Macrothink Institute™

Business Management and Strategy
ISSN 2157-6068
2026, Vol. 17, No. 1

Transformational Leadership and Ambidextrous Work Behaviours among Employees in Tunisian Knowledge-Intensive Firms: The Mediating Role of Psychological Empowerment

Syrine Zine El Abidine

Department of Management, Higher Institute of Management of Tunis,

University of Tunis, Tunis, Tunisia

Laboratory Arbre

University of Tunis, Tunis, Tunisia

Tel: +216 52 519 721 E-mail: zinelabidinesyrine@gmail.com

Received: November 25, 2025 Accepted: December 27, 2025 Published: January 16, 2026

doi:10.5296/bms.v17i1.23366 URL: https://doi.org/10.5296/bms.v17i1.23366

Abstract

This study examines the effect of transformational leadership on employees' ambidextrous behavior by focusing on the mediating role of psychological empowerment in knowledge-intensive organizations. Addressing calls for deeper micro-foundations of ambidexterity, the research explains how leadership behaviors translate into employees' ability to simultaneously exploit existing competencies and explore new ideas and work methods. Survey data were collected from 82 employees working in Tunisian knowledge-intensive firms and analyzed using partial least squares structural equation modeling (PLS-SEM).

The findings show that transformational leadership enhances psychological empowerment ($\beta = 0.626$, $p < 0.001$), which in turn fosters ambidextrous behavior at work ($\beta = 0.386$, $p < 0.05$). By empirically demonstrating the mediating role of psychological empowerment ($\beta = 0.242$, $p < 0.05$), this study makes a clear theoretical contribution to leadership and ambidexterity research by identifying empowerment as a key behavioral mechanism linking leadership to adaptive and innovative employee outcomes. Moreover, by focusing on a non-Western, emerging-economy context, the study extends existing literature beyond Western-centric

perspectives and highlights the contextual relevance of transformational leadership. From a practical standpoint, the results suggest that organizations can strengthen employee ambidexterity by investing in leadership development practices that promote empowerment, autonomy, and continuous learning.

Keywords: transformational leadership, psychological empowerment, ambidextrous work behaviors, social-determination theory, knowledge-intensive firms

1. Introduction

In a constantly evolving global environment characterized by technological disruption, intensified competition, and accelerating knowledge cycles, innovation has become a fundamental driver of economic, social, and organizational development. For organizations seeking to sustain competitive advantage, innovation is no longer optional but a strategic imperative (Naimova, 2025; Rubera and Kirca, 2012; Gerlach et al., 2020). Contemporary research increasingly emphasizes that innovation does not solely depend on organizational structures or strategies but also on employees' ability to manage the inherent tension between exploration and exploitation in their daily work activities (Mom et al., 2009; Salas-Vallina et al., 2023). At the individual level, ambidexterity refers to employees' capacity to simultaneously explore new ideas, experiment with novel approaches, and exploit existing knowledge by refining, improving, and extending established routines and processes (Mom et al., 2009). This dual capability is increasingly recognized as a critical micro-foundation of organizational innovation.

Within this context, leadership has emerged as one of the most influential antecedents of employee innovation and organizational development (Zacher et al., 2016; Hunter et al., 2011; Bledow et al., 2009). Leaders play a central role in shaping employees' behaviors by managing the paradoxical demands of exploration and exploitation and by creating conditions that enable individuals to engage in both simultaneously (Cunha et al., 2019; Alkhamees and Durugbo, 2024; Berraies et al., 2019). Prior studies suggest that leaders who actively encourage flexibility, learning, and performance improvement can foster higher levels of innovative behavior among employees (Jango, 2024; Afsar et al., 2017a; Pudjiarti et al., 2024). In this regard, transformational leadership has received considerable attention due to its emphasis on vision, intellectual stimulation, risk-taking, and adaptability (Li et al., 2015). Empirical evidence consistently shows that transformational leadership positively affects firm performance (Shahzad et al., 2022) and is one of the strongest predictors of innovative behavior at work (Agazu et al., 2025). However, despite these insights, the mechanisms through which transformational leadership translates into employees' ambidextrous behaviors remain insufficiently understood.

Recently, psychological empowerment has gained prominence as a critical individual-level resource in modern organizations (Mathew and Nair, 2022). Psychological empowerment defined as a motivational construct reflecting meaning, competence, self-determination, and impact has been shown to enhance employees' motivation, job satisfaction, and performance

(Kimolo, 2013). A growing body of research highlights psychological empowerment as a key driver of organizational success and employee sustainability (Carless, 2004; Patah et al., 2009; Mathew & Nair, 2022). Importantly, transformational leadership has been identified as a powerful antecedent of psychological empowerment, as such leaders inspire employees, foster trust, and provide autonomy and psychological responsibility (Krishnan, 2012; Dust et al., 2014; Pradhan et al., 2017; Kim & Shin, 2019). By helping employees recognize their potential and encouraging them to transcend formal job requirements, transformational leaders create work environments that are conducive to creativity and innovation (Bass and Avolio, 1994; Hennessey and Amabile, 2010; Jung and Yoon, 2012; Saira et al., 2021).

Despite these advances, important gaps remain in the literature. First, although individual ambidexterity is increasingly acknowledged as a key source of innovation, empirical research at the individual level remains relatively scarce compared to studies conducted at the organizational level (Kauppila and Tempelaar, 2016). Second, while prior research has examined the effects of psychological empowerment on innovative behavior in general (Conger and Kanungo, 1988; Afsar et al., 2014), its role in fostering employees' ambidextrous work behavior, simultaneously engaging in exploration and exploitation, has not been empirically investigated. Third, to the best of our knowledge, no prior study has examined the mediating role of psychological empowerment in the relationship between transformational leadership and individual ambidextrous work behavior.

Addressing these gaps, the present study contributes to the literature by empirically examining how transformational leadership influences employees' ambidextrous behaviors at work, encompassing both exploratory and exploitative activities. Moreover, it advances existing knowledge by explicitly testing the mediating role of psychological empowerment in this relationship. By integrating leadership theory, psychological empowerment, and individual ambidexterity, this research offers a novel and fine-grained understanding of the micro-level mechanisms through which leaders foster sustained innovation within organizations.

2. Literature Review and Hypotheses

2.1 Transformational Leadership

Burns (2012) defines a leader as a manager capable of inspiring enthusiasm among subordinates and achieving both the leader's and followers' goals more effectively. He introduced the concept of transformational leadership by emphasizing the leader's role in elevating followers' motivation and moral maturity (Lan and Chong, 2015). Building on this foundational work, Bass (1985) further developed the concept, arguing that transformational leadership enables employees to accomplish meaningful and challenging tasks, satisfy higher-order needs, and act in the interest of the organization rather than solely their own. By fostering mutual trust and intrinsic motivation, transformational leaders help employees achieve outcomes that exceed initial expectations. Bass (1985) also highlighted that transformational leadership influences not only job satisfaction and work behaviors but also

employees' values, beliefs, self-esteem, confidence, and emotional well-being (Lan and Chong, 2015).

Transformational leadership is thus understood as a managerial style aimed at inspiring and motivating employees to reach their full potential while prioritizing collective organizational goals (Zine El Abidine et al., 2025). Such leaders are characterized by a clear vision, charismatic presence, and the ability to communicate purpose and direction, thereby fostering strong commitment among employees (Abdul-Azeez et al., 2024; Hilton et al., 2023). Rather than viewing employees merely as resources to be managed, transformational leaders recognize them as individuals with distinct values, aspirations, and capabilities (Ausat et al., 2024). By creating supportive and engaging work environments, they encourage employees to contribute fully to organizational objectives while simultaneously developing their skills and competencies (Ausat et al., 2024). As a result, transformational leadership is associated with higher levels of job satisfaction, organizational commitment, and productivity, supported by strong leader–subordinate relationships, effective communication, and opportunities for growth and development (Adegbola et al., 2024; Nembe et al., 2024; Abdul-Azeez et al., 2024; Zine El Abidine et al., 2025).

According to Bass (1985) and Teoh et al. (2022), transformational leadership is commonly conceptualized through four interrelated dimensions: (i) idealized influence, reflecting ethical conduct, trust, and role modeling through both attributed and behavioral influence; (ii) inspirational motivation, whereby leaders provide meaning and challenge by articulating an inspiring vision; (iii) intellectual stimulation, which encourages creativity and critical thinking by questioning established assumptions and practices; and (iv) individualized consideration, referring to leaders' attention to followers' individual needs, abilities, and development through personalized support and mentoring (Berraies and Zine El Abidine, 2019).

2.2 Ambidextrous Work Behaviours

Innovative behavior refers to individual efforts aimed at developing novel solutions and encompasses the physical and cognitive activities employees undertake, individually or collaboratively, to generate creative ideas, explore relevant opportunities, mobilize support, and ultimately implement or prototype innovations (Messmann et al., 2022). Because it involves both idea generation and implementation, innovative behavior provides an integrative conceptualization of creativity and innovation at work (Amabile, 1988; West and Farr, 1989; Messmann et al., 2017).

Individual ambidexterity refers to employees' ability to engage simultaneously in exploratory and exploitative activities in their work (Mom et al., 2009). Exploration involves acquiring and applying new knowledge through experimentation, opportunity recognition, and the development of novel ideas for products, services, or processes (Mom et al., 2009; Alghamdi, 2018). In contrast, exploitation focuses on leveraging existing knowledge and skills to refine routines, improve efficiency, and enhance current products, services, or processes (Mom et al.,

2009; Turner et al., 2013; Zine El Abidine et al., 2025). At the individual level, ambidexterity thus captures employees' capacity to balance innovation-oriented behaviors with performance-enhancing refinement of existing practices.

2.3 Psychological Empowerment

Empowerment is a process through which individuals, organizations, and communities gain control over issues affecting their lives (Rappaport, 1987). It is a multilevel construct in which each level of analysis is interdependent. Psychological empowerment refers specifically to empowerment at the individual level (Zimmerman, 1990a) and encompasses perceptions of personal mastery, proactive life orientation, and critical awareness of the sociopolitical environment (Zimmerman, 1995). In the context of this research, psychological empowerment reflects employees' beliefs about their role within the organization and shapes how they subjectively perceive and interpret their work environment (Spreitzer, 2008). Although not entirely stable, psychological empowerment is relatively enduring and is not expected to change rapidly over time (Mackey et al., 2015).

Psychological empowerment can be understood as a cognitive motivational state characterized by intrinsic motivation, perceived competence, and a sense of self-determination in performing work tasks (Amari et al., 2022; Deci et al., 1989). Spreitzer (1995) defines empowerment as "an increased intrinsic motivation for the task manifested through a set of four cognitions reflecting an individual's orientation toward their professional role: competence, impact, meaning, and self-determination." Accordingly, psychological empowerment is conceptualized as a multidimensional construct composed of these four interrelated dimensions (Ochoa Pacheco and Coello-Montecel, 2023).

Meaning refers to the value individuals attach to their work goals and the extent to which these goals are aligned with their personal beliefs and standards (Thomas and Velthouse, 1990; Stanescu et al., 2021). For employees to feel empowered, their professional objectives must be consistent with their personal values (Mathew and Nair, 2022). Competence reflects employees' assessment of their capability and skills to perform work tasks effectively (Spreitzer, 1995), with higher confidence fostering greater responsibility and effectiveness (Mathew and Nair, 2022). Impact denotes the degree to which individuals perceive that they can influence organizational outcomes, processes, or strategies through their actions (Ashforth, 1990; Islam and Irfan, 2020). Finally, self-determination refers to the perceived autonomy in initiating, regulating, and executing work activities, including decisions regarding task scheduling and methods (Spreitzer, 1995, 2008; Schermuly and Meyer, 2016; Schermuly et al., 2022).

2.4 Transformational Leadership and Ambidextrous Work Behaviours

Previous studies consistently emphasize the importance of leadership in fostering organizational ambidexterity (Alkhamees and Durugbo, 2024) and stimulating innovative behaviors among employees (Bekdash, 2019). Employee innovation is fundamentally a cognitive and motivational process through which individuals generate, refine, and apply

novel ideas to address complex and uncertain problems (Afsar et al., 2017a; Rajeswari and Venugopal, 2024). However, these processes are not automatic outcomes of leadership behaviors; rather, they depend on the extent to which leadership practices activate appropriate motivational and psychological mechanisms at the individual level.

Transformational leaders are known to encourage creativity and questioning of existing practices, thereby shaping an environment conducive to innovation. Empirical research suggests that such leaders are particularly effective in promoting exploratory innovation by fostering learning, experimentation, and calculated risk-taking (Jansen et al., 2009; Agazu et al., 2025). Through consistent and risk-tolerant behaviors, transformational leaders build trust, which signals psychological safety and encourages employees to adopt innovative approaches in their work (Reuvers et al., 2008; Amankwaa et al., 2019). From the perspective of self-determination theory (SDT), transformational leaders also enhance employees' intrinsic motivation by instilling confidence, purpose, and a compelling vision of the future, thereby encouraging autonomous and innovative work behaviors (Amankwaa et al., 2019).

Nevertheless, while transformational leadership creates favorable conditions for innovation, its influence on ambidextrous work behavior may not be direct. Ambidexterity requires employees to simultaneously pursue exploration and exploitation, two activities that entail competing cognitive demands and behavioral orientations. As such, leadership behaviors alone may be insufficient to trigger this dual engagement unless employees feel psychologically empowered to manage these tensions. In line with SDT, innovative and ambidextrous behaviors are more likely to emerge when employees experience autonomy, competence, and meaningfulness in their work, as these conditions reduce conformity pressures and strengthen achievement motivation (Afsar et al., 2014; Amankwaa et al., 2019).

Transformational leaders contribute to this process by fostering information sharing, intellectual stimulation, and individualized consideration, which encourage employees to reassess existing routines and explore alternative approaches (Isaken and Laver, 2002; Bass, 1990; Amankwaa et al., 2019). Moreover, by cultivating a sense of belonging and empowerment, transformational leaders enable employees to engage in experimentation, implementation of new techniques, and refinement of existing practices (Afsar et al., 2017; Keller and Weibler, 2015). Through these mechanisms, transformational leadership supports both exploration and exploitation (Berraies and Bchini, 2019; Kumar et al., 2023) as a consequence of enhanced psychological and motivational states that allow employees to balance competing demands.

Referring to the existing literature, we propose the following hypothesis:

H1: Transformational leadership positively influences Ambidextrous work behaviours

2.5 Transformational Leadership and Psychological Empowerment

According to Burns (2012), transformational leaders articulate a compelling vision, help employees understand the meaning and purpose of their work, and motivate them to commit

fully to organizational goals. By demonstrating passion and personal engagement, such leaders inspire employees to recognize the significance of their contributions and strengthen their confidence and self-efficacy (Avolio et al., 2004; Lan and Chong, 2015). In this way, transformational leadership operates not only through behavioral influence but also by shaping employees' internal motivational states.

Warrick (2011) further suggests that transformational leaders encourage employees to critically examine and conceptualize work-related issues, thereby enhancing problem-solving capabilities through fair, ethical, and empathetic conduct. These leadership behaviors create conditions under which employees feel valued, trusted, and capable, making psychological empowerment a key mechanism through which transformational leadership contributes to organizational effectiveness (Saira et al., 2021). Consistent with self-determination theory, transformational leaders provide employees with opportunities to express autonomy, experiment with ideas, and apply creativity in addressing work-related challenges (Li and Tian-Bao, 2006). Such experiences reinforce employees' intrinsic motivation and sense of control over their work.

Prior research indicates that transformational leadership significantly influences employees' psychological experience of empowerment, specifically psychological empowerment (Lan and Chong, 2015). By fostering enthusiasm, integrity, optimism, and strong ethical values, transformational leaders cultivate team spirit and assign meaningful and challenging tasks. This leadership approach enhances key components of psychological empowerment, namely self-efficacy, confidence, perceived meaning, and self-determination (Avolio et al., 2004), thereby aligning closely with the core principles of self-determination theory. Employees working under transformational leaders are therefore more likely to perceive themselves as psychologically independent and capable of realizing their full potential (Joo and Lim, 2013; Pradhan et al., 2017).

Moreover, transformational leaders shape followers' aspirations, values, and professional identities, enabling them to develop a stronger sense of agency and influence within the organization (Lowe et al., 1996; Avolio et al., 2004). As a result, followers are more inclined to identify with their leaders and perceive themselves as capable of making a meaningful organizational impact, reflecting heightened levels of psychological empowerment (Laschinger et al., 2001; Saira et al., 2021; Berraies et al., 2024). Accordingly:

H2 : Transformational leadership positively influences psychological empowerment

2.6 Psychological Empowerment and Ambidextrous Work Behaviours

When employees experience psychological empowerment within organizations, they are more likely to display creative and innovative behaviors, as they recognize the value and significance of their professional roles (Jung et al., 2003). From a self-determination theory perspective, psychologically empowered employees experience higher levels of well-being at work and perceive their tasks as meaningful and motivating (Berraies et al., 2024; Afsar et al., 2014). As a result, they tend to align their individual goals with organizational objectives,

which fosters innovative behavior (Jha, 2014; Amari et al., 2024). Employees who perceive control over their work and derive meaning from their tasks are more intrinsically motivated to contribute to organizational outcomes, thereby enhancing innovative behavior and task performance (Berg and Hallberg, 1999; Krishnan, 2009; Jung and Sosik, 2002; Laschinger et al., 2004). In this sense, psychological empowerment acts as a catalyst for change, a core characteristic of innovative behavior (Conger and Kanungo, 1988).

Psychological empowerment also strengthens intrinsic motivation, adaptability, and autonomy in task execution (Ryan and Deci, 2000; Afsar et al., 2014), which supports employees' engagement in exploitative innovation through the refinement and improvement of existing practices. When employees perceive themselves as competent and self-determined, they are more likely to act proactively and confidently in addressing job-related challenges, thereby reinforcing exploitative innovation at work (Knezović and Drkić, 2021).

Furthermore, employees' participation in decision-making, a central element of structural empowerment, enhances autonomy and involvement in work processes. Such participation enables employees to both generate and implement new ideas (De Jong and Den Hartog, 2010; Knezović and Drkić, 2021), thereby fostering exploratory innovation through experimentation and the pursuit of novel solutions.

Based on these insights, we can formulate the following hypothesis:

H3: Psychological empowerment positively influences ambidextrous work behaviour

2.7 The Mediating Role of Psychological Empowerment

According to Hennessey and Amabile (2010), the intrinsic motivation of employees, fostered by psychological empowerment from transformational leaders, is fundamental to their capacity for innovation at work. Employees inspired by transformational leadership experience psychological empowerment by gaining a clear understanding of organizational expectations, which enables them to align their skills and behaviors with performance goals and anticipated outcomes (Afsar et al., 2014). This empowerment enhances their sense of control and personal efficacy regarding their tasks and work environment. When employees are granted greater independence and decision-making authority, their engagement in creative processes increases significantly (Volmer et al., 2012; Zhang and Bartol, 2010).

Transformational leaders also employ intellectual stimulation to encourage employees' critical thinking, imagination, creativity, and awareness of their values, beliefs, and mindset (Avolio et al., 2004). By challenging conventional methods, these leaders motivate employees to explore innovative and inventive solutions, enabling successful task completion (Bass and Avolio, 1994). Through psychological empowerment, transformational leadership promotes ambidexterity among employees. Specifically, transformational leaders foster independence, identify individual needs, and enhance followers' sense of competence, meaning, influence, and self-determination (Bass and Avolio, 1994; Spreitzer, 1995).

This psychological empowerment acts as a key factor encouraging employees to exceed

established norms, propose innovative ideas, and actively contribute to continuous organizational improvement (Zhang and Bartol, 2010). Consequently, it fosters both exploratory and exploitative innovation, serving as a mediator that translates transformational leadership into innovative actions. Numerous empirical studies support this mediation, showing that psychologically empowered employees are more likely to engage in creative behaviors (Amabile et al., 1996; Pieterse et al., 2010). Therefore, psychological empowerment represents a critical mechanism through which transformational leadership influences individual ambidextrous innovation. Additionally, it has been shown to promote innovation and improve project performance among employees (Malik et al., 2020). Consequently, we hypothesize as follows:

H4: Psychological empowerment mediates the link between transformational leadership and Ambidextrous work behaviours

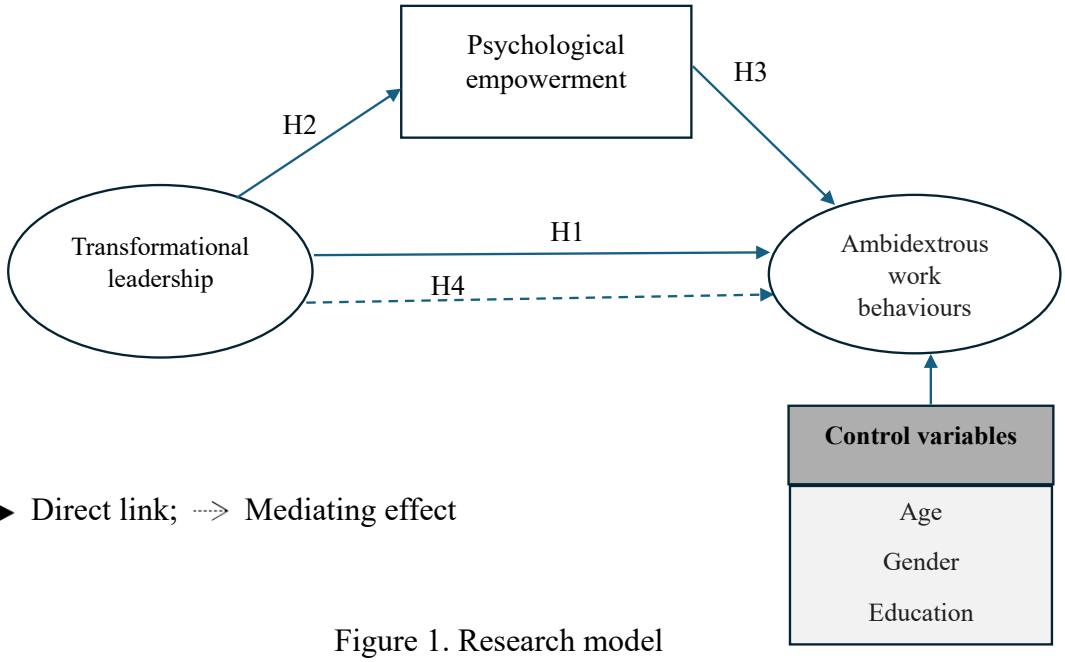

Figure 1. Research model

3. Methodology

3.1 Survey Procedure and Sampling

To empirically test the proposed research model (see Figure 1), this study adopted a quantitative method based on a survey. A structured questionnaire was developed using measurement indicators developed in previous literature. To ensure linguistic accuracy and conceptual equivalence, the instrument underwent a back-translation procedure from English to French. An initial pretest was conducted with two domain experts and three scholars in management to assess the clarity, relevance, and content validity of the measurement items.

The target population consisted of employees working in Tunisian knowledge-intensive firms (KIFs). A non-probability convenience sampling approach was adopted for this study due to the absence of an accessible sampling frame for the target population. Moreover, the use of random sampling techniques would not automatically ensure a convenient response rate, as

organizations in the Middle East and North Africa region are often reluctant to allow employee participation in survey-based research (Berraies et al., 2024).

To minimize potential regional variability, the investigation targeted firms operating within Tunisia. Eligible respondents were employees who reported to a middle manager, had at least six months of organizational tenure, and held positions involving intensive information processing, knowledge exchange, or innovation-related activities. These criteria ensured that respondents had sufficient interaction with their supervisors to meaningfully assess transformational leadership and its effects on ambidextrous work behaviors.

Data was gathered using an online questionnaire administered via Google Forms and distributed to a pool of 300 employees from 300 distinct organizations. A total of 82 usable responses were retained for analysis, resulting in a response rate of approximately 27.3%. Participation was entirely voluntary, and respondents were assured of anonymity and confidentiality. Informed consent was obtained prior to data collection, and no personally identifiable information was recorded.

Using a retrospective assessment of statistical power based on the inverse square root criterion, it is estimated that achieving an 80% power level at a 5% significance threshold requires a minimum sample of 69 observations when expected path coefficients range between 0.20 and 0.30 (Hair et al., 2022, p.19). In the present study, the smallest standardized path coefficient among the core relationships is the link between transformational leadership and ambidextrous work behaviors ($\beta = 0.204$), which falls within this interval. Accordingly, the final sample size of 82 respondents surpasses the minimum requirement (69), indicating sufficient statistical power for the analysis.

The demographic characteristics of the respondents and firms are summarized in Table 1, providing a clearer overview of the sample profile. 32.9% of respondents were male and 67.1% female; 43.9% were aged between 44 and 59 years. More than 51.2% reported holding a master's degree. Concerning organizational characteristics, 75.6% of companies were classified as SMEs, while 24.4% belonged to large enterprises operating in the ICT sector.

Table 1. Sample demographics

Variables	Category	Frequency	Percentage
Respondents characteristics (N=82)			
Gender	Men	27	32,9%
	Women	55	67,1%
Age	18-27 (Gen Z)	8	9,8%
	28-43 (Gen Y)	31	37,8%
	44-59 (Gen X)	36	43,9%
	60 and more (baby-boomers)	7	8,5%
Education	Bachelor (baccalaureate+3)	24	29,3%
	Bachelor (baccalaureate+4)	16	19,5%
	Master (baccalaureate+5)	32	39,0%
	Master (baccalaureate+6)	10	12,2%
Firm characteristics (N=82)			
Firm size	Small entreprise (10–50 employees)	15	18,3%
	Medium-sized business (51–250 employees)	47	57,3%
	Intermediate-sized enterprises (251–5000 employees)	17	20,7%
	Large enterprise (over 5000 employees)	3	3,7%
Branches of activity	Software development and engineering	8	9,8%
	IT services and consulting	7	8,5%
	Telecommunications and network services	5	6,1%
	Marketing	12	14,6%
	Tourism and travel-related services	7	8,5%
	Retail and distribution services	16	19,5%
	Transportation and logistics	9	11,0%
	Financial services	18	22,0%

3.2 Scales of Measurement

We assessed individual ambidextrous innovative behavior based on the nine items defined by Janssen (2000). These nine criteria measure the extent to which an employee adopts innovative behaviors at work, using a scale from 1 = “never” to 5 = “always.” A Cronbach’s alpha of 0.94 was obtained for these nine items. The data were coded so that higher scores reflect more innovative behavior in the workplace.

For transformational leadership, we used the Multifactor Leadership Questionnaire (MLQ-5x) developed by Bass and Avolio (1995), which includes 20 items measuring transformational leadership style. This scale is the most frequently used in management research. Transformational leadership consists of five dimensions distributed as follows: eight items assessing idealized influence (attributed) and idealized influence (behavior), four items evaluating inspirational motivation, four assessing individualized consideration, and four related to intellectual stimulation. We also used a five-point Likert scale, ranging from (1) “never” to (5) “often or almost always.”

The psychological empowerment scale developed by Gretchen M. Spreitzer (1995) is one of the most widely used instruments in organizational behavior research to measure employees’

sense of autonomy and control over their work. This scale includes four core dimensions, each evaluated by three items: meaning (reflecting the perception of the value of work aligned with personal values and beliefs); competence (referring to the individual's confidence in their ability to perform tasks effectively); self-determination (expressing the perceived freedom in making work-related decisions); and impact (measuring the degree of influence felt on organizational outcomes). This scale reliably assesses employees' level of psychological empowerment in various professional contexts.

Employee ambidexterity was conceptualized through 14 items developed by Mom et al. (2009), encompassing two dimensions that capture employees' exploration and exploitation behaviors. Exploration activities represent efforts to promote learning, stimulate innovation, and enhance adaptability. These efforts include exploring innovative ideas, seizing emerging opportunities, and evolving in uncertain environments to ensure long-term development and renewal. Exploitation activities focus on the effective use of existing knowledge, operational efficiency, and continuous improvement. They primarily aim to meet current customer demands, optimize established processes, and achieve predictable short-term results.

Regarding control variables, in line with previous studies (Keller and Weibler, 2015; Ahmed et al., 2019), we included employees' age, gender, and education level as control variables due to their potential impact on individual ambidexterity. Manager age was assessed using generational cohorts based on age groups: Baby Boomers (60 and older), Generation X (44 to 59), Generation Y or Millennials (28 to 43), and Generation Z (18 to 27).

4. Results

To conduct this study, we employed structural equation modeling based on the partial least squares technique (PLS-SEM), using the SmartPLS 4 software. This method stands out for its strong adaptability when dealing with complex multivariate data or constructs that integrate multiple dimensions and items (Hair et al., 2021). It allows for the simultaneous examination of both direct and indirect effects among variables, while simplifying the evaluation of models with a large number of indicators as well as mediating variables. To assess the significance of the mediation effect of ambidextrous green innovation, we used the non-parametric bootstrap method (Hair et al., 2021).

4.1 Measurement Model Quality

Following the suggestions of Hair et al. (2021), we assessed reliability as well as convergent and discriminant validity to confirm the psychometric quality of the constructs.

4.1.1 Reliability and Convergent Validity of the Constructs

As shown in Table 2, Cronbach's alpha values range between 0.748 and 0.931, and composite reliability values range between 0.883 and 0.942, both well above the 0.7 threshold recommended by Hair et al. (2021). Accordingly, the internal consistency of the constructs is satisfactory. Moreover, the average variance extracted (AVE) values range from 0.644 to 0.844, exceeding the 0.5 threshold (Hair et al., 2021), demonstrating satisfactory convergent validity of the constructs.

Table 2. Reliability and convergent validity of the research constructs

Constructs	Cronbach's alpha	Composite reliability (rho_c)	Average variance extracted (AVE)
Self-determination	0.748	0.858	0.675
Exploitative innovative behaviors	0.931	0.945	0.712
Exploratory innovative behaviors	0.888	0.913	0.601
Competence	0.904	0.940	0.839
Impact	0.783	0.872	0.695
Indvidualized influence attributed	0.836	0.888	0.666
Individualized influence behaviors	0.868	0.910	0.717
Inspired motivation	0.793	0.866	0.620
Meaning	0.818	0.883	0.717
Intellectual stimulation	0.899	0.929	0.767
Indvidualized consideration	0.832	0.889	0.667

4.1.2 Discriminant Validity of the Constructs

To assess discriminant validity, we used the heterotrait-monotrait ratio (HTMT) as well as the Fornell-Larcker criterion. According to Table 3, all HTMT values were below the conservative threshold of 0.85, confirming discriminant validity (Hair et al., 2021). Moreover, Table 4 shows that the square roots of the AVE (presented on the diagonal) exceed the correlations between constructs, further supporting the validation of discriminant validity (Fornell and Larcker, 1981). Overall, these results indicate that the constructs exhibit satisfactory reliability, convergent validity, and discriminant validity.

Table 3. Discriminant validity (HTMT)

Constructs	AD	CII	CIR	CC	Impact	IIA	IIC	MI	Sens	SI
CII	0.557									
CIR	0.395	0.344								
CC	0.488	0.257	0.266							
Impact	0.698	0.547	0.350	0.722						
IIA	0.146	0.350	0.206	0.219	0.262					
IIC	0.320	0.459	0.224	0.574	0.522	0.442				
MI	0.325	0.500	0.175	0.334	0.500	0.338	0.654			
Sens	0.230	0.247	0.562	0.355	0.344	0.325	0.445	0.479		
SI	0.484	0.536	0.256	0.429	0.618	0.218	0.704	0.613	0.347	
CI	0.465	0.473	0.261	0.555	0.680	0.469	0.843	0.727	0.402	0.724

CII: Exploitation innovative behavior; CIR: Exploration innovative behavior; IIA: Attributed individualized influence; IIC: Behavioral individualized influence; MI: Inspirational motivation; SI: Intellectual stimulation; CI: Individualized consideration; AD: Self-determination; CC: Competence

Table 4. Discriminant validity (Fornell-Larcker)

Constructs	AD	CII	CIR	CC	Impact	IIA	IAC	MI	Sens	SI	CI
AD	0.821										
CII	0.461	0.844									
CIR	0.311	0.331	0.775								
CC	0.412	0.243	0.249	0.916							
Impact	0.550	0.474	0.288	0.634	0.834						
IIA	0.049	0.290	0.130	0.195	0.222	0.816					
IIC	0.262	0.411	0.193	0.511	0.451	0.412	0.847				
MI	0.259	0.422	0.105	0.287	0.400	0.302	0.547	0.787			
Sens	0.230	0.246	0.463	0.354	0.302	0.210	0.397	0.401	0.846		
SI	0.397	0.499	0.239	0.390	0.521	0.203	0.626	0.526	0.329	0.876	
CI	0.384	0.412	0.227	0.484	0.568	0.436	0.719	0.595	0.364	0.632	0.817

CII: Exploitation innovative behavior; CIR: Exploration innovative behavior; IIA: Attributed individualized influence; IIC: Behavioral individualized influence; MI: Inspirational motivation; SI: Intellectual stimulation; CI: Individualized consideration; AD: Self-determination; CC: Competence

4.2 Structural Model Evaluation

4.2.1 Structural Model Quality

The evaluation of the structural model quality was conducted by analyzing the coefficient of determination (R squared). All values concerning ambidextrous innovative behavior (0.511) and psychological empowerment (0.392) exceed the minimum threshold of 0.10 recommended by Hair et al. (2021), indicating an acceptable level of predictive relevance and validating the overall explanatory power of the model.

Table 5. Hypotheses testing

Hypotheses	Relations	β	T	P
	Direct pathways			
H1	Transformational leadership -> Ambidextrous work behaviours	0.204	1.593	0.111
H2	Transformational leadership -> Psychological empowerment	0.626	8.179	0.000
H3	Psychological empowerment-> Ambidextrous work behaviours	0.386	2.579	0.010
Control variables	**Age** -> Ambidextrous work behaviours	0.177	1.767	0.077
	Gender-> Ambidextrous work behaviours	0.046	0.233	0.816
	Education -> Ambidextrous work behaviours	-0.772	4.962	0.000
	Indirect pathway			
	Relation	**β**	**T**	**P**
H4	Transformational leadership -> Ambidextrous work behaviours	0.242	2.387	0.017

β : standardised regression coefficient, T : t student, P-value : significance level

4.2.2 Test of Direct Effects

Table 5 and Figure 2 present the results of hypothesis testing and the relationships between variables. Transformational leadership was found to have no direct, positive, and significant effect on employees' ambidextrous behavior ($\beta = 0.204$, $p > 0.05$), leading to the rejection of H1. This suggests that the influence of transformational leadership on ambidextrous behavior may be indirect or contingent on other factors. However, transformational leadership has a strong positive impact on psychological empowerment ($\beta = 0.626$, $p < 0.001$), supporting H2, which highlights its key role in fostering employees' sense of autonomy and motivation. Psychological empowerment, in turn, significantly and positively affects ambidextrous behavior ($\beta = 0.386$, $p < 0.05$), confirming H3 and emphasizing its mediating role in this relationship.

Among the control variables, neither gender nor age showed a significant effect on ambidextrous behavior. In contrast, education level exhibited a negative and significant influence ($\beta = –0.772$, $p < 0.001$). This unexpected finding may reflect that higher education levels could be associated with more specialized tasks or less flexibility, potentially limiting the ability to balance exploratory and exploitative behaviors. Also, highly educated employees might feel overqualified for certain tasks, leading to lower motivation or engagement in ambidextrous activities that require flexibility. They might occupy specialized roles that emphasize exploitation (routine tasks) over exploration, limiting ambidextrous behaviors. This result opens avenues for further research to clarify the conditions under which education level impacts ambidexterity in the workplace.

4.2.3 Test of the Mediating Effect of Psychological Empowerment

The results indicate that transformational leadership does not have a statistically significant direct effect on employees' ambidextrous innovative behavior ($\beta = 0.204$, $p > 0.05$). Importantly, the indirect effect of transformational leadership on ambidextrous work behaviors via psychological empowerment is positive and significant ($\beta = 0.242$, $p < 0.05$). Since the direct effect is not significant while the indirect effect is, psychological empowerment fully mediates the relationship between transformational leadership and ambidextrous innovative behavior, supporting H4. This suggests that transformational leadership enhances employees' ambidextrous behavior primarily by fostering their psychological empowerment, highlighting the crucial role of empowerment as a mechanism through which leadership translates into innovative and adaptive employee behaviors.

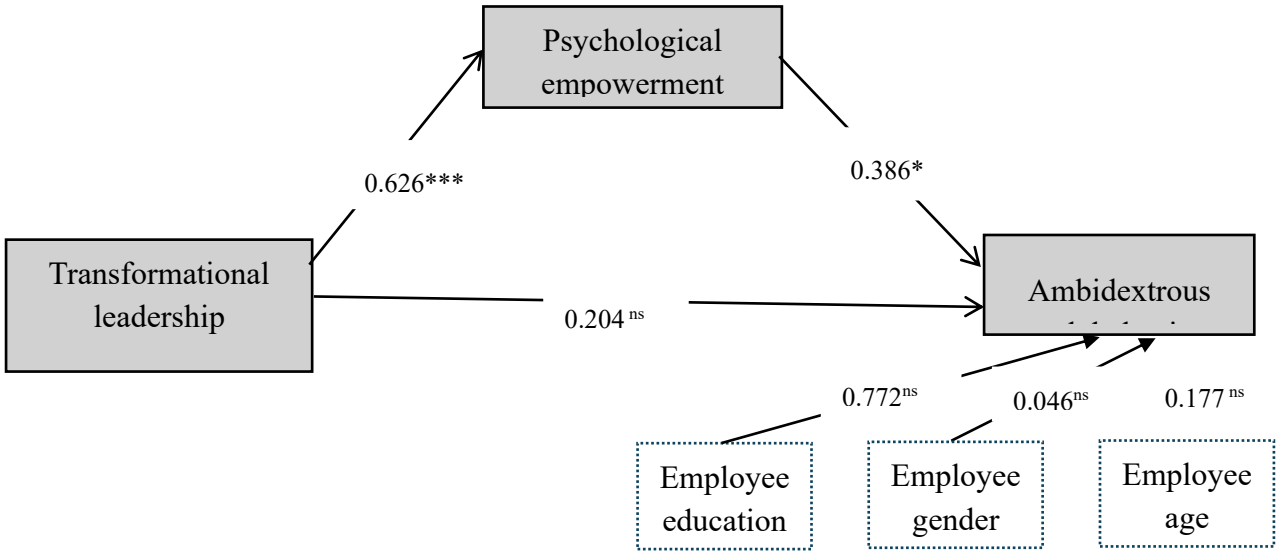

Figure 2. Results of structural model

5. Discussion

From a theoretical perspective, this study offers valuable contributions by examining the relationship between transformational leadership and ambidextrous work behavior, alongside the mediating role of employees' psychological empowerment in knowledge-intensive firms.

Our primary findings can be summarized in four key points:

First, results indicate no significant direct relationship between transformational leadership and employees' ambidextrous behavior. This suggests that employees' simultaneous engagement in exploration and exploitation behaviors does not directly stem from the leader's transformational style. Instead, this relationship is mediated by psychological empowerment. Previous scholars (Jung et al., 2003 ; Reuvers et al., 2008 ; Majumdar and Ray, 2011) have focused on innovative work behaviour rather than ambidextrous work behaviour. This result might seem surprising given that transformational leadership is often linked to positive employee outcomes, including innovation. The absence of a direct significant relationship between transformational leadership and employees' ambidextrous behavior can be attributed to the complex nature of ambidexterity, which involves balancing both exploratory and exploitative tasks. Unlike general innovative behavior, ambidextrous behavior requires employees to manage conflicting demands, necessitating a strong sense of autonomy, competence, and meaningfulness. Transformational leadership alone may inspire and motivate employees, but it is through psychological empowerment, where employees feel capable, autonomous, and impactful, that this motivation translates into the ability to engage simultaneously in exploration and exploitation (Berraies et al., 2024). Previous research has largely focused on innovative behavior without distinguishing this dual nature (Jung et al., 2003 ; Reuvers et al., 2008 ; Majumdar and Ray, 2011), which explains why the mediation by psychological empowerment is crucial in understanding how transformational leadership influences ambidextrous work behavior.

Second, transformational leadership and employees' psychological empowerment are strongly positively linked. Self-Determination Theory (Deci & Ryan, 2000), which posits that self-determined motivation requires fulfillment of key psychological needs, autonomy, competence, and relatedness, helps explain this result. Transformational leadership, through involvement, encouragement, and recognition, addresses these needs by enhancing employees' sense of competence (perceived efficacy), relatedness (identification with group goals), and autonomy (perceived choice and control), all contributing to psychological empowerment.

Third, hypothesis H3 is supported, showing that psychological empowerment positively relates to employees' ambidextrous innovative behavior. This aligns partially with Spreitzer (1995), who identified psychological empowerment as a key predictor of innovative behavior. When employees feel capable of influencing organizational outcomes, they are more likely to generate and implement innovative ideas (Janssen, 2005; Zhang and Bartol, 2010; Stanescu et al., 2021). However, prior research directly linking psychological empowerment with ambidextrous behavior is limited. Bishop (2001) and Özaralli (2003) also found that transformational leadership positively affects psychological empowerment.

Fourth, our findings reveal that transformational leadership influences individual ambidexterity indirectly through psychological empowerment, rather than directly. This partially confirms previous studies showing that psychological empowerment mediates the effect of transformational leadership on various employee outcomes, including organizational commitment (Avolio et al., 2004; McCann et al., 2006; Stanescu et al., 2021).

Transformational leadership encourages ambidextrous behaviors by stimulating internal motivational processes consistent with Self-Determination Theory. Psychological empowerment thus serves as the key mechanism enabling employees to engage simultaneously in exploratory and exploitative activities. These results corroborate findings by Stanescu et al. (2021) and Gumusluoglu and Ilsev (2009). A leadership style characterized by listening, trust, and emotional support, which satisfies the need for relatedness, further strengthens psychological empowerment (Quinn & Spreitzer, 1997). Such a motivational climate fosters the development of ambidextrous work behaviors.

Thus, psychological empowerment functions as a mediator between transformational leadership and employees' ambidextrous innovative behavior. This supports prior research showing that transformational leadership influences employee behavior through leader credibility and psychological empowerment (Bartram & Casimir, 2007), and depends on employees' self-perceptions (Afsar et al., 2014; Berraies et al., 2024).

6. Conclusion

6.1 Study's Contributions

The empirical results support three of the proposed hypotheses, underscoring the critical role of transformational leadership and employees' psychological empowerment in enhancing

ambidextrous innovation among employees. This study contributes to the literature by highlighting how transformational leadership indirectly fosters ambidextrous behavior through psychological empowerment, particularly within Tunisian companies. The originality of this research lies in its focus on the impact of transformational leadership on ambidextrous work behaviors, simultaneously balancing exploration and exploitation, which goes beyond the more commonly studied innovative work behaviors. Moreover, to our knowledge, this study is among the first to empirically examine the mediating effect of psychological empowerment in this specific relationship. Additionally, the study adds value by exploring these dynamics in the context of an emerging economy, Tunisia, where leadership styles and employee behaviors may differ from those in developed countries. These insights therefore provide valuable additions to leadership and organizational behavior research, especially in knowledge-intensive environments, by broadening the understanding of how transformational leadership drives complex employee behaviors that are essential for organizational adaptability and innovation.

6.2 Managerial Implications

First, given the demonstrated positive effect of transformational leadership on psychological empowerment, organizations should prioritize promoting and embedding this leadership style among managers at all levels. Implementing targeted training programs and support systems will facilitate the adoption of transformational leadership, enabling leaders to foster balanced management practices characterized by transparency and ethical rigor (Alqatawenh, 2018).

To further cultivate psychological empowerment, senior leaders must clearly communicate a compelling vision that motivates employees to take on greater responsibility. Defining clear goals, roles, and reward systems, particularly at the immediate supervisory level, can enhance employees' sense of autonomy and control over their work (Avolio et al., 2004). Supporting empowerment also involves understanding employee needs, creating a nurturing environment, and implementing practices that build personal confidence (Conger, 1989; Quinn & Spreitzer, 1997).

6.3 Limitations and Future Research

This study has several limitations that should be acknowledged. First, the reliance on self-reported data may introduce bias, and the cross-sectional design limits the ability to infer causality. Additionally, the relatively small sample size of 82 companies, concentrated exclusively in Tunisia's ICT sector, restricts the generalizability of the findings to other countries, sectors, and cultural contexts. Lastly, the model tested does not include other potentially relevant moderating or mediating variables, which may limit the comprehensiveness of the analysis.

Future research should address these limitations by collecting longitudinal data from multiple sources to better capture the mediating role of psychological empowerment in the transformational leadership–ambidexterity relationship. Exploring additional contextual variables such as organizational structure, climate, and culture would further enrich the

understanding of factors influencing employee empowerment and innovation (Koberg et al., 1999; Spreitzer, 1996; Avolio et al., 2004). Moreover, expanding the scope of the study to include a larger, more diverse sample across various industries and countries would enhance the robustness and generalizability of the results. Incorporating additional variables such as employee well-being and conducting qualitative research could provide deeper insights into how transformational leadership drives ambidextrous innovation through psychological empowerment.

Acknowledgments

Not applicable.

Authors contributions

Not applicable.

Funding

Not applicable.

Competing interests

Not applicable.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Macrothink Institute.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

Open access

This is an open-access article distributed under the terms and conditions of the Creative

Commons Attribution license (http://creativecommons.org/licenses/by/4.0/).

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

References

Abdul-Azeez, O. Y., Nwabekee, U. S., Agu, E. E., & Ijomah, T. I. (2024). Sustainability in product life cycle management: A review of best practices and innovations. International *Journal of Applied Research in Social Sciences*, *6*(9), 2018-2043. https://doi.org/10.51594/ijarss.v6i9.1540

Abdul-Azeez, O., Ihechere, A. O., & Idemudia, C. (2024). Transformational leadership in SMEs: Driving innovation, employee engagement, and business success. *World Journal of Advanced Research and Reviews*, *22*(3), 1894-1905. https://doi.org/10.30574/wjarr.2024.22.3.1888

Adegbola, A. E., Adegbola, M. D., Amajuoyi, P., Benjamin, L. B., & Adeusi, K. B. (2024). Fostering product development efficiency through cross-functional team leadership. *International Journal of Management & Entrepreneurship Research*, *6*(5), 1733-1753. https://doi.org/10.51594/ijmer.v6i5.1144

Afsar, B., Badir, Y. F., & Saeed, B. B. (2014). Transformational leadership and innovative work behavior. *Industrial Management & Data Systems*, *114*(8), 1270-1300. https://doi.org/10.1108/IMDS-05-2014-0152

Afsar, B., Badir, Y. F., Saeed, B. B., & Hafeez, S. (2017). Transformational and transactional leadership and entrepreneurial behavior. *The International Journal of Human Resource Management*, *28*(2), 307-332. https://doi.org/10.1080/09585192.2016.1244893

Agazu, B. G., Kero, C. A., & Debela, K. L. (2025). Transformational leadership and firm performance. *Journal of Innovation and Entrepreneurship*, *14*(1), 29. https://doi.org/10.1186/s13731-025-00476-x

Ahmed, G., Amponsah, C.T. and Johnson, D.S. (2019) 'Gender differences in entrepreneurial attitudes and intentions: the case of Brand Dubai', *International Journal of Business andEmerging Markets*, *11*(4), 315-334. https://doi.org/10.1504/IJBEM.2019.105230

Alghamdi, F. (2018). Ambidextrous leadership and innovative performance. *Journal of Innovation and Entrepreneurship*, *7*(1), 1-14. https://doi.org/10.1186/s13731-018-0081-8

AlKhamees, S. B., & Durugbo, C. M. (2024). Organisational ambidexterity and innovation. *Management Review Quarterly*, 1-75. https://doi.org/10.1007/s11301-024-00474-5

Alqatawenh, A. S. (2018). Transformational leadership style and its relationship with change management. *Verslas: teorija ir praktika*, *19*(1), 17-24. https://doi.org/10.3846/btp.2018.03

Amabile, T. M. (1988). A model of creativity and innovation in organizations. *Research in Organizational Behavior*, *10*(1), 123-167.

Amabile, T. M., Conti, R., Coon, H., Lazenby, J., & Herron, M. (1996). Assessing the work environment for creativity. *Academy of management journal*, *39*(5), 1154-1184. https://doi.org/10.2307/256995

Amankwaa, A., Gyensare, M. A., & Susomrith, P. (2019). Transformational leadership and innovative behaviour. *Leadership & Organization Development Journal*, *40*(4), 402-420. https://doi.org/10.1108/LODJ-10-2018-0358

Amari, A., Berraies, S., & Hofaidhallaoui, M. (2022). Does expatriates' cross-cultural psychological capital mediate the link between ethical organizational climate and turnover intention? A generational cohort comparison. *European Journal of International Management*. https://doi.org/10.1504/EJIM.2022.10063229

Amari, A., Berraies, S., Alshahrani, S. T., Hofaidhallaoui, M., & Choukir, J. (2024). Does the overall justice climate enhance self-initiated expatriates' creativity during uncertain times? The mediating role of cross-cultural psychological capital. *Journal of Global Mobility, 12*(1), 147-166. https://doi.org/10.1108/JGM-05-2023-0030

Ashforth, B. E. (1990). The organizationally induced helplessness syndrome. *Canadian Journal of Administrative Sciences*, *7*(3), 30-36. https://doi.org/10.1111/j.1936-4490.1990.tb00532.x

Ausat, A. M. A., Shafiq, M. A., Wafik, D., & López, N. A. S. (2024). Transformational leadership and psychological wellbeing. Apollo: *Journal of Tourism and Business*, *2*(1), 148-157. https://doi.org/10.58905/apollo.v2i1.239

Avolio, B. J., Zhu, W., Koh, W., & Bhatia, P. (2004). Transformational leadership and organizational commitment: Mediating role of psychological empowerment and moderating role of structural distance. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, *25*(8), 951-968. https://doi.org/10.1002/job.283

Bartram, T., & Casimir, G. (2007). The relationship between leadership and follower in-role performance and satisfaction with the leader: The mediating effects of empowerment and trust in the leader. *Leadership & Organization Development Journal*, *28*(1), 4-19. https://doi.org/10.1108/01437730710718218

Bass, B. M. (1985). *Leadership and Performance Beyond Expectations.* Free Press.

Bass, B. M. (1990). From transactional to transformational leadership: Learning to share the vision. *Organizational dynamics*, *18*(3), 19-31. https://doi.org/10.1016/0090-2616(90)90061-S

Bass, B. M., & Avolio, B. J. (1994). Transformational leadership and organizational culture. *International Journal of Public Administration*, *17*(3-4), 541-554. https://doi.org/10.1080/01900699408524907

Bass, B. M., & Avolio, B. J. (1995). *The multifactor leadership questionnaire - 5x short form.* Redwood: Mind Garden. https://doi.org/10.1037/t03624-000

Bekdash, M. O. (2019). Leadership and decision-making style for airline crisis management in emerging markets. *EuroMed Journal of Management*, *3*(2), 89-108. https://doi.org/10.1504/EMJM.2019.104324

Berg, A., & Hallberg, I. R. (1999). Effects of systematic clinical supervision on psychiatric nurses' sense of coherence, creativity, work-related strain, job satisfaction and view of the effects from clinical supervision: a pre-post test design. *Journal of Psychiatric and Mental Health Nursing*, *6*(5), 371-381. https://doi.org/10.1046/j.1365-2850.1999.00235.x

Berraies, S., & Bchini, B. (2019). Effect of leadership styles on financial performance: mediating roles of exploitative and exploratory innovations case of knowledge-intensive firms. *International Journal of Innovation Management*, *23*(03), 1950020. https://doi.org/10.1142/S1363919619500208

Berraies, S., & Zine El Abidine, S. (2019). Do leadership styles promote ambidextrous innovation? *Journal of Knowledge Management,* *23*(5), 836-859. https://doi.org/10.1108/JKM-09-2018-0566

Berraies, S., Bchini, B., Houaneb, A. (2024). Employees' empowerment and ambidextrous innovation: Knowledge sharing as a mediator and organizational trust as a moderator. *European Journal of International Management,* *23*(4), 648-676. https://doi.org/10.1504/EJIM.2024.139615

Berraies, S., Bchini, B., Zine El Abidine, S., & Mejri, T. (2019). Effects of transactional and transformational leadership styles on innovation: Knowledge sharing as mediator and gender as moderator, Case of French knowledge-intensive firms. *International Conference on Arts, Business, Law and Education*., Lisbon.

Bishop, W. J. (2001). Leadership challenges in a changing industry. *Journal-American Water Works Association*, *93*(4), 128-132. https://doi.org/10.1002/j.1551-8833.2001.tb09178.x

Bledow, R., Frese, M., Anderson, N., Erez, M., & Farr, J. (2009). A dialectic perspective on innovation. *Industrial and Organizational Psychology*, *2*(3), 305-337. https://doi.org/10.1111/j.1754-9434.2009.01154.x

Burns, J. M. (2012). *Leadership (unabridged).* Open Road Media.

Carless, S. A. (2004). Psychological empowerment and job satisfaction. *Journal of Business and Psychology*, *18*(4), 405-425. https://doi.org/10.1023/B:JOBU.0000028444.77080.c5

Conger, J. A. (1989). Leadership: The art of empowering others. *Academy of Management Perspectives*, *3*(1), 17-24. https://doi.org/10.5465/ame.1989.4277145

Conger, J. A., & Kanungo, R. N. (1988). The empowerment process. *Academy of Management Review, 13*(3), 471-482. https://doi.org/10.2307/258093

Cunha, M. P. E., Fortes, A., Gomes, E., Rego, A., & Rodrigues, F. (2019). Ambidextrous leadership. *International Journal of Human Resource Management*, *30*(4), 702-727. https://doi.org/10.1080/09585192.2016.1201125

De Jong, J., & Den Hartog, D. (2010). Measuring innovative work behaviour. *Creativity and innovation management*, *19*(1), 23-36. https://doi.org/10.1111/j.1467-8691.2010.00547.x

Deci, E. L., Connell, J. P., & Ryan, R. M. (1989). Self-determination in a work organization. *Journal of Applied Psychology*, *74*, 580-590. https://doi.org/10.1037/0021-9010.74.4.580

Dust, S. B., Resick, C. J., & Mawritz, M. B. (2014). Transformational leadership and psychological empowerment. *Journal of Organizational Behavior*, *35*(3), 413-433. https://doi.org/10.1002/job.1904

Dvir, T., Eden, D., Avolio, B. J., & Shamir, B. (2002). Transformational leadership and follower development. *Academy of Management Journal*, *45*(4), 735-744. https://doi.org/10.2307/3069307

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, *18*(1), 39-50. https://doi.org/10.1177/002224378101800104

Gerlach, F., Hundeling, M., & Rosing, K. (2020). Ambidextrous leadership and innovation performance. *Leadership & Organization Development Journal*, *41*(3), 383-398. https://doi.org/10.1108/LODJ-07-2019-0321

Gumusluoglu, L., & Ilsev, A. (2009). Transformational leadership, creativity, and organizational innovation. *Journal of business research*, *62*(4), 461-473. https://doi.org/10.1016/j.jbusres.2007.07.032

Hadi, S., et al. (2023). Temporal and transformational leadership. *Journal of Leadership in Organizations*, *5*(2), 132-154. https://doi.org/10.22146/jlo.86213

Hair, J. F., Astrachan, C. B., Moisescu, O. I., Radomir, L., Sarstedt, M., Vaithilingam, S., & Ringle, C. M. (2021). Executing and interpreting applications of PLS-SEM: Updates for family

business researchers. *Journal of Family Business Strategy*, *12*(3), 100392. https://doi.org/10.1016/j.jfbs.2020.100392

Hennessey, B. A., & Amabile, T. M. (2010). Creativity. *Annual Review of Psychology*, *61*, 569-598. https://doi.org/10.1146/annurev.psych.093008.100416

Hilton, S. K., et al. (2023). Transformational leadership and organizational performance. *Management Research Review, 46*(1). https://doi.org/10.1108/MRR-02-2021-0152

Hunter, S. T., Tate, B. W., Dzieweczynski, J. L., & Bedell-Avers, K. E. (2011). Leaders make mistakes. *The Leadership Quarterly*, *22*(2), 239-258. https://doi.org/10.1016/j.leaqua.2011.02.001

Isaksen, S. G., & Laver, K. J. (2002). Climate for creativity. *Creativity and Innovation Management*, *11*(1), 74-86. https://doi.org/10.1111/1467-8691.00238

Islam, T., & Irfan, K. U. (2020). Can empowered employees go the extra mile? *Journal of Public Affairs*, e2394.

Jango, J. (2024). Leadership and management of change. *EuroMed Journal of Management, 6*(1), 57-71. *https://doi.org/10.1504/EMJM.2024.135991*

Jansen, J. J., Vera, D., & Crossan, M. (2009). Strategic leadership for exploration and exploitation: The moderating role of environmental dynamism, *The leadership quarterly,20*(1), 5-18. https://doi.org/10.1016/j.leaqua.2008.11.008

Janssen, O. (2000). Job demands, perceptions of effort-reward fairness and innovative work behaviour. *Journal of Occupational and organizational psychology*, *73*(3), 287-302. https://doi.org/10.1348/096317900167038

Janssen, O. (2005), The joint impact of perceived influence and supervisor supportiveness on employee innovative behaviour. *Journal of Occupational and Organizational Psychology, 78*, 573-579. https://doi.org/10.1348/096317905X25823

Jha, S. (2014). Transformational leadership and psychological empowerment: Determinants of organizational citizenship behavior. *South Asian Journal of Global Business Research*, *3*(1), 18-35. https://doi.org/10.1108/SAJGBR-04-2012-0036

Joo, B. K., & Lim, T. (2013). Transformational leadership and career satisfaction: The mediating role of psychological empowerment. *Journal of Leadership & Organizational Studies*, *20*(3), 316-326. https://doi.org/10.1177/1548051813484359

Jung, D. I., & Sosik, J. J. (2002). Transformational leadership in work groups: The role of empowerment, cohesiveness, and collective-efficacy on perceived group performance. *Small group research*, *33*(3), 313-336. https://doi.org/10.1177/10496402033003002

Jung, D. I., Chow, C., & Wu, A. (2003). The role of transformational leadership in enhancing organizational innovation: Hypotheses and some preliminary findings. *The leadership quarterly*, *14*(4-5), 525-544. https://doi.org/10.1016/S1048-9843(03)00050-X

Jung, H. S., & Yoon, H. H. (2020). Leadership styles among flight attendants. *Tourism Research Journal*, *34*(4), 75-90. https://doi.org/10.21298/IJTHR.2020.4.34.4.75

Kauppila, O. P., & Tempelaar, M. P. (2016). Ambidextrous behaviour. *Journal of Management Studies*, 53(6), 1019-1044. https://doi.org/10.1111/joms.12192

Keller, T., & Weibler, J. (2015). What it takes and costs to be an ambidextrous manager: Linking leadership and cognitive strain to balancing exploration and exploitation. *Journal of Leadership & Organizational Studies*, *22*(1), 54-71. https://doi.org/10.1177/1548051814524598

Kim, S., & Shin, M. (2019). Empowering process and commitment. International *Journal of Human Resource Management*, *30*(2), 251-275. https://doi.org/10.1080/09585192.2016.1278253

Kimolo, K. (2013). Employee empowerment practices. University of Nairobi.

Knezović, E., & Drkić, A. (2021). Innovative work behavior in SMEs: the role of transformational leadership. *Employee Relations: The International Journal*, *43*(2), 398-415. https://doi.org/10.1108/ER-03-2020-0124

Koberg, C. S., Boss, R. W., Senjem, J. C., & Goodman, E. A. (1999). Antecedents and outcomes of empowerment: Empirical evidence from the health care industry. *Group & organization management*, *24*(1), 71-91. https://doi.org/10.1177/1059601199241005

Krishnan, C. (2009). Role of Microfinance in Women Empowerment: A Study of Selected Experiments in Kerala. *The microFINANCE*, 84.

Krishnan, V. R. (2012). Empowerment as mediator. *Leadership & Organization Development Journal*, *33*(6), 550-563. https://doi.org/10.1108/01437731211253019

Kumar, A., Chakraborty, S., & Bala, P. K. (2023). Text mining approach to explore determinants of grocery mobile app satisfaction using online customer reviews. *Journal of retailing and consumer services*, *73*, 103363. https://doi.org/10.1016/j.jretconser.2023.103363

Lan, X. M., & Chong, W. Y. (2015). Psychological empowerment. *Procedia Social and Behavioral Sciences*, *172*, 184-191. https://doi.org/10.1016/j.sbspro.2015.01.353

Laschinger, H. K. S., Finegan, J. E., Shamian, J., & Wilk, P. (2004). A longitudinal analysis of the impact of workplace empowerment on work satisfaction. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, *25*(4), 527-545. https://doi.org/10.1002/job.256

Laschinger, H. K. S., Finegan, J., Shamian, J., & Wilk, P. (2001). Impact of structural and psychological empowerment on job strain in nursing work settings: Expanding Kanter's model. *JONA: The Journal of Nursing Administration*, *31*(5), 260-272. https://doi.org/10.1097/00005110-200105000-00006

Li, C., & Tian-Bao, S.-K. (2006). Transformational leadership and psychological empowerment. *Acta Psychological Sinica*, *38*(2), 297-307.

Li, S. L., He, W., Yam, K. C., & Long, L. R. (2015). Empowering leadership. *Asia Pacific Journal of Management*, *32*(3), 645-670. https://doi.org/10.1007/s10490-015-9424-1

Lowe, K. B., Kroeck, K. G., & Sivasubramaniam, N. (1996). Effectiveness correlates of transformational and transactional leadership: A meta-analytic review of the MLQ literature. *The leadership quarterly*, *7*(3), 385-425. https://doi.org/10.1016/S1048-9843(96)90027-2

Mackey, J. D., et al. (2015). Empowered employees as social deviants. *Journal of Business and Psychology, 30*, 149-162. https://doi.org/10.1007/s10869-014-9345-x

Majumdar, B., & Ray, A. (2011). Transformational leadership and innovative work behaviour. *Journal of the Indian Academy of Applied Psychology*, *37*(1), 140-148.

Malik, A., Khan, N., Faisal, S., Javed, S., & Faridi, M. R. (2020). An investigation on leadership styles for the business productivity and sustainability of small medium enterprises (Sme's). *International Journal of Entrepreneurship*, *24*(5), 1-10.

Mathew, J., & Nair, S. (2022). Psychological empowerment and job satisfaction. *Vision*, *26*(4), 431-440. https://doi.org/10.1177/0972262921994350

Mccann, J. A., Langford, P. H., & Rawlings, R. M. (2006). Testing Behling and McFillen's syncretical model of charismatic transformational leadership. *Group & Organization Management*, *31*(2), 237-263. https://doi.org/10.1177/1059601104273061

Messmann, G., Evers, A., & Kreijns, K. (2022). Psychological needs, leadership, innovative work behavior. *Human Resource Development Quarterly*, *33*(1), 29-45. https://doi.org/10.1002/hrdq.21451

Messmann, G., Stoffers, J., Van der Heijden, B., & Mulder, R. H. (2017). Job demands and resources. *Personnel Review*, *46*(8), 1948-1961. https://doi.org/10.1108/PR-03-2016-0053

Mom, T. J., Van Den Bosch, F. A., & Volberda, H. W. (2009). Managers' ambidexterity. *Organization Science, 20*(4), 812-828. https://doi.org/10.1287/orsc.1090.0427

Naimova, N. (2025). MANAGEMENT OF THE INNOVATION PROCESS IN ENTERPRISES. *International Journal of Artificial Intelligence*, *1*(2), 302-304.

Nembe, J.K., Atadoga, J.O., Mhlongo, N.Z., Falaiye, T., Olubusola, O., Daraojimba, A.I. et al., (2024), 'The role of artificial intelligence in enhancing tax compliance and financial regulation', *Finance and Accounting Research Journal* *6*(2), 241-251. https://doi.org/10.51594/farj.v6i2.822

Ochoa Pacheco, P., Coello-Montecel, D., & Tello, M. (2023). Psychological empowerment and job performance. *Administrative Sciences*, *13*(3), 76. https://doi.org/10.3390/admsci13030076

Özaralli, N. (2003). Effects of transformational leadership on empowerment and team effectiveness. *Leadership & Organization Development Journal*, *24*(6), 335-344. https://doi.org/10.1108/01437730310494301

Pacheco, P. O., & Coello-Montecel, D. (2023). Digital competencies and job performance. *Computers in Human Behavior*, *140*, 107575. https://doi.org/10.1016/j.chb.2022.107575

Patah, M. O., Radzi, S. M., & Abdullah, R. (2009). Psychological empowerment and job satisfaction. *International Journal of Business and Management*, *11*(4), 167-176. https://doi.org/10.5539/ijbm.v4n11p167

Pieterse, A. N., Van Knippenberg, D., Schippers, M., & Stam, D. (2010). Transformational and transactional leadership and innovative behavior: The moderating role of psychological empowerment. *Journal of organizational behavior*, *31*(4), 609-623. https://doi.org/10.1002/job.650

Pradhan, R. K., Panda, M., & Jena, L. K. (2017). Transformational leadership and psychological empowerment. *Journal of Enterprise Information Management*, *30*(1), 82-95. https://doi.org/10.1108/JEIM-01-2016-0026

Pudjiarti, E. S., et al. (2024). Spirituality leadership and performance. *EuroMed Journal of Management, 6*(3), 239-260. https://doi.org/10.1504/EMJM.2024.141589

Quinn, R. E., & Spreitzer, G. M. (1997). The road to empowerment: Seven questions every leader should consider. *Organizational dynamics*, *26*(2), 37-49. https://doi.org/10.1016/S0090-2616(97)90004-8

Rajeswari, A., & Venugopal, P. (2024). Examining the role of workplace humour in stimulating innovative work behaviour-an empirical investigation using structural equation modelling. *International Journal of Work Innovation*, *5*(3), 226-243. https://doi.org/10.1504/IJWI.2024.139443

Rappaport, J. (1987). Terms of empowerment. *American Journal of Community Psychology*, *15*, 121-148. https://doi.org/10.1007/BF00919275

Reuvers, M., Van Engen, M. L., Vinkenburg, C. J., & Wilson-Evered, E. (2008). Transformational leadership and innovative work behaviour: Exploring the relevance of

gender differences. *Creativity and innovation management*, *17*(3), 227-244. https://doi.org/10.1111/j.1467-8691.2008.00487.x

Rosing, K., Frese, M., & Bausch, A. (2011). Ambidextrous leadership. *The Leadership Quarterly*, 22(5), 956-974. https://doi.org/10.1016/j.leaqua.2011.07.014

Rubera, G., & Kirca, A. H. (2012). Firm innovativeness. *Journal of Marketing, 76*(3), 130-147. https://doi.org/10.1509/jm.10.0494

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary educational psychology*, *25*(1), 54-67. https://doi.org/10.1006/ceps.1999.1020

Saira, S., Mansoor, S., & Ali, M. (2021). Transformational leadership and employee outcomes. *Leadership & Organization Development Journal*, *42*(1), 130-143. https://doi.org/10.1108/LODJ-05-2020-0189

Salas-Vallina, A., Herrera, J., & Rofcanin, Y. (2023). HRM, patient care and burnout. *Employee Relations*, *45*(5), 1254-1274. https://doi.org/10.1108/ER-10-2022-0485

Schermuly, C. C., & Meyer, B. (2016). Good relationships at work: The effects of Leader-Member Exchange and Team-Member Exchange on psychological empowerment, emotional exhaustion, and depression. *Journal of organizational behavior*, *37*(5), 673-691. https://doi.org/10.1002/job.2060

Schermuly, C. C., Creon, L., Gerlach, P., Graßmann, C., & Koch, J. (2022). Leadership styles and psychological empowerment: A meta-analysis. *Journal of Leadership & Organizational Studies*, *29*(1), 73-95. https://doi.org/10.1177/15480518211067751

Shahzad, M. A., Iqbal, T., Jan, N., & Zahid, M. (2022). Transformational leadership and firm performance. *Frontiers in Psychology*, *13*, 883224. https://doi.org/10.3389/fpsyg.2022.883224

Spreitzer, G. (2008). Twenty years of empowerment research. *In SAGE Handbook of Organizational Behavior* (pp. 54-72). https://doi.org/10.4135/9781849200448.n4

Spreitzer, G. M. (1995). Psychological empowerment in the workplace. *Academy of Management Journal*, *38*(5), 1442-1465. https://doi.org/10.2307/256865

Spreitzer, G. M. (1996). Social structural characteristics of psychological empowerment. *Academy of management journal*, *39*(2), 483-504. https://doi.org/10.2307/256789

Stanescu, D. F., Zbuchea, A., & Pinzaru, F. (2021). Psychological empowerment as mediator. *Kybernetes*, *50*(5), 1041-1057. https://doi.org/10.1108/K-07-2019-0491

Stanescu, D. F., Zbuchea, A., & Pinzaru, F. (2021). Transformational leadership and innovative work behaviour: the mediating role of psychological empowerment. *Kybernetes*, *50*(5), 1041-1057. https://doi.org/10.1108/K-07-2019-0491

Teoh, B. E. W., et al. (2022). Transformational leadership in hospitality. *Frontiers in Psychology, 13*, 913773. https://doi.org/10.3389/fpsyg.2022.913773

Thomas, K. W., & Velthouse, B. A. (1990). Cognitive elements of empowerment. *Academy of Management Review*, *15*(4), 666-681. https://doi.org/10.5465/amr.1990.4310926

Turner, S. F., Mitchell, W., & Bettis, R. A. (2013). Strategic momentum. *Journal of Management*, *39*(7), 1855-1890. https://doi.org/10.1177/0149206312458704

Utomo, H. J. N., et al. (2023). Innovative work behavior and SME performance. *Journal of Law and Sustainable Development*, *11*(2). https://doi.org/10.55908/sdgs.v11i2.417

Volmer, J., Spurk, D., & Niessen, C. (2012). Leader-member exchange (LMX), job autonomy, and creative work involvement. *The leadership quarterly*, *23*(3), 456-465. https://doi.org/10.1016/j.leaqua.2011.10.005

Warrick, D. (2011). The need for transformational leaders. *Journal of Leadership, Accountability, and Ethics*, *8*(5), 11-26.

West, M. A., & Farr, J. L. (1989). Innovation at work. *Social Behaviour.*

Zacher, H., Robinson, A. J., & Rosing, K. (2016). Ambidextrous leadership. *The Journal of Creative Behavior*, *50*(1), 24-46. https://doi.org/10.1002/jocb.66

Zhang, X., & Bartol, K. M. (2010). Linking empowering leadership and employee creativity: The influence of psychological empowerment, intrinsic motivation, and creative process engagement. *Academy of management journal*, *53*(1), 107-128. https://doi.org/10.5465/amj.2010.48037118

Zimmerman, M. A. (1990). Psychological vs individual empowerment. *American Journal of Community Psychology*, *18*, 169-177. https://doi.org/10.1007/BF00922695

Zimmerman, M. A. (1995). Psychological empowerment: Issues and illustrations. *American Journal of Community Psychology*, *23*(5), 581-599. https://doi.org/10.1007/BF02506983

Zine El Abidine, S., Berraies, S., & Chaher, M (2025). Fueling workplace innovation: Ambidextrous leadership as the engine behind work motivation, knowledge sharing, and employee ambidexterity. *International Journal of Work Innovation*. https://doi.org/10.1504/IJWI.2025.10073715