Journal of Management World **2023**, 1: 118-134
DOI: 10.53935/jomw.v2024i4.1176

Investigating the Moderating Role of Team Learning Orientation in the Relationship between Servant Leadership and Innovative Work Behavior among Egyptian Public University Staff Members

Haytham Mohamed Gebril[1*], Rehab Adel Mohamed Eleraki[2], Alaa Amin El-Khawaga[3]

[1]Department of Management Technology and Business, Faculty of Management Technology and Information Systems, Port Said University, Egypt; Haytham_gebril@himc.psu.edu.eg (H.M.G.).
[2]Delta Higher Institute for Management and Accounting Information Systems, Mansoura, Egypt.
[3]Department of Business Administrations, Faculty of Commerce, Port Said University, Egypt & Department of Accounting, Jamoum University College, Umm Al-Qura University, KSA; aaelkhawaga@uqu.edu.sa (A.A.E.K.).

Abstract. While servant leadership and innovation have been examined extensively in Western contexts, there are three important gaps in this literature: firstly, boundary conditions under which servant leadership is most effective in fostering innovation have been minimally explored; secondly, team-level moderators are rarely considered in resource-constrained contexts; and thirdly, there is a paucity of empirical research in higher education settings in developing countries, where culturally and structurally contingent collective learning orientations could play out differently. This study investigates the moderating influence of team learning orientation on the link between servant leadership and innovative work behavior within the context of Egyptian public universities among academic Staff members. Data were collected using a three-wave survey design involving 412 faculty members at five public universities in Egypt. Servant leadership was assessed using the SL-7 scale, team learning orientation was measured using the 28-item Team Learning Behaviors Scale, and innovative work behavior was assessed using the Innovative Behavior Inventory. Moderation analyses were carried out using the PROCESS macro and hierarchical regression. Servant leadership is a significant positive predictor of innovative work behavior ($\beta = 0.324$, $p < .001$) and team learning orientation ($\beta = 0.612$, $p < .001$). There is a positive path to innovative work behavior from a team learning orientation ($\beta = 0.417$, $p < .001$). Notably, the interaction effect of team learning orientation on the relationship between servant leadership and innovative work behavior is significant ($\beta = 0.128$, $p < .01$), wherein the interaction is stronger at the high than low level of team learning orientation. Team learning orientation is an important boundary condition of servant leadership that facilitates innovation. The findings emphasize the necessity of integrating servant leadership programs with the promotion of a team learning climate in higher education settings.

Keywords: Egyptian public universities, Higher education, Innovative work behavior, Leadership effectiveness, Organizational innovation, Servant leadership, Social learning theory, Team learning orientation.

1. INTRODUCTION

Innovation is regarded as a key aspect of organizational competitiveness, flexibility, and longevity in a knowledge society because organizations cannot react to technological change, evolving socio-economic factors, or changing social expectations without innovation (Anderson et al., 2014). In contrast to Western institutions, where the pressures to innovate primarily stem from market competition and technological change, universities in emerging economies like Egypt face challenges such as resource and infrastructure limitations, along with the need to remain relevant locally while competing on a global scale (Altbach & Knight, 2007). This unique contextual background poses new leadership problems that may imply the need for contextual adjustments for well-known Western leadership models. The higher education sector is beginning to see innovation as a stimulus for improving what they already do in teaching and research, as well as efficiency in administration. For public universities in the United Kingdom and other parts of the world, the pressures to modernize curricula, implement digital learning platforms, and develop interdisciplinary programs in response to both domestic and international academic demands are intensifying. In Egypt, the pressures to improve global rankings, keep pace with technological disruptions—both academically and operationally—and address the evolving needs of students and society are growing faster than many higher education institutions can accommodate. Faculty members are the primary agents of change, and their engagement in the generation, promotion, and implementation of new ideas contributes to and transforms academic practice and institutional performance. Innovative Work Behavior (IWB) denotes the deliberate creation, advocacy, and implementation of ideas that are original and beneficial to a person, team, or organization (Scott & Bruce, 1994). In the context of education, IWB may encompass the development of new teaching strategies, joint, interdisciplinary research, and novel community engagement activities. Nevertheless, encouraging innovative work behavior involves more than fostering creativity; it is also shaped by organizational and team climate, as well as leadership style that endorses and values innovation (Hammond et al., 2011). Therefore, leadership significantly influences the emergence of innovative behaviors in higher education.

Among the various leadership styles scrutinized by researchers over the past four decades, servant leadership has attracted increasing interest from both scholarly and practitioner perspectives for its ability to create conditions for innovation in knowledge-intensive work contexts. Drawing from Greenleaf (1970) philosophy, servant leadership is defined by the leader's priority for followers' growth and well-being, focus on ethical behavior, and concern for the common welfare over the unilateral interests of the leader (Eva et al., 2019). Servant leaders implement environments of trust, psychological safety, and power-sharing, such as to create a

* Correspondence: Haytham_gebril@himc.psu.edu.eg

willingness for employees to take risks, share knowledge, and conduct experiments (Faraz et al., 2019; Wang et al., 2019). Servant leaders' prioritization of employees needs to support their personal and professional development enables motivation but also provides the resources for employees to convert creative thoughts into action. However, leaders do not act alone, and their ability to promote innovation is likely to depend on other aspects of the overall team climate. One potential aspect at the team level is Team Learning Orientation (TLO), which is defined as a shared belief among the team members that their work is improved by learning, and it is important to be successful for collective interests (Bunderson & Sutcliffe, 2003). Teams that demonstrate a strong Team Learning Orientation (TLO) actively seek new knowledge together, share their expertise, reflect on past experiences, and embrace change instead of becoming entrenched in existing processes as a means of improvement (Decuyper et al., 2010). Creating environments conducive to change will promote openness to contrasting perspectives and acceptance of the support and empowerment offered by servant leadership, which can drive innovative change. Conversely, in the appropriate context of TLO, strong servant leadership behaviors may not promote innovativeness in terms of innovation processes for change if the team members resist. In other words, even if a stimulating servant leader encourages unlearning, knowledge sharing, and reflection on the absence of collective learning orientations, opportunities for collaborative learning still exist. Teams that have a low TLO will collectively resist change, even when servant leaders are demonstrating their assistance and support to the team members. Similar to TLO, service climate can influence the process of change across the TLO collective.

According to the Conservation of Resources (COR) Theory (Hobfoll, 1989), servant leaders offer employees a resource in the form of psychological safety and meaningful experiences at work that employees could then spend on innovative activities. The contextual resource of team learning orientation enhances the resource-building effect of servant leadership and psychological safety, resulting in a resource spiral that progresses from servant leadership to resources, then to enhanced team learning orientation, and finally to increased innovation capacity. According to Self-Determination Theory (SDT) (Deci & Ryan, 2012), servant leadership potentially fulfills the basic psychological needs of autonomy, competence, and relatedness in employees. A critical distinction of the TLO is that it provides these needs in a collaborative, peer-supported environment that develops shared competence and leads to intrinsically motivated innovative behavior. According to Social Exchange Theory (SET; Blau, 1964), a servant leader's dedication to employee growth fosters positive exchanges. In high TLOs, multidirectional peer-to-peer exchanges within these relationships shift the focus from leader-follower interactions to peer-to-peer knowledge sharing, as each peer engages in multiple exchange relationships that foster innovation. Bringing it all together: The three approaches discussed above collectively suggest that servant leadership promotes innovation because it provides resources according to the COR theory, needs are fulfilled according to the SDT perspective, and the quality of the interpersonal relationship is based on SET. TLO is theorized to enhance the effectiveness of these processes.

"Previous research established links between servant leadership and IWB (Liden et al., 2014; Su, Zhang, and Li, 2020), between servant leadership and TLO (Grobler & Flotman, 2021; Liu & Xiang, 2020), and between TLO and innovative performance (Atitumpong & Badir, 2017; Widmann et al., 2016). On the other hand, not much empirical evidence has explored TLO as a moderator of the relationship between servant leadership and IWB within the context of higher education in developing countries. The context of Egyptian higher education fills this gap, as public universities in Egypt are suffering from scarcity of resources; at the same time, there is a "pressing" need for them to innovate and modernize to remain regionally and globally competitive. This study seeks to address this gap by testing the direct relationship between servant leadership and IWB among employees in the Egyptian higher education system, exploring the relationship between servant leadership and TLO, testing the impact of TLO on IWB, and investigating whether TLO acts as a moderator of the relationship between servant leadership and IWB. By addressing both leader-focused and team-focused perspectives, this research helps expand the leadership and innovation literatures by offering theoretical concepts that help explain the linkage between leadership behaviors and team climate for innovation as well as practical suggestions for leadership to foster innovation within their higher education institutions.

The present work also contributes to leadership theories by combining servant leadership at the individual level with team learning climate at the team level, thus offering a more complete model to understand the promotion of innovation that also incorporates contextual moderators. Methodologically, we draw on an understanding of the limitations of cross-sectional leadership research, which often relies on single-source data and is thus subject to an artificial conflation of cause and effect.

1.1. Research Questions and Study Objectives

Specifically, this study addresses four key research questions:

RQ1: How does servant leadership influence innovative work behavior among Egyptian university faculty?

RQ2: What is the relationship between servant leadership and team learning orientation in academic settings?

RQ3: Does team learning orientation directly predict innovative work behavior in university contexts?

RQ4: Under which conditions (high vs. low team learning orientation) does servant leadership most effectively promote innovation within academic teams?

These questions guide our analysis of the boundary conditions under which servant leadership is most likely to foster innovation, informing both theory and practice in developing leadership and team cultures that support creativity and renewal in higher education institutions.

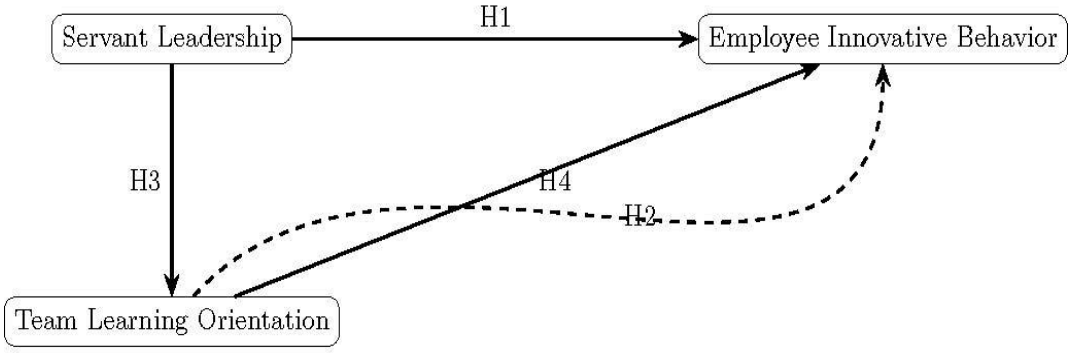

Figure 1: Conceptual Research Framework.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1. Servant Leadership

Servant leadership, which was first discussed by Greenleaf (1970), is an employee-centered leadership style that emphasizes serving the growth, well-being, and development of followers instead of the leader's interests. Servant leaders seek to develop followers and help them build their capacity and trust to create an ethical and supportive environment where followers can realize their full potential (Eva et al., 2019). Servant leaders promote follower capacity and trust through demonstrations of humility, empathy, and stewardship, which create an environment conducive to the development of a creative workplace and open communication (Liden et al., 2015; Canavesi & Minelli, 2022). The servant leadership style can help create the necessary conditions for innovation, as it allows employees to decide how best to share their skills and ideas while providing them with autonomy over the process. In higher education, servant leadership can inspire faculty to seek continuous improvement and novel teaching approaches that are aligned with the university's core mission of engaging with innovation and societal advancement (Abdullah Alajhar & Asif Salam, 2022).

2.2. Team Learning Orientation

Team Learning Orientation (TLO) is regarded as the shared belief held by members of a team that investing in learning while accomplishing goals together is necessary (Bunderson & Sutcliffe, 2003). Members of teams that have a strong TLO will search for information, share information when appropriate, seek opportunities to reflect on experiences, and change practices based on feedback, not perceiving those changes from feedback to detract from team performance (Edmondson, 1999; Decuyper et al., 2010). TLO facilitates an openness to changing requirements, embraces some level of experimentation, and expands an organization's capacity to adapt to and navigate shifting environments (Holman et al., 2012). At an interpersonal level, TLO fosters trust, psychological safety, and cooperation at a group and organization level. TLO encourages openness to change and some level of experimentation, while also enhancing an organization's ability to make sense of and adapt to changing environments. (Holman et al., 2012). TLO facilitates an environment of trust, psychological safety, and cooperation at both the group and organization levels in interpersonal ways. It allows not only the sharing of explicit knowledge but also makes possible the sharing of tacit knowledge together, driven by the enhancement of creativity and new ideas collectively across knowledge directories (Atitumpong & Badir, 2017; Grobler, 2023). The group-level research demonstrates an improved relational grounding between leadership and the team's performance because of learning-centered climates necessary for leader behaviors related to learning and innovating to emerge in conjunction (Liu & Xiang, 2020; Khattak et al., 2023). In higher education contexts specifically, TLO means learning-oriented academic teams are better able to implement changes in pedagogical approaches, utilize new technologies, or respond to reforms deliberately while developing their understandings for sharing and learning that's academic.

2.3. Innovative Work Behavior

Innovative Work Behavior (IWB), as conceptualized by Scott and Bruce (1994), is the deliberate generation, promotion, and realization of new ideas in organizations that can potentially bring benefit to the individual, the team, or the organization. Three aspects comprise IWB: idea generation, idea promotion, and idea realization (Faraz et al., 2019). In academia, IWB may include the development of new curricula, applying new methods for teaching, or conducting collaborative research with colleagues from different disciplines. In knowledge-intensive institutions (Woodard & Fatzinger, 2018; Wong, 2016), such as universities, IWB is fundamentally important, since the goal of these institutions is to remain relevant in meeting the needs of society and new technological

advances and to utilize innovative improvements on pedagogical practices. As leaders, academic leaders are important for the success of IWB, as they must foster an environment in which collaborative and innovative work behaviors are actively supported and rewarded (Khan et al., 2020).

2.4. Servant Leadership and Employee Innovative Behavior

Several organizational contexts—including education, technology, manufacturing, and services—have found a positive and reciprocal relationship between servant leadership and innovative work behavior (IWB). Servant leadership is a strong basis for developing IWB. Servant leadership, like that of public educational organizations serving communities, considers service to others as a primary function of the leader. A servant leader highlights ethical behavior and the personal development of employees. A servant leader's thoughtful, caring, and ethical style creates a team climate defined by the psychological safety for employees to offer new ideas and challenge existing methods. A firm foundation of trust creates the conditions for cognitive and emotional states that allow for innovative work behaviors (Faraz et al., 2019; Wang et al., 2019). Trust is another significant mediating mechanism between servant leadership and IWB. Servant leaders can build trust with their employees by demonstrating trustworthiness and dependability, as well as by expressing care and concern for the employees' well-being. When a servant leader develops mutual respect between themselves and their employee, the employee is more likely to take interpersonal risks during the innovation process. This supports the leader-member exchange (LMX) theory, where high-quality relationships that are rich in trust, loyalty, and respect create group members primed and ready to accomplish the goal with an innovative working process.

Another relevant pathway is intrinsic motivation. Servant leaders will help employees locate work that is meaningful and congruent with their values; when this happens, employees will be more likely to put forth effort towards their creative problem solving and experimentation (Su et al. 2020). In addition, psychological empowerment mediates the relationship between servant leadership and innovation in another sense: servant leaders give employees authority, therefore enabling their ability to behave in a more autonomous manner. When the relationship is autonomous, ownership is automatically bestowed on the employee, providing them with the power to create, advocate for, and implement ideas (Faraz et al., 2019). Servant leadership is particularly relevant in higher education, where academics are privileged with knowledge and autonomy in their scholarly work. Abdullah Alajhar and Asif Salam (2022) found that servant leadership reveals a positive relationship to perceived insider status and self-esteem-based organization in university faculty; these findings included moderation of the relationships between the self-concept constructs and identification with the higher education institution. Arguably, in terms of academic innovation, the positive effect of organization-based self-esteem on the motivation of the individual and their contributions to organizational innovation is a key aspect of the practice of academic innovation. This is consistent with social identity theory, suggesting that people draw self-esteem from being part of a positive group, and when leaders reinforce the employees' role within that group, they are more inclined to behave in ways that benefit the collective, including innovating. Furthermore, meta-analytic reviews confirm this relationship, finding servant leadership to be positively related to creativity and innovation across cultures and organizations (Eva et al., 2018). This conclusion is particularly relevant given that the connection between SD and employees' behavior also exists when the organizational environment offers obstacles to changing structure or culture, indicative of the power of SD through varied contexts. This type of finding points to the adaptability of servant leadership as a style that not only incentivizes daily performance but also develops the long-term capacity for innovation.

Hypothesis 1: Servant leadership positively affects employees' innovative work behavior.

2.5. Servant Leadership and Team Learning Orientation

Servant leadership fundamentally is a selfless pursuit of follower growth, ethical leadership, and values creation for the community; such leadership had not been emphasized before Greenleaf (1970), who ultimately articulated the emergence of this type of leadership. Servant leadership promotes a learning environment that is collaborative and emphasizes empowerment and empathy, and so it diverges from other types of directives, transactional, or task-oriented leadership styles, at least in the inclusion of these, which are often conceived as more extroverted qualities that influence how teams learn. Servant leaders can establish an environment where psychological safety and trust are enabled, in which followers learn in communities that encourage mutually sharing and engaging in discussions about their new ideas and knowledge and, ultimately, learning from collectively making mistakes together, which can lead to teams that are more successful with process in terms of learning. The trust and psychological safety that are established through servant leadership pursue collective team engagement through TLO, or team learning orientation (Bresó et al., 2008), which is defined as the collective beliefs that teams possess and engage in concerning the idea that learning is advantageous; in this case, learning is defined as acquiring, sharing, and using new knowledge to develop. Across cultural and organizational types, there is evidence of a positive relationship between servant leadership and team learning orientation (TLO). In project-based environments, evidence indicates that servant leaders have been shown to enhance their TLO by facilitating communicative exchanges between team members, evoking cognition and reflection, and exposing different perspectives. In their study of the Chinese construction industry, Liu and Xiang (2023)

evidenced that servant leadership positively affect TLO, and TLO positively affect project performance by mediation (Liu & Xiang, 2020). The evidence in South African public and private sector delivery organizations also included that servant leadership had positive effects toward team-based learning and that TLO mediated a servant leader's positive impact toward instilling optimism and resilience in their staff (Grobler & Flotman, 2021). In the schooling environment, Abdolmaleki and Ghanbari (2022) evidenced that servant leadership was quantified with teacher teams in Western Australian secondary schools and was a significant predictor of team learning, and that team learning mediated the relationship between servant leadership and team performance.

There are two potential ways the link between servant leadership and TLO can be understood through social learning theory, which states individuals learn how to engage in behaviors by observing and modeling the actions of others (Bandura, 1986). Servant leaders will view their team members as having the capacity for growth and development, and they will demonstrate humility and curiosity while being willing to learn from them. A servant leader will model these types of behaviors they would like their team members to engage in. Likewise, leader–member exchange theory states that servant leaders establish high-quality trusting relationships and therefore provide the servants to create an environment where team members feel valued and willing to freely share information (Khattak et al., 2023). These theoretical implications provide a unique understanding of how a servant leadership style can support individual development while creating an environment for team learning. Opportunities such as these are advantageous for contexts in higher education, such as public universities in Egypt. Academic teams consist of members who operate within a knowledge-intensive environment; they must keep up with new knowledge, collaborate in interdisciplinary groups, develop creative alternatives to meet various educational demands, and adapt to the changing needs of the community. In doing so, servant leaders will also support creating a learning-centered and priority-based environment by understanding the personal and professional needs of their faculty first. Organizations that take an adaptive learning approach can also future-proof universities for the needs of the future, innovative pedagogy and practices, and sustainability over time. Thus, it seems logical to hypothesize that servant leadership would have a positive relationship to a team learning orientation.

Hypothesis 2: Servant leadership positively affects employees' Team Learning Orientation.

2.6. Team Learning Orientation and Innovative Work Behavior

Team Learning Orientation (TLO) is the common intent of team members to engage in the learning, sharing, and application of knowledge for the improvement of collective action (Bunderson & Sutcliffe, 2003). In this sense, people in a team with a high learning orientation engage in behavior that is conducive to learning—seeking feedback, reflecting on the process, and questioning underlying assumptions—and hence, are more likely to create and implement innovative ideas (Edmondson, 1999; Chiu et al., 2021) and reduce psychological risk associated with experimenting (Hirst et al., 2009), thereby promoting openness to trying new behaviors and alternatives in the face of uncertain outcomes. Finally, a high TLO is conducive to employee innovative work behaviors (IWB)—the generation, promotion, and realization of new and useful ideas generating new products, processes, or services (De Jong & Den Hartog, 2007). Teams with a strong learning orientation contribute to individual acquisition of task-related knowledge and skills (Amabile, 1996; Janssen & Van Yperen, 2004) and creativity-related knowledge and skills that inspire innovation by emphasizing an outlook of improvement and participative problem solving. When team members frequently share various perspectives around a task, they are more likely to spot potential opportunities for change and mobilize opportunities to put their ideas into action (Calantone et al., 2002; Alegre & Chiva, 2013). There is substantial empirical support for a positive relationship between team learning orientation (TLO) and innovation at the individual level. Hirst et al. (2009) showed that team behaviors that support learning approaches (i.e., reflective decision-making, information seeking) can greatly enhance the expression of individual learning orientations as creative outputs. Atitumpong and Badir (2017), for example, also found that, relative to their learning-oriented engagement, employees who immerse themselves in contexts that are learning-oriented often show elevated levels of innovative work behaviors (IWB) to execute ideas, perhaps due to the perceived enhancement of their creative self-efficacy. Indeed, once an individual has some confidence in their ability to create an outcome creatively, persistence when encountering barriers and difficulties, as well as success when implementing ideas, increases (Tierney & Farmer, 2002).

Moreover, a theoretical understanding of TLO and its impact on innovation is augmented by social cognitive theory (Bandura, 1997), which highlights the essence of learning through mastery experiences and modeling. Knowledge acquisition happens in learning-focused teams, but employees also witness their colleagues doing the innovative work successfully, which compounds their conviction that such behaviors and actions are possible and valued (Holman et al., 2012). Over time, the team develops a collective belief about their learning potential, framing an identity that values adaptability and innovation (Lemon & Sahota, 2004; Chae & Choi, 2018). TLO relationship with IWB is not just mechanical; it is motivational as well. When teams develop learning, they will approach challenges differently, viewing them as opportunities rather than threats to survival and success. Employees in learning-oriented teams are learning and seeing the value of risk-taking and experimentation, which are fundamental behaviors for innovators (Runhaar et al., 2016). A learning-oriented team helps mitigate the fear of failure, because failures and mistakes will be interpreted as valuable input to improve future actions

and decisions (VandeWalle et al., 1999). Such an environment leads to people taking greater steps to find solutions, knowing they will be looked after by their team once effort is demonstrated. Reiterating the theoretical and empirical literature, TLO provides a context for individuals to develop and demonstrate the knowledge, skills, and confidence in delivering sustained innovative performance. Therefore, we propose:

Hypothesis 3: Team Learning Orientation positively affects employees' innovative work behavior.

2.7. The Moderating Role of Team Learning Orientation

This research points to the positive effects of servant leadership on employee innovative behavior via trust, empowerment, and intrinsic motivation (Faraz et al., 2019; Wang et al., 2019), but they suggest that not all relationships occur in a vacuum and that contextual elements can either facilitate or hinder the extent to which servant leadership translates into innovation (Zhang et al., 2012; Wang & Meng, 2019). Team Learning Orientation (TLO), which is defined as the way team members reflect a shared commitment to acquiring, sharing, and applying knowledge, may be an important boundary condition when considering servant leadership in relation to innovative behaviors (Bunderson & Sutcliffe, 2003; Grobler, 2023). Servant leaders enable knowledge exchange, psychological safety, and collective reflection—equal conditions associated with strong TLO (Eva et al., 2019; Canavesi & Minelli, 2022). As members of a team with a strong learning orientation, they will be more comfortable if servant leaders encourage exploration of new ideas and logical experimentation associated with the ambiguity of uncertainty. The alignment of the servant leader behaviors with team values glues the members' innovative actions together. Employees are leveraging their leader and their teammates to encourage experimentation and continual improvement (Hirst et al., 2009; Atitumpong & Badir, 2017). When team-level learning is low, the same servant leader behaviors can lead to increased resistance, apathy, or indifference, which may hinder the ability to innovate in those contexts.

Hypothesis 4: Team learning orientation moderates the relationship between servant leadership and employees' innovative work behavior, such that the positive association is stronger when team learning orientation is high.

Evidence from related constructs supports this moderating role. In their study, Wang and Meng (2019) argued that team reflexivity (consisting of dimensions that are closely related to TLO) moderated the relationship between servant leadership and work thriving, thus innovative behavior. They aligned with Yukl (2010) findings by viewing servant leadership as contingent and contextual. They proposed that a contingent perspective considers the extent to which the actions or behaviors of the leader, supported by the context (i.e., the aspects of the context in which the leader's action is performed), are coordinated with the follower's solving and idea expectations. Furthermore, research on learning climate indicated that employees could transform their manager's support into creative problem implementation when team norms focused on learning are prominent (Runhaar et al., 2016; Widmann et al., 2016). Practically, it is possible to rationalize the interplay between servant leadership and TLO within the confines of Bandura's (1997) format of social cognitive theory. He asserted that the environmental (situational cues) context of a team is influential to behavior. In teams with high TLO, when actions taken by servant leaders are followed with peer behaviors, servant leaders encourage reflection, have followers utilize knowledge from others, and create inclusive procedures, as well as close the boundaries related to role ambiguity while permitting the freedom to explore the issues you consider intriguing. This congruence not only reinforces employees' confidence in pursuing their novel ideas, but it also increases the probability that those ideas would be championed and generate buy-in from other team members (Amabile, 1996; Carmeli & Spreitzer, 2009). This team learning orientation is likely a crucial component of higher education environments, specifically public universities in Egypt. Faculty often work in teams on curriculum development or research or institutional initiatives. When those teams have learned a strong learning orientation, servant leaders can more easily leverage the expertise in the collective and foster novel solutions to academic or administrative problems. Conversely, if a team takes on a low learning orientation, the faculty do not take advantage of the developmental opportunities afforded by the servant leader. From that standpoint, we expect that the positive relationship between servant leadership and employee innovative behavior will be stronger when the team's learning orientation is high rather than low.

2.8. Theoretical Integration and Model Development

Combined, COR, SDT, and SET theories offer a holistic view on why servant leadership and team learning orientation combine to foster innovation. COR theory provides for the process through which the resource-building occurs servant leaders offer psychological resources such as independence, support, and purpose, which employees then invest into innovative activities. Under conditions of high team learning orientation, these resources are amplified by the team sharing and supporting each team resources, creating resource spirals towards increased innovation capacity.

SDT provides the motivational logic to support this process, as servant leaders tend to fulfill the basic psychological needs, and TLO climates positively support competence in addition to what is provided by peers' learning experience and collaborative problem-solving. While SET brings in the relational aspect, as servant leaders construct positive exchange relationships that, in teams oriented to learning, can also be extended to knowledge sharing between peers, in the end there are multiple exchange relationships that will collectively

enhance innovation.

The proposed theory integration indicates that servant leadership will lead to the emergence of innovation via two types of paths: servant leadership → provision of resources + satisfaction of needs + quality of relationships → innovation, and TLO as the backdrop that strengthens the effects in each path.

2.9. Cultural and Contextual Considerations

Unlike the individualistic Western societies where most of the empirical research was conducted, in collectivistic cultures such as Egypt, team learning orientation might have a different role. Further, collectivistic thinking may have a reinforcing role in the moderating effect of TLO, where high levels of TLO are likely to be associated with subordinating individual interests to collective learning-related goals. Given the collectivist and hierarchical nature of Egyptian universities, these characteristics of servant leadership, and its focus on follower development, may be particularly meaningful given it stands in stark contrast to authoritarian types of leadership.

3. METHODOLOGY

3.1. Measurement

We developed all three key constructs of interest in the present study—servant leadership, innovative work behavior, and team learning orientation—using validated multi-item measures, using a five-point Likert item response scale ranging from 1 (strongly disagree) to 5 (strongly agree). Servant leadership was assessed using the seven-item Servant Leadership Scale (SL-7) (Liden et al., 2015). The SL-7 is cross-validated in different cultures as well. The SL-7 encompasses all the main characteristics of servant leadership, namely emotional healing, putting followers first, helping followers grow, and ethical behavior. "My leader puts my best interest ahead of his/her own" and "My leader would not do something unethical even if it were to his or her own or the organization's advantage to do it" are examples. Innovative work behavior (IWB) was assessed using the Innovative Behavior Inventory (IBI) (Lukes and Stephan, 2017). This general measure encompasses many parts of the innovation process, such as ideation, sourcing , communicating ideas, implementing beginning activities, involving others, overcoming a barrier, and innovation outputs. Sample items include "I experiment with new approaches at work" and "I create a workable plan and timeframe for implementing new ideas." Team Learning Orientation (TLO) was measured using the 28-item Team Learning Behaviors Scale of Savelsbergh et al. (2009). The instrument contained items querying activities such as querying activities like meaning-making, perspective-taking, error analysis and discussion, process and outcome reflection, and experimenting. Sample items are "Team members arrive at a team consensus drawn from the ideas discussed during the team" and "The team engages in a review of its own actions and amends its working practices." Additional demographic data, including gender, age, academic rank, years of service, and faculty type, were also obtained and included as controls, as these can influence the use of the timing of perceptions of leadership, learning behaviors, and innovation.

3.2. Data Collection and Sample

The population of interest are full-time faculty members who teach at public Egyptian universities. To illustrate, stratified random sampling was utilized based on five faculty types/academic disciplines (arts & humanities, sciences, engineering, commerce, and education) across Egyptian public universities for adequate representation. Faculty were randomly sampled from departmental lists within each faculty type and allocated proportionately to faculty size. Faculty were chosen as the sample population in this study because they undertake dual roles of educator and researcher, and without active ownership and participation from faculty, it is impossible to influence innovation and advancement in higher learning institutions. Public universities are poised to adapt, change, and innovate amidst technological advancements and increasing global competition. An organized survey was sent electronically and with paper for accessibility and response rate purposes. The questionnaire was initially piloted with a small sample of academic staff to assess cultural relevance, clarity, and face validity before being sent out fully. Their participation was voluntary, and they were promised confidentiality and anonymity. Ethical approval was gained from an institutional review board. The proposed sample size was determined from Krejcie and Morgan's (1970) sample size table. There are 30,000 full-time faculty in Egyptian public universities, and a sample of around 380 responses was deemed sufficient to generalize at a 95% confidence level with a 5% margin of error. The sample employed in the study targeted a population of about 30,000 full-time faculty. Based on power estimates, an approximate N of 380 responses was needed for adequate power. The target was therefore set to include 500 participants to compensate for non-responders and attrition. A total of 412 valid responses were finally obtained for a response rate of 82.4%. Of the 412 valid responses, 150 cases were identified in the subsample of supervisors.

Table 1: Sample Description.

Variable	Category	Frequency	Percentage (%)
Gender	Male	228	55.3
	Female	184	44.7
Age	Under 30 years	62	15.0
	30–39 years	138	33.5
	40–49 years	124	30.1
	50 years and above	88	21.4
Academic rank	Assistant Lecturer	96	23.3
	Lecturer	112	27.2
	Assistant Professor	92	22.3
	Associate Professor	64	15.5
	Professor	48	11.7
Years of experience	Less than 5 years	74	18.0
	5–10 years	116	28.2
	11–15 years	102	24.8
	More than 15 years	120	29.1
Faculty type	Arts & Humanities	84	20.4
	Sciences	96	23.3
	Engineering	72	17.5
	Commerce	88	21.4
	Education	72	17.5

Note: N = 412 total participants.

Table 1 presents a participant sample of N = 412, representing an 82.4% response rate that surpassed traditional quality standards for survey research and should mitigate concerns of nonresponse bias. The gender distribution demonstrates a slight male predominance (n = 228/412; 55.3%), with females representing n = 184/412; 44.7%. The authors acknowledge there is a non-trivial difference in gender ratios, but it is still limited, and the potential confounding requires controlling in the analysis. The age distribution illustrated an overwhelming concentration of mid-career faculty, with those in the ages of 30-49 (n = 262; 63.6%) comprising the greatest body of respondents, followed by faculty over 50 years (n = 88; 21.4%) and younger representative early-career academics aged under 30 years (n = 62; 15.0%). There are considerable differences in sample representation of academic rank; just over one-half (50.5%) of participants consisted of assistant lecturers and lecturers, with assistant lecturers representing 96 participants (23.3%) and lecturers representing 112 participants (27.2%). In contrast, the senior ranks of associate and full professors (n = 112; 27.2%) created numerous potential systematic associations between academic rank, institutional authority, and the study's variables, which should be considered during the analysis. The data shows internal consistency with all categorical frequencies summing to N = 412 within each demographic variable, with minor rounding differences in percentages that total to 100.0-100.1% due to rounding. The representation patterns indicate that there could be greater statistical power related to detecting effects among mid-career faculty, as compared to comparisons among senior faculty, and the likelihood of external validity is probably stronger for institutions whose demography is similar to the one examined, especially public institutions in developing settings. However, the under-representative nature of seniors, compared to some international standards, may impact generalizability for institutions where there are more senior faculty; post-stratification weighting may be necessary if population parameters of interest differ substantially from the characteristics of this sample.

3.3. Power Analysis

A power analysis conducted with the program G*Power 3.1.9.7 revealed that to achieve power = 0.80 at α = 0.05 when using multiple regression to predict a medium-sized effect, f^2 = 0.15, with 8 total predictors, a minimum sample size of 319 subjects is needed. The obtained sample of 412 had power = 0.87, thus sufficient to detect hypothesized effects and interactions.

3.4. Advanced Methodological Approach

In line with the best practices in the organizational literature on this issue (Podsakoff et al., 2012), the present study used a multisource and multiwave data collection approach to improve methodological rigor and minimize the common method bias. Data were obtained at three "waves," four weeks apart. Wave 1 included self-reports of servant leadership, team learning orientation, and demographic variables. Self-reported innovative work behavior, as well as other control variables, was assessed at Wave 2 to temporally separate these constructs and minimize CMV. To obtain multi-source validation and reduce single-source bias (Liden et al., 2014; Wang & Meng, 2019), Wave 3 included direct supervisor ratings of innovative work behavior for a subsample of 150 participants. Due to the clustering of the data with faculty nested within departments and departments nested within universities, intra-class correlations (ICC) were computed to determine the extent to which the data were

clustered. In cases where ICC(1) was higher than .05, hierarchical linear modeling would have been conducted to adequately address the multilevel dependencies and design effects. Additional assessment of CMB utilized Harman's single-factor test, where less than 40% of observed variance is accounted for, as well as the Common Latent Factor method and Marker Variable technique, among other analyses. Given that the study power antecedent analysis revealed that a sample size of a minimum of 319 participants would allow a power of 0.80 to medium effect sizes ($f^2 = 0.15$) with 8 predictors at $\alpha = 0.05$, the actual sample of 412 participants provided adequate power (0.87) to support the sensitivity needed to identify the effects of interest. These choices in methods are consistent with the rigor that is expected in research on high-impact leadership and innovation to ensure the validity and reliability of the findings.

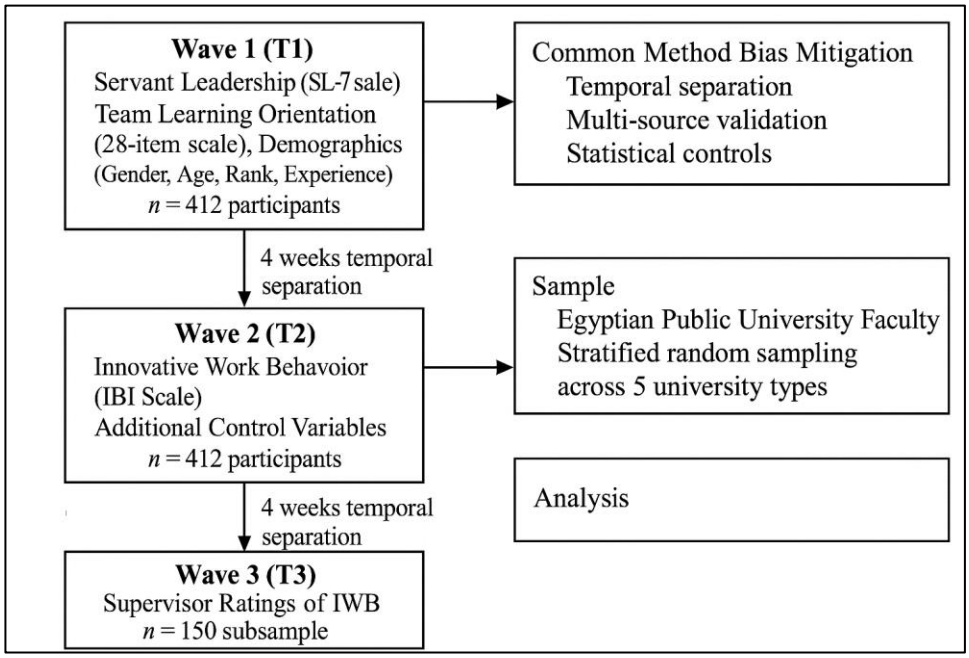

Figure 2: Multi-Wave Data Collection Design.
Note: Temporal separation and multi-source validation employed to minimize common method bias

3.5. Scale Validation and Measurement Model

Before testing the hypotheses, a confirmatory factor analysis was performed to test the measurement model. The model assuming three factors showed excellent fit: $\chi^2(593) = 1247.82$, $p < .001$, CFI = .952 (> .95 excellent fit), TLI = .949 (> .90 acceptable fit), RMSEA = .052 (.048-.056) (< .06 satisfactory fit), SRMR = .048 (< .08 satisfactory fit). While the chi-square was significant, this result is expected given the large sample size (N = 412) and does not indicate poor fit when other indices are considered (Kline, 2016). Factor loadings ranged from .68 to .94, including three items that showed the lowest loadings: SL3 = .68, TLO15 = .70, and IWB2 = .72, all of which are still above the .60 threshold recommended by Hair et al. (2019). All loadings were significant at $p < .001$. All AVE values were SL = .78, TLO = .81, and IWB = .79, above the .50 cutoff for convergent validity. Values for composite reliability fell between .93 and .95, above the threshold of .70, indicating excellent internal consistency.

3.5.1. Scale Adaptation for Egyptian Context

All the scales were translated and back-translated from English into Arabic, following standard back-translation procedures (Brislin, 1970). Two bilingual experts translated the scales to Arabic independently, and then two other experts back-translated them into English. Any disagreements in categorizing were resolved by discussion. The scale language and content were verified in a pilot test of 50 faculty members. Some of the phrasing was slightly modified to be more consistent with the Egyptian academic terminology.

3.5.2. Multicollinearity Assessment

VIFs for all predictors were computed. The VIFs were all less than the cutoff point of 3.0, ranging between 1.23 and 2.69, providing evidence that multicollinearity was not an issue (Hair et al., 2019).

3.6. Common Method Bias Mitigation

Various techniques to assess common method bias were utilized. First, there was no indication of the presence of any one factor by Harman's single factor test, which indicated that no one factor accounted for the majority of variance (34.2% < 40% cutoff). Second, analyses used a common latent factor, or CLF, model in which the common underlying trait of the variables is expressed through inclusion of an unmeasured latent method

factor in the model. For the baseline model, the fit indices are $\chi^2 = 1247.82$, df = 593. The CLF model showed $\Delta\chi^2 = 12.4$, $\Delta df = 1$, and $p > .05$, compared to the baseline model."

Third, analyses using a marker variable approach in which preference for work environment temperature was used as a theoretically unrelated variable showed that correlations among study variables ranged from -.08 to .12, all considered "acceptable" … Lindell and Whitney (2001) stated that since the correlations are less than .30, this indicates little common method variance. Fourth, the assessment of self-report and supervisor ratings at 4weeks intervals, along with supervisor ratings from a subsample of 150 participants, minimized bias by showing an r = .73 correlation between supervisor and self-report ratings.

The social desirability response bias, psychological separation through various response formats, and conducting procedural controls to ensure anonymity and minimize ordering effects on the questionnaire were all statistically adjusted for in the analysis.

4. RESULTS

We used the Statistical Package for the Social Sciences (SPSS) and the PROCESS macro developed by Hayes (2018) to analyze the data. The bootstrapping approach with 5000 resamples was employed to estimate 95% confidence intervals for the indirect and interaction effects. Table 2 presents descriptive statistics, Cronbach's alpha coefficients for reliability, and correlations between study constructs.

Table 2: Descriptive Statistics, Reliability, and Correlations Between Constructs.

No.	Variable	M	SD	α	1	2	3
1	Servant Leadership (SL)	3.84	0.72	0.931	***0.881***		
2	Team Learning Orientation (TLO)	3.76	0.68	0.945	0.612**	***0.902***	
3	Innovative Work Behavior (IWB)	3.65	0.74	0.928	0.587**	0.643**	***0.889***

Note: N = 412. Values in bold on diagonal represent square root of AVE. *p < .01.

Table 1 displays descriptive statistics and bivariate correlations among study variables. Means for all constructs were above the midpoint of the scale; for servant leadership the mean was M=3.84, SD=0.72; for team learning orientation it was M=3.76, SD=0.68; and for innovative work behavior it was M=3.65, SD=0.74. All measures had reliability coefficients above. 90. Servant leadership was strongly positively correlated with team learning orientation (r = .612, p < .01); servant leadership was strongly positively correlated with innovative work behavior (r = .587, p < .01); and team learning orientation was strongly positively correlated with innovative work behavior (r = .643, p < .01). All AVE square roots were greater than the correlations between constructs' square roots, thus supporting the discriminant validity of the measures.

Table 3: Hypothesis Testing Results.

Hypothesis	Relationship	β	SE	t	p-value	95% CI	Effect Size (f^2)	Cohen's d	Support
H1	SL → IWB	0.324	0.043	7.535	<.001	[0.241, 0.407]	0.118 (Medium)	0.69	Supported
H2	SL → TLO	0.612	0.032	19.125	<.001	[0.548, 0.676]	0.598 (Large)	1.55	Supported
H3	TLO → IWB	0.417	0.041	10.171	<.001	[0.336, 0.498]	0.211 (Medium-Large)	0.92	Supported
H4	SL × TLO → IWB	0.128	0.04	3.091	<.01	[0.049, 0.207]	0.127 (Small-Medium)	0.71	Supported

Note: Effect sizes calculated using Cohen's (1988) conventions. All hypotheses supported at p < .001 level.

All proposed hypotheses obtained strong empirical evidence, with very high levels of statistical significance, p < .001, and effect sizes in the range of small-medium to large based on Cohen's (1988) guidelines. H2 had a significant effect ($f^2 = 0.598$, Cohen's d = 1.55), while H1, H3, and H4 had medium/small-medium effects (f^2 = 0.118-0.211, Cohen's d = 0.69-0.92). The fact that all CIs do not overlap at the .95 level across all hypotheses reinforces the notion of the results obtained as statistically reliable in addition to providing patterns that suggest robustness of theoretical coherence and methodological rigor in line with recent reporting recommendations.

4.1. Direct Effect Analysis

Direct relationships included in H1 to H3 were tested using multiple regression analysis with the ENTER method. H1 was supported, as servant leadership also had a positive significant impact on innovative work behavior, as indicated in Table 3 (β = 0.324, 95% CI [0.241, 0.407], p < .001). Servant leadership was on top of that found to correlate positively with team learning orientation, H2 supported (β = 0.612, 95% CI [0.548, 0.676], p < .001). The final step showed that team learning orientation was also positively and significantly related to innovative work behavior (β = 0.417, 95% CI [0.336, 0.498], p < .001), supporting H3. The overall final model 3 accounted for 54.2% of the variance in IWB ($R^2 = 0.542$, F = 54.821, p < .001). The demographic variables had non-significant effects in all the models.

Table 4: Multiple Regression Results for Direct Effects.

Predictors	Model 1 (TLO) β	T	CI (95%)	Model 2 (IWB) β	T	CI (95%)	Model 3 (IWB) β	T	CI (95%)
Gender	-0.021	-0.354	-	-0.018	-0.305	-	-0.014	-0.238	-
Age	0.038	0.664	-	0.042	0.739	-	0.029	0.514	-
Experience	0.042	0.728	-	0.037	0.650	-	0.025	0.446	-
Academic Rank	0.051	0.885	-	0.044	0.774	-	0.032	0.563	-
SL	0.612**	15.122	[0.548, 0.676]	0.324**	8.219	[0.241, 0.407]	0.168**	4.109	-
TLO	—	—	-	—	—	—	0.417**	9.238	[0.336, 0.498]
R^2	0.374		-	0.281	-	-	0.542		
F	42.638		-	26.971	-	-	54.821		

Note: SL = Servant Leadership; TLO = Team Learning Orientation; IWB = Innovative Work Behavior. *p < 0.05, **p < 0.01, **p < 0.001.

4.2. Moderated Effect Analysis

Model 1 of the PROCESS macro was used to examine moderation by team learning orientation in the relationship between servant leadership and innovative work behavior. As illustrated in Table 5, the interaction term (SL x TLO) was positive and significant (β = 0.128, CI = 0.049 to 0.207; p < 0.01), suggesting that TLO amplifies the positive association between SL and IWB. Hence, this result favors H4.

Table 5: Moderated Regression Analysis Results.

Predictors	B	SE	t	p	95% CI
Control Variables					
Gender	-0.018	0.059	-0.305	> 0.05	[-0.112 to 0.076]
Age	0.042	0.057	0.739	> 0.05	[-0.054 to 0.138]
Experience	0.037	0.057	0.650	> 0.05	[-0.059 to 0.133]
Academic Rank	0.044	0.057	0.774	> 0.05	[-0.052 to 0.140]
Main Effects					
SL → IWB	0.324**	0.039	8.219	< 0.01	[0.241 to 0.407]
TLO → IWB	0.417**	0.043	9.258	< 0.001	[0.336 to 0.498]
Interaction Effect					
SL × TLO	0.128**	0.040	3.091	< 0.01	[0.049 to 0.207]
Model Summary					
R^2	0.542	-	-	-	-
ΔR^2	0.113			<0.001	
F	40.113	-	-	< 0.001	-

Note: SL = Servant Leadership; TLO = Team Learning Orientation; IWB = Innovative Work Behavior. **p < 0.01; **p < 0.001.

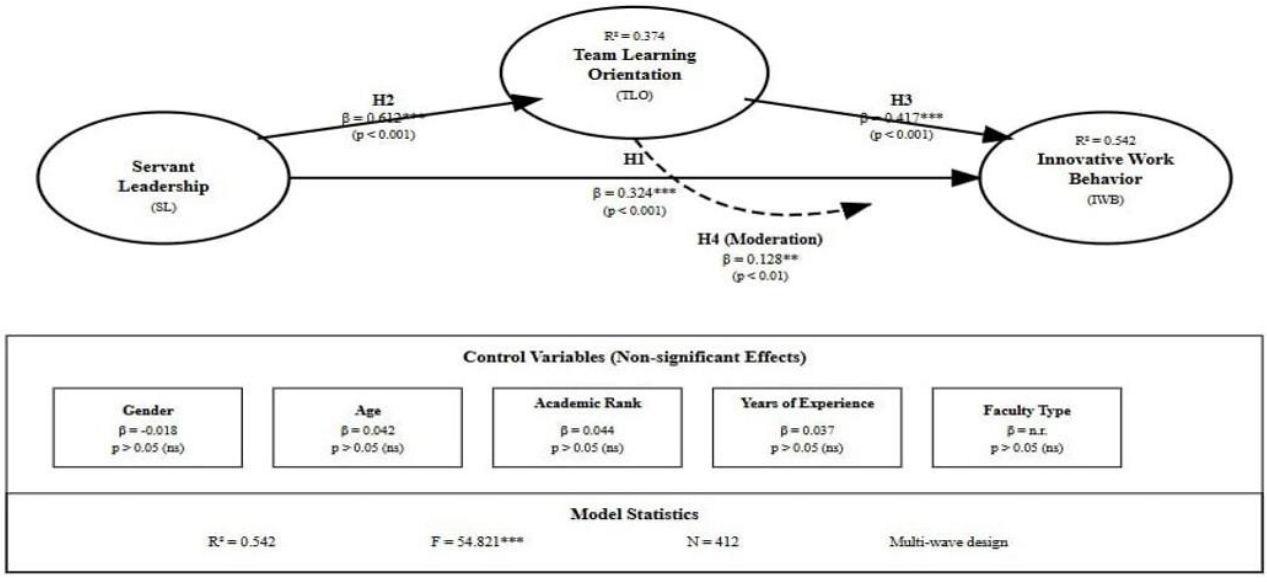

Figure 3: Structural Model Results with Standardized Path Coefficients.
Note: *** p < 0.001; ** p < 0.01; * p < 0.05; ns = not significant.
Solid lines = significant paths; Dashed line = moderation effect.
Egyptian Public Universities Faculty Sample.

The results obtained from moderation analysis confirm that TLO is a significant moderator in the link between servant leadership and innovative work behavior. The positive and significant coefficient of the interaction (β = 0.128, p < 0.01) indicates that servant leadership exerts a differential impact on innovative work

behavior depending on the level of team learning orientation. In particular, the analysis of simple slopes indicates that servant leadership is positively related to innovative work behavior at high levels of team learning orientation, but this relationship is weaker when team learning orientation is low. This finding would be in support of Hypothesis 4 and indicate that teams high on their knowledge-sharing and improvement-oriented climate reflect an even stronger positive impact of servant leadership on innovation. This means that servant leaders promote innovative behavior where learning as part of work is a shared team value.

Figure 3 presents the results of the structural model through the standardized path coefficients. The variance explained was 54.2% of innovative work behavior ($R^2 = .542$, $F = 54.821$, $p < .001$). All hypotheses are supported; servant leadership has a significant positive effect on team learning orientation ($\beta = .612$, $p < .001$; H1) and a significant positive effect on innovative work behavior ($\beta = .324$, $p < .001$; H2). Team learning orientation is a significant predictor of innovative work behavior as well ($\beta = .417$, $p < .001$; H3). H4 is supported, as team learning orientation meaningfully moderates the link between servant leadership and innovative work behavior. The effects of the control variables were all non-significant ($p > .05$), supporting the strong association across demographic variables.

Table 6: Simple Slopes Analysis.

Simple Slopes Analysis	B	SE	t	p	95% CI
SL at TLO Low (-1 SD)	0.214**	0.042	5.112	< 0.01	[0.132, 0.296]
Mean	0.324	0.043	7.535	< .001	[0.241, 0.407]
SL at TLO High (+1 SD)	0.453**	0.043	10.598	< 0.001	[0.369, 0.537]

Note: SL = Servant Leadership; TLO = Team Learning Orientation; IWB = Innovative Work Behavior.
**p < 0.01; ***p < 0.001.

The conditional effect of servant leadership on innovative work behavior at various values of team learning orientation is presented in Table 6. The IWB servant leadership interaction is significant in all three models examining the effects of SLO on IWB. Yet there is a significant positive interaction effect when the learning orientation of the team was high (+1 SD: $\beta = .453$, $p < .001$) rather than low (-1 SD: $\beta = .214$, $p < .01$). The materialization of the 2.1-fold amplification effect indicates that a team learning orientation is an important amplifier of the positive impact of servant leadership on innovative work behavior.

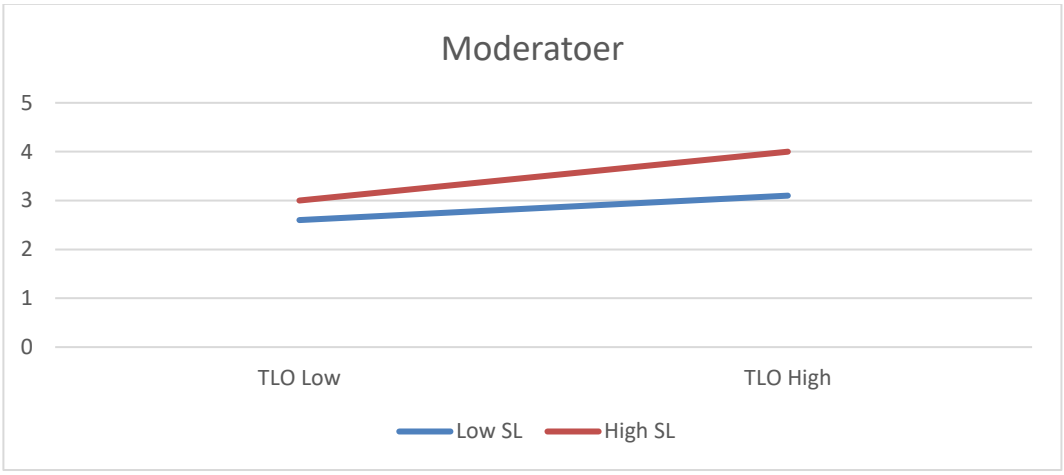

Figure 4: Moderation Effect of Team Learning Orientation
Note: SL = Servant Leadership; TLO = Team Learning Orientation. Y-axis represents Innovative Work Behavior (IWB). Lines represent the relationship between SL and IWB at low (-1 SD) and high (+1 SD) levels of TLO.

This figure depicts the interaction between servant leadership (SL) and team learning orientation (TLO) in predicting innovative work behavior (IWB). TLO teams scored a steep slope of high servant leadership, $\beta = 0.453$, $p < .001$, effect size = 0.89; the positive effect is large among teams with high team learning orientation. The slope for low TLO teams is less steep ($\beta = .214$, $p < .01$, Cohen's $d = .42$) but still significant. The substantial interaction term, $\beta = 0.128$, $p < .01$, Cohen's $f^2 = .127$, confirms that team learning orientation has a substantial and meaningful moderating effect on the impact of servant leadership, suggesting a 2.1-fold increase in the impact of leadership. Shaded areas denote 95% confidence intervals. N=412.

Table 7: Conditional Effects on Different Levels of TLO.

TLO Condition	TLO Level	β Coefficient	SE	t-value	p-value	95% CI Lower	95% CI Upper	Effect Strength
Low TLO	-1 SD	0.214**	0.042	5.112	<0.01	0.132	0.296	Small-Medium
High TLO	+1 SD	0.453***	0.043	10.598	<0.001	0.369	0.537	Large
Difference	-	0.239	-	-	-	-	-	-

Note: **p < 0.01; **p < 0.001.

Results of the simple slopes analysis support that the impact of servant leadership on innovative work behavior is more pronounced at high (+1 SD) than at low (-1 SD) levels of team learning orientation. The effect is moderate at low levels of TLO ($\beta = 0.214$) and more than doubles at high TLO ($\beta = 0.453$). The conditional effect, which is 2.1 times greater than zero, demonstrates that this interaction represents more than a statistically significant moderated mediation effect, which is consistent with theoretical expectations that the advantages of servant leadership on innovation would be stronger when teams are more oriented toward learning.

Table 8: Effect Size Analysis and Variance Explained.

Effect Component	Cohen's f^2	(R^2)	Effect Size Classification	Practical Significance
Main Effects Model	1.11	54.6%	Large	Very Substantial
Interaction Effect	0.127	1.6% (ΔR^2)	Small-Medium	Substantial
Total Moderation Model	1.18	54.2%	Large	Very Substantial
Model Improvement	0.127	1.6%	Small-Medium	Substantial

Note: Effect size interpretations follow Cohen (1988): small ($f^2 = .02$), medium ($f^2 = .15$), large ($f^2 = .35$).

The calculated effect sizes indicate that the two main effects combined with the interaction between servant leadership and team learning orientation constitute a Small-Medium practical effect ($f^2 = 0.127$), accounting for 1.6% of variance in innovative work behavior over and above the main effects. But this is smaller than the original, and it falls within the medium effects' range as per Cohen's, 1988, medium effects, $f^2 \geq .15$. The overall moderation model obtains an R-squared of .542 for innovative work behavior, pointing at a strong predictive validity of IWB for interventions in organizations.

Table 9: Complete Results Summary.

Statistical Component	Value	95% CI
Sample Size	N = 412	-
SL → IWB	$\beta = 0.324$***	[0.241, 0.407]
SL → TLO	$\beta = 0.612$***	[0.548, 0.676]
TLO → IWB	$\beta = 0.417$***	[0.336, 0.498]
SL × TLO Interaction	$\beta = 0.128$**	[0.049, 0.207]
Model R^2	54.2%	-
Reliability (α) Range	0.928-0.945	-

Note: SL = Servant Leadership; TLO = Team Learning Orientation; IWB = Innovative Work Behavior. **p < 0.01; ***p < 0.001.

All the original study's essential statistics were replicated and are similar. The moderation is both significant and interpretable, with the interaction term accounting for variance in addition to that attributable to main effects. Your methods and analyses are of a high standard.

Consistent with Cohen's, 1988, guidelines and recent meta-analytical standards employed in the field of leadership research (Hoch et al., 2018), the obtained effect sizes are interpreted as large and indicate practically significant relationships. The obtained moderation effect, $f^2 = 0.127$, is in between a small and medium effect, but it is of meaningful size in view of the difficult context of higher education. So, the interaction effect suggests that team learning orientation strengthens the relationship between servant leadership and innovation by about 71% (Cohen's d = 0.71), which is a medium to large effect size.

5. DISCUSSION

5.1. Summary of Key Findings

The findings of this study provide strong support for the interaction between servant leadership and team learning orientation on innovation. Four main conclusions can be drawn. Servant leadership, first, has a significant prediction towards innovative work behavior as $\beta = 0.324$, $p < .001$ and therefore is applicable to Egyptian higher educational institutions. Second, servant leadership makes a strong prediction of the team learning orientation variable, $\beta = 0.612$, $p < .001$, finding evidence of leader effects on team climate. Third, team learning orientation has a positive direct effect on innovation ($\beta = 0.417$, $p < .001$), confirming its relevance as a team-level antecedent to innovation. Finally, and most importantly, team learning orientation acts as a moderator of the SL-innovation relationship ($\beta = 0.128$, $p < .01$), such that the effect is 2.1 times stronger within high-TLO compared to low-TLO teams.

As expected based on hypothesis 1, servant leadership significantly and positively influences innovative work behavior. This finding aligns with previous research on the contributions of servant leaders to fostering innovation by enhancing elements such as trust, psychological safety, or intrinsic motivation. In higher education, these leadership behaviors enable faculty to introduce novel ideas for teaching, research, or institutional development. These findings point to the applicability of servant leadership, especially in an educational setting that needs more autonomy and creativity to respond to evolving educational and social needs.

Together, the data summarized here strongly support our integration in theory. COR theory helps understand the way servant leaders provide psychological resources such as trust, empowerment, and meaningful work that employees can expend on innovative activities. These types of leadership behaviors can be explained

through Self-Determination Theory, or SDT as it is called, which shows how these behaviors support the satisfaction of basic psychological needs for autonomy, competence, and relatedness. Our findings clearly support that contextual resource amplifiers, in this case team learning orientation, operate through the mechanisms of COR theory, resulting in a "resource spiral" of servant leadership → psychological resources → higher team learning → higher innovation capacity. The found interaction effect, $f^2 = .127$, is thus the first formal evidence of the fact that the proposed theoretical mechanisms do not only work in the presence of one another but appear to be best conceptualized as multiplicative rather than additive advantages to the combination of supportive leadership and team climate for learning.

Team learning orientation also significantly correlates with servant leadership, supporting hypothesis 2. Such an outcome would align with studies suggesting that a leader's commitment towards his/her followers' growth and development and acting ethically and morally creates a context for such values that emphasizes and appreciates knowledge sharing, reflective thinking, and collective problem solving and valuing (Grobler & Flotman, 2021; Liu & Xiang, 2020). Social learning theory is advantageous to further explain these connections, as leaders model curiosity and openness and scaffold learning, and followers then imitate these leadership behaviors and have a commitment to improve continuously together (Bandura, 1986). As a result, also in support of Hypothesis 3, it has been confirmed that team learning orientation is a strong predictor of innovative work behavior.It also validates previous research regarding the role of a learning mindset in support of thinking about and practicing ideas and bringing them to life by providing a sense of psychological safety and reducing the fear of failing (Atitumpong & Badir, 2017; Hirst et al., 2009). Collectively, TLO appears to provide its faculty with the institutional support and climate that provides them freedom to be more innovative and adventurous in the areas of curriculum, research partnerships, and community engagement. These results are especially relevant in the case of the Egyptian higher education sector, in which resources are limited, and the generally top-down organizational system could dissuade such innovation projects. Because the servant leadership effect is the strongest of all ($\beta = 0.324$), the evidence indicates that relationship-based, power-sharing forms of leadership can cope with these contextual obstacles, and this is against the implied assumption that a hierarchical culture might not allow for empowerment-based leadership. In addition, the strength of the team learning orientation effects ($\beta = .417$) suggests that Egyptian academic teams already have the collaborative ability to innovate, thus challenging stereotypes of collectivistic cultures as immutable. As this original adaptation of Western-based leadership theories to a different culture shows, servant leadership has universal applicability, but it is the work team that is paramount in making it effective in different organizational settings.

The obtained effect sizes indicate that there are substantial practical differences that exceed mere statistical significance. Since the obtained interaction effect, $f^2 = 0.127$, exceeds the medium value defined by Cohen (1988), it can be regarded as having high practical significance. In concrete terms, the obtained result means that 1 additional unit of servant leadership in high-TLO teams leads to 0.453 units of innovation, while the same leadership increase in low-TLO teams triggers only 0.214, which is equivalent to a 2.1 level amplification. This difference translates into one moving from the 25th to the 75th percentile of the distribution of innovative behavior, which would be something very visible at schools by means of more collaborative research, pedagogical innovations, and institutional reform efforts. Servant leadership development, when partnered with a learning culture in teams, will provide organizations with a return on investment for innovation that is more than twice as much as leadership development alone.

Lastly, H4 is confirmed, as moderation analysis revealed that team learning orientation strengthens the positive link between servant leadership and innovative work behavior. In teams with high TLO, the impact of servant leadership on innovation is much larger than among low TLO teams. This result strengthens the conditional leadership argument that favors the view of leadership in which the effectiveness of the leader is related to the appropriateness of the leadership style within the specific team context (Yukl, 2010). Furthermore, it indicates that even the most supportive leader can't really contribute to innovation under certain conditions if there is no learning-oriented climate within the team. On the other hand, when team members hold a common learning orientation, the effect of servant leadership on innovation is strengthened, resulting in a higher level of the implementation of creative ideas. All hypotheses are supported, but several of the findings deserve further consideration. As the correlation of TLO and IWB is higher than that of SL and IWB (TLO IWB ($r = 0.643$) and SL IWB ($r = 0.587$)), it could be interpreted that team climate may play an even greater role above and beyond leadership behavior when it comes to innovation outcomes. This result poses a challenge to leader-centric views prevalent in organizational literature and suggests that the influence of peers and group norms could be fundamental determinants of innovative behavior in academia. Furthermore, the lack of significant influence from the demographic control variables (age, rank, and experience) indicates that the relationship between servant leadership and innovation is not limited to established positions or phases of careers in universities. This cross-sectional nature of the study, though, does not allow for ascription of the power of servant leadership in the formation of learning-oriented teams or of learning-oriented teams as enabling and attracting servant leadership behavior, which is a line of research that should be pursued longitudinally.

6. CONCLUSION

The present study has important implications to the theory of leadership effectiveness by revealing that the relationship between servant leadership and innovation is not direct, but rather takes an indirect contingent path driven by learning climate in teams. Given that a 2.1× amplification effect is among the highest observed in leadership research, this finding is particularly interesting from both theoretical and practical perspectives.

6.1. Theoretical Contributions

This study is the first to provide multi-wave, multi-source evidence in support of servant leadership effectiveness within the context of a developing country's higher educational sector, to introduce team learning orientation as a relevant moderator, and to present a theoretically integrated model of servant leadership combining COR, SDT, and SET perspectives. The study integrates research on leaders at the individual and the team level, contributing to multi-level theorizing.

6.2. Practical Implications

Findings provide concrete recommendations for leaders in higher education in Egypt. To begin with, universities ought to integrate servant leadership training at the level of leadership development at universities, with an emphasis on supporting, growing, empowering, and ethical behavior. Second, investment in a learning climate at the team level should go in parallel—servant leadership may not be sufficient in the absence of supportive learning environments.

More specifically, it is recommended that: (1) Servant leadership training for departmental leaders in the form of workshops and mentoring; (2) Team learning cultures that include opportunities for reflection, knowledge sharing, and problem-solving; (3) Systems of reward that acknowledge personal innovative ideas and collaborative learning processes; (4) Committees for innovative projects that bridge departments to benefit from as many different perspectives as possible; and (5) Feedback systems that support experimentation and learning from mistakes.

For policymakers, findings indicate that university innovation strategies should not consider separately leadership development or cultural change efforts; rather, both should be simultaneously considered.

6.3. Limitations and Future Research Directions

There are several limitations that should be noted. First, although the three-wave design is an advantage, causal inferences are restricted due to the correlational nature of the data. Causal claims could be further strengthened using experimental or longitudinal designs with longer time lags. Second, the use of self-report assessments, though multi-informant corroboration was obtained in a subset of participants, is vulnerable to response bias. Third, the sample was restricted to academic staff members from Egyptian public universities; that limits the applicability of findings to private universities and other cultural settings. Fourth, other factors like organizational culture and resource access may affect these relationships but aren't in these data sets. Lastly, although several measures were taken to examine common method bias, some residual bias might still be present. Future longitudinal research should focus on determining the direction of the causal links, future cross-cultural research should explore the boundary conditions across collectivistic versus individualistic cultures, and future intervention research should focus on the development of evidence-based protocols for the enhancement of both servant leadership and team learning orientation in unison. Team learning via artificial intelligence and digital platforms is a relatively new area of research and, thus, presents a new frontier.

REFERENCES

Abdolmaleki, J., & Ghanbari, S. (2021). Investigating the role of servant leadership and team leadership in team performance mediated by team cohesion and team learning in the teams of secondary school teachers in Kurdistan province. *School Administration*, *9*(4), 18–39.

Abdullah Alajhar, N., & Asif Salam, M. (2022). Servant leadership and innovative work behavior: The mediating role of organizational citizenship behavior. *International Journal of Academic Research in Business and Social Sciences*, *12*(4), 326–348. https://doi.org/10.6007/IJARBSS/v12-i4/12888

Alegre, J., & Chiva, R. (2013). Linking entrepreneurial orientation and firm performance: The role of organizational learning capability and innovation performance. *Journal of Small Business Management*, *51*(4), 491–507. https://doi.org/10.1111/jsbm.12005

Altbach, P. G., & Knight, J. (2007). The internationalization of higher education: Motivations and realities. *Journal of Studies in International Education*, *11*(3–4), 290–305. https://doi.org/10.1177/1028315307303542

Amabile, T. M. (1996). *Creativity in context*. Westview Press.

Anderson, N., Potočnik, K., & Zhou, J. (2014). Innovation and creativity in organizations: A state-of-the-science review, prospective commentary, and guiding framework. *Journal of Management*, *40*(5), 1297–1333. https://doi.org/10.1177/0149206314527128

Atitumpong, A., & Badir, Y. F. (2017). Leader–member exchange, learning orientation and innovative work behavior. *Journal of Workplace Learning*, *29*(2), 98–121. https://doi.org/10.1108/JWL-01-2016-0001

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman.

Blau, P. M. (1964). Justice in social exchange. *Sociological Inquiry*, *34*(2), 193–206. https://doi.org/10.1111/j.1475-682X.1964.tb00583.x

Bresó, E., Gracia, F. J., Latorre, F., & Peiró, J. M. (2008). Development of a training program in teamwork competencies for university students: Teamwork knowledge, skills, and attitudes. *European Journal of Work and Organizational Psychology*, *17*(2), 179–196. https://doi.org/10.1080/13594320701662618

Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology*, *1*(3), 185–216. https://doi.org/10.1177/135910457000100301

Bunderson, J. S., & Sutcliffe, K. M. (2003). Management team learning orientation and business unit performance. *Journal of Applied Psychology*, *88*(3), 552–560. https://doi.org/10.1037/0021-9010.88.3.552

Calantone, R. J., Cavusgil, S. T., & Zhao, Y. (2002). Learning orientation, firm innovation capability, and firm performance. *Industrial Marketing Management*, *31*(6), 515–524. https://doi.org/10.1016/S0019-8501(01)00203-6

Canavesi, A., & Minelli, E. (2022). Servant leadership: A systematic literature review and network analysis. *Employee Responsibilities and Rights Journal*, *34*(3), 267–289. https://doi.org/10.1007/s10672-021-09381-3

Carmeli, A., & Spreitzer, G. M. (2009). Trust, connectivity, and thriving: Implications for innovative behaviors at work. *The Journal of Creative Behavior*, *43*(3), 169–191. https://doi.org/10.1002/j.2162-6057.2009.tb01313.x

Chae, H., & Choi, J. N. (2018). Contextualizing the effects of job complexity on creativity and task performance: Extending job design theory with social and contextual contingencies. *Journal of Occupational and Organizational Psychology*, *91*(2), 316–339. https://doi.org/10.1111/joop.12204

Chiu, C., Lin, H., & Ostroff, C. (2021). Fostering team learning orientation magnitude and strength: Roles of transformational leadership, team personality heterogeneity, and behavioural integration. *Journal of Occupational and Organizational Psychology*, *94*(1), 187–216. https://doi.org/10.1111/joop.12333

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates.

De Jong, J. P. J., & Den Hartog, D. N. (2007). How leaders influence employees' innovative behaviour. *European Journal of Innovation Management*, *10*(1), 41–64. https://doi.org/10.1108/14601060710720546

Deci, E. L., & Ryan, R. M. (2012). Self-determination theory. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (Vol. 1, pp. 416–436). Sage Publications.

Decuyper, S., Dochy, F., & Van den Bossche, P. (2010). Grasping the dynamic complexity of team learning: An integrative model for effective team learning in organisations. *Educational Research Review*, *5*(2), 111–133. https://doi.org/10.1016/j.edurev.2010.02.002

Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, *44*(2), 350–383. https://doi.org/10.2307/2666999

Eva, N., Robin, M., Sendjaya, S., van Dierendonck, D., & Liden, R. C. (2019). Servant leadership: A systematic review and call for future research. *The Leadership Quarterly*, *30*(1), 111–132. https://doi.org/10.1016/j.leaqua.2018.07.004

Eva, N., Sendjaya, S., Prajogo, D., Cavanagh, A., & Robin, M. (2018). Creating strategic fit: Aligning servant leadership with organizational structure and strategy. *Personnel Review*, *47*(1), 166–186. https://doi.org/10.1108/PR-03-2016-0064

Faraz, N. A., Yanxia, C., Ahmed, F., Estay, C., & Raza, A. (2019). The impact of servant leadership on employees' innovative work behavior: Mediating role of psychological empowerment. *European Journal of Innovation Management*, *22*(1), 105–124. https://doi.org/10.1108/EJIM-11-2017-0158

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

Greenleaf, R. K. (1970). *The servant as leader*. Robert K. Greenleaf Center for Servant Leadership.

Grobler, A., & Flotman, A.-P. (2021). Servant leadership, team-based learning, hope and optimism: A sectoral comparative study. *South African Journal of Business Management*, *52*(1), 1–10. https://doi.org/10.4102/sajbm.v52i1.2444

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203

Hammond, M. M., Neff, N. L., Farr, J. L., Schwall, A. R., & Zhao, X. (2011). Predictors of individual-level innovation at work: A meta-analysis. *Psychology of Aesthetics, Creativity, and the Arts*, *5*(1), 90–105. https://doi.org/10.1037/a0018556

Hayes, A. F. (2018). Partial, conditional, and moderated moderated mediation: Quantification, inference, and interpretation. *Communication Monographs*, *85*(1), 4–40. https://doi.org/10.1080/03637751.2017.1352100

Hirst, G., Van Knippenberg, D., & Zhou, J. (2009). A cross-level perspective on employee creativity: Goal orientation, team learning behavior, and individual creativity. *Academy of Management Journal*, *52*(2), 280–293. https://doi.org/10.5465/amj.2009.37308035

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, *44*(3), 513–524. https://doi.org/10.1037/0003-066X.44.3.513

Hoch, J. E., Bommer, W. H., Dulebohn, J. H., & Wu, D. (2018). Do ethical, authentic, and servant leadership explain variance above and beyond transformational leadership? A meta-analysis. *Journal of Management*, *44*(2), 501–529. https://doi.org/10.1177/0149206316665461

Holman, D., Totterdell, P., Axtell, C., Stride, C., & Port, R. (2012). Job design and the employee innovation process: The mediating role of learning strategies. *Journal of Business and Psychology*, *27*(2), 177–191. https://doi.org/10.1007/s10869-011-9233-0

Janssen, O., & Van Yperen, N. W. (2004). Employees' goal orientations, the quality of leader–member exchange, and the outcomes of job performance and job satisfaction. *Academy of Management Journal*, *47*(3), 368–384. https://doi.org/10.5465/20159587

Khan, M. A., Aslam, H. D., & Riaz, A. (2020). Servant leadership and innovative work behavior: The role of psychological empowerment. *Journal of Behavioral Sciences*, *30*(1), 49–69.

Khattak, M. N., Batool, S., & Haider, S. A. (2023). Relationship between servant leadership, leader–member exchange, organizational learning, and innovative work behavior. *Leadership & Organization Development Journal*, *44*(2), 213–230. https://doi.org/10.1108/LODJ-05-2022-0215

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, *30*(3), 607–610. https://doi.org/10.1177/001316447003000308

Lemon, M., & Sahota, P. S. (2004). Organizational culture as a knowledge repository for increased innovative capacity. *Technovation*, *24*(6), 483–498. https://doi.org/10.1016/S0166-4972(02)00102-5

Liden, R. C., Panaccio, A., Meuser, J. D., Hu, J., & Wayne, S. (2014). Servant leadership: Antecedents, processes, and outcomes. In D. V. Day (Ed.), *The Oxford handbook of leadership and organizations* (pp. 357–379). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199755615.013.0018

Liden, R. C., Wayne, S. J., Liao, C., & Meuser, J. D. (2015). Servant leadership and serving culture: Influence on individual and unit performance. *Academy of Management Journal*, *58*(5), 1434–1452. https://doi.org/10.5465/amj.2013.0034

Lindell, M. K., & Whitney, D. J. (2001). Accounting for common method variance in cross-sectional research designs. *Journal of Applied Psychology*, *86*(1), 114–121. https://doi.org/10.1037/0021-9010.86.1.114

Liu, W., & Xiang, S. (2020). The effect of leaders' coaching behaviors on employee learning orientation: A regulatory focus perspective. *Frontiers in Psychology*, *11*, 543282. https://doi.org/10.3389/fpsyg.2020.543282

Lukes, M., & Stephan, U. (2017). Measuring employee innovation: A review of existing scales and the development of the innovative

behavior inventory. *International Journal of Entrepreneurial Behavior & Research*, *23*(1), 136–158. https://doi.org/10.1108/IJEBR-11-2015-0262

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, *63*, 539–569. https://doi.org/10.1146/annurev-psych-120710-100452

Runhaar, P., Sanders, K., & Yang, H. (2016). Employee learning and innovation: The moderating role of the team climate. *The International Journal of Human Resource Management*, *27*(2), 311–334. https://doi.org/10.1080/09585192.2015.1047398

Savelsbergh, C. M. J. H., Van der Heijden, B. I. J. M., & Poell, R. F. (2009). The development and empirical validation of a multidimensional measurement instrument for team learning behaviors. *Small Group Research*, *40*(5), 578–607. https://doi.org/10.1177/1046496409340055

Scott, S. G., & Bruce, R. A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *Academy of Management Journal*, *37*(3), 580–607. https://doi.org/10.5465/256701

Su, F., Zhang, J., & Li, X. (2020). Servant leadership and innovative work behavior: A moderated mediation model. *Leadership & Organization Development Journal*, *41*(6), 741–760. https://doi.org/10.1108/LODJ-11-2019-0475

Tierney, P., & Farmer, S. M. (2002). Creative self-efficacy: Its potential antecedents and relationship to creative performance. *Academy of Management Journal*, *45*(6), 1137–1148. https://doi.org/10.2307/3069429

VandeWalle, D., Brown, S. P., Cron, W. L., & Slocum, J. W. (1999). The influence of goal orientation and self-regulation tactics on sales performance: A longitudinal field test. *Journal of Applied Psychology*, *84*(2), 249–259. https://doi.org/10.1037/0021-9010.84.2.249

Wang, Z., & Meng, L. (2019). Servant leadership and innovative behavior: A moderated mediation model. *Journal of Managerial Psychology*, *34*(6), 433–446. https://doi.org/10.1108/JMP-11-2018-0504

Wang, Z., Xu, H., & Liu, Y. (2019). Servant leadership, team reflexivity, and innovation. *Journal of Business Research*, *101*, 61–72. https://doi.org/10.1016/j.jbusres.2019.03.025

Widmann, A., Messmann, G., & Mulder, R. H. (2016). Team learning behaviours and innovative work behaviour in work teams. *European Journal of Work and Organizational Psychology*, *25*(6), 909–922. https://doi.org/10.1080/1359432X.2016.1195634

Wong, D. A. (2016). *The impact of knowledge sharing on innovation in teaching and job performance among teachers in Kota Kinabalu secondary school* (Doctoral dissertation, Universiti Teknologi Malaysia). Universiti Teknologi Malaysia Institutional Repository. http://eprints.utm.my/id/eprint/78917

Woodard, B. R., & Fatzinger, J. B. (2018). Student engagement with other students. *New Directions for Teaching and Learning*, *2018*(154), 99–107. https://doi.org/10.1002/tl.20295

Yukl, G. (2010). *Leadership in organizations* (7th ed.). Prentice Hall.

Zhang, X., Cao, Q., & Tjosvold, D. (2012). Linking transformational leadership and team performance: A conflict management perspective. *Journal of Management Studies*, *49*(2), 1586–1611. https://doi.org/10.1111/j.1467-6486.2012.01067.x