



Role of adaptive leadership in learning organizations to boost organizational innovations with change self-efficacy

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Abstract

The present study investigates the direct impact of learning organizations on organizational innovations and investigates the mediating mechanism of change self-efficacy between learning organizations and organizational innovations. Furthermore, this study proposes adaptive leadership as a moderator between learning organizations, change self-efficacy, and organizational innovations. Three hundred seventy-three permanent employees from the pharmaceutical industry voluntarily participated. Data was collected using a simple random sampling technique through the temporal separation method (One-month interval between two temporal separations). SPSS v.25, AMOS v.22, and Smart-PLS were utilized to analyze reliability, validity, descriptive statistics, and correlations, and PROCESS-macro v3.4 was used for direct, indirect (mediation), and interaction (moderation) effects analysis. The study supports the hypothesized link between learning organizations and organizational innovations. In addition, change self-efficacy partially mediates the learning organizations – organizational innovations relationship. Moreover, adaptive leadership moderates the association between learning organization and organizational innovation, learning organizations and change self-efficacy, and change self-efficacy and organizational innovations relationship. The study's findings suggest that adaptive leadership is imperative not only for higher change self-efficacy of the individuals but also helps the organizations for organizational innovations with the utilization of learning organizations phenomenon. Additionally, this study highlights the importance of change self-efficacy, which plays a vital role in learning organizations for organizational innovations.

Keywords Learning Organizations (LOs) · Change Self-Efficacy (CSE) · Adaptive Leadership (AL) · Organizational Innovations (OIs) · Social Schema Theory (SST) · Social Cognitive Theory (SCT)

Introduction

Background of study

Today's business climate is challenging, fast-paced, and cut-throat (Chaubey et al., 2022) because the twenty-first century commences with tremendous technological advancement, revolutionizing the business world into a highly competitive environment (Fazekas, 2021). Astounding natural disasters, precarious political administrations, ecological factors, financial and economic regime changes, and pandemics have impacted organizational activities throughout the last decade (Mrayyan, 2020). In these scenarios, organizational innovations (OIs) have emerged as a key strategic tool (i.e., technique, concept, procedure, and policy) (Ahmad et al., 2022) for organizations seeking to increase productivity, compete more effectively, and interact with customers (Hani, 2021). OIs concerned with modifying old products/services

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and producing new ones through planned change to meet the customers' demands (Alshammari et al., 2014; Sung & Kim, 2021) or represent the procedure of coming up with or instituting a unique and different notion or attitudes for the organization (Damanpour, 2020). The culture of OIs regularly arouses the innovative behaviors of individuals (Weng et al., 2015) that can be from individuals' perceptions about environmental dynamism (Huang et al., 2023). In addition, the international market now compels businesses to innovate by regularly updating and releasing new products and services.

With appropriate organizational policies and employees' willingness, higher OIs are attainable (Weng et al., 2015). On the other hand, empowerment increases both employees' willingness to work and their confidence in their abilities (Chughtai & Rizvi, 2020) given by learning organizations (LOs) for creative and innovative outcomes. Organizations can take advantage of the LOs phenomenon to foster a culture of lifelong learning, where employees and management alike pursue knowledge for its own sake and develop their adaptable and procreative abilities (Hansen et al., 2020; Senge, 1990). Workers may gain knowledge from one another through workplace social interactions by exchanging anecdotes and insights that encourage risk-taking, creativity, and the pursuit of novel solutions (Castellani et al., 2019; Meshari et al., 2021). LOs serve as a role models for alternative management and leadership styles, such as those that foster a culture of teamwork, empowerment, knowledge sharing, and learning under the guidance of positive leadership to enable individuals better to contribute to the achievement of the organization's goals (Ramírez, 2021). Recent research has also shown that LOs that nurture an environment for open dialogue and constructive criticism foster a workplace where individuals are more likely to take risks and develop novel solutions to problems (Gil et al., 2018).

Self-efficacy refers to the belief of an individual about their self-confidence for the performance of certain irregular and uncertain tasks (Bernerth, 2004), and change self-efficacy (CSE) is interrelated with the self-confidence level of individuals about their capabilities that they can get well pact with the change procedures (Holt et al., 2007). This confidence level is necessary and beneficial for organizations to implement change policies successfully, and it comes from individuals' experiences and effective communication (Haqq & Natsir, 2019a, 2019b). Researchers highlight the importance of CSE as it strengthens the individuals about their involvement in the change process (Holt et al., 2007). Moreover, CSE is related to individuals' beliefs that they can jointly engage themselves to implement change through their participation, collective utilization of expertise and skills, and managing organizational politics (Helfrich et al., 2018). Low levels of CSE have been linked to increased stress, reduced ability to deal with new circumstances, and

exacerbated weaknesses, all of which compound the difficulty and intensity of change behaviors experienced by organizations during changes (Bernerth, 2004; Haqq & Natsir, 2019a, 2019b). Organizational change increases employees' job insecurity as they feel fear of change due to uncertainty and ambiguity (Hay et al., 2021).

Leadership has been around for as long as human civilization has, and it's always been linked to better results and expanded human potential. A successful leader knows how to convert the failure of individuals and organizations into success through attention, mobilization, and motivation (Heifetz et al., 2009; Pohan, 2019). The fundamental motivating feature of leadership for managing and motivating individuals and organizational effectiveness is ongoing innovation, together with effective leadership (Nasir et al., 2022). Moreover, adaptivity is an imperative factor that enhances the efficacy of individuals and innovations, which become beneficial for the accomplishment of organizational goals efficiently (Burušić et al., 2016). Adaptive leadership (AL) is the leadership which holds the qualities of a clear vision and mission; and the know-how to utilize the experiences and skills of their subordinates with tolerance and independence (Heifetz et al., 2009; Uhl-Bien & Arena, 2018). AL also hold the ability to bear the pressures of change through interaction with their subordinates (Heifetz et al., 2009; Uhl-Bien & Arena, 2018). Moreover, adaptive leaders mold the behaviors of their subordinates with encouragement according to the situations, with purposeful shared sense and empathy instead of insistence, command, and control (Torres et al., 2012; Yukl & Mahsud, 2010) that helps the individuals for the enhancement of self-confidence. (Hoerudin, 2020; Zhang et al., 2021). Leaders motivate the workforce to trigger the OIs by introducing novel, new and creative ideas (Amabile, 1988; Begum et al., 2020; Kül & Sönmez, 2021; Siswanto et al., 2022).

Problem statement and research gap

Post-pandemic circumstances pressure the pharmaceutical industry to invent new drugs so humans can save their lives from the wave and variants of COVID-19. These circumstance forces organizations to organizational change, innovations, and technological advancement to meet market demands and sustainability. The modern era necessitates change initiatives, and it demands that middle and lower management fulfill market and top management expectations (Budhiraja, 2020; Ramírez, 2021) for survival and competitive advantage. The pharmaceutical industry of developing economies faces several challenges in the current era, i.e., how to improve efficiency by reducing the cost of production and waste, enhancement of digital transformation of the working setups, and innovations by utilizing new ideas with the use of the latest technologies (Rabea, 2022). For

that purpose, this study offers a solution to these problems by explaining the phenomenon of LOs, with the culture of sharing knowledge, empowerment, and feedback that enables individuals to meet challenging circumstances. Pharmaceutical organizations can meet the challenges through organizational change, which leads to utilizing new ideas for developing and manufacturing the latest drugs to compete in the market and customer demands. In contrast, innovation and R&D in the pharmaceutical industry cannot be possible without a higher self-efficacy workforce, which can be developed using the culture of LOs where employees feel confident when they find a similarity of knowledge with their collaboration process colleagues. Moreover, unprecedented and uncertain change can be manageable if the organization has the foresight and swift leadership that carefully tackles these situations and overcomes the consequences and side effects of changes in policies and procedures (Bracht et al., 2021; Netolicky, 2020). Therefore, this study highlights the importance of adaptive leaders, who can lead the change by managing the change risks and optimizing their subordinates, leading to creative problem-solving and innovations.

