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Driving Innovation in Banking Sector: The Role of Transformational Leadership and Knowledge Sharing

Yaser Shyyab [1]* **, Ahmed M. Mutahar** [1] **, Ayoub Zouria** [1]**, Jacqueline Rawlinson** [1]
[1] *School of Business and Law, Buckinghamshire New University, Buckinghamshire, United Kingdom*
* *Correspondence: Yaser.shyyab@bnu.ac.uk*

Abstract

Purpose:
This study aims to investigate the influence of transformational leadership (TL) on product and process innovation in the banking sector, emphasising the moderating role of knowledge sharing (KS). While TL has been recognised for fostering innovation through mechanisms such as idealised influence, intellectual stimulation, and individualised consideration, its interplay with KS remains underexplored in the context of developing economies.

Design/methodology/approach:
A quantitative, cross-sectional research design was adopted. Data were collected from 418 employees working in banks in Jordan, using self-administered in person survey. Partial Least Squares Structural Equation Modelling (PLS-SEM) was employed to test the hypotheses and validate the proposed conceptual framework.

Findings:
The findings affirm a direct positive relationship between TL and both product and process innovation. Moreover, KS showed a moderation effect on the relation between TL on one side and both process and product innovation on the other. The impact of TL on the ProdInn and ProcInn was strengthened with the moderation of KS among employees with banking sector.

Originality/value:
The study provides valuable insights for both theory and practice, recommending enhanced TL practices and organisational strategies to foster innovation, including building trust and encouraging knowledge-sharing behaviours. Future research should explore these dynamics across diverse sectors and longitudinal contexts to deepen understanding of TL's role in driving innovation. Practically, the findings underscore crucial considerations for banking sector aiming to effectively leverage TL to improve process and product innovation that will lead to improved performance and competitive advantage.

Keywords: *Transformational Leadership; Knowledge sharing; Product Innovation; Process Innovation; Moderation; banking sector*

1. Introduction

Innovation is a critical driver of organisational success, enabling businesses to adapt to dynamic environments and maintain a competitive advantage (Alateeg & Alhammadi, 2024). Shareholders, employees, and customers increasingly view innovation as a crucial tool for generating wealth (Keiningham et al., 2024; Kurtmollaiev et al., 2022; Liu & Sun, 2024). It significantly enhances a firm's efficiency, making it indispensable in today's competitive and uncertain environment. The ability to innovate is not just a growth driver but a survival necessity (Kyurova & Koyundzhiyska-Davidkova, 2024; Peterková & Ludvík, 2015; Tajpour et al., 2025). To remain competitive, companies must continuously adapt, especially as rivals introduce new products and processes to strengthen their market position. In an ever-changing economic landscape marked by rapid technological advancements, shifting markets, evolving customer preferences, and financial crises, firms face an "innovate or perish" scenario (Gowd et al., 2023; Yayha et al., 2024). Innovation is thus a critical element for maintaining competitiveness and ensuring long-term survival.

The importance of innovation has led researchers to investigate and explore this concept across multiple industries, including industrial, academic, and financial landscapes. For instance, Rasheed et al. (2021) and Lei et al. (2020) analysed these ideas in growing economies such as Vietnam, while Prasad & Junni (2016) and García-Morales et al. (2012) focused on highly developed regions like the USA and Spain. Various sectors, such as academia and telecommunications, have also been explored. In contrast, the financial sector, particularly banking in developing countries has received limited scholarly attention, despite its critical role in economic development and resource allocation (Al-abedallat, 2017). In Jordan, for example, the performance of commercial banks has

been shown to significantly influence GDP growth (Alkhazaleh, 2017), underscoring the sector's strategic importance.

As a context for this study, Jordan's fluctuating yet generally upward trajectory in the Global Innovation Index (2024), rising from 81st in 2021 to 73rd in 2024 depicted in figure 1, this fluctuation underscores the need to better understand the organisational drivers of innovation. While this improvement is encouraging, it remains modest and inconsistent, indicating that innovation performance is still vulnerable to structural and strategic limitations. Despite this progress, there is a clear need for further investigation into internal factors, such as transformational leadership and knowledge sharing, that could more robustly support innovation outcomes. Among these, knowledge sharing stands out as a critical yet underexplored factor. This is particularly relevant in light of Jordan Vision 2033 (Jordan Government, 2022), which prioritises innovation, digital transformation, and the development of a knowledge-based economy. Understanding how organisations, especially in key sectors like banking, can contribute to this vision through enhanced innovation practices is therefore both timely and strategically important.

Figure 1: Jordan Ranking Globally in the Global Innovation Index over Years
Source: Global Innovation Index (2024)

Knowledge sharing (KS) plays a pivotal role in shaping an organisation's capacity to innovate, particularly in knowledge-intensive and service-driven sectors such as banking. In environments where innovation depends not only on technological assets but also on the effective mobilisation of human capital, KS acts as a conduit through which ideas, experiences, and expertise are disseminated and transformed into actionable insights. Within the context of transformational leadership, KS becomes even more critical, as leaders who inspire, intellectually stimulate, and individually support their employees can foster a culture where knowledge is willingly exchanged rather than hoarded. This dynamic is especially relevant in the Jordanian banking sector, where high power distance and uncertainty-avoidance cultures (See Figure 2) may inhibit open communication (Hofstede, 2011). Prior studies from the UAE and China, such as those by & Manaf (2024), and Ye et al. (2022), have highlighted how knowledge sharing can amplify the impact of transformational leadership on innovation outcomes across various sectors, including manufacturing and government ministries. By introducing KS as a moderating variable, this study explores whether strong knowledge-sharing behaviours enhance the positive effects of transformational leadership on innovation outcomes. In doing so, it addresses a key organisational mechanism that may explain variability in innovation performance and aligns with the broader goals of Jordan Vision 2033 (Jordan Government, 2022).

