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**Impact of Leader Openness on
Project Performance with
Mediating Role of Project
Innovativeness and Moderating
Role of Technical Knowledge**

by

Amreen

A thesis submitted in partial fulfillment for the
degree of Master of Science

in the

**Faculty of Management & Social Sciences
Department of Management Sciences**

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This thesis is dedicated to my parents, my husband and my respected teacher



CERTIFICATE OF APPROVAL

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Abstract

The purpose of this research is to discover how Leader Openness influences Project Performance via the mechanism of Project Innovativeness. The study also investigates whether Technical Knowledge moderated Leader Openness between Project Innovativeness. Data were gathered from 277 employees working in project-based organizations (IT sector) in Rawalpindi/Islamabad. SPSS was used to analyze the data, which included correlation and regression analysis. The findings indicated that Leader Openness had a positive impact on Project Performance. On an organizational level, specific guidelines are presented to understand how Leader Openness affects Project Performance within the organization. According to the findings, Leader Openness and Project Innovativeness have a significant impact on Project Performance. Future research can investigate the effect of Leader Openness on Project Performance by including other variables as mediators and moderators in this relationship. This thesis concludes with a discussion of the empirical and theoretical implications, as well as Limitations.

Keywords: Leader Openness; Technical Knowledge; Project Innovativeness; Project Performance.

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Chapter 1

Introduction

1.1 Background of Study

For centuries, a number of researchers have been working on Leadership. Leadership has been extensively debated, documented about, and practiced by many people, which include, (Bass & Steidlmeier, 1999; Yukl, Gordon, & Taber, 2002) and there are still many dimensions that have yet to be discovered. Leadership can be viewed as a distinct significant element of project success, especially in project-based organizations with scarce resources. The project needs to be delivered in a defined period (Dwivedula, Bredillet, & Müller, 2016).

Leadership is thought to be both directly linked to innovation through its extensive influences on the entire company's operation, and also indirectly associated to innovation by creating a positive favorable atmosphere to innovative thinking and creativity (Guan et al., 2019). One of the most crucial elements of organizational leadership is to influence the standard, thinking, and behavioral standards that employees possess (Verburg, 2019). Team members mostly become uneasy to manage and understand the structure of the organization and as a result; the managers are clueless about the thinking of their subordinates (Bolman & Deal, 2017).

Several findings from studies show that external forces such as leadership style can enhance innovative behavior (Pramono et al., 2020). According to some studies,

leadership style has a significant impact on innovative work behavior ([Waruwu et al., 2020](#)). Based on the foregoing, Leader Openness is a vital part of leadership to implement in an organization. Leadership style can encourage staff to enhance their performance at work and foster a positive atmosphere at work. Innovative work behavior leads to job satisfaction, and employee confidence in their leader will encourage them to provide feedback to the leader and company ([Hutagalung et al., 2020](#)).

As a significant personality trait, "Openness to Experience" entails being receptive to new ideas, concepts, and points of view while also being ready to participate actively in a broad variety of activities. Leader's openness to a project is particularly interesting due to the fact that it is time sensitive and the leader role becomes more important when the project is dynamic or when the project goals are not clearly defined. Organizations need both innovation and creativity to thrive, and the two reinforce one another ([Hong, Hou, Zhu, & Marinova, 2018](#)).

Presumably, each employee can drive innovation and optimize their working ability by developing such fresh and innovative ideas that can result in successful organization. It will be difficult to accomplish and innovate if one cannot keep up with the changes in the new era. Employees play an important role in company's growth, according to experts ([Yuwono, Wiyono, Asbari, Novitasari, & Silitonga, 2020](#)). Also, Employees who have a high level of openness to experience actively evaluate, advocate for, and adopt new idea.