In contrast, this study answers different contextual and empirical gaps suggested in the latest studies. The pharmaceutical industry requires a systematic innovational and technological advancement work routine; for that purpose, a motivational contribution from employees is necessary to implement change policies (Haqq & Natsir, 2019a, 2019b) which leads to OIs. Moreover, Hansen et al. (2020) suggested that there is a need to investigate how LOs facilitate responsible behaviors of employees that further produce higher productivity and competitiveness in the firm; for that purpose, we use LOs as an antecedent of OIs to respond to the recommendations of Chaubey et al. (2022) and Ramírez (2021), especially in the context of the pharmaceutical industry. Higher self-efficacy of individuals plays a vital role in attaining organizational change objectives. For that purpose, we took LOs as an antecedent of CSE, which may enable the organizations for higher OIs; moreover, we use CSE as a mediator between LOs – OIs relationship by following the future research directions in the recent study by Alnatsheh et al. (2023). The value of learning is much imperious, and it can be enhanced by answering the call of Abbas et al. (2020), who stressed that learning could be beneficial not only for the higher efficacy of individuals but also for innovations as well; therefore, we investigate the impact of LOs on CSE and OIs. During uncertain transformation, a foresight and swift leader carefully tackle the situation to overcome the consequences and side effects of changes in policies and procedures (Bracht et al., 2021; Netolicky, 2020). Therefore, the present study uses AL as moderating variable; to uncover the importance of leadership, which is a psychological and motivation source for the enhancement of efficacy of employees, especially in LOs, as proposed by

earlier researchers (Ju et al., 2021). Additionally, Qiao et al. (2022) stress that there is a need to investigate the positive psychosocial factor for the improvement of the working environment and well-being of the employees through psychological strength; therefore, we choose AL as the moderator in the context of LOs for the enhancement of CSE which alternatively boost OIs.

Purpose and contribution of study

The lack of technological innovation in drug production presents difficulties for the pharmaceutical industry in emerging economies. In contrast, more R&D might help the pharmaceutical industry to develop novel production methods and adapt to changing market conditions. Raw material imports from developed countries drive up the cost of medicine production in developing countries like Pakistan, which reduces the industry's profitability and adds to the difficulties associated with its high capital investment requirements for survival. Additionally, drug development and advancement to save people's lives demand highly self-confident employees from pharmaceutical organizations who can meet the challenging circumstance for innovations. Also, the present study provides assistance and guidance, especially to the pharmaceutical industry, on innovating drugs in the rapidly changing environment.

In contrast, this study adds knowledge in change management, organizational behavior, leadership, and positive psychology by explaining the mediating role of CSE between the LOs – OIs relationship. This study also highlights the importance of leadership not only to increase the confidence level of subordinates but also for innovations. Therefore, this study uses AL as a moderator on three different paths, i.e., between the LOs – OIs relationship, between the LOs – CSE relationship, and between the CSE – OIs relationship. Moreover, this study contributes to SCT (Bandura, 1986) by explaining the mediating role of CSE, that organizational and environmental factors influence the cognitive process of the individuals, which shape their behavior toward achieving performance targets. Also, this study contributes to the SST (DiMaggio, 1997; Moscovici, 1982) by explaining the direct effect of LOs on CSE and OIs and explaining the moderating role of AL between LOs – OIs relationship, between LOs – CSE relationship and between CSE – OIs relationship, that organizational culture and motivation can alter the social schema of individuals about the specific role, event, and self; therefore, these modifications of schemas leads several positive outcomes. The present study contributes contextually by explaining the concept of LOs that enables the pharmaceutical industry for the modification and production of new drugs (innovations) through the utilization of adaptive learning activities, debate, and discussion, empowering the individuals and the utilization of internal and external

knowledge (Chinowsky et al., 2007a, 2007b; Chinowsky et al., 2007a, 2007b; Chughtai & Rizvi, 2020).

The present study is structured into different sections; the first section describes the research background, problem statement, and research objective; the second section provides brief details of theoretical and literature discussion on which bases hypotheses of this study are proposed; the third section provides details of methods (population, sample, sample size, measurement scales) which used in this research, fourth section provides a brief report of statistical analysis results and interpretation regarding support/non-support of hypotheses and final section provides a discussion of findings with theoretical and practical implications with future research directions and limitations.

Theoretical framework and hypotheses development

SST (DiMaggio, 1997; Moscovici, 1982) and SCT (Bandura, 1986) provide a theoretical foundation and explanation of relationships. SST (DiMaggio, 1997; Moscovici, 1982) derives from the word ‘schemata,’ a piece of storage in human brains where humans save the information, whereas ‘social schemata’ means a structure of memory of humans based on their social experiences (positive/negative) that they recall responding to present and future behaviors (Paulik, 2012; Strauss & Quinn, 1997). Moreover, DiMaggio (1997) suggested that humans ‘social schemata’ can be replaced with attention, culture, and motivation. LOs provide an environment of learning, knowledge sharing, and empowerment which helps individuals to learn new things at the workplace. This learning replaces the old schemas with new information; in contrast, management’s encouragement about generating new and novel ideas also motivates the individuals to produce positive outcomes, i.e., OIs, and replace their negative schemas about the organizational change. Earlier researchers argued that different schemata, i.e., self, person, role, and event schemata (Augoustinos & Innes, 1990), self-schemata of individuals are based on their self-concepts (Augoustinos & Innes, 1990); person schemata usually is grounded the on the perceptions of individuals about personality characteristics and prototypes (Augoustinos & Innes, 1990); whereas, role schemata represent the perceptions of individuals about specific workplace roles/positions (Augoustinos & Innes, 1990), and event schemata represent the perceptions of individuals about their specific past events. These schemata influence individuals’ cognitive levels and enable them to make strategies to react in the workplace (Crocker et al., 1984; Taylor & Crocker, 1981). Based on this notion, we argue that AL plays an imperative role in altering their subordinate’s schemata through motivation and tolerance, enabling them to adapt

to new policies and practices confidently. Also, AL helps their subordinates to reduce their negative perceptions about the change by enhancing their self-confidence and allowing them to face challenging circumstances (Nissim & Simon, 2021). In contrast, employees generally can’t support organizational change initiatives for several reasons; lack of self-efficacy is also among them (Zainab et al., 2021). Lower levels of self-efficacy diminish individuals’ coping abilities toward accepting new environments and demands (Amiot et al., 2006; Wanberg & Banas, 2000).

Moreover, SCT (Bandura, 1986) explains that the organizational environment influences the learning process of individuals at the workplace, which helps individuals to enhance skills and capabilities, which resultantly becomes the cause of higher self-confidence. People’s emotions, thoughts, motivations, and actions are all governed by their sense of self-efficacy, and there are four main mechanisms through which such beliefs produce their various impacts, i.e., psychological, emotional, motivational, and evaluating activities all belong to this classification (Bandura, 1994). It has been observed that individuals with high self-efficacy believe they possess the requisite skills for a specific task, can exert the needful initiative, and face no meaningful barriers to attaining their ideal efficiency level (Schermerhorn Jr et al., 2011). In contrast, cogent and convincing communication between the leaders and subordinates and positive experiences also becomes the cause of higher self-confidence (Haqq & Natsir, 2019a, 2019b). In the organizational change context, CSE is related to employees’ confidence to accept challenging situations and respond positively to the demands of the new work environment (Jimmieson et al., 2004; Lyons & Bandura, 2019; Wanberg & Banas, 2000). In contrast, the feeling of individuals about their higher self-confidence also motivates them to accomplish unexpected workplace tasks (Bandura, 1986). Further, SCT theorizes that higher-level individuals’ self-efficacy toward the change reduces their cognitive resistance to accepting change policies and procedures (Bandura, 1986), which resultantly enhances the successful implementation of change and higher OIs. Moreover, it has been observed in earlier studies that higher change efficacy can be achieved with continuous learning (Budhiraja, 2020, 2021) because when employees feel a similarity of knowledge between their colleagues and leaders, they feel motivated and confident about their skills and abilities. Hence, we argue that LOs help individuals gain higher self-efficacy toward change. Based on this notion, we proposed that AL moderates the relationship between LOs, CSE, and OIs.