Figure 2: Hofstede Cultural dimensions Comparison (Jordan Vs United Kingdom)
Source: Hofstede & Minkov (2010)

This study addresses this gap by examining the impact of Transformational Leadership (TL) on process and product innovation in Jordan's banking industry. Transformational leadership, characterised by idealised influence, inspirational motivation, intellectual stimulation, and individualised consideration, has been widely associated with fostering innovation. However, the mechanisms through which TL translates into innovation outcomes remain insufficiently understood, particularly in service-based and developing economy contexts.

To advance this understanding, the study introduces Knowledge Sharing (KS) as a moderating variable. KS is a critical enabler of innovation, facilitating the exchange of ideas, expertise, and problem-solving strategies across organisational boundaries. Drawing on Social Cognitive Theory by Bandura (1986), the study posits that transformational leaders serve as role models who influence employees' learning behaviours, thereby fostering a culture of knowledge exchange that supports innovation. Additionally, Social Exchange Theory by Cropanzano et al. (2002) provides a complementary lens, suggesting that employees reciprocate supportive leadership behaviours such as intellectual stimulation and individualised consideration, by engaging in discretionary behaviours like knowledge sharing, which in turn enhance innovation outcomes.

By integrating these theoretical perspectives, this study contributes to the literature by offering a nuanced understanding of how transformational leadership and knowledge sharing interact to influence innovation. Using a quantitative, survey-based design, data were collected from employees in the banking sector in Jordan. The analysis was conducted using Structural Equation Modelling (SEM) via SmartPLS 4.0. The findings are expected to yield theoretical insights and practical implications for leadership development and innovation strategy in the banking sector of developing economies.

2. Literature Review

2.1 Transformational Leadership and Innovation

Transformational leadership (TL) has been widely recognised as a pivotal driver of innovation across organisational contexts (García-Morales et al., 2012). As Samad (2012) notes, TL is instrumental in integrating creative insight and persistence, while demonstrating sensitivity to employees, thereby facilitating changes in managerial practices and processes. Expanding on this, Zheng et al. (2016) argue that transformational leaders foster team cohesion and stimulate innovation by articulating shared goals, values, and beliefs.

Moreover, TL enhances employee creativity by acknowledging individual differences and encouraging diverse perspectives (Guo et al., 2016). Within the banking sector, Qabool and Jalees (2017) found that leaders who support employee skill development can significantly boost creative problem-solving and the generation of novel approaches. In addition to enabling creativity in others, transformational leaders often exhibit innovative behaviours themselves, such as idea generation, promotion, and implementation, both for personal development and to cultivate the potential of their subordinates (Majumdar and Ray, 2011). Similarly, leadership that integrates strategic, communicative, motivational, and personal dimensions has been shown to foster collective creativity by encouraging idea generation (Chang, 2016).

To contextualise TL within the broader leadership literature, it is important to note that leadership has historically been conceptualised through traits, behaviours, influence, and situational factors, giving rise to a variety of leadership styles (Al-Husseini and Talib, 2016; Saenz, 2011). Among these, TL is widely regarded as particularly effective for managing organisational transformation and responding to the demands of globalisation (Riazet et al., 2012). Bass and Riggio (2012) define TL as a process that transforms individuals by motivating them to transcend self-interest and embrace positive change. This is operationalised through four core behaviours: idealised influence, inspirational motivation, intellectual stimulation, and individualised consideration.

2.2 Knowledge Sharing and Innovation

Alongside leadership, knowledge sharing (KS) has emerged as a critical enabler of innovation. Iyer and Ravindran (2009) highlight KS as a key contributor to organisational performance, enhancing absorptive and innovative capacities and improving customer service (Cao and Xiang, 2012). Singh (2008) further emphasises KS as a mechanism for individual learning, which is essential for the adoption of new practices. Renzl (2008) adds that KS strengthens organisational competencies, making it a strategic asset.

In the banking context, Valipour et al. (2017) found that the exchange of employee skills is vital for generating new ideas and solutions, which are essential for improving products, processes, and technologies. Definitions of KS vary across the literature. For instance, Hooff and Weenen (2004) describe it as the exchange of knowledge that leads to the creation of new knowledge, while Ipe (2003) and Lin (2007) frame it as the sharing of knowledge and skills among employees. Kim et al. (2013) refers to it as the exchange of competencies, and Hooff and Ridder (2004) emphasise the role of individual actions such as sharing ideas, suggestions, and experiences.

Scholars have also identified different dimensions of KS processes, including knowledge seeking and contribution (Wei et al., 2013), transmission and absorption (Ipe, 2003), and possession and acquisition (Singh et al., 2016). For the purposes of this study, the framework proposed by Hooff and Weenen (2004) is adopted, which categorises KS into two primary dimensions: knowledge donation and knowledge collection. This classification is widely supported in the literature (Karkoulian et al., 2010; Lin, 2007; Tohidinia and Mosakhani, 2010).

2.3 Innovation

Innovation is increasingly recognised as a fundamental organisational competency in the twenty-first century (Cekmecelioglu and Gunsel, 2013). Innovative organisations are characterised by their ability to identify and leverage new opportunities, technologies, competencies, and knowledge assets to achieve and sustain competitive advantage (Teece, 2014).

The concept of innovation has been defined in various ways. Plessis (2007) describes it as the development of new ideas, products, and processes that enhance organisational outcomes. Similarly, De Jong and Hartog (2007) define innovation as the adoption of novel products, processes, or market opportunities that influence performance. Andreeva and Kianto (2011) extend this view by emphasising the recognition and implementation of new ideas, products, and services to achieve tangible results.

The literature also presents multiple typologies of innovation. Tidd and Bessant (2011) distinguish between incremental innovation, continuous improvements, and radical innovation, which involves significant breakthroughs. Damanpour and Aravind (2012) focus on product and process innovation, while Schilling (2010) proposes a dual framework of technical and administrative innovation. These classifications highlight the multidimensional nature of innovation and its dependence on disciplinary and contextual factors.

In today's environment, characterized by intense competition and increasing globalization, continuous innovation has become essential for organizational survival (Chen & Huang, 2009; Kianto, 2011). Innovation is no longer optional but a necessity for all organizations in a free-market economy (Aramburu & Sáenz, 2011). The creation of new ideas and innovations is crucial for staying competitive.

The innovation output indicator measures how effectively ideas from innovation sectors reach the market and create better job opportunities. While Jordan is one of the countries that leads among Arab neighbours in innovation output, it still falls significantly behind the Western and Asian counterparts (Global Innovation Index, 2024).

To enhance organizational innovation, it is important to examine the factors influencing it. Organizational performance is affected by various elements, including the transformational leadership (Al-Husseini et al., 2021; García-Morales et al., 2012; Gumusluoğlu & Ilsev, 2009; Trung et al., 2014; Yang & Yang, 2019). Sharing valuable knowledge and fostering relationships both within and outside the organization can drive innovation and success in the global economy (Al-Husseini et al., 2021; Anwar et al., 2019; Le & Lei, 2018).

In summary, innovation is not a singular or static concept but a dynamic and multifaceted phenomenon. It encompasses the generation, adoption, and implementation of new ideas and practices that enhance organisational adaptability and performance. This study adopts a broad conceptualisation of innovation, recognising its diverse forms and the integral roles of transformational leadership and knowledge sharing in promoting an innovative organisational climate.

3. Hypotheses Development

Transformational leadership (TL) has been conceptualised in the literature as a collaborative and dynamic process through which leaders and followers mutually inspire, support, and motivate one another to achieve shared goals and exceed expectations (Lynch, 2012; Yukl, 2013). TL is widely recognised for its significant influence on innovation across diverse organisational contexts. Defined by four core dimensions, idealised influence, intellectual stimulation, inspirational motivation, and individualised consideration, TL fosters an environment that nurtures creativity, proactive behaviour, and high performance among employees (Bass & Bass, 1985).

From a theoretical standpoint, Social Cognitive Theory (Bandura, 1986) provides a foundation for understanding how TL influences innovation. According to this theory, individuals learn by observing role models. Transformational leaders, through their visionary and supportive behaviours, serve as such models, shaping employees' attitudes and behaviours towards creativity and innovation.

Empirical studies have consistently demonstrated the positive impact of TL on innovation outcomes. For instance, TL has been shown to stimulate both product and process innovation by encouraging employees to challenge existing norms, explore novel ideas, and pursue continuous improvement (Le & Lei, 2017; Peng et al., 2021; Phong et al., 2018; Prasad & Junni, 2016). Gómez-Prado et al. (2022) further highlight that TL enhances a firm's competitive advantage by promoting innovation capabilities, which in turn contribute to broader economic development (Drucker & Maciariello, 2014; Hogan & Coote, 2014).

A substantial body of research supports the positive association between TL and innovation (Al-Husseini et al., 2021; García-Morales et al., 2012; Gumusluoğlu & Ilsev, 2009; Prasad & Junni, 2016; Rasheed et al., 2021; Trung et al., 2014; Yang & Yang, 2019). However, some inconsistencies have been observed, particularly within the banking sector, where empirical evidence on the relationship between TL and specific types of innovation, namely product and process innovation remain limited and inconclusive (Le & Lei, 2017). These discrepancies suggest that the effectiveness of TL may be contingent upon industry-specific dynamics and the nature of innovation being examined.

Given the theoretical foundations and empirical insights outlined above, this study seeks to examine the influence of TL on innovation within the banking sector, with a particular focus on product and process innovation. Accordingly, the following hypotheses are proposed:

H1: Transformational leadership has a positive effect on Product Innovation among employees within banking sector.

H2: Transformational leadership has a positive effect on Process Innovation among employees within banking sector.

Knowledge sharing (KS) is a cooperative and collaborative process where individuals actively exchange and share tacit and explicit knowledge to empower and support each other with new and important knowledge and skills to achieve organisational goals. This in turn fosters mutual growth and development (Clayton, 2020; Lin, 2007; Nonaka & Toyama, 2005). KS significantly impacts innovation, particularly in product and process innovation, by enhancing the organisation's ability to generate new ideas and improve performance (Škerlavaj et al., 2010). Studies have shown that KS promotes collective learning, enabling employees to develop innovative solutions and improve organisational innovation performance (Al-Husseini et al., 2021; Anwar et al., 2019; Le & Lei, 2018). However, some challenges exist, as the effectiveness of KS can vary depending on the organisational context and employees' willingness to share knowledge (Wu, 2016). This suggests that while KS generally enhances innovation, its impact may differ based on specific organisational settings and employee behaviours.

Knowledge sharing (KS) is a key component in shaping the connection between transformational leadership (TL) and innovation (product and process) by cultivating an environment that encourages the exchange of knowledge, which is crucial for innovation. This dynamic interaction enhances the innovation process by ensuring a continuous flow of meaningful knowledge to enhance research. Studies have shown that KS can strengthen the innovation, as it helps employees develop new solutions and engage in creative behaviours (Choi et al., 2016; Nonaka et al., 2006)For instance, Le & Lei (2019) found that TL positively impacts product and process innovation through KS in various industries. Similarly, Lei et al. (2019) highlighted that TL stimulates KS, contributing to innovation capabilities (Dost et al., 2019; Phong et al., 2018). In the context of modern infrastructure, technology, and economic resources, KS remains the most critical factor for innovation (Castaneda & Cuellar, 2020; Kremer et al., 2019).

However, the moderating role of KS is not always straightforward. Research has shown that KS can be hindered by factors such as lack of trust, fear of knowledge misuse, or cultural barriers, particularly in high power-distance environments like Jordan (Wu, 2016; Alsharo et al., 2017; Hofstede, 2011). For instance, Shyyab (2023) found that KS did not significantly mediate the TL–product innovation relationship in banking contexts, suggesting that its effectiveness may be conditional.

Given these mixed findings, this study examines whether KS strengthens the relationship between TL and innovation in the banking sector, where knowledge-intensive work and hierarchical structures coexist (Choi et al., 2016; Castaneda & Cuellar, 2020; Kremer et al., 2019). These inconsistencies highlight the need for further research into the role of knowledge sharing and its moderating effect on the relationship between transformational leadership and innovation (Choi et al., 2016). Consequently, the following hypotheses are proposed:

H3: Knowledge sharing moderates the relationship between Transformational leadership and product innovation among employees within banking sector.

H4: Knowledge sharing moderates the relationship between Transformational leadership and process innovation among employees within banking sector.

3. Research Method

3.1 Overview of the Proposed Conceptual Framework

This study's conceptual framework is grounded in transformational leadership theory, which posits that leaders who inspire, intellectually stimulate, and individually support their followers foster an environment conducive to innovation. Transformational leadership enhances both process innovation (improvements in workflows and methods) and product innovation (development of new offerings) (Alshehri, 2024). Moreover, by encouraging creativity, risk-taking, and a shared vision (Bass & Riggio, 2014). However, while prior research establishes a direct link connecting transformational leadership and innovation, the mechanisms that strengthen or hinder this relationship remain underexplored(Al Ahmad et al., 2019). To address this gap, knowledge sharing is introduced as a moderating variable, reflecting the premise that the efficacy of transformational leadership in driving innovation depends on the extent to which employees exchange expertise, insights, and information. Knowledge sharing acts as a critical enabler, amplifying the leader's influence by ensuring that novel ideas are disseminated, refined, and implemented effectively (Mohammed et al., 2024)

The inclusion of knowledge sharing as a moderator aligns with social exchange theory, which suggests that transformational leaders cultivate trust and reciprocity, thereby encouraging employees to contribute and share knowledge(Staples & Webster, 2008). Without effective knowledge sharing, even the most visionary leadership may fail to translate into tangible innovations due to siloed information or resistance to collaboration. Thus, this framework not only extends transformational leadership theory by delineating a boundary condition but also offers practical insights for organisations seeking to optimise innovation outcomes. By examining how knowledge sharing moderates the leadership-innovation relationship (illustrated in figure 3), this study provides a more nuanced understanding of the contextual factors that determine whether transformational leadership successfully fosters innovation.

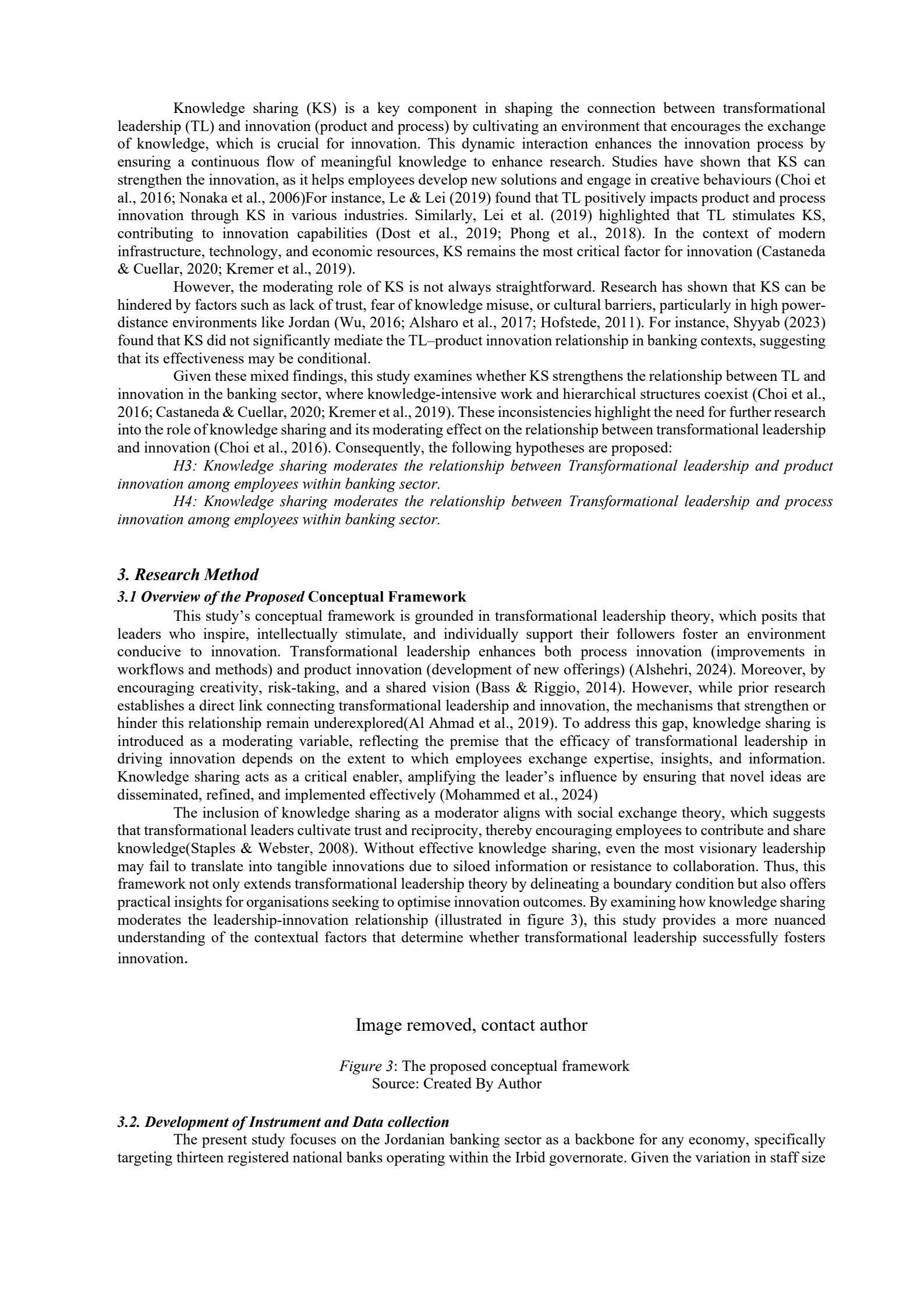

Figure 3: The proposed conceptual framework
Source: Created By Author

3.2. Development of Instrument and Data collection

The present study focuses on the Jordanian banking sector as a backbone for any economy, specifically targeting thirteen registered national banks operating within the Irbid governorate. Given the variation in staff size

across these institutions, a stratified sampling technique was employed to ensure proportional representation from each bank. The total population across all thirteen banks amounted to 824 employees. Based on the sample size guidelines provided by Sekaran & Bougie (2020), a sample of 262 participants was deemed appropriate. Accordingly, the required sample proportion from each bank was calculated using the formula: (262 / 824) × 100 = 31.79%, ensuring statistical representation across the strata. With the presence of HR of each bank's branch, simple random sampling was used to distribute the questionnaire

To collect data, self-administered questionnaires were distributed to the selected participants. A total of 627 questionnaires were handed out, of which 588 were returned, yielding a notably high response rate of 93.77%. This exceeds the average response rate of 52.7% reported by Baruch and Baruch & Holtom (2008) in their meta-analysis of 490 survey-based studies published in 17 refereed journals. Following rigorous data screening procedures, the final valid sample comprised 418 questionnaires. This robust response rate and sample size enhance the reliability and generalisability of the study's findings within the targeted banking context.

The Multifactor Leadership Questionnaire 5X (MLQ) by Avolio (1999)was used to measure transformational leadership, while a scale developed by Rosendaal & Bijlsma-Frankema (2015) was used for knowledge sharing. Pre-validated tools by Easa (2012), were used to measure product and process innovation. The analysis and findings of this study were conducted using Structural Equation Modelling (SEM) with SMARTPLS 4.0. SEM is a multivariate statistical-driven approach that validates complex models with causal links, either directly or indirectly. This study analysed two models: the measurement model and the structural model (Hair Jr et al., 2020) Additionally, SPSS v26 was used for data screening and preliminary analysis.

5. Results

5.1 Respondents Demographics Description

After data screening, which included handling missing data and removing non-valid questionnaires, the final valid sample consisted of 418 responses. The respondents' profile showed gender diversity, with 39.2% females and 60.8% males. Most respondents were young, with 80.6% aged 39 years or less. High education levels were evident, with 98.3% holding at least a bachelor's degree. Monthly income and job experience varied, with a significant portion earning between 301-700 JD and having 6-15 years of experience. Job titles ranged from employees to managers, with more than half being employees.

5.2 Measurement Model Assessment

The measurement model was rigorously assessed for reliability and validity of reflective-reflective second-order constructs (Hair Jr et al., 2021; Ramayah et al., 2018). Specifically, transformational leadership (II, IM, IS, IC) was operationalized as second-order constructs. The psychometric properties of the constructs, encompassing factor loadings, Cronbach's alpha (α), composite reliability (CR), and average variance extracted (AVE), are detailed in Tables 1 and 2 (Becker et al., 2023; Hair Jr et al., 2021). Factor loadings for all items exceeded the recommended threshold of 0.70 except for (KS3, KS4) were deleted due to low factor loading, indicating strong indicator reliability. α values for the constructs ranged from 0.901 to 0.979, surpassing the benchmark of 0.70. CR values further validated construct reliability, ranging from 0.913 to 0.980, well above the recommended threshold of 0.70 (Hair Jr et al., 2021; Ramayah et al., 2018). These results confirm the internal consistency and reliability of the constructs.

Convergent validity was assessed using the AVE, which measures the extent to which indicators explain the variance of their respective constructs. AVE values for all constructs ranged from 0.665 to 0.864, exceeding the recommended threshold of 0.50 (Hair Jr et al., 2021; Ramayah et al., 2018). Table 1 demonstrates that the constructs effectively capture shared variance among their indicators, affirming convergent validity.

Table 1. Reliability and convergent validity results

First-order	Second-order	Items	Loading	α	CR	AVE
II		II1	0.785	0.926	0.931	0.774
		II2	0.892			
		II3	0.903			
		II4	0.918			
		II5	0.893			
IM		IM1	0.881	0.943	0.945	0.815
		IM2	0.924			
		IM3	0.910			
		IM4	0.878			
		IM5	0.920			

IS		IS1	0.928	0.948	0.948	0.864
		IS2	0.942			
		IS3	0.932			
		IS4	0.917			
IC		IC1	0.883	0.949	0.950	0.831
		IC2	0.906			
		IC3	0.901			
		IC4	0.934			
		IC5	0.933			
KS		KS1	0.777	0.901	0.913	0.669
		KS2	0.730			
		KS5	0.860			
		KS6	0.876			
		KS7	0.858			
		KS8	0.795			
ProdInn		Prod1	0.721	0.916	0.920	0.665
		Prod2	0.845			
		Prod3	0.857			
		Prod4	0.830			
		Prod5	0.854			
		Prod6	0.810			
		Prod7	0.782			
ProcInn		Proc1	0.817	0.905	0.913	0.724
		Proc2	0.848			
		Proc3	0.866			
		Proc4	0.864			
		Proc5	0.860			
TL		II	0.924	0.979	0.980	0.728
		IM	0.949			
		IS	0.954			
		IC	0.946			

Source: SmartPLS (Ringle et al., 2024)

Discriminant validity was evaluated for the constructs using the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio (Henseler et al., 2015). These approaches confirm that each construct represents a distinct concept, reducing the risk of multicollinearity or conceptual overlap. According to the Fornell-Larcker criterion, discriminant validity is established when the square root of a construct's AVE exceeds its correlations with other constructs (Becker et al., 2023; Lim, 2024). As shown in Tables 2, diagonal values reflect the square roots of AVEs, while off-diagonal values show inter-construct correlations.

Table 2. Discriminant validity (Fornell-Larcker criterion)

	KS	ProcInn	ProdInn	TL
KS	**0.818**			
ProcInn	0.409	**0.851**		
ProdInn	0.340	0.797	**0.815**	
TL	0.595	0.575	0.515	**0.853**

Source: SmartPLS (Ringle et al., 2024)

The HTMT ratio offers a stricter evaluation of discriminant validity by comparing average correlations between constructs against those within constructs, with values below 0.90 indicating satisfactory validity (Henseler et al., 2015). s shown in Table 3, all HTMT values for first-order constructs fall below this threshold, confirming strong discriminant validity.

Table 3. Discriminant validity (Heterotrait-monotrait ratio (HTMT))

	KS	ProcInn	ProdInn	TL
KS				
ProcInn	0.439			
ProdInn	0.364	0.876		
TL	0.624	0.605	0.537	

Source: SmartPLS (Ringle et al., 2024)

5.2 Structural Model Assessment and Hypothesis Testing:

The structural model was rigorously assessed to evaluate the hypothesized relationships between the constructs, ensuring both statistical significance and practical relevance. The analysis involved examining path coefficients, t-values, p-values, variance inflation factors (VIF), effect sizes (f-square), and the coefficient of determination (R-square) (Becker et al., 2023; Hair Jr et al., 2021). These metrics collectively provide a comprehensive understanding of the model's explanatory power and the strength of the proposed relationships as shown in table 4.

Prior to hypothesis testing, collinearity among predictor constructs was evaluated to ensure the absence of multicollinearity issues that could undermine the robustness of the results. As indicated in Table 3, all VIF values were below the threshold of 3.33, confirming that multicollinearity was not a concern in the structural model. Then, the bootstrapping technique with 5,000 resamples was employed to compute path coefficients, t-values, and associated p-values for each hypothesized relationship. The first hypothesis posited a positive relationship between transformational leadership and product innovation. The results revealed a path coefficient of 0.514, with a t-value of 8.382 and a p-value less than 0.01, indicating statistical significance. Consequently, the hypothesis was supported. The effect size for this relationship was 0.245, suggesting a moderate effect which connects transformational leadership to advancements in product innovation.

The second hypothesis examined the influence connection transformational leadership to advancements in process innovation. The analysis yielded a path coefficient of 0.546, with a highly significant t-value of 9.575 and a p-value < 0.001. affirming the strength of this relationship. The effect size was 0.306, indicating a moderate practical impact of transformational leadership on process innovation. Thus, the hypothesis was strongly supported. The third and fourth hypotheses explored the moderation effect of knowledge sharing on the relationships between transformational leadership on one side and product innovation and process innovation on the other. The path coefficient was estimated at 0.164, and 0.174 respectively, with a t-value of 3.223 and 4.388 and a p-value of 0.001. Hypotheses 3 and 4 were also supported.

The coefficient of determination (R2) values highlighted the explanatory power of the model. For transformational leadership (TL), the R2 values were 0.303 and 0.375 respectively for ProdInn and ProcInn, indicating that 30.3% of the variance in product innovation is explained by the transformational leadership. Similarly, 37.5% of the variance in process innovation is accounted for by transformational leadership. These substantial R2 values underscore the model's moderate explanatory capacity (Chin, 2010). Besides, the effect sizes (f2) were computed to assess the practical significance of each predictor's contribution to the dependent constructs (Cohen, 1988, 2013; Hair Jr et al., 2016). The findings revealed that transformational leadership had a moderate effect size (f2= 0.245) on product innovation, while exhibited large effect sizes (f2= 0.306) on process innovation, highlighting its pivotal role in driving positive outcomes.

Table 4. Structural Model Assessment and Hypothesis Testing:

H	**Path**	**Beta**	**T values**	**P values**	**Decision**	**VIF**	**f^2**	**R^2**
1	TL -> ProdInn	0.514	8.382	**	Supported	1.589	0.245	0.303
2	TL -> ProcInn	0.546	9.575	**	Supported	1.589	0.306	0.375
3	KS*TL -> ProdInn	0.164	3.223	**	Supported	1.184	0.043	
4	KS*TL -> ProcInn	0.174	4.388	**	Supported	1.184	0.053	

*p<0.05, **p<0.01

Source: SmartPLS (Ringle et al., 2024)

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Figure 4. Structural model
Source: SmartPLS (Ringle et al., 2024)

5. Discussion

This study explored the influence of transformational leadership (TL) on product and process innovation within the banking sector, with a particular emphasis on the moderating role of knowledge sharing (KS). The findings confirm that TL exerts a statistically significant and positive effect on both product and process innovation with s ($\beta = 0.514$, $p = 0.001$) and ($\beta = 0.546$, $p = 0.001$) respectively. Moreover, KS significantly moderates these relationships, enhancing the impact of TL on both product and process innovation with ($\beta = .164$, $P= .001$) and ($\beta = .174$, $P= .001$) respectively. These results offer empirical support for a comprehensive framework that links leadership style, knowledge sharing, and innovation outcomes in a highly regulated and competitive service industry.

A key contribution of this study lies in its contextual and theoretical novelty. While prior research has extensively examined TL and innovation in manufacturing and SME contexts, this study extends the literature by focusing on the banking sector, a domain often characterised by operational conservatism, regulatory constraints, and incremental innovation. The confirmation of KS as a significant moderator in this environment underscores the strategic importance of knowledge dynamics in service-based innovation, offering new insights into how leadership and knowledge practices interact in complex organisational settings.

While no major contradictions emerged, one notable nuance was observed: the moderating effect of KS was stronger for process innovation than for product innovation. This was somewhat unexpected, as product innovation is often assumed to benefit more directly from knowledge exchange. A possible explanation lies in the nature of banking operations, where process innovation such as improving service delivery or compliance workflows relies heavily on cross-functional collaboration and shared procedural knowledge. In contrast, product innovation in banking may involve more top-down strategic planning or external market analysis, where KS among employees plays a less central role. This finding suggests that even in environments constrained by standardisation and compliance, active knowledge sharing can significantly amplify the innovation outcomes of transformational leadership.

The findings largely affirmed the study's theoretical expectations. Consistent with transformational leadership theory, TL was found to positively influence both product and process innovation. This supports the view that visionary, empowering leadership fosters a climate conducive to creativity, and continuous improvement. These results align with previous studies (e.g., Rasheed et al., 2021; Le & Lei, 2019; Prasad & Junni, 2016), which have demonstrated similar effects across various national and organisational contexts.

No major contradictions emerged in the analysis; however, the strength of the moderating effect of KS on product innovation was less than on process innovation. This is particularly noteworthy given that process innovation in banking is often constrained by standardisation and compliance requirements. The finding suggests that even in such environments, active knowledge sharing can significantly amplify the innovation outcomes of transformational leadership. This may be due to the collaborative nature of banking operations, where cross-functional knowledge flows are essential for designing customer-centric products and services.

The moderating role of KS is strongly supported by prior literature. Studies by Le and Lei (2019) and Zheng et al. (2017) have shown that KS enhances the effectiveness of TL in promoting innovation. Castaneda and Cuellar (2020b) argued that while infrastructure and resources are important, the exchange of knowledge among employees is a critical enabler of innovation. Kremer et al. (2019) similarly noted that innovation is unlikely to occur without KS, as it facilitates continuous learning and creative problem-solving. De Jong and Den Hartog (2007) further emphasised that KS enables employees to address current challenges while anticipating future needs. The findings of this study reinforce these perspectives and extend them to the banking sector, where KS appears to be a key mechanism through which TL translates into tangible innovation outcomes.

From a sector-specific standpoint, the banking industry is undergoing rapid digital transformation, requiring institutions to innovate while maintaining operational stability and regulatory compliance. In such a context, TL can play a pivotal role in fostering a culture of innovation by promoting adaptability, vision, and employee empowerment. However, without effective mechanisms for knowledge exchange, the potential of TL may remain underutilised. This study underscores that KS is not merely a supportive practice but a strategic lever that enhances the innovation capacity of banks.

Ultimately, to strengthen product and process innovation within the banking sector, it is essential to promote transformational leadership practices. Equally important is the cultivation of a knowledge-sharing culture,

which significantly enhances the effectiveness of TL in driving innovation. These findings offer valuable insights for both scholars and practitioners seeking to understand and leverage the interplay between leadership and knowledge dynamics in innovation-intensive environments.

6. Implications

6.1Theoretical Implication

This study advances theoretical understanding at the intersection of transformational leadership (TL), innovation, and knowledge management within the context of emerging market financial institutions. By empirically examining the influence of TL on both product and process innovation in the banking sector, the study extends the application of TL theory to a domain that remains underrepresented in the literature. While prior research has explored similar dynamics in specific national contexts (e.g., Al Ahmad et al., 2019), this study contributes novel insights by situating the TL–innovation relationship within the unique institutional and operational constraints of developing financial markets. The findings reaffirm the theoretical proposition that TL through its core dimensions of idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Al-Husseini & Elbeltagi, 2016), which is a critical antecedent of organizational innovation. Importantly, the study distinguishes itself by demonstrating that TL exerts a significant and differentiated impact on both product and process innovation. This dual focus enriches the theoretical discourse by highlighting the versatility of TL in shaping innovation across multiple dimensions of organizational functioning, particularly in service-intensive and highly regulated environments such as banking.