Nonetheless, not all staff members are capable of engaging in innovative work behavior, which reduces their work performance ([Asbari et al., 2020](#); [Hutagalung et al., 2020](#); [Sopa et al., 2020](#)). Based on the issues raised, it is clear that when an employed person or organization is unable to innovate, their performance of the company suffers. Employees' innovativeness is also crucial for the company and organization to have a versatile business, according to some researchers ([Ganguly, Talukdar, & Chatterjee, 2019](#); [Hartley & Rashman, 2018](#); [Kaabi, Elanain, & Ajmal, 2018](#); [Khalili, 2016](#)).

Project teams (such as IT project teams) have a dynamic environment with some degree of interdependence (customer requirements that require creative results and are pressured to deliver results faster). Work with (changes in). It raises

challenges in adopting appropriate leadership behavior to achieve project performance (Maaroufi & Asad, 2017). At the same time, project leaders strive to drive innovation, identify opportunities and take risks. Leadership has a very important relationship to the performance of a project and is an important aspect that influences openness and innovation (Kim, Park, & Miao, 2017).

Novelty is not meaningless, but it is required for 21st-century organizations to maintain their competitive edge (Kremer, Villamor, & Aguinis, 2019). To instill innovation, leaders need to redesign organization's resource base, including information about new products, services, processes, technologies, and business models, to improve the organization's ability to innovate projects (Sankowska & Paliszkiwicz, 2016). Some organizations use customer feedback, while others use new knowledge and technology to generate new ideas and amazing insights. These are always important for advancing project innovation and building unique product characteristics and motivations for future projects (Mahr, Lievens, & Blazevic, 2014).

IT teams, particularly those involved in operating system development, are subject to regular changes in customer needs or can generally use a scrum-like technique (e.g., agile development) for efficient and powerful task results and performance (Schwaber & Beedle, 2002). These are limited but inter - dependent teams that discuss responsibilities. It moreover requires comprehensive learning and Leader Openness, as an individual might not even possess all of the expertise needed to finish an activity. The same applies to unity. That is, how close the team members are with each other and how grateful they are for the solidarity of each other and the managers (Shariff et al., 2014).

Current research is trying to understand why Leader Openness adds innovation features to IT projects and ultimately contributes to project performance. In addition, to better understand the theory, the whole research furthermore enables professionals by emphasizing the value of people in highly complicated (especially IT) projects that operate in changing environments (Nguyen, Killen, Kock, & Gemünden, 2018). This study, with dataset from the IT sector of Islamabad in Pakistan, highlights the key factor - openness of the leader - project innovation and

technical knowledge as success factors important in the performance of a project (Goffnett, 2020).

Achieving performance and success is prime concern for a project leader, performance in a project means that particular needs of stakeholders are met under the defend timelines, budget, cost and resources (Pmi, 2004). Project performance is defined as generating results that are better than anticipated in the areas of scope, value, cost, dependability, and security, and meeting the needs of stakeholders (Ashley, Lurie, & Jaselskis, 1987). When it comes to project there is no specific definition of performance; somewhat, subjective measures that are meaningful to every stakeholder associated with the project (Pollanen, Abdel-Maksoud, Elbanna, & Mahama, 2017).

Nowadays, all organizations compete in a complex and challenging environment that is being shaped by numerous factors such as globalization, hyper-competition, innovations, information technological advancement, and virtualization. To survive and thrive in these new environments, organizations must think and act differently. That is why the majority of them are looking for new ways to gain a competitive advantage. The electronic world we live in today will become an even more crucial component of our workplace and leisure lives. We will communicate with this stream of electronic data in order to improve our personal and professional lives (Levy, 2018). Often these operating system / software / website development tasks involve a higher degree of innovation terms of structure as well as functionality. This can be accomplished by increasing leadership openness (Vallaster, 2004).

Innovation is often considered synonymous with technological development involving new or improved products or processes. As a result, other types of innovation such as organizational or brand innovation were ignored (Radicic & Djalilov, 2019). Project innovation is considered the potential for an organization to engage in innovative activities, often such as the introduction of new or upgraded commodities and services, new procedures, or latest methods to enhance project performance (Ratchukool & Igel, 2018). As a result, these forward-thinking companies routinely integrate product design but also engage in innovation activities which enhance the effectiveness of innovative products, technologies, as well as processes.

