik & Yuyu, 2019; West, 2004), which addresses the importance of culture in shaping innovation. Transformational Leadership Theory (Bass, 1985; Burns, 1978) which is composed of four behavioral components, namely, individualized consideration, inspirational motivation, idealized influence and intellectual stimulation that facilitate the transformation of followers and Employee Engagement Theory (Kahn, 1990; Schaufeli & Bakker, 2004) which conceptualizes engagement as a positive, fulfilling work-related state comprising vigor, dedication and absorption.

These frameworks are integrated drawing on Social Exchange Theory (Blau, 1964) which assumes that employees will reciprocate positive behaviors, such as the use of digital tools and processes, by being more engaged and exhibiting greater organizational citizenship behaviors. Conservation of Resources Theory (Hobfoll, 1989) also clarifies why transformational leaders provide followers with personal and organizational resources: motivation, capability and psychological safety, which energize their digital change behaviors.

3.2. Conceptual Model Variables

Table 1

Research Model Variables, Dimensions, and Hypotheses

Variable Type	Construct	Dimensions	Hypothesis	Direction
Independent Variable (IV)	Transformational Leadership (TL)	• Idealized Influence • Inspirational Motivation • Intellectual Stimulation • Individualized Consideration	H1, H2	TL → EE → TL → DT
Mediating Variable (MV)	Employee Engagement (EE)	• Cognitive Engagement • Emotional Engagement • Behavioral Engagement	H3	EE → DT
Dependent Variable (DV)	Digital Transformation (DT)	• Technology Adoption • Process Digitization • Innovation Culture • Data-Driven Decision	H4 (mediation TL→EE→DT (indirect))	
Control Variables	Contextual Factors	• Org. size • Sector type • Years in service • Education level	-	Controlled in regression

3.3. Model Pathways and Rationale

Transformational leaders inspire followers through shared vision, establishing role model behavior, stimulating creativity and providing individualized support. These behaviours reflects the three conditions of meaningfulness, safety, and psychological availability, which are required for employee engagement, as outlined by Kahn (1990). The relationship between transformational leadership (TL) and employee engagement (EE) has

been confirmed by many studies as significant e.g., (Alamri, 2023; Nugroho & Muslim, 2024; Tanović, 2023; Tims, Bakker, & Xanthopoulou, 2011).

Transformational leaders in Islamic Banking Sector change, build a shared vision for digitization and create an environment for technology adoption. These leaders help to create a culture of innovation, lessen resistance to change, and promote knowledge sharing, thereby directly influencing digital transformation readiness and progress (Cortellazzo et al., 2019; Mihardjo et al., 2019).

Employees who are cognitively, emotionally and behaviorally engaged are more likely to be willing to learn new digital skills, experiment with new technologies and participate in process innovation. High engagement is related to organizational proactivity, adaptability, and innovation (Saks, 2006), all of which are essential for successful digital transformation.

According to the indirect path model, the impact of transformational leadership (TL) on digital transformation (DT) is largely mediated by employee engagement (EE). Leaders who inspire and engage their employees effectively create a digitally ready workforce that proactively drives transformation initiatives. This mediation model is consistent with the Job Demands Resources (JDR) framework and Social Information Processing Philosophy and is the central theoretical contribution of this study.

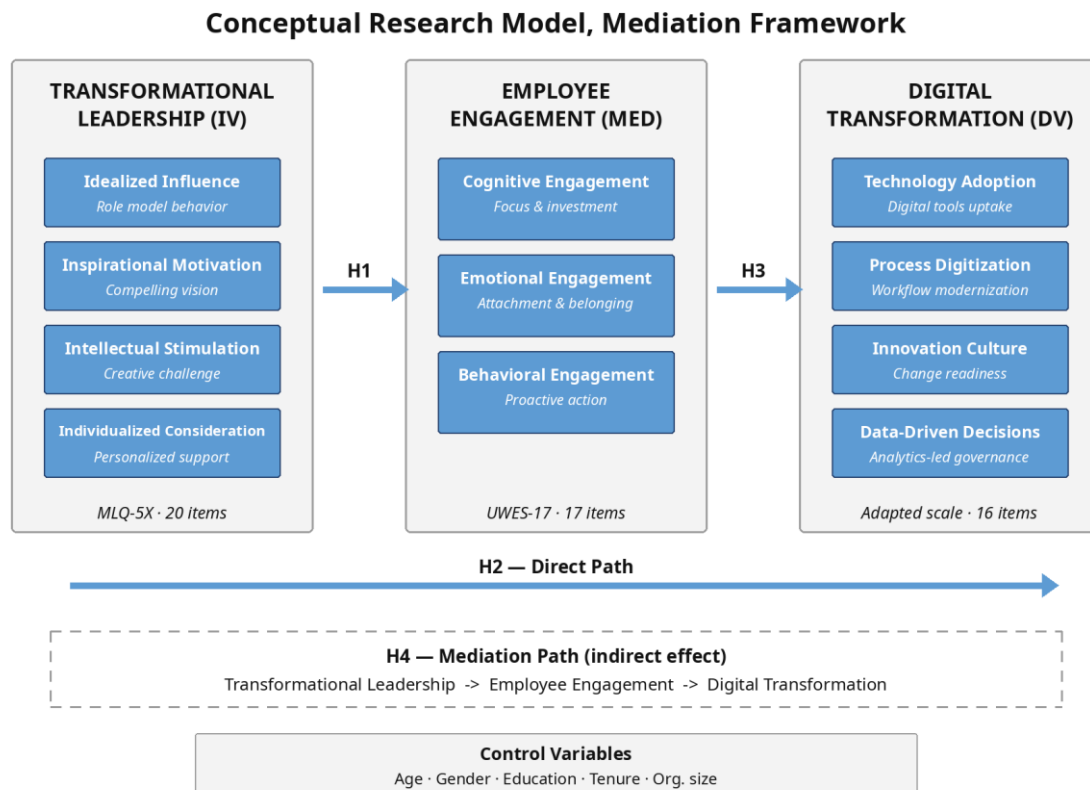


Figure 1: Conceptual Research Model and Mediation Framework

4. Research Methodology

The study used a quantitative cross-sectional survey design to explore the structural relationship between transformational leadership, employee engagement and digital transformation. This research design is suitable for analysing relationships between latent constructs and is commonly used in the study of leadership and organisational transformation (Creswell & Creswell, 2018; Hair et al., 2019). Employees of the Islamic Banking Sector of Pakistan with different organisational levels and banking institutions were targeted as a target group. To achieve answers from employees at various levels in the hierarchy, of various functions and from various organizational settings, a convenience sampling technique was adopted. The sample size was set at 150 respondents, following the guidelines of structural equation modeling (SEM) (Hair et al., 2019). The study

constructs were measured using established and validated instruments. Transformational leadership was assessed by means of the Multifactor Leadership Questionnaire (MLQ-5X) created by Bass and Avolio (1995), which consisted of 20 items across four subscales: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. Employee engagement was measured with the Utrecht Work Engagement Scale (UWES-17) designed by Schaufeli and Bakker (2004) and consisting of 17 items measuring vigor, dedication, and absorption. Digital transformation was measured by 16 adapted items based on Vial (2019) and Kattel and Mergel (2019) corresponding to the technology adoption, process digitization, data-driven decision making, and innovation culture. A five-point Likert scale was used to measure all the study variables.

Demographic and control variables included age, gender, education, organizational tenure and organizational size. To ensure linguistic equivalence and clarity of the questionnaire, the measurement items were translated and subsequently back translated before the main data collection. A pilot study was also carried out to assess the clarity, reliability and content validity of the instrument, which included 30 respondents, and Cronbach's alpha value of > 0.70 was used to determine acceptable internal consistency. Ethical issues have been considered during the research. Data collection was approved by the institutional ethics committee and participation was completely voluntary. Respondents were informed about the purpose of the study and were assured that their participation was anonymous and confidential. Informed consent was obtained from all participants before completing the questionnaire. The collected information was securely maintained and used exclusively for academic and research purposes.

5. Data Analysis and Results

5.1. Descriptive Analysis of the Sample

Demographic characteristics of the respondents were examined to provide overview of study sample. 59.0% of the respondents were male while 41.0% were female. As far as age is concerned, about 73% of the respondents were less than 45 years old, indicating that a significant proportion of the respondents were drawn from the relatively young and middle-aged work force groups. As for the level of education, 65% of the respondents had 16 years of schooling. Overall, the demographic profile suggests that the study was able to capture the responses from the professional educated workforce which was relevant to the study of transformational leadership (TL), employee engagement (EE), and digital transformation (DT) in the Islamic banking sector of Pakistan.

5.2. Preliminary and Exploratory Analysis

Before examining structural relationships, the measurement items were evaluated for the examination of the representation of the items to their respective constructs. The exploratory assessment was performed to determine the pattern of relationships between the indicators and to verify the association of all measurement items with the three factors: transformational leadership, employee engagement and digital transformation. The partial least squares structural equation modelling (PLS-SEM) software, SmartPLS 4, was then used to evaluate the proposed measurement and structural models.

5.3. Measurement Model Assessment

The measurement model was evaluated prior to the testing of the hypothesized structural relationships. The evaluation of reflectively measured constructs consisted of indicator reliability, internal consistency reliability, convergent validity, and discriminant validity as recommended in the PLS-SEM approach (Hair & Alamer, 2022; Hair et al., 2016; Henseler et al., 2009). Outer loadings were used to consider the reliability of indicators, and internal consistency was tested with Cronbach's alpha and composite reliability (CR). Average variance extracted (AVE) was used to establish convergent validity.

The outer loadings reported varied from 0.614 to 0.923. While loadings around 0.708 are preferred, indicators with loadings in the 0.40 to 0.70 range might be left in the composite if their exclusion does not significantly reduce composite reliability or AVE and if it is plausible to do so on theoretical grounds. Therefore, the relatively low loadings of Ab-1 (0.614), DT-1 (0.659), and IS-2 (0.691) would not necessarily be considered as

measurement failure. Their retention, however, should be justified in terms of reliability of the construct, convergent validity and theoretical relevance. The composite reliability values showed that the values were above the desired 0.7 as recommended by Hair and Alamer (2022) while the AVE values presented were greater than 0.5 which served as an indicator of internal consistency and convergent validity. Finally, Cronbach's alpha should be interpreted as per the generally accepted criterion of around 0.70, and not 0.50.

The heterotrait-monotrait ratio of correlations (HTMT) as proposed by Henseler et al. (2009) was used to check for discriminant validity. All the HTMT values were below the conservative 0.90 threshold level as indicated in Table 3. The highest correlation was between transformational leadership and employee engagement (0.783), followed by (0.536) between employee engagement and digital transformation, (0.438) between transformational leadership and digital transformation. The results show that the three constructs have good empirical distinctiveness.

Table 3
Heterotrait-Monotrait Ratio (HTMT)

Construct	Digital Transformation (DT)	Employee Engagement (EE)	Transformational Leadership (TL)
Digital Transformation (DT)	—		
Employee Engagement (EE)	0.536	—	
Transformational Leadership (TL)	0.438	0.783	—

Note: HTMT values below 0.90 indicate adequate discriminant validity.

Source: Authors' calculations using SmartPLS 4.

The following measurement-model issue needs to be discussed prior to final submission: Currently the manuscript represents transformational leadership and employee engagement as reflective constructs, and digital transformation as a formative construct. If digital transformation is indeed identified as a formative construct in SmartPLS, then the measure quality is more dependent on the collinearity of indicators, outer weights and theoretical considerations for indicators, rather than Cronbach's alpha, composite reliability and AVE and HTMT. Therefore, it is important that the final manuscript ensures the evaluation procedure described in the manuscript is in line with the evaluation procedure described in the SmartPLS model.

5.4. Collinearity and Indicator Assessment

Variance inflation factor (VIF) was used to investigate collinearity. The outer loadings and VIF values for the indicators selected are presented in Table 4. Most of the VIF values were less than 3.0 which showed that there was no problem of collinearity.

Table 4
Indicator Loadings and Variance Inflation Factors

Construct	Indicator	Outer Loading	VIF
Transformational Leadership (TL)	IC-2	0.773	1.6
	IS-1	0.752	2.1
	IS-2	0.691	2.3
Employee Engagement (EE)	Ab-1	0.614	3.7
	Vi-1	0.923	1.4
	Vi-2	0.891	1.5
Digital Transformation (DT)	DT-1	0.659	2.9
	DT-2	0.803	1.9
	DT-3	0.757	2.5
	DT-4	0.812	1.9
	DT-5	0.825	1.7

Source: Authors' calculations using SmartPLS 4.

The VIF value of Ab-1 was 3.7, however. Therefore, it is not suggested that all the VIF values were less than 3.0. Even so, this VIF, 3.7, is below the liberal cut-off of 5.0 and is not indicative of serious collinearity problems. However, Ab-1 should be further explored

regarding potential overlap with other measures of employee engagement, in the context of a lower cut-off, which could approximate 3.0-3.3.

Overall results indicate that the retained items have satisfactory measurement properties. The relatively lower loadings of Ab-1, IS-2 and DT-1, however, does not mean that they can be deleted and should be theoretically justified. For example, if indicators are deleted due to the statistical value alone, the contents' validity of the construct may be impacted. Thus, statistical considerations and conceptual domain represented by each item should be considered when deciding to keep or remove an indicator.

5.5. Effect-Size Analysis

To determine the relative contribution of each predictor to the variance of its corresponding endogenous construct, effect size (f^2) was assessed. By following Cohen (1988), f^2 values of around 0.02, 0.15 and 0.35 can be considered small, medium and large effects respectively. The results are shown in Table 5.

Table 5
Effect-Size Analysis

Structural Relationship	f^2	Effect Size
Transformational Leadership → Employee Engagement	0.370	Large
Employee Engagement → Digital Transformation	0.170	Medium
Transformational Leadership → Digital Transformation	0.030	Small

Source: Authors' calculations using SmartPLS 4.

Results indicate that transformational leadership is a large effect on employee engagement ($f^2 = 0.370$) because the amount of variance of the leadership behavior is an important contribution to the variance in employee engagement. For the dimension of the impact of employee engagement on digital transformation ($f^2 = 0.170$), the involvement, commitment and readiness for employees to contribute to digital transformation is in the medium range. In comparison, the direct effect of transformational leadership on the digital transformation is small ($f^2 = 0.030$). This pattern suggests that transformational leadership not only plays a direct role in digital transformation but that a significant part of its impact might be through employee pathways, specifically employee engagement.

It should be noted that the f^2 results by itself does not constitute mediation. The direct and indirect effects should be assessed based on the magnitude of the indirect effect obtained by bootstrapping. The mediation effect of employee engagement is, therefore, tested in structural-model analysis.

5.6. Structural Model Assessment and Hypothesis Testing

After measuring model satisfactory assessment, the structural model was tested to investigate the posited relationships between TL, EE, and DT. The PLS-SEM procedure was followed in the assessment of the structural models by considering collinearity, path coefficients, effect sizes, coefficient of determination (R^2) and the predictive relevance and the statistical significance of direct and indirect relationships. The significance of the hypothesized paths (Hair Jr et al., 2017) was determined by bootstrapping in Smart-PLS 4.

Results of hypothesis testing can be found in Table 6. When considering the relationship between transformational leadership and employee engagement, H1 was supported as the analysis revealed that transformational leadership had a positive and statistically significant effect on employee engagement ($\beta = 0.569$, $t = 7.205$, $p < 0.001$). For H2, direct and positive impact of digital transformation was also a statistically significant path coefficient ($\beta = 0.354$, $t = 4.190$, $p < 0.001$). Moreover, there was a positive and statistically significant mediation effect of employee engagement in the relationship between transformational leadership and digital transformation ($\beta = 0.276$; $t = 2.942$; $p = 0.004$).

The findings thus indicate that there is a positive relationship between transformational leadership and employee engagement as well as digital transformation in the Islamic banking industry of Pakistan. The considerable indirect effect additionally

suggests that employee engagement is a relevant mechanism that through which transformational leadership plays a role in digital transformation. When leaders communicate an inspiring vision, inspire innovation and provide individual employee support, they can create employee engagement, which can ultimately increase their technology readiness to change a business.

Table 6
Structural Model and Hypothesis Testing

Hypothesis	Structural Relationship	β	t-value	p-value	Decision
H1	TL $\rightarrow$ EE	0.569	7.205	< 0.001	Supported
H2	TL $\rightarrow$ DT	0.354	4.190	< 0.001	Supported
H3*	TL $\rightarrow$ EE $\rightarrow$ DT	0.276	2.942	0.004	Supported

Note: β = standardized path coefficient. For the mediation relationship, β represents the specific indirect effect.

Source: Authors' calculations using SmartPLS 4.

The simultaneous effects of the direct path (transformational leadership $\rightarrow$ digital transformation) and indirect path (transformational leadership $\rightarrow$ employee engagement $\rightarrow$ digital transformation) are consistent with a partial mediation, if the path (employee engagement $\rightarrow$ digital transformation) is also statistically significant in the estimated structural model. So, direct and indirect, transformational leadership appears to be playing a role in digital transformation.

Verification of Structural Model Quality

The quality of the structural model is determined according to the following criteria: R-square, the coefficient of determination (R²) and predictive relevance (Q²)

Table 7
Model Diagnostics

	R-square	R-square adjusted	Q ² predict
DT	0.173	0.169	0.085
EE	0.323	0.318	0.258

To evaluate the explanatory power of the structural model the coefficient of determination (R²) was examined. The R² value on 0.323 shows that TL explains 32.3% of the variance of EE as shown in Table 7. Variance obtained implies that the transformational leadership is meaningful in explaining the difference in the employee's engagement in Islamic banking sector of Pakistan. Similarly, R² value of digital transformation (DT) is 0.173 indicating that the predictors in the structural model accounted for 17.3% of the variance in digital transformation. The value is considered to have a relatively low degree of explanatory power, but still has strong significance, because digital transformation is a multi-dimensional phenomenon, which would also include other factors not included in this current model (technological readiness, organisational culture, digital competencies, financial resources, regulatory environment, innovation orientation, etc.) (Hair et al., 2019).

It then becomes important to understand that the relatively low value of the R² of the model of digital transformation does not necessarily indicate a weak model but the phenomenon under study. Digital transformation is a complex process in terms of organization; it is not just about leadership and employee related factors. However, the statistically significant relationship between transformational leadership, employee engagement and digital transformation suggests a relevant link between these constructs and the organizational mechanisms that play a role in the process of digital transformation in the context of Islamic banking in Pakistan. Employee engagement showed a higher explanatory power, revealing that transformational leadership is an important antecedent to the involvement and commitment of employees; while digital transformation might span across a larger range of organizational, technological and environmental dimensions. Not only that, but the results also corroborate with the proposed theoretical relationships; moreover, it indicates that some other factors determining the digital transformation might require further study.

The predictive relevance of the model was assessed using Q^2 values as well. In accordance with the literature of PLS-SEM, Q^2 values > 0 indicate that the model is predictive regarding the respective endogenous constructs (Hair & Alamer, 2022). As shown in Table 7, the endogenous constructs, namely digital transformation ($Q^2 = 0.085$) and employee engagement ($Q^2 = 0.258$) have positive Q^2 values. The higher value of Q^2 for EE as compared to the digital transformation construct indicates that EE construct is more predispositive. The overall proposed model is found to be of acceptable explanatory and predictive relevance as revealed by the positive value of Q^2 and statistically significant structural relationships and reported R^2 value in the context of Islamic banking sector of Pakistan.

5.7. Discussion

The findings of the study provide some valuable insights related to the relationship between transformational leadership (TL), employee engagement (EE) and digital transformation (DT) in the Islamic banking context in Pakistan. Overall, the results suggest that transformational leadership is an important factor in the enhancement of employee engagement and digital transformation. This finding underscores the importance of managing digital transformation as a process of organizational and behavioral transformation, not only technological change, but to do so effectively requires adequate leadership and employee engagement. Transformational leaders can help this change happen by establishing a clear vision, asking employees to consider new ways of doing things, offering personalized support, and establishing a climate where employees are confident to use new technologies. The positive correlation between transformational leadership and employee engagement confirms the findings of earlier studies that showed that positive leadership styles like supportive, inspirational and empowering behaviors, have a positive effect on employees' cognitive, emotional and behavioral engagement with their work (Kwarteng et al., 2024; Van der Voet & Steijn, 2021; Yao et al., 2023). Similarly, the positive relationship between transformational leadership and digital transformation is consistent with the idea that leadership is crucial in setting the stage for technological transformation in organizations (Ly, 2024).

The positive influence of transformational leadership towards digital transformation can be understood based on the four dimensions of transformational leadership. Idealized influence helps leaders become credible and trusted, which can minimize uncertainty about the technological changes, and induce employees to accept the changes of the organization (Bass & Riggio, 2006). Intellectual stimulation helps staff to question existing practice, think creatively and try out new ways of working using technology (Gilmore et al., 2013; Khan & Khan, 2019). Inspirational motivation helps leaders to share an inspiring vision on how digital technologies can bring better banking operations, service, efficiency and competitiveness (Al Dari et al., 2018). Furthermore, by utilizing individualized consideration, managers can recognize that employees may have different technological competencies and provide them with the appropriate type of mentoring, training, and development (Bass & Riggio, 2006; Yukl et al., 2019). When combined, the leadership attributes can help establish a culture where employees are more likely to embrace and support digital transformations.

The mediation role of employee engagement between transformational leadership and digital transformation is one of the main findings of this study. The finding shows that while digital transformation is not exclusively driven by transformational leadership, it is also driven by the employees psychological and behavioural engagement, to an extent. Transformational leaders who know how to recognize the employees' contribution, give opportunities for development, clearly communicate organizational objectives and involve employees in decision making can strengthen the relationship between the employees and the organization by employees' sense of value and attachment to the organization. In turn, committed employees are better equipped to acquire new digital competencies, adjust to new job demands, try new technology and proactively contribute to organizational change. This is consistent with the results of studies, which emphasized the importance of employee flexibility, capabilities, and engagement during times of technological change (Ly, 2024). It also highlights the significance of technology infrastructure as well as motivational and behavioural factors affecting how much employees will be willing to implement new technology in organisations that wish to embark on the journey of digital transformation.

The Social Exchange Theory is a useful conceptual framework to explain this intervening process. According to the theory, if there are positive interactions between an employee and their organisation, then there will be a mutual commitment. By fostering a sense of support, recognition, development, and fairness, employees are more inclined to reciprocate with commitment and work engagement. In the digital transformation context, this can manifest itself in employee's readiness to engage in digital transformation initiatives, learn new skills, share knowledge and put in extra energy to support the adoption of digital systems. Thus, the results confirmed that employee engagement is a crucial behavioral mechanism whereby transformational leadership contributes to the digital transformation. The study reveals that the quality of leadership does not always result in change in the organization, but it is significant to understand how a person responds to a leader and how he/she responds in terms of transformation.

These results have important implications for Islamic banks' managers in several respects. First, leadership development must be included in the digital-transformation efforts. Banks need to build managers' skills to effectively share a digital vision, promote staff learning, foster innovative thinking, and engage staff in decisions around transformation. More leadership-development programmes, mentoring, coaching and ongoing managerial training may be needed to reinforce these skills. Second, employee engagement needs to be actively managed throughout the digital-transformation process. Structured mechanisms can be established in Islamic banks for their employees to give their feedback on digital systems, take part in the redesign of work processes, offer innovative solutions, and voice any problems they encounter when they are using digital systems. Performance systems and award programs should also include employees who help positively contribute to digital efforts. These can help to build staff engagement and minimize resistance to the new technology.

Islamic banks should make a change in HR, organizational culture and technological. Digital transformation should not be only the responsibility of information technology units but should be coordinated between various departments as well. By bringing together cross functional teams of employees from operations, customer services, human resources, compliance, finance and technology, digital solutions that reflect the actual needs in operations can be achieved and knowledge sharing can be enabled. There should also be a steady progression of digital skills to make sure that employees are at ease with the new technology in banking. On an organizational level, banks should foster experimentation, share knowledge, collaboration, and continuous learning and invest in robust digital infrastructure, data-management capacities and cybersecurity. Leaders must ensure that technological investments are clearly related to the organizational goal, and the staff understand the connection between digital investments and quality of service, operational efficiency, innovations and long-term competitiveness. Progress in transformation can also be monitored using performance indicators, and a list of what needs more managing or staffing can be identified.

Theoretically, the study contributes to existing literature by integrating the Transformational Leadership Theory (TLT) and Social Exchange Theory (SET) in the field of digital transformation. Much of the traditional transformational literature has focused on employee performance, commitment, innovation and organizational citizenship behavior. The current results add to this view by providing evidence of the transformational leadership in the context of technology-initiated transformation in organizations. The study also contributes by introducing employee engagement as an explanatory mechanism in between leadership and digital transformation. This offers a more in-depth theoretical account of the connection between transformational leadership and organizational results. Transformational leaders may not only change the direction of the organisation but also have an impact on employees' attitudes and behaviours, consequently affecting the success of organisational change.

The study also adds to the growing literature on leadership for digital transformation in organizations by showing that the well-known transformational leadership behaviors are still relevant in the context of technology-intensive organizations. Idealized influence can help to build trust during uncertain times, inspirational motivation can foster a shared

commitment to a digital vision, individualized consideration can facilitate employees' acquisition of the skills needed for technologically evolving workplaces, and intellectual stimulation can inspire experimentation and innovation. Importantly, these dimensions are not intended to be a special type of "digital leadership," but rather leadership behaviours that are very applicable in a digital-transformation context. The study makes two contributions to literature: it extends the Transformational Leadership Theory by providing insights on how transformational leadership is indirectly related to digital transformation through employee engagement and it provides a foundation for future research on other psychological and organizational mechanisms through which transformational leadership is indirectly related to digital transformation. The findings are of great importance for the Islamic Banking Sector of Pakistan, as they would require being further digitalized, where the investment in technology, employees' preparedness, organizational learning and workforce engagement become key.

6. Conclusion

The present study aimed to explore the relationship between transformational leadership (TL) and digital transformation (DT) based on the mediating role of employee engagement (EE) in Islamic banking sector in Pakistan. The results support the positive role of the transformational leadership in digital transformation and that employee engagement is one of the important channels to convey this effect. Transformational leaders who embody idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration can foster increased employee engagement in organizational change, a greater openness to new technologies, and active engagement in digital initiatives. Thus, employee engagement is a significant mediator and indicates that successful digital transformation is not only about technological investments but also about the willingness, motivation, and engagement of employees. In this sense, the study emphasizes the need to establish leadership behaviors and practices that motivate employees, drive learning, decrease resistance to change, and foster a workplace that empowers employees to embrace digital transformation efforts.

Theoretically, the study adds to the literature by aligning the concepts of Transformational Leadership Theory and Social Exchange Theory to understand how leadership behavior can create a digital transformation via employee engagement. Social Exchange Theory also suggests that when employees feel supported, recognised, guided and developed by their leaders, they in turn will be more motivated to respond by being more committed and involved in their work. Thus, transformational leadership can foster a positive relationship between the leader and employee which can in turn lead to employees putting in more effort to change the organization and adopt new technology. The study thus advances leadership literature in that it highlights the transformational leadership can have on digital transformation not only directly, but also indirectly via employees' psychological and behavioural involvement. In the light of the digital transformation in the Islamic banking sector of Pakistan, where technological readiness is constantly growing, the current contribution becomes significant as it underscores the importance of aligning the technology with employee readiness, organizational learning, and supportive leadership.

The results also have practical implications in the context of Islamic banking and how it can enhance its digital transformation. Bank managers need to invest in leadership development initiatives that enhance managers' skills in articulating digital vision, fostering innovation, offering a personal touch, and engaging staff in organizational transformation. Meanwhile, Islamic banks should facilitate the engagement of their employees through training, recognition, including in digital projects, ongoing communication, and training in digital skills. The relatively modest variance explained in the case of digital transformation ($R^2 = 17.3\%$) suggests that there are other factors of the organization, technology and environment that can impact the results of digital transformation. Study is also restricted with only a few Islamic Banks of Pakistan and has adopted cross-sectional quantitative design. It is therefore recommended that further research should be conducted in order to explore other aspects like digital readiness, organizational culture, technological capability, digital leadership, innovation climate and resistance to change. Comparative studies between Islamic and conventional banks, different regions, or different countries also would increase the generalizability of the findings. Longitudinal, qualitative and mixed-method

studies are also recommended to gain deeper insight into the impact of transformational leadership and employee engagement on digital transformation over time.

Author Contributions

Suhaib Ahmed: Conceptualization, methodology, data collection, formal analysis, investigation, and writing—original draft preparation.

Tauqir Ahmad Ghauri: Conceptualization, methodology, supervision, validation, and writing—review and editing.

Syed Muhammad Javed Iqbal: Supervision, validation, interpretation of results, critical review, and writing—review and editing.

Conflict of Interests/Disclosures

The authors declared no potential conflicts of interest w.r.t the research, authorship and/or publication of this article.

Acknowledgements

The authors gratefully acknowledge the support of the Department of Business Management at the University of Zululand. Special thanks are due to the respondents for their willing participation, and to the department heads and lecturers whose assistance made data collection possible during the COVID-19 period.

References

- Al-Hawari, M. A., Bontis, N., & Ardekani, A. M. (2016). The Impact of Leadership Styles on Employee Engagement in the Public Sector. *International Journal of Public Sector Management*, 29(4), 305-320.
- Al Dari, T., Jabeen, F., & Papastathopoulos, A. (2018). Examining the Role of Leadership Inspiration, Rewards and Its Relationship with Contribution to Knowledge Sharing: Evidence from the Uae. *Journal of Workplace Learning*, 30(6), 488-512. <https://doi.org/10.1108/JWL-11-2017-0105>
- Alagarsamy, S., Mehroliya, S., & Aranha, R. H. (2023). The Mediating Effect of Employee Engagement: How Employee Psychological Empowerment Impacts Employee Satisfaction? A Study of Maldivian Tourism Sector. *Global Business Review*, 24(4), 768-786. <https://doi.org/10.1177/0972150920915315>
- Alamri, M. (2023). Transformational Leadership and Work Engagement in Public Organizations. *The Leadership & Organization Development Journal*, 44(1), 137-155. <https://doi.org/10.1108/LODJ-12-2021-0544>
- Alnaqbi, M. A., Aldabbas, H., Macasukit Gernal, L., & Ahmed, Z. E. (2025). Work Engagement and Individual Work Performance in the Uae: The Mediating Role of Work-Life Balance. *Frontiers in Sociology*, 10, 1567207. <https://doi.org/10.3389/fsoc.2025.1567207>
- Arifin, S. (2024). The Role of Job Satisfaction in Mediating Employee Engagement on Employee Performance. *International Journal of Research in Social Science and Humanities*, 5(4), 1-7. <https://doi.org/10.47505/IJRSS.2024.4.1>
- Arman, A. (2023). How Perceived Inclusion Impacts Minority Employees' Organizational Satisfaction in the Uae Banking Industry. *International Journal of Service Science, Management, Engineering, and Technology*, 14(1), 1-14. <https://doi.org/10.4018/IJSSMET.326551>
- Bakker, A. B., Hetland, J., Olsen, O. K., & Espevik, R. (2023). Daily Transformational Leadership: A Source of Inspiration for Follower Performance. *European Management Journal*, 41(1), 1-12. <https://doi.org/10.1016/j.emj.2022.04.004>
- Bass, B. M. (1985). *Leadership and Performance Beyond Expectations*. Free Press.
- Bass, B. M., & Avolio, B. J. (1995). MLQ Multifactor Leadership Questionnaire. In.
- Bass, B. M., & Riggio, R. E. (2006). Transformational Leadership. <https://doi.org/10.4324/9781410617095>
- Bentaleb, D. (2024). Dynamics of Leadership, Interpersonal Relations and Commitment to Change in the Tunisian Healthcare Context: Toward Effective Transformation of Healthcare Institutions. *Journal of Management Development*, 43(4), 514-532. <https://doi.org/10.1108/Jmd-09-2023-0261>
- Bhatti, S. H., Kiyani, S. K., Dust, S. B., & Zakariya, R. (2021). The Impact of Ethical Leadership on Project Success: The Mediating Role of Trust and Knowledge Sharing.