Learning organizations and organizational innovations

In organizations where management provides the environment of learning and critical thinking at the team and

individual levels are defined as LOs (Sidani & Reese, 2018, 2020). Moreover, Senge (1990) describes LOs from three aspects, i.e., structural, technological, and social. According to him, the structural element of a LOs is concerned with organizational hierarchy, policies, and procedures; whereas the technological aspect is concerned with hierarchical organization communication process and procedure during the process of change; lastly, the social element is related to the leadership, empowerment of employees and organizational strategy (Hansen et al., 2020). By utilizing and sharing internal and external knowledge, LOs promote creativity and innovation development at the individual and team levels (Anjaria, 2020). Furthermore, the LOs are intelligent, innovative organizations that accomplish their goals, overcome performance obstacles, expertly handle evacuation factors and crises, and give voice to workers at all levels following a strategy that heavily relies on a work team system that replenishes and arranges expertise, distributes, develops, and utilizes them to the organization's strengths in times of change and strategic planning (Saeed et al., 2022). It has been observed that, LOs, by utilizing the skills of knowledge (acquisition, creating, sharing, and applying), enables individuals to embrace the change policies that result in higher performance (Hassani et al., 2022), innovations, and competitive advantage (Chinowsky et al., 2007a, 2007b; Chinowsky et al., 2007a, 2007b) and to deal positively with crisis challenges (Al-Janabi et al., 2022; López-Cabarcos et al., 2021, 2023). Innovations are vital to the business's growth and development and to enhance the organization's market share (Yildiz & Aykanat, 2021). Also, OIs have become a crucial element in revitalizing the ideas and authorities of individuals (Hussain et al., 2022). Moreover, innovations help the business promote products/services, and these organizational activities show how much organizations value the demands of their customers (Dooley & O'Sullivan, 2001; Dooley & O'Sullivan, 2007). Moreover, Alfawaire and Atan (2021, p. 13) define "OI is the development or adoption of an idea or behavior in business processes that are new to the entire organization." It has been observed in recent studies that different factors influence the OIs, such as empowerment of leadership (Supriyanto et al., 2023), strategic HRM and knowledge management (Alfawaire & Atan, 2021), organizational learning capability (Haile & Tüzüner, 2022), organizational culture and learning (Hussain et al., 2022) and intellectual capital (Alnatsheh et al., 2023). In contrast, earlier studies evidenced that LOs practices in organizations become the cause of improvement for a smooth workflow, higher innovations, and new insights for organizations in the dynamic and competitive environment market (Khunsoonthornkit & Panjakajornsak, 2018). These organizations also contribute to human capital development and improve individuals' creative and innovative capabilities (Geok & Ali, 2021; Szabla et al., 2017). Culture

and environment of learning in the organizations aligned with different outcomes, i.e., organizational effectiveness, the readiness of employees for the acceptance of change policies, a commitment of management to the organization, innovation, and sharing of learning by the team members in the form of knowledge and experience sharing (Chughtai et al., 2022; Khan et al., 2021; Kumar et al., 2021). Based on the above debate, we hypothesized that:

Hypothesis 1: *There is a positive association between LOs and OIs.*

Change self-efficacy as mediator

Self-efficacy is related to an individual's belief that they can perform a course of action to achieve the workplace demands which occur with the change in situations (Bandura, 1977, 1986). Self-efficacy is not related to the individuals' general feelings of situational control, but it is for the specific, unprecedented situation and be dealt with specific cognitive behaviors (Bandura, 1977, 1986). In contrast, Helfrich et al. (2018) explained CSE as employees' joint ability and shared beliefs necessary for implementing change. Higher level CSE of employees shows their motivation and self-confidence to accomplish organizational change objectives (Bandura, 1977, 1986; Jimmieson et al., 2004). Doubtful employees about their abilities and skills feel incompetent and threatened by failure, thus suffering from anxiety, exhaustion, and psychological distress (Annesi & Powell, 2023; Bandura, 1977; Jimmieson et al., 2004). Moreover, employees with a higher CSE perceive organizational change as an opportunity to improve their abilities and skills (Haqq, 2023; Kebede & Wang, 2022). Furthermore, LOs create a reasonable learning atmosphere where individuals feel comfortable expressing their opinions (Garvin et al., 2008). In contrast, learning is essential to an organization's change process, giving it an advantage over other organizations with slower change processes (Tidd & Bessant, 2020). In addition, an alternative view of LOs as organizational settings results in the production, absorption, modification, and transmission of activities within the organization based on newly acquired commitment and sensibility (Ahmad et al., 2023). LOs, through the continuous and systematic change in organizational structure through learning, motivational policies, and practices, and with the culture of knowledge sharing, help the management for the promotion and facilitation of OIs (Chang et al., 2012; Damanpour et al., 2009; Trigo & Vence, 2012). It is argued that successful implementation of change requires higher employee motivation, commitment, and self-efficacy (Burnes & Todnem, 2012), which further produces innovative and creative activities. On the other side, a level of higher CSE is mandatory during the

developmental change process (Haqq, 2023; Zainab et al., 2021), and it can be achieved by providing an environment of motivation, counseling, coaching, and learning (Budhiraja, 2021; Giovanita & Mangundjaya, 2017; Grant, 2014). From this notion, we argue that higher self-confidence in individuals comes not only from their past experiences but also due to the supportive environment and culture of the organizations provided by the LOs (Weng et al., 2012, 2015). From the above-detailed discussion of literature, we hypothesize that:

Hypothesis 2: *CSE mediates the positive relationship between LOs and OIs.*

Moderating role of adaptive leadership

Leadership is imperative for developing an adequate and appropriate learning environment for subordinates (García-Morales et al., 2006). Leadership styles influence the individuals' opinions and beliefs that enable them to accept the changes (Rafferty et al., 2013). Effective leadership is mandatory to optimize organizational performance (Mirčetić et al., 2019). In specific, leaders should get both "opening" and "closing" attitudes and behaviors from their subordinates, where "Opening" behaviors encompass motivating employees to do things differently and try new things, enabling them to make decisions on their own, and actively supporting their attempts to challenge entrenched ways of doing things (Jia et al., 2022); whereas, "Closing" characteristics include taking corrective intervention, establishing clear rules, and monitoring goal accomplishments (Jia et al., 2022). LOs can be functionally described as an organization that encourages employee learning and undergoes continual change (Ahmad et al., 2023). Moreover, LOs demonstrate that the organization that seeks to establish its future is the one that is learning by presuming that learning is an ongoing and innovative process for its employees, that it emerged, adapts, and modifies following the requirements and expectations of individuals within as well as outside the organization (Ahmad et al., 2023), and that everyone within the organization can actively engage in continuously enhancing their abilities to produce performance both individually and collectively (Ahmad et al., 2023). LOs also necessitate leadership that promotes learning (Garvin et al., 2008) (Garvin et al., 2008), and for this, leaders should indeed have a favorable attitude toward other employees to participate in active questioning and listening (Spears et al., 2006). In contrast, Heifetz et al. (2009) explained that adaptive leaders mobilize and motivate their subordinates to manage challenging and uncertain tasks. Challenging workplace situations (i.e., changes in policies and procedures) have been observed to cause negative feelings, i.e., depression, anxiety, and distress (Netterstrøm et al., 2010; Weißenfels

et al., 2022). So, we argue that these qualities of AL give psychological strength to their subordinates in the form of higher self-efficacy towards change, resulting in higher OIs. AL mobilize the knowledge of their own and subordinates to quickly respond to the demanding and challenging situations that occur due to unprecedented change (Goode et al., 2021). Leaders analyze their activities and determinations in reaction to unexpected external occurrences and what the experience encourages them about themselves (London, 2022). Mobilization of knowledge by the AL also enhances individuals' self-efficacy to respond swiftly to changing opportunities (Castillo, 2018; Castillo & Trinh, 2019), which enhances creative and innovative activities. Moreover, in LOs, the role of leadership is much imperative for the enhancement of skills and abilities of individuals through learning and teamwork (Hansen et al., 2020; Senge, 1990), which enables the subordinates to accept the change and produce creative and innovative ideas. Therefore, adaptive leaders in the environment of LOs and by utilizing their qualities of adaptability influence the beliefs and opinions of their subordinates (Rafferty et al., 2013; Siddique, 2018), i.e., enhancement in CSE which further increases the positive outcomes of LOs, such as OIs. Adaptive leader's support also enables the subordinates to cope with the challenging working demands and crisis situations which occur during the organizational change process (González-Mendoza et al., 2022), that further leads to positive outcomes (Bakker & Demerouti, 2018), i.e., higher OIs. Based on the above-detailed discussion of literature, the present study hypothesized that AL moderates the relationship of LOs – OIs, the association of LOs – CSE, and the relationship of CSE – OIs (Fig. 1).

Hypothesis 3: *AL moderates the relationship between LOs and OIs, such that a higher level of AL strengthens the positive LOs – OIs association.*

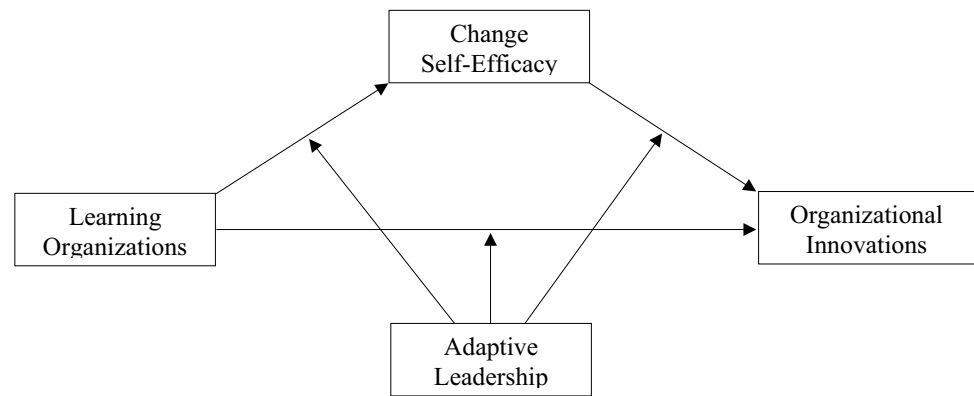
Hypothesis 4: *AL moderates the relationship between LOs and CSE, such that a higher level of AL strengthens the positive LOs – CSE association.*

Hypothesis 5: *AL moderates the relationship between CSE and OIs in such a sense that a higher level of AL strengthens the positive CSE – OIs association.*

Research design

Participants and procedure

The data for the present study was collected from the individuals working permanently in the manufacturing industry (pharmaceutical) of major cities of Pakistan (Islamabad and Karachi). The purpose behind selecting pharmaceutical organizations is that medication plays a vital role in the

Fig. 1 Proposed Research Model

healthier lives of humans and the economy (Malik et al., 2021; Yu et al., 2010). The pharmaceutical industry in Pakistan is facing different challenges, i.e., customers satisfaction, loyalty, and higher quality (Mubarik et al., 2016); these circumstances increase the importance of this industry and force the researchers to focus on the factors which influence the innovations and creativity (Griebel, 2017). Pakistan's pharmaceutical industry is vivacious and meets the country's 70% demands (Bhatti et al., 2020), and current circumstances increase the importance of innovations, especially for this industry.

It is pertinent to mention here that the Pakistani culture of uncertainty avoidance and power distance also becomes a challenge for growth and creates an environment of inconsistent learning at the workplace (Afsar & Masood, 2018; Lawrie et al., 2020), which may affect the efficacy of individuals and innovations as well. Pakistan has a high level of uncertainty avoidance, which means that people in the country tend to be more anxious about ambiguity and prefer clear rules and guidelines. Uncertain situations at the workplace psychologically force the employees to seek help from their leadership by following the organizational rules and regulations to overcome workplace uncertainty (Afsar & Masood, 2018). Due to the risky nature of innovations, employees may face inconsistency and uncertainty and need encouragement from their leadership to be on the righteous path. Moreover, it may strongly emphasize education and acquiring knowledge and skills as people seek to reduce uncertainty by gaining expertise in their respective fields (Afsar & Masood, 2018; Hofstede, 2001; Sherf et al., 2021). Overall, the impact of uncertainty avoidance on learning, especially in Pakistan, depends on how it is managed and balanced with individualism/collectivism, power distance, and masculinity/femininity (Iqbal & Rasheed, 2019).

A healthier balance can help create a positive learning environment that fosters creative thinking, organizational innovations, and efficacy. In contrast, Pakistan has a high-power distance culture (Iqbal & Rasheed, 2019), which means that people generally accept and expect an unequal

distribution of power and authority (Hofstede, 2001). In a society with a humongous power distance like Pakistan, hierarchical bureaucracies are frequently firmly established, with a distinct hierarchy of authority and a heavy focus on honoring authoritative people. The high-power distance society, on the other hand, can generate a learning atmosphere that is less suitable for creativity and innovative thinking; where individuals may be cautious to questioning existing benchmarks or speak openly about possible problems of nervousness about being seen as rude or insubordinate (Akhtar et al., 2019). This can inhibit the likelihood of introducing new ideas and techniques into the business, harming growth and development. Therefore, the authors of this study select this sample in the present study to find out the importance of learning for higher efficacy and innovation with the support of leadership, especially in the non-western cultural perspectives (e.g., Pakistan).

Furthermore, in the present study, we use a simple random sampling technique for the collection of data, as several scholars from different fields (i.e., psychology, education, and business) asserted that this sampling technique helps the researchers to minimize the biases and enhance the generalizability of the data by giving an equal chance of selection of participant from an unknown population (Cohen et al., 2018; Howitt & Cramer, 2020; Saunders et al., 2012; Sekaran & Bougie, 2010); also it saves the time and financial cost of the researchers (Sharma, 2017). To overcome the threat of common method bias (CMB), we used the temporal separation method (time lag) and collected data in two phases with an interval of one month as suggested by (Podsakoff et al., 2003; Podsakoff et al., 2012). For that purpose, we followed the method of separation of one month as indicated by different scholars (Johnson et al., 2011; Ostroff et al., 2002), where they explained the reason behind the specific one-month delay as they found 32%-43% smaller correlation between the two construct's data when it was collected without delay and with one month delay. Also, due to time constraints, we chose this one-month delay which was reasonable for

getting the respondents' opinions, rather than the 15-days or more than a month. Several scholars also asserted that temporal separation also helps the researchers to collect the actual views of the researchers about the curtail phenomenon when the data collected from a single source and self-reported (Naseer et al., 2016; Syed et al., 2022); as it is difficult for the humans to recall the exact answers of the similar questions from their short memory (Podsakoff et al., 2012). Moreover, we also performed a single-factor analysis suggested by Harman (1967) for the detection of CMB and found a 26.292% cumulative value less than the recommended threshold of 50%. Additionally, to check the appropriateness and accuracy of data, we performed KMO (Kaiser Meyer-Olkin) and Bartlett's Test, and the values for $KMO = 0.868$, which is found marvelous as per suggestions of Hair et al. (2010) and the value of Bartlett's Test of Sphericity was significant where $p < 0.001$.

We use close-ended questionnaires to collect opinions from the participants about different phenomena discussed in this study and to test the proposed research model and hypotheses. Furthermore, we measure the perceptions of individuals about the phenomenon discussed in this study by following the earlier studies (Abbas et al., 2020; Adel Odeh et al., 2021; Ali et al., 2020; Cik et al., 2021; Hussain et al., 2022). Participants were contacted through the respective HR/Administration departments of pharmaceutical organizations, and the objective and purpose of the study were briefed to the respective HR manager and participants of the survey before the distribution of survey questionnaires. Additionally, the confidentiality of the participants' opinions was also assured to them. In the first phase (T_1), 700 survey forms were distributed to get the opinions of participants about predictor variable (LOs) and mediating variable (CSE); 550 survey forms were received at the end of the first phase; in the second phase (T_2) survey forms were distributed to those employees who participate in the first phase for the collection of their opinions about moderating variable (AL) and a criterion variable (OIs); and 373 survey forms were considered correct for the further statistical analysis. Thus, the response rate was 53.29%. Different statistical analysis was performed using various statistical software, i.e., SPSS (v. 25), AMOS (v. 22), and Smart-PLS (v. 3). SPSS is effective for statistical analysis, especially in the social sciences (Zheng et al., 2017) and correlations, direct, indirect and statistical moderation analysis were performed through SPSS. In contrast, CFA (confirmatory factor analysis) was performed using AMOS statistical software, through which the researchers used modification indices to optimize the model fit chi-square by try drawing a correlation feature between the variables examined (Tshuma et al., 2017).

Whereas discriminant validity analysis (HTMT, Blindfolding, and Fornell and Larker) was performed using Smart-PLS, which is also used to test the complex relationships between variables using different structural models in a very particular way; also, this method is helpful for samples of small data (Hair et al., 2017).

Measurement scales

Measurement scales used in the present study were adopted from the previously published studies, and all scales were assessed on a 5-point Likert scale '1-strongly disagree' to '5-strongly agree' by following the earlier studies (Armenakis et al., 1993; Jansen et al., 2006; Northouse, 1997; Song et al., 2009). Moreover, the five-point Likert scale is beneficial for the researchers to measure the perceptions, opinions, and attitudes of the individuals during the operationalization of the construct (Hair et al., 2010); also, this type of scale meets the assumptions of normal distribution of data and easy interpretation of results with limited response options. Using a five-point Likert scale, it is possible to conduct an item-by-item analysis of replies to a set of questions that all touch on the same topic or variable or to get a total or summed score for each respondent by adding across questions (Sekaran & Bougie, 2010). All items of the scales were in English, as the mode of education in Pakistan from schooling to university is English (Naseer et al., 2020). Moreover, in Pakistan, the official and corresponding language in public and private offices is English (Syed et al., 2022), and most of the participants fall in the educational category of graduation who are familiar with the English language.

Learning organizations

Perceptions of individuals were assessed using a 13-items scale by Marsick and Watkins (2003). Individuals were asked to provide opinions on how they perceive their organizations as LOs. Cronbach alpha of this scale is 0.90. A sample item of this scale is "In my organization, people are given time to support learning."

Change self-efficacy

Was assessed by adopting the 6-item scale of Holt et al. (2007). Individuals were asked to give their opinions about the self-confidence behaviors they demonstrated in the last year. Cronbach alpha of this scale is 0.90. A sample item of this scale is "My past experiences make me confident that I will be able to perform successfully after this change is made."

Table 1 Demographics

Category		Frequency	Percent
Gender	Male	235	63.00%
	Female	138	37.00%
Age (in Years)	26–35	58	15.55%
	36–45	228	61.13%
	46–55	9	2.41%
	More than 56	1	0.27%
Education	Bellow Than masters	288	77.21%
	Above than Masters	85	22.79%
Experience (in Years)	1–10	269	72.12%
	11–20	96	25.74%
	More than 20	8	2.14%

Adaptive leadership

Perceptions of subordinates were measured using a 15-items scale of Northouse (2019). Individuals were asked to give their opinions about the leaders considering their behaviors/attitudes in the last year. The Cronbach alpha of this scale is 0.90. A sample of this scale is “In complex situations, my leader gets people to focus on the issues they are trying to avoid.”

Organizational innovations

Were measured using the 6-item scale for each dimension of innovation (exploitative and explanatory) adopted from Jansen et al. (2006). Individuals were asked to give their opinion considering the innovational policies of the last year. Cronbach alpha of this scale is 0.90. Sample items of

this scale are “My organization invents new products/services”; “My organization improves provision’s efficiency of products/services.”

Results

Demographics details

Table 1 shows the demographic details of employees voluntarily participating in the present study.

Confirmatory factor analysis and validity statistics

Table 2 illustrate the CFA values calculated through AMOS, and according to the values shown in the table, full model measurement indicators (Chisq/df, GFI, AGFI, CFI, TLI, NFI, RMR, and RMESA) meet the acceptable ranges as suggested by (Brown & Moore, 2012; Hair et al., 2016; Hu & Bentler, 1999) which shows the good fit of the model. Moreover, Table 3 shows the discriminant values calculated using Smart-PLS statistical techniques. Values of Q2 follow the threshold (above zero) Hair et al. (2016) suggested. Additionally, the values of discriminant validity meet the threshold criteria (the diagonal values should be higher than the other values), as Fornell and Larcker (1981) suggested. Finally, the HTMT (Heterotrait-Monotrait Ratio) values are also following the threshold (less than 0.90 or 0.85) as suggested by Henseler et al. (2015). Values of Table 4 are about the validity and reliability statistics and following the minimum threshold, where values of CR (composite reliability) are above than .700 and values of AVE (average variance extracted) are above .500, as suggested by Hair et al. (2016) (Fig. 2)

Table 2 Confirmatory Factor Analysis

Acceptable Range	1–3	> .90	> .80	> .90	> .90	> .90	< .09	< .08
Measurement Indicators	CMIN/DF	GFI	AGFI	CFI	TLI	NFI	RMR	RMESA
LOs, CSE	2.30	.87	.84	.91	.90	.85	.11	.06
LO, OIs	2.40	.90	.80	.85	.89	.90	.08	.05
LOs, AL	3.57	.78	.74	.90	.88	.86	.14	.08
AL, OIs	2.69	.85	.79	.90	.83	.90	.08	.07
AL, CSE	4.24	.81	.75	.93	.82	.91	.13	.09
CSE, OIs	2.53	.81	.77	.92	.85	.84	.09	.06
LOs, CSE, OIs	2.80	.88	.80	.90	.984	.89	.09	.05
LO, CSE, AL	2.91	.78	.74	.90	.89	.86	.12	.07
LO, AL, OIs	2.53	.78	.75	.90	.89	.85	.12	.06
CSE, AL, OIs	2.71	.81	.77	.93	.92	.89	.11	.07
Full Model	1.88	.92	.90	.96	.95	.91	.07	.05

LOs; learning organizations, CSE; change self-efficacy, AL; adaptive leadership, OIs; organizational innovations

Table 3 Discriminant Validity

Variables	Q2			Q2 (1-SSE/ SSO)
	SSO	SSE		
LOs	4849.000	4849.000		
CSE	2238.000	2144.198		.042
AL	5595.000	5595.000		
OIs	4476.000	4053.863		.094
Discriminant Validity (Fornell-Larker Criterion)				
	LOs	CSE	AL	OIs
LOs	.520			
CSE	.241	.510		
AL	.508	.310	.523	
OIs	.170	.483	.291	.559
Discriminant validity (HTMT)				
	LOs	CSE	AL	OIs
LOs	-			
CSE	.252	-		
AL	.442	.304	-	
OIs	.161	.467	.275	-

LOs; learning organizations, CSE; change self-efficacy, AL; adaptive leadership, OIs; organizational innovations

Descriptive statistics and correlations

Table 4 shows the descriptive statistics and correlations of the all-study variables, where LOs positively and significantly linked with CSE ($r=0.25^{**}, p<0.01$), with AL ($r=0.48^{**}, p<0.01$), and with OIs ($r=0.24^{**}, p<0.01$). CSE significantly and positively associated with AL ($r=0.21^{**}, p<0.01$) and OIs ($r=0.42^{**}, p<0.01$) and AL significantly and positively linked with OIs ($r=0.13^{**}, p<0.01$). The reliability statistics shown in parentheses which are also as per the threshold limit (0.80–90) as suggested by Sekaran and Bougie (2010).

Model testing

Direct and indirect effect analysis

Values of direct and indirect effects, as shown in Table 5, are calculated through the PROCESS-macro using the

bootstrapping method with 5000 samples, as Hayes (2018) suggested. The first three rows reveal the values of direct effects where LOs have a positive direct impact on OIs ($b=0.14, SE=0.06, t=2.58, p<0.001, LL-UL\ CIs=0.03/0.25$) and on CSE ($b=0.24, SE=0.05, t=4.85, p<0.001, LL-UL\ CIs=0.14/0.34$); and, CSE has also a positive influence on OIs ($b=0.40, SE=0.06, t=6.10, p<0.001, LL-UL\ CIs=0.27/0.52$); therefore, these results support H1 of this study.

Moreover, values of total and indirect effects, as shown in Table 5 calculated through the PROCESS-macro using the bootstrapping method with 5000 samples, as suggested by Hayes (2018). The total effects are positive and significant ($b=0.24, SE=0.05, t\text{-value}=4.46, p<0.001, LL-UL\ CIs=0.13/0.34$), indirect effects of CSE between the relationship of LOs – OIs are also significant and positive ($b=0.10, SE=0.03, LL-UL\ CIs=0.08/0.20$) which shows a partial mediation of CSE; moreover, the researcher also conduct Sobel (1982) test for the authentication of mediation effects which are also positive and significant ($b=0.10, SE=0.03, z\text{-value}=3.76, p<0.001$) thus, these findings support H2 of the present study.

Moderation analysis

Table 6 shows the values of interactive (LOs x AL) effects on criterion variable (OIs), which are calculated through PROCESS-macro by following the bootstrapping method with 5000 samples as recommended by Hayes (2018). The first portion of Table 6 reveals that LOs have a significant influence on OIs ($b=0.35, SE=0.08, t=4.69, p<0.001, LL-UL\ CIs=0.21/0.50$), AL significantly influencing the OIs ($b=0.12, SE=0.08, t=2.23, p<0.05, LL-UL\ CIs=0.14/0.18$), and interaction (LOs x AL) also positively and significantly affect the OIs ($b=0.14, SE=0.06, t=2.31, p<0.05, LL-UL\ CIs=0.12/0.25$); thus, these findings support H3 of the study. Furthermore, the second portion of Table 6 reveals that CSE influencing significantly OIs ($b=0.50, SE=0.05, t=9.14, p<0.001, LL-UL\ CIs=0.39/0.60$), AL significantly impacting on OIs ($b=0.10, SE=0.06, t=2.71, p<0.01, LL-UL\ CIs=0.14/0.26$), and interaction (CSE x AL)

Table 4 Descriptive Statistics and Correlations

Variables	Mean	SD	CR	AVE	rho_A	1	2	3	4
1 LOs	3.66	.75691	.90	.52	.90	(.90)	.25**	.48**	.24**
2 CSE	3.76	.71978	.86	.50	.86		(.89)	.21**	.42**
3 AL	3.79	.72093	.93	.51	.95			(.91)	.13*
4 OIs	3.68	.84375	.90	.57	.92				(.90)

LOs; learning organizations, CSE; change self-efficacy, AL; adaptive leadership, OIs; organizational innovations, ** $p<.01$, * $p<.05$

The bold parenthesis represents the alpha values of the variables

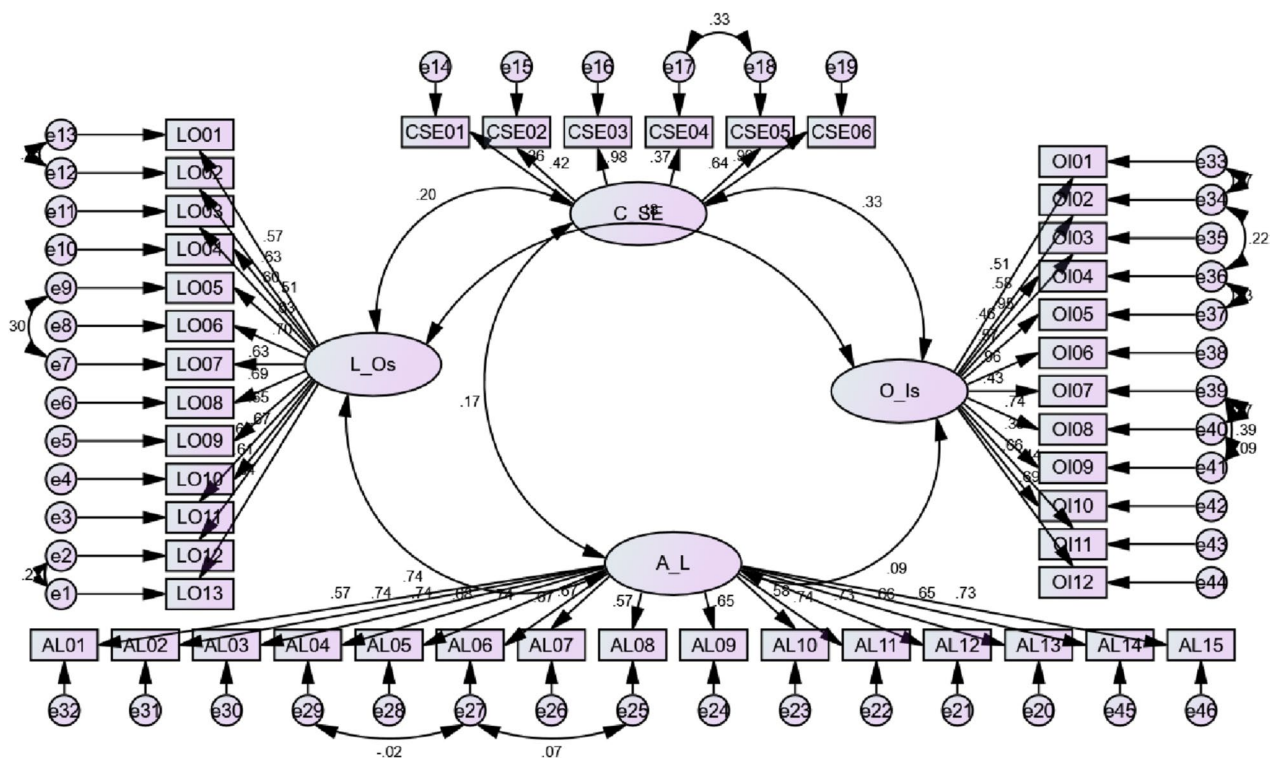


Fig. 2 Confirmatory Factor Analysis

also positively and significantly affect the OIs ($b = 0.29$, $SE = 0.07$, $t = 4.04$, $p < 0.001$, LL-UL CIs = 0.15/0.43); thus, these findings support H4 of the study. Additionally, values in the third portion of Table 6 show that LOs significantly affecting the CSE ($b = 0.20$, $SE = 0.07$, $t = 3.07$, $p < 0.001$, LL-UL CIs = 0.17/0.33), AL significantly impacting on OIs ($b = 0.08$, $SE = 0.07$, $t = 2.08$, $p < 0.05$, LL-UL CIs = 0.16/0.22), and interaction (LOs x AL) also positively and significantly affect the CSE ($b = 0.02$, $SE = 0.05$, $t = 2.44$, $p < 0.01$, LL-UL CIs = 0.08/0.12); thus, these findings support H5 of the study.

Table 5 Direct and Indirect Effect Analysis

Relationships	Coeff	SE	t-value	LL-CI	UL-CI
Direct Effects					
LOs → OIs	.14***	.06	2.58	.03	.25
LOs → CSE	.24***	.05	4.85	.14	.34
CSE → OIs	.40***	.06	6.10	.27	.52
Mediation Effects					
Total Effects	.24***	.05	4.46	.13	.34
Indirect Effects (LOs → CSE → OIs)	.10***	.03		.08	.20
Normal Theory test	.10***	.03	3.76		
			(z-value)		

LOs; learning organizations, CSE; change self-efficacy, AL; adaptive leadership, OIs; organizational innovations, UL/LL-CI; upper and lower-level class interval; *** $p < .001$, ** $p < .01$, * $p < .05$

Moderation slope

The moderation slope was drawn by adding the values of ± 1 mean and S.D, which shows in Fig. 3, verifying the interaction term (LOs x AL) effects on OIs, which explains that when the perception of individuals about LOs was higher, and the role of AL was also higher, it becomes the cause of higher CSE of individuals. Moreover, the moderation slope shown in Fig. 4 explains that when the perception of individuals about LOs was at a higher level, and the AL role was also higher, it further led to a higher level of CSE. Finally, Fig. 5 explains that individuals' higher CSE and higher role of AL resulted in higher OIs.

Discussion

By utilizing the theoretical lens of SST (DiMaggio, 1997; Moscovici, 1982) and SCT (Bandura, 1986), this study aims to test the direct influence of LOs on OIs; further, the weexamine the intervening role of CSE between LOs – OIs relationship; additionally, we also investigate the moderating role of AL between LOs – OIs association, between LOs – CSE relationship and between the association of CSE and OIs. The current study's first hypothesis predicted that LOs positively linked with OIs; the findings of this study proved this hypothesis; further earlier studies also support

Table 6 Interactive Effects Analysis

Moderation Effects (<i>LOs x AL</i> → <i>OIs</i>)					
Relationships	Coeff	SE	t-value	LL-CI	UL/UL-CI
Constant	3.63***	.05	77.20	3.54	3.72
LOs	.35***	.08	4.69	.21	.50
AL	.12**	.08	2.23	.14	.18
Interaction (<i>LOs x AL</i>) → <i>OIs</i>	.14**	.06	2.31	.12	.25
Moderation Effects (<i>CSE x AL</i> → <i>OIs</i>)					
Constant	3.65***	.04	94.11	3.57	3.72
CSE	.50***	.05	9.14	.39	.60
AL	.10**	.06	2.71	.14	.26
Interaction (<i>CSE x AL</i>) → <i>OIs</i>	.29***	.07	4.04	.15	.43
Moderation Effects (<i>LOs x AL</i> → <i>CSE</i>)					
Constant	3.75***	.04	92.17	3.67	3.83
LOs	.20***	.07	3.07	.17	.33
AL	.18**	.07	1.08	.16	.22
Interaction (<i>LOs x AL</i>) → <i>CSE</i>	.12**	.05	2.44	.08	.12

LOs; learning organizations, *CSE*; change self-efficacy, *AL*; adaptive leadership, *OIs*: organizational innovations, *UL/LL-CI*; upper and lower-level class intervals; ****p* < .001, ***p* < .01, **p* < .05

the acceptance of this hypothesis (Adam et al., 2020; Allouzi et al., 2018; Hansen et al., 2020). The findings of this study further explain that the culture of LOs provides a platform

of learning to individuals and organizations through sharing of information and knowledge, effective communication, and feedback, which enables the employees to think innovatively. Moreover, the culture of LOs provides opportunities for decision-making by using the tools of debate, learning, and discussion (Ghasemzadeh et al., 2019; Gil et al., 2018), which enables the organizations to higher innovations. The study’s second hypothesis predicted that CSE mediates the LOs and OIs association; the results support this hypothesis; additionally, the earlier studies also evidenced the acceptance of this hypothesis (Alameri et al., 2019; Hu & Zhao, 2016; Wang et al., 2018). The findings enlighten that LOs, by providing a culture of empowerment, feedback, information, and knowledge sharing, enhance the CSE level through which individuals boost OIs. Moreover, the atmosphere of learning (through debate and discussion) increase the level of confidence of employees when they share their knowledge, and when found similarity of knowledge with others, it enhances their self-confidence (Haqq, 2023; Zainab et al., 2021). In contrast, when employees feel confident about their abilities to tackle the uncertain circumstances of organizational change, they convert these situations of complexity into challenges, especially in the culture of LOs, which enables them to generate new and novel ideas (i.e., OIs). This study’s third hypothesis predicted that AL moderates the LOs and OIs relationship, and the findings also proved this hypothesis. The findings further explain that a higher-level perception of individuals about the LOs with

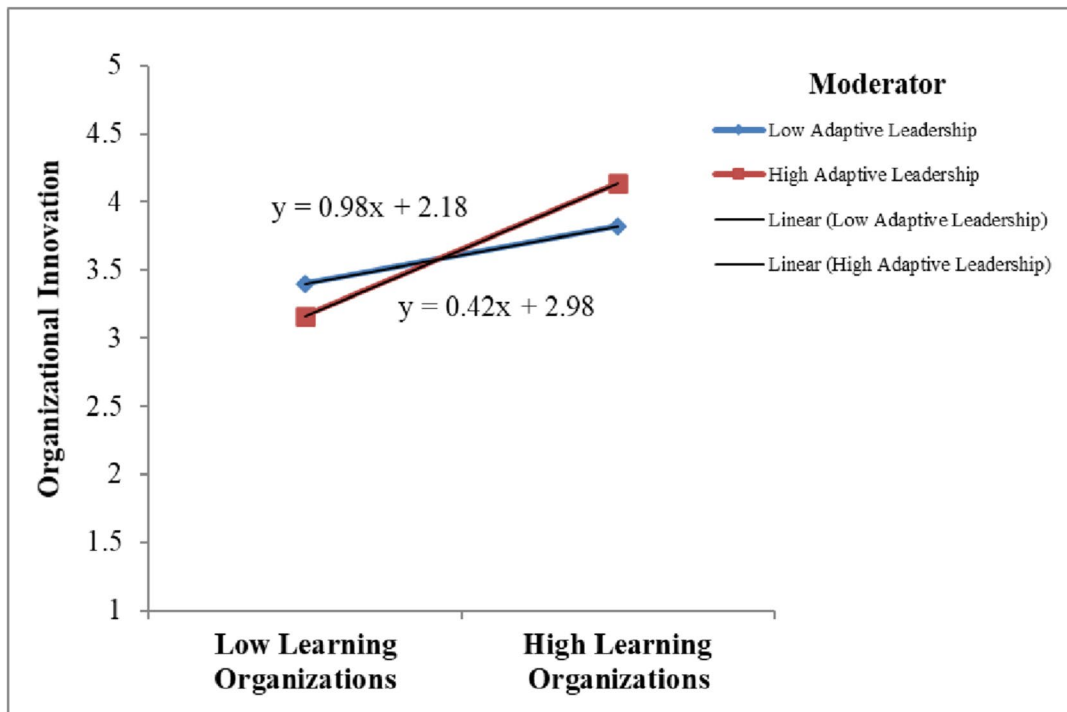


Fig. 3 Interaction Slope (*LOs x AL* → *OIs*)

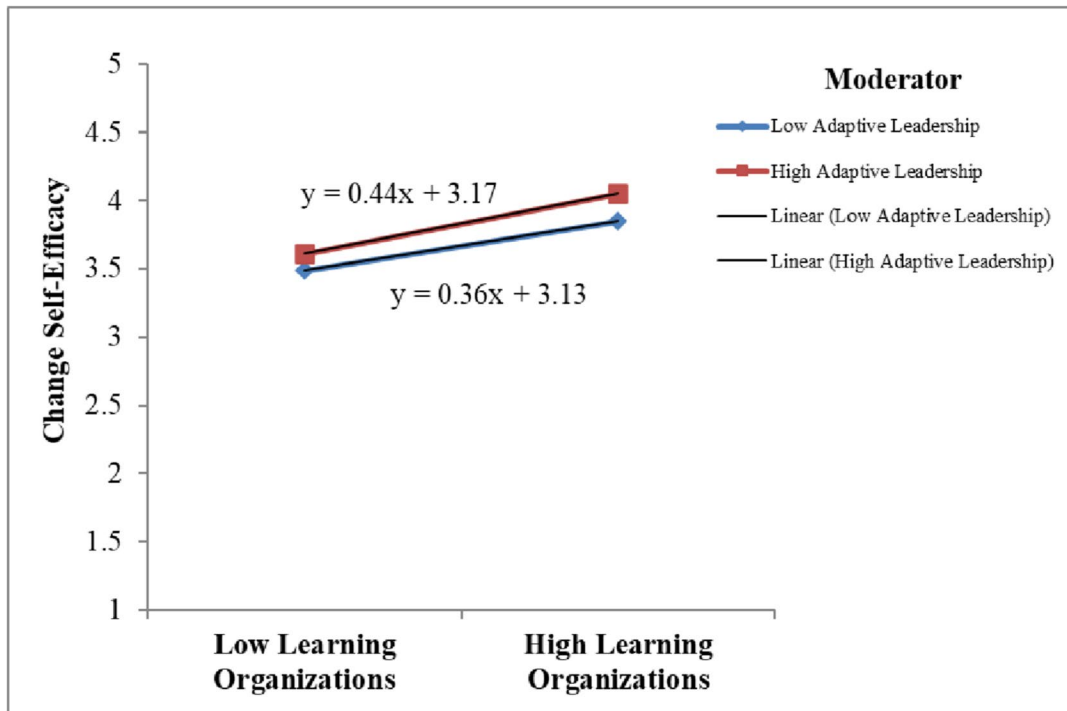


Fig. 4 Interaction Slope (LOs x AL → CSE)

the higher support of AL enables them to produce higher OIs (Goode et al., 2021). Moreover, leadership directly influences the capacity for innovation and facilitates the

organizations for innovations through learning. So, the culture of LOs, where learning is a main component of culture, provides to the employees systematically, and the support

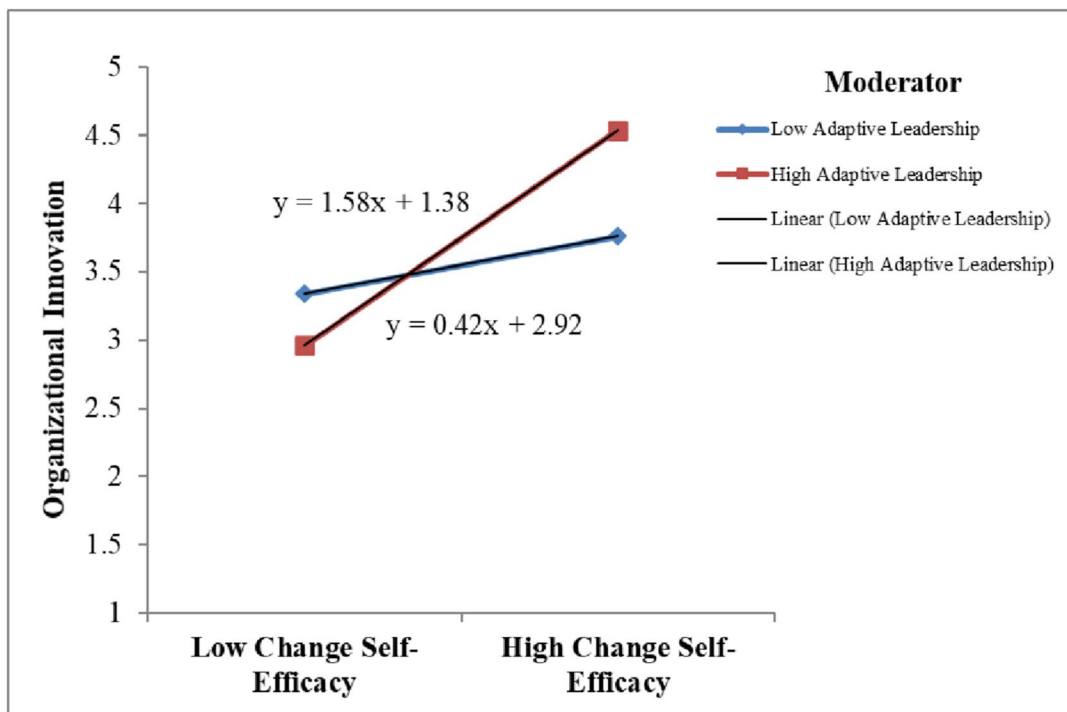


Fig. 5 Interaction Slope (CSE x AL → OIs)

of leadership, especially of AL, enables them to produce positive outcomes, i.e., OIs. The fourth hypothesis proposed that AL moderates LOs and CSE association, and the findings support this hypothesis. These results further elaborate that when individuals were at their higher level of learning, organization perception and support of AL was also higher, enhancing their CSE level (Castillo, 2018; Haqq & Natsir, 2019a, 2019b). A good leader's major characteristics are inspiring subordinates through motivation, encouragement, and care and shielding them, especially in uncertainty and ambiguity. In contrast, leaders with adaptive qualities motivate their followers/subordinates to welcome new things, increasing their confidence in decision-making and dealing with challenging situations. Also, the atmosphere of LOs through learning and with the support of leadership (i.e., AL) enhances the self-confidence level of employees for the successful implementation of organizational change. The final hypothesis predicted that AL moderates the CSE and OIs relationship, and the findings support this hypothesis. These findings further enlighten that individuals' higher level of CSE with the higher support of AL leads to higher-level OIs. Previous studies also support this hypothesis (Fatima et al., 2020; Haqq & Natsir, 2019a, 2019b; Imran & Iqbal, 2021) by explaining the vital role of AL, which not only enhances the self-confidence level of the individuals in the form of CSE but also these leaders support the individuals for the enhancement of their self-efficacy towards change (Acevedo & Diaz-Molina, 2022), that enables them to accept the challenges which occur during the process of change and avail the opportunities which further led to OIs. Moreover, successfully implementing organizational change strategies requires the workforce to positively welcome the change in policies, procedures, and practices and support the process until its completion. The support of leadership to the confident employees also becomes the cause of the higher level of OIs. The results of this study highlight the importance of AL as this leadership is imperative for the successful process of change in the form of implementing new policies or modifications in the current process and procedures (Castillo, 2018; Goode et al., 2021). By utilizing the tool of motivation encouragement and giving credit for success to their team members, these leaders enhance their self-confidence about accepting challenges and opportunities obligatory for OIs (Castillo & Trinh, 2019; McCollum & Shea, 2018).

Theoretical implications

Theoretically, the present study contributes to the knowledge of leadership, organizational behavior, and positive psychology; the present study highlights the importance of CSE for OIs, especially in the context of LOs. This study also points out that the cognitive level of employees (Bandura, 1986) is

imperative for fulfilling complex tasks, especially during the change process. By explaining the mediating role of CSE, this study adds knowledge to the SCT (Bandura, 1986), which demonstrates that individuals' feelings, thinking, and motivation influence their behaviors. The LOs culture, where sharing knowledge, learning, debate, effective communication, feedback, discussion, and empowerment increases the motivation level of employees through which they feel confident to face challenging situations and resultantly able to think new ideas, which leads to higher OIs. The present study also highlights the importance of LOs as a successful tool to meet the sustainability and competitive advantage in the circumstances of rapid organizational change; systematic learning in LOs culture enables organizations and individuals to minimize the pressure of high competition with CSE. The present study adds knowledge to SST (DiMaggio, 1997; Moscovici, 1982) by explaining the role of adaptive leaders for higher CSE and OIs. SST explains that employees' perceptions about the change can be altered with the support of motivation, and it has been proven that adaptive leaders hold this leadership quality by increasing the cognitive level of employees and innovations. In contrast, the culture of LOs also further explains the lens of SST that learning and sharing of knowledge and information also increase the confidence level of individuals when they feel the similarity of knowledge with others.

Managerial implications

Empirically this study provides suggestions to the policy-makers; first, top management, step by step, implements the concept of LOs in the organizations for higher productivity and innovation as this concept cannot develop overnight (Matic & Juras, 2018). Moreover, to develop LOs culture in the organizations, management must encourage learning, debate, and discussion, increasing the employees' knowledge. Secondly, during the recruitment process, organizations must evaluate the self-efficacy level of the candidates in the circumstances of change (uncertainty and complexity); this step helps the organizations for the smooth implementation of change policies and strategies. Third, organizations also arrange seminars and training sessions for the workforce to increase the awareness of CSE and provide assistance and guidance on enhancing it. Fourth, this study also highlights the importance of AL, as these leaders adapt and learn new things and motivate and encourage their subordinates. Therefore, organizations must arrange training sessions for middle and line management to enhance their leadership qualities as these positions, especially in the manufacturing industry, work as a backbone during the manifesting of goods from raw-material to final goods. This study also enlightens that for the sustainability of the organization, the role of innovation is much imperative, which can be attained

with the support of positive leadership attitudes/behaviors with the subordinates, which boosts the self-confidence of the employees for the solution of complex problems at the workplace that occur due to organizational change. Finally, this study also highlights the importance of LOs culture, through which organizations enhance the workforce's skills, knowledge, and abilities as in these organizations learning process occurs systematically, enabling the employees to respond positively when uncertain change occurs.

Future research and limitations

The present study has some limitations and new avenues for future researchers. First, the present study uses the aggregate scale of LOs it is suggested that future researchers use the dimensional scale of LOs. Second, data for this study is self-administered and from a single source (employees); it is suggested that it would be to collect data from the leaders to collect their perceptions about the LOs. Third, the data for the present study was collected from the manufacturing industry of a developing economy; it would be interesting to generalize the results of the current study to collect data from other industries, i.e., the corporate sector and the public sector. Fourth, the present study is conducted in a developing economy; future researchers may replicate this model in other organizational and regional contexts. Fifth, in this study, CSE was used as an intervening variable; it is suggested that future researchers may use self-leadership and knowledge management practices as mediating variables to enhance innovations and creativity in LOs. Sixth, we use leadership style (adaptive leadership) to improve the motivational level of employees in the form of CSE; it would be reasonable for future researchers to test another moderator, i.e., psychological safety climate and motivational readiness or other leadership styles (i.e., agile leadership, responsible leadership, and change-oriented leadership) with different outcomes.

Conclusion

The present study provides an understanding of LOs for higher OIs. Also, this study enlightens the CSE that a cognitive appraisal facilitates the organizations' achievement and advancement of OIs. This study also highlights the importance of leadership in promoting CSE and OIs. Moreover, this study emphasizes that organizations utilizing the phenomenon of LOs (i.e., learning, debate, sharing of knowledge, discussion, feedback, and effective communication) increases the CSE of the workforce, which is necessary for OIs, especially in the circumstances of highly globalized competition. Leaders who are willing to learn and adapt to new things and possess the ability to motivate, direct,

and pay attention to their subordinates. The present study unpacks the moderating role of AL in enhancing the CSE of employees and OIs in the cultural context of LOs. This study also contributes knowledge to the social schema theory and the social cognitive theory by explaining the relationship between the variables.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s12144-023-04669-z>.

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Data availability The dataset generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics statement The research was approved by the Institutional Ethics Committee, Faculty of Management Sciences, International Islamic University, Islamabad. The procedures followed in the study adhere to the ethical standards of the Helsinki Declaration of 1975 and its later addenda.

Informed consent Informed consent was obtained from all participants included in the present study.

Conflict of interest All the authors declare that they have no conflict of interest.

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