Organizations are said to strive for worldwide excellence through the innovation (X. Yuan, Guo, & Fang, 2014), as well as the company's growth momentum enables it to constantly transform and modify in a volatile market environment. Furthermore, project innovation was already consistently stated to be a significant source of improved business outcomes and performance (Kalyar & Rafi, 2013; Sankowska & Paliszkievicz, 2016). Innovation capabilities enable organizations to continually innovate to adapt to the changing market environment (Slater, Hult, & Olson, 2010) and it is also incorporated into all strategies, systems and structures that support organizational innovation (Gloet & Samson, 2016).

Innovative workplace behavior is defined as "the deliberate creation, introduction, and application of new ideas in the workplace as working in a group, or organization or as an individual to benefit the group, the organization or role performance" (Karatepe, 2011). This behavior starts with three stages of innovation; name as Generation of ideas, harvesting ideas, developing and implementing the ideas (Rabia, Tahir, & Afsheen, 2010). The development and use of knowledge are two of the most important parts of the innovation process.

In the project innovation process, it is hard to overstate the importance of new information and knowledge. Knowledge does not guarantee financial success on its own. The importance of information is judged by its ability to affect the broader audience. The effective implementation of innovations must have robust and efficient interactions between technical knowledge and operational processes. According to Schumpeter, to be deemed innovative, something must first be made and then utilized or marketed efficiently in the marketplace to be called creative (Shujahat et al., 2019). The ability of a company to innovate is a decisive factor in its competitive advantage in a highly turbulent market environment.

The several experts agree that industry and service development differs from production innovation (Drejer, 2004) and is frequently viewed as not technical (J. P. De Jong & Den Hartog, 2007). Service sector innovation generally considers two factors: the introduction of entirely new services for enterprises or people, as well as restructuring or improving the current facilities (Miles, 2008) whether completely rather than gradually. Project innovation only occurs if the company has the ability to innovate. The project's innovation capabilities are seen as a

valuable asset for a company to achieve and maintenance of competitiveness and execution of its overall strategy (Laforet, 2011).

As a result, a project's innovation processes encompass various external and internal digital resource, as well as numerous external and internal digital commercialization channels (West & Gallagher, 2006). At the mezzo level, innovation relates to the attitude of the organization towards innovation. Project innovation as a leader open to new ideas and develop a scale that reflects this definition of an innovator. Relatively recently, innovation in companies has received more attention (Choi & Choi, 2014). Modern business environments have expanded the definition of innovation to encompass the creation of fresh corporate operations, goods, processes, as well as organizational structures, in addition to general renewal and change using technical knowledge.

Information Technology (IT) project supervisors need to achieve and deliver optimal results for every project. At the same time, project leaders need to coordinate how work offerings are organized, planned, and completed in accordance with the project charter. In reality, Information systems project managers usually supervise a team of specialists from various fields who support various applications within an organization, such as web server, networks, database systems, development tools, web applications, and privacy (such as financial applications). At the mezzo level, innovation relates to the attitude of the organization towards innovation. To attain the ideal project performance in this situation, performance is primarily influenced by the combination of a) style of leadership and b) leadership behavior (Stagnaro, Piotrowski, et al., 2013).

1.2 Gap Analysis

There are several researches which have specified the procedures by which behavioral patterns of an individual can yield organizational value (Carpini, Parker, & Griffin, 2017). Leadership behavior or governance can influence performance, as per (Asbari, Novitasari, Purwanto, Fahmi, & Setiawan, 2021). Leader Openness is the quality reveals how profoundly and extensively people think. People who

score well on openness are often creative, curious about the world, aesthetically responsive, aware of their internal sentiments, self-directed, thrill-seekers, and exploratory, and they choose innovative types of stimulus ([Arana Araya, 2022](#)).