- International Journal of Managing Projects in Business*, 14(4), 982-998.
<https://doi.org/10.1108/IJMPB-05-2020-0159>
- Blau, P. M. (1964). *Exchange and Power in Social Life*. Wiley.
- Bouaziz, F. (2020). Digital Government Competences for Digital Public Administration Transformation. In *Leadership, Management, and Adoption Techniques for Digital Service Innovation* (pp. 244-263). Igi Global. <https://doi.org/10.4018/978-1-7998-2799-3.ch013>
- Boukamcha, F. (2023). A Comparative Study of Organizational Commitment Process in the Private and Public Sectors. *International Journal of Organizational Analysis*, 31(5), 1987-2013. <https://doi.org/10.1108/IJOA-07-2021-2866>
- Burns, J. M. (1978). *Leadership*.
- Bussin, M., & Nienaber, H. (2015). The Impact of Transformational Leadership on Employee Engagement in the Public Sector. *SA Journal of Human Resource Management*, 13(1), 1-12.
- Cahyono, A. (2024). The Influence of Leadership Style on Employee Performance Pt. Pos Indonesia. *Journal of Current Research in Multidisciplinary*, 2(1), 168-172.
- Cortellazzo, L., Bruni, E., & Zampieri, R. (2019). The Role of Leadership in a Digitalized World: A Review. *Frontiers in Psychology*, 10, 1938.
<https://doi.org/10.3389/fpsyg.2019.01938>
- Creswell, J. W., & Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (5th Ed.)*. SAGE.
- Dahlström, P., Desmet, D., & Singer, M. (2017). The Seven Decisions That Matter in a Digital Transformation: A CEO's Guide to Reinvention. In.
- Dahmani, A. (2021). La Résilience Du Personnel Soignant À L'épreuve De La Pandémie De Covid-19: Une Étude Dans Un Hôpital Public En Tunisie. *Relations Industrielles/Industrial Relations*, 76(2), 189-210.
<https://doi.org/10.7202/1078504ar>
- Dema, H., Hamid, H., & Barisan, B. (2023). Transformational Leadership in Supporting Innovative Digital Governance. *Journal of Government and Politics*, 14(1), 69-80.
<https://doi.org/10.18196/jgp.v14i1.13528>
- Fletcher, L. (2016). Training Perceptions, Engagement, and Performance: Comparing Work Engagement and Personal Role Engagement. *Human Resource Development International*, 19(1), 4-26. <https://doi.org/10.1080/13678868.2015.1067855>
- Gilmore, P. L., Hu, X., Wei, F., Tetrick, L. E., & Zaccaro, S. J. (2013). Positive Affectivity Neutralizes Transformational Leadership's Influence on Creative Performance and Organizational Citizenship Behaviors. *Journal of Organizational Behavior*, 34(8), 1061-1075. <https://doi.org/https://doi.org/10.1002/job.1833>
- Gomes, A. (2014). Transformational Leadership: Theory, Research and Application to Sports. In.
- Gradillas, M., & Thomas, L. D. (2023). Distinguishing Digitization and Digitalization: A Systematic Review and Conceptual Framework. *Journal of Product Innovation Management*, 42(1), 112-143. <https://doi.org/10.1111/jpim.12690>
- Hair, J., & Alamer, A. (2022). Partial Least Squares Structural Equation Modeling (PLS-Sem) in Second Language and Education Research: Guidelines Using an Applied Example. *Research methods in applied linguistics*, 1(3), 100027.
<https://doi.org/https://doi.org/10.1016/j.rmal.2022.100027>
- Hair, J., Joe F, Sarstedt, M., Matthews, L. M., & Ringle, C. M. (2016). Identifying and Treating Unobserved Heterogeneity with Fimix-PLS: Part I–Method. *European Business Review*, 28(1), 63-76. <https://doi.org/https://doi.org/10.1108/EBR-09-2015-0094>
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to Use and How to Report the Results of PLS-Sem. *European Business Review*, 31(1), 2-24.
<https://doi.org/10.1108/EBR-11-2018-0203>
- Hair Jr, J. F., Matthews, L. M., Matthews, R. L., & Sarstedt, M. (2017). PLS-Sem or Cb-Sem: Updated Guidelines on Which Method to Use. *International Journal of multivariate data analysis*, 1(2), 107-123.
<https://doi.org/https://doi.org/10.1504/IJMDA.2017.087624>
- Handayani, E., Garad, A., Suyadi, A., & Tubastuvi, N. (2023). Increasing the Performance of Village Services with Good Governance and Participation. *World Development Sustainability*, 3, 100089. <https://doi.org/10.1016/j.wds.2023.100089>

- Harb, B., & Sidani, D. (2019). Transformational Leadership for Organizational Change in the Lebanese Public Sector. *Problems and Perspectives in Management*, 17(2), 205-216. [https://doi.org/10.21511/PPM.17\(2\).2019.15](https://doi.org/10.21511/PPM.17(2).2019.15)
- Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The Use of Partial Least Squares Path Modeling in International Marketing. [https://doi.org/https://doi.org/10.1108/S1474-7979\(2009\)0000020014](https://doi.org/https://doi.org/10.1108/S1474-7979(2009)0000020014)
- Hizam, S. M., Akter, H., Sentosa, I., Ahmed, W., Masrek, M. N., & Ali, J. (2023). Predicting Workforce Engagement Towards Digital Transformation through a Multi-Analytical Approach. *Sustainability*, 15(8), 6835. <https://doi.org/10.3390/su15086835>
- Hobfoll, S. E. (1989). Conservation of Resources: A New Attempt at Conceptualizing Stress. *American Psychologist*, 44(3), 513-524. <https://doi.org/10.1037/0003-066X.44.3.513>
- Hooi, L. W., & Chan, A. J. (2023). Does Workplace Digitalization Matter in Linking Transformational Leadership and Innovative Culture to Employee Engagement. *Journal of Organizational Change Management*, 36(2), 197-216. <https://doi.org/10.1108/Jocm-06-2022-0184>
- Ikwuanusi, U. F., Onunka, O., Owoade, S. J., & Uzoka, A. (2024). Digital Transformation in Public Sector Services: Enhancing Productivity and Accountability through Scalable Software Solutions. *International Journal of Applied Research in Social Sciences*, 6(11), 2744-2774. <https://doi.org/10.51594/IJARSS.v6i11.1724>
- Irianto, H., & Basbeth, A. (2021). The Effect of Transformational Leadership on Employee Engagement: The Moderating Role of Organizational Culture. *South East Asia Journal of Contemporary Business, Economics and Law*, 24(4), 124-132.
- Joo, Y. M. (2023). Developmentalist Smart Cities? The Cases of Singapore and Seoul. *International Journal of Urban Sciences*, 27(Suppl. 1), 164-182. <https://doi.org/10.1080/12265934.2021.1925143>
- Kahn, W. A. (1990). Psychological Conditions of Personal Engagement and Disengagement at Work. *Academy of Management Journal*, 33(4), 692-724. <https://doi.org/10.2307/256287>
- Kattel, R., & Mergel, I. (2019). Estonia's Digital Transformation: Mission Mystique and the Hiding Hand. In *Great Policy Successes* (pp. 143-160). Oxford University Press. <https://doi.org/10.1093/oso/9780198843719.003.0008>
- Khan, N. A., & Khan, A. N. (2019). What Followers Are Saying About Transformational Leaders Fostering Employee Innovation Via Organisational Learning, Knowledge Sharing and Social Media Use in Public Organisations? *Government Information Quarterly*, 36(4), 101391. <https://doi.org/10.1016/j.giq.2019.07.003>
- Kim, S., & Vandenabeele, W. (2010). Toward a More Comprehensive Understanding of Public Service Motivation: A Multi-Dimensional Approach. *International Review of Administrative Sciences*, 76(4), 1-24.
- Kouadio, A. B. (2023). L'engagement Au Travail Des Employés Publics En Contexte Post-Bureaucratique. In.
- Kwarteng, M. A., Ntsiful, A., Diego, L. F. P., & Novák, P. (2024). Extending Utaut with Competitive Pressure for Smes Digitalization Adoption in Two European Nations: A Multi-Group Analysis. *Aslib Journal of Information Management*, 76(5), 842-868. <https://doi.org/https://doi.org/10.1108/AJIM-11-2022-0482>
- Lidman, L., Gustavsson, M., & Fogelberg Eriksson, A. (2023). Learning and Employee-Driven Innovation in the Public Sector - the Interplay between Employee Engagement and Organizational Conditions. *Journal of Workplace Learning*, 35(9), 86-100. <https://doi.org/10.1108/JWL-05-2022-0055>
- Ly, B. (2024). The Interplay of Digital Transformational Leadership, Organizational Agility, and Digital Transformation. *Journal of the Knowledge Economy*, 15(1), 4408-4427. <https://doi.org/10.1007/s13132-023-01377-8>
- Matt, C., Hess, T., & Benlian, A. (2015). Digital Transformation Strategies. *Business & Information Systems Engineering*, 57(5), 339-343. <https://doi.org/10.1007/s12599-015-0401-5>
- Meske, C., Kissmer, T., & Stieglitz, S. (2020). Bridging Formal Barriers in Digital Work Environments: Investigating Technology-Enabled Interactions across Organizational Hierarchies. *Telematics and Informatics*, 48, 101342. <https://doi.org/10.1016/j.tele.2020.101342>
- Mihardjo, L., Sasmoko, S., Alamsjah, F., & Elidjen, E. (2019). Digital Leadership Role in Developing Business Model Innovation and Customer Experience Orientation in

- Industry 4.0. *Management Science Letters*, 9(11), 1749-1762.
<https://doi.org/10.5267/j.msl.2019.6.015>
- Mishra, D., Dashora, J., & Dubey, D. K. (2023). The Impact of Transformational Leadership on Employee Engagement and Performance: A Comprehensive Review. *Journal of Business Research*, 153, 113-125.
- Mkrtchyan, T., & Melkumyan, N. (2023). The Foundations of Digital Transformation of the Public Administration System. *Alternative Quarterly Academic Journal*, 2, 118-127.
<https://doi.org/10.55528/18292828-2023.2-118>
- Moynihan, D. P. (2013). Advancing the Empirical Study of Performance Management: What We Learned from the Program Assessment Rating Tool. *The American Review of Public Administration*, 43(5), 499-517. <https://doi.org/10.1177/0275074013487023>
- Mulyani, S. (2024). Exploring Public Leadership Transformation for Public Service in the Digital Age: A Brief Appraisal. In.
- Nabi, M. S. (2019). *Making the Tunisian Resurgence*. <https://doi.org/10.1007/978-981-13-3771-0>
- Nikolova, I., Schaufeli, W., & Notelaers, G. (2019). Engaging Leader-Engaged Employees? A Cross-Lagged Study on Employee Engagement. *European Management Journal*, 37(6), 772-783. <https://doi.org/10.1016/j.emj.2019.02.004>
- Nugroho, S. A., & Muslim, M. A. (2024). Transformational Leadership in Public Sector Innovation: A Bibliometric Analysis. *Asian Journal of Social and Humanities*, 2(6), 1321-1333. <https://doi.org/10.59888/AJOSH.v2i6.266>
- Nurfadilah, A., & Haliah, H. (2024). Public Sector Transformation: Increased Efficiency and Innovation in the Digital Economy. *International Journal of Humanities Education and Social Sciences*, 2(2), 127-143. <https://doi.org/10.58578/IJHESS.v2i2.2870>
- Onesi-Ozigagun, O., Ololade, Y. J., Eyo-Udo, N. L., & Ogundipe, D. O. (2024). Leading Digital Transformation in Non-Digital Sectors: A Strategic Review. *International Journal of Management and Entrepreneurship Research*, 6(4), 1157-1175.
<https://doi.org/10.51594/IJMER.v6i4.1005>
- Prabowo, T. S., Noermijati, N., & Irawanto, D. W. (2018). The Influence of Transformational Leadership and Work Motivation on Employee Performance Mediated by Job Satisfaction. *Jurnal Aplikasi Manajemen*, 16(1), 171-178.
<https://doi.org/10.21776/ub.jam.2018.016.01.20>
- Rahmadani, A. R. R., Prasilowati, S. L., & Siradjuddin, J. S. (2025). Employee Engagement in Mediating Transformational Leadership and Perceived Organizational Support on Employee Performance of Religious Training Centers in Indonesia. In.
- Saadah, M. (2024). Transformational Leadership and Dynamic Managerial Capabilities in Public Sector Innovation. *Jurnal Bina Praja*, 16(1), 201-214.
<https://doi.org/10.21787/jbp.16.2024.201-214>
- Sabekti, T. S., & Setiawan, A. I. (2023). How to Improve Employee Performance through the Role of Work Engagement Mediation: Empirical Studies on Public Sector Organizations. *Asian Journal of Engineering, Social and Health*, 2(3), 205-218.
<https://doi.org/10.46799/ajesh.v2i3.45>
- Saks, A. M. (2006). Antecedents and Consequences of Employee Engagement. *Journal of Managerial Psychology*, 21(7), 600-619.
<https://doi.org/10.1108/02683940610690169>
- Salas-Vallina, A., Simone, C., & Fernández-Guerrero, R. (2020). The Human Side of Leadership: Inspirational Leadership Effects on Follower Characteristics and Happiness at Work (Haw). *Journal of Business Research*, 107, 162-171.
<https://doi.org/10.1016/j.jbusres.2018.10.044>
- Schaufeli, W. B., & Bakker, A. B. (2004). Job Demands, Job Resources, and Their Relationship with Burnout and Engagement. *Journal of Organizational Behavior*, 25(3), 293-315. <https://doi.org/10.1002/job.248>
- Shaik, F. F., & Makhecha, U. P. (2019). Drivers of Employee Engagement in Global Virtual Teams. In.
- Sihite, O. B., Andika, C. B., & Prasetya, A. B. (2020). A Literature Review: Does Transformational Leadership Impact and Effective in the Public Bureaucratic. *International Journal of Social, Policy and Law*, 1(1), 44-50.
- Swarnalatha, C., & Prasanna, T. S. (2012). Employee Engagement: The Key to Organizational Success. *International Journal of Management*, 3(3), 216-227.
- Tanović, M. (2023). Transformational Leadership as a Prerequisite for Organizational Development in Public Administration. *Uprava*, 14(1), 37-52.
<https://doi.org/10.53028/1986-6127.2023.14.1.37>

- Tims, M., Bakker, A. B., & Derks, D. (2011). The Impact of Job Demands on Employees' Work Engagement and Job Performance. *Journal of Managerial Psychology*, 26(5), 374-388.
- Tims, M., Bakker, A. B., & Xanthopoulou, D. (2011). Do Transformational Leaders Enhance Their Followers' Daily Work Engagement. *The Leadership Quarterly*, 22(1), 121-131. <https://doi.org/10.1016/j.leaqua.2010.12.011>
- Trivellas, P., Reklitis, P., & Koniordos, M. (2017). Job Characteristics and Organizational Resources as Determinants of Employee Engagement. *International Journal of Human Resource Management*, 28(3), 1-20.
- Van der Voet, J., & Steijn, B. (2021). Team Innovation through Collaboration: How Visionary Leadership Spurs Innovation Via Team Cohesion. *Public Management Review*, 23(9), 1275-1294. <https://doi.org/https://doi.org/10.1080/14719037.2020.1743344>
- Vial, G. (2019). Understanding Digital Transformation: A Review and a Research Agenda. *Journal of Strategic Information Systems*, 28(2), 118-144. <https://doi.org/10.1016/j.jsis.2019.01.003>
- Walter, Y. (2024). Embracing the Future of Artificial Intelligence in the Classroom: The Relevance of Ai Literacy, Prompt Engineering, and Critical Thinking in Modern Education. *International Journal of Educational Technology in Higher Education*, 21(1), 15. <https://doi.org/10.1186/s41239-024-00448-3>
- Winasis, S., Djumarno, D., Riyanto, S., & Ariyanto, E. (2021). The Effect of Transformational Leadership Climate on Employee Engagement During Digital Transformation in Indonesian Banking Industry. *International Journal of Data and Network Science*, 5(2), 91-96. <https://doi.org/10.5267/j.ijdns.2021.3.001>
- Wirtz, B. W., & Daiser, P. (2018). A Meta-Analysis of Empirical E-Government Research and Its Future Research Implications. *International Review of Administrative Sciences*, 84(1), 144-163. <https://doi.org/10.1177/0020852315599047>
- Yao, L., Wu, J., & Rudnák, I. (2023). A Study on Gender Differences in the Performance of Leadership Traits in Chinese Internet Promotion Service Industry. *Acta Carolus Robertus*, 13(1), 104-118. <https://doi.org/https://doi.org/10.33032/acr.4349>
- Youssef, A. B. (2024). Digital Transformation in Tunisia: Under Which Conditions Could the Digital Economy Benefit Everyone? (Erf Working Paper No. In.
- Yukl, G., Mahsud, R., Prussia, G., & Hassan, S. (2019). Effectiveness of Broad and Specific Leadership Behaviors. *Personnel Review*, 48(3), 774-783. <https://doi.org/10.1108/PR-03-2018-0100>
- Yusuf, M., Bernardianto, R. B., Satia, H. M. R., Nurhasanah, N., Irwani, I., Setyoko, P. I., & Saputra, A. S. (2023). Investigating the Role Transformational Leadership, Innovative Work Behavior, and Team Member Exchange on Public Service Organization Performance. In.