A key theoretical contribution lies in the identification of knowledge sharing (KS) as a significant moderator in the TL–innovation relationship. This finding introduces a critical boundary condition that has been underexplored in prior leadership research. KS is shown to function as a relational mechanism that enhances the translation of TL behaviours into innovation outcomes. When KS is high, the influence of TL on innovation is amplified, suggesting that the effectiveness of transformational leadership is contingent upon the presence of a collaborative and knowledge-rich organizational climate. This insight contributes to the integration of leadership and knowledge management theories, which have traditionally evolved in parallel. By empirically validating the moderating role of KS, the study offers a more holistic theoretical framework that captures the interplay between leadership behaviours and organizational knowledge dynamics.

6.2 Practical Implication

This study provides critical insights for managers and policymakers within the banking sector, particularly concerning the dynamic relationship between transformational leadership (TL), knowledge sharing (KS), and innovation. The findings demonstrate that KS significantly moderates the relationship between TL and both product and process innovation, indicating that the effectiveness of TL in fostering innovation is contingent upon the presence of a robust knowledge-sharing culture.

To optimise the impact of TL, banking institutions must not only invest in leadership development but also cultivate organisational environments that actively support and facilitate KS. Transformational leaders should be equipped to inspire and develop employees while simultaneously fostering structured and consistent knowledge exchange. This involves creating systems and practices that encourage trust, reduce resistance to sharing, and promote collaborative learning. Such an environment enables employees to contribute meaningfully to innovation efforts and enhances the overall effectiveness of leadership initiatives.

The moderating role of KS suggests that leadership strategies should be adapted according to the prevailing level of knowledge sharing within the organisation. In contexts where KS is limited, leaders must prioritise building foundational trust and communication channels to enable knowledge flow. Conversely, in environments where KS is well-established, leaders can focus on leveraging shared expertise to accelerate innovation and refine organisational processes. This strategic alignment ensures that TL is not only inspirational but also operationally effective in driving innovation outcomes.

The study also reveals that KS remains underdeveloped in many banking institutions, which may constrain the potential benefits of TL. Addressing this gap requires deliberate and sustained efforts, including the integration of KS into performance management systems, the provision of regular training and development opportunities, and the reinforcement of collaborative behaviours through recognition and support. These initiatives can help embed KS into the organisational culture and ensure that it functions as a strategic enabler of innovation.

Furthermore, the context of data collection during the COVID-19 pandemic highlights the importance of resilient leadership and adaptive knowledge-sharing mechanisms during times of crisis. Leaders must develop agile crisis management frameworks that incorporate virtual collaboration tools, scenario-based training, and decentralised decision-making processes. Such measures are essential for maintaining innovation momentum and employee engagement during periods of disruption and uncertainty.

7. Limitation and Future Work

While this study provides valuable insights into the moderating role of knowledge sharing (KS) in the relationship between transformational leadership (TL) and innovation within the Jordanian banking sector, several limitations should be acknowledged.

Firstly, the study employed a self-administered questionnaire as the sole data collection method. Although this approach yielded a high response rate, the use of a single method may have introduced common method bias. Future research could benefit from employing a mixed-methods approach, incorporating qualitative techniques such as interviews or focus groups with senior management. This would allow for a deeper exploration of the mechanisms through which TL influences innovation via KS and provide richer contextual understanding.

Secondly, the cross-sectional design limits the ability to infer causality or observe changes over time. Longitudinal studies are recommended to track the evolution of leadership practices, knowledge-sharing behaviours, and innovation outcomes, particularly in response to organisational or environmental changes.

Thirdly, while this study focused exclusively on transformational leadership, it is important to recognise that TL often coexists with other leadership styles, such as transactional leadership. Future research should consider examining the combined or comparative effects of multiple leadership styles on KS and innovation to provide a more nuanced understanding of leadership dynamics in the banking sector.

Finally, the study was confined to national banks operating within the Irbid governorate. Although the sampling strategy ensured proportional representation, the findings may not be generalisable to other regions or sectors. Future studies should replicate this research across different governorates and industries, such as higher education, telecommunications, and healthcare to validate and extend the model. Additionally, cross-cultural studies could offer insights into how national culture moderates the relationships among TL, KS, and innovation.

8. Conclusion

This study examined the influence of transformational leadership (TL) on innovation, specifically product and process innovation within the Jordanian banking sector, with knowledge sharing (KS) introduced as a moderating variable. Drawing on data collected from thirteen national banks in the Irbid governorate, the research employed a quantitative approach using a self-administered questionnaire, and the data were analysed using Structural Equation Modelling (SEM) via SMARTPLS 4.0.

The findings provide robust empirical support for the positive relationship between TL and both forms of innovation. TL was found to exert a moderate yet significant direct effect on product and process innovation, with the model explaining 30.3% of the variance in product innovation and 37.5% in process innovation. These results reinforce the theoretical proposition that TL is a critical enabler of innovation in knowledge-intensive and competitive sectors such as banking. Among the dimensions of TL, intellectual stimulation emerged as the most prominent, while inspirational motivation was comparatively lower. This suggests that while leaders are effective in intellectually challenging their employees, they may be less successful in inspiring them through a compelling organisational vision, possibly reflecting the performance-driven and target-oriented nature of the banking industry.

Crucially, the study confirmed that KS significantly moderates the relationship between TL and innovation. This finding underscores the importance of fostering a knowledge-sharing culture to enhance the effectiveness of leadership practices. It suggests that TL alone may not be sufficient to drive innovation unless supported by mechanisms that facilitate the open exchange of knowledge across organisational levels.

Overall, this research contributes to the growing body of literature on leadership and innovation by demonstrating the conditional role of KS in the TL–innovation relationship. It offers practical insights for banking sector leaders and policymakers, highlighting the need to develop both transformational leadership capabilities and robust knowledge-sharing environments to sustain innovation and maintain competitive advantage.

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