The current research aims to fill several theoretical gaps and the empirical gaps in the literature on Leader Openness, Technical Knowledge, Project Innovativeness and Project Performance which were scarcely identified in previous literature. We discovered scarce research that attempted to respond to the research question of how Leaders Openness improves Project Performance. The underlying mechanism towards Project Innovativeness and Project Performance needs to be studied. Technical knowledge and Leader openness are still in its infancy stage. Also, Project Management Journal has recently called for papers “Project management and Innovation” and “Project knowledge Management and the challenges of rising complexity and uncertainty”.

Many researchers have studied Leader Openness, Project Innovativeness and Project Performance, but the impact of Technical Knowledge on Leader openness and Project Innovativeness has scarcely been studied in the Pakistani context, there is hardly any research available stating the positive or negative impact of Technical knowledge on Project innovativeness. We are conducting this research to identify factors such as Leader Openness, Technical Knowledge, and Project Innovativeness affecting Project Performance in the Pakistani context. The lack of substantial empirical study on Leader Openness with moderating role of “Technical Knowledge” calls for filling this gap.

1.3 Problem Statement

The competitive landscape is changing rapidly due to technology, and the need for competent and job-ready workers is increasing globally ([Siddique, Ahsan, Azizi, & Haass, 2022](#)). Organizations use a range of resources for innovation, and technical knowledge management is one of those resources. With so much competition in the market every organization wants a skillful resource to add value to their company. Hence, the employees with Technical Knowledge have an edge in market than those

with little to no Technical Knowledge. Organizations use a range of resources for innovation, and technical knowledge management is one of those resources.

Research on Project Performance has been conducted by various academics over the last several decades. Leader Openness and Project Performance are the focus of this study, with Technical Knowledge a moderating influence, and Project Innovation a mediating Influence. The purpose of this research is to better understand the role of Leader Openness in Project performance. There are studies on factors contributing to Project Performance but not all factors have yet been extensively studied.

The available studies scarcely state the positive or negative impact of Leader Openness with moderating role of Technical Knowledge on Project Performance in the Pakistani context. I'm researching to see whether there's a link between Leader Openness and Project Performance in the Pakistani industry. For the most part, thus we need to identify how Technical Knowledge and Project innovation affect the Project Performance. Therefore, there is a need to highlight the importance of Leader Openness and the importance of Technical Knowledge.

1.4 Research Objectives

1. To explore the connection between of Leader openness and Project Performance at workplace.
2. To find the Impact of Leader openness on Project Innovativeness at workplace.
3. To explore the relationship of Project Innovativeness and Project Performance at workplace.
4. To study the mediation role of Project Innovativeness on the impact of Leader Openness on Project Performance.
5. To study the moderating role of Technical knowledge between Leader Openness and Project Innovativeness.

6. To study indirect effect of Leader Openness on Project Performance through Project Innovativeness is predicted to be significant for those who have high Technical Knowledge and non-significant for those who have low Technical Knowledge.

1.5 Research Questions

This study was intended to respond to some critical questions, which are summarized below.

Question 1:

Does the Leader Openness have any impact on Project Performance?

Question 2:

What is the Impact of Leader openness on Project Innovativeness?

Question 3:

What is the association of Project Innovativeness and Project Performance?

Question 4:

Is there any mediation role of Project Innovativeness on the impact of Leader openness on Project Performance?

Question 5:

Is there any moderating role of Technical Knowledge on the impact of Leader Openness on Project Innovativeness?

Question 6:

Is the indirect effect of Leader Openness on Project Performance through Project Innovativeness is predicted to be significant for those who have high Technical Knowledge and non-significant for those who have low Technical Knowledge.?

1.6 Significance of Study

Leader plays an important role in project. On-site leadership has always been a major concern for researchers. In the present day, project-based organizations

require teamwork to improve their performance and results. The effective People management is a critical factor in the success of the organization (Castanias & Helfat, 2001; Gambardella, Panico, & Valentini, 2015; Starr, Ganco, & Campbell, 2018). When members of the team are not managed appropriately, they may feel disconnected from one another, or they may experience information deficits (Handke, Klonek, Parker, & Kauffeld, 2020). The research on project management emphasizes the significance of educational, technical competencies, and leadership ability for carrying out project successfully (Rumeser & Emsley, 2019; Zimmerer & Yasin, 1998).

This research will be critical for the organizations in Pakistan to take Leader Openness in order to maximize performance in projects through competent leader participation. Numerous recent studies have discovered that giving employees autonomy in knowledge-intensive projects (Gambardella, Khashabi, & Panico, 2020), letting staff to participate in side hustles or smart working (Choudhury, Foroughi, & Larson, 2021), and allowing flexible contractual arrangements and project proportions (T. Anderson & Bidwell, 2019) Jain & Mitchell, 2021) leads to better Project Performance.

The significance of Innovation for Organizational success is extensively established (Rochdi, Khatijah, & Muhammad, 2017). The study will be significant for the researchers and academicians, they can use the study findings in the identification of research gaps for their upcoming research that how Technical Knowledge moderates the impact of leader Openness on Project Innovativeness. The study will be significant for policymakers so they can find out what attributes of a leader can be helpful for the innovativeness and performance of the employees and this factor can be enhanced the success of a company.

There has not been ample study on Leader Openness and Technical Knowledge in the field of project management, our study will fill a theoretical gap in the previous literature. This study intends to help researchers improve the domains of Leader Openness and Project Performance in organizations. This research will also assist practitioners in trying to promote effect-related technical knowledge, which will aid in promoting the chances of employee creativity and keeping organizations running smoothly.

1.7 Supporting Theory

1.7.1 Leader-Member Exchange Theory

Leader-Member Exchange (LMX) is the underlying theory of this research. This unique leadership theory reveals the vertical bilateral interaction between leaders and employees. Leader-Member Exchange (LMX) is a preliminary theory of leadership with the manifestation of employee social exchange with supervisors (Graen & Uhl-Bien, 1995). According to the literature, managers play an active role in encouraging workers. When leaders give employees autonomy, power, and abilities, they show creative behavior. There is give and take in the organizations. Leaders train employees, support them, and take personal responsibility to help them participate more creatively and lead to project's performance and success.

Leader-Member Exchange Leadership theory includes general characteristics of leaders, such as innovation and risk optimization. These characteristics foster trust, build trust, and improve project performance. The leader's and follower's role has been observed to have prime importance in management studies and philosophies. While studying this significant relationship, the approach (LMX - Leader member exchange theory) is brought in practice to analyze the relationship status between leader and follower and has been widely considered since long (Yammarino, Dionne, Chun, & Dansereau, 2005).

Leader-member exchange theory also supports leader's openness in a way that leaders and individuals who are open to experience and sharing new ideas and new experiences more positively, and if leaders value the ideas and imaginations of their employees, they will work with more care and interest in the organization leading to success of the project and its performance. LMX stresses the significance of constructing relationships primarily based totally on mutual appreciate and consider among supervisors and their subordinates (Gerstner & Day, 1997) while other leaders focus more on the one-way, top-down relationship between these two parties.

LMX has features such as novelty, risk optimization, employee encouragement and motivation. As a result of this motivation and encouragement, employees come

up with fresh, creative and unique ideas and show innovative work behavior in the organization that leads to the achievement of the project. The leader-member exchange theory also shows the characteristics of entrepreneurial leadership. If leaders have the power to motivate and influence open employees in their experience, they will voluntarily enhance innovative work behavior.

Leader-member exchange theory relies on the relationships or connection between the leader and the follower (LMX). According to LMX, the dyadic relationship between leaders and followers is the focal point of the leadership process (Northouse, 2021). According to this theory, a leader develops numerous types of connections with his or her followers (Kuknor & Bhattacharya, 2020; Omilion-Hodges & Baker, 2017; Carmeli, Reiter-Palmon, & Ziv, 2010; Nembhard & Edmondson, 2006; Uhl-Bien, 2006). LMX has three components, according to (Graen & Uhl-Bien, 1995) the leader, the followers, and their relationship.

The leader is a vital component of the organization who works directly with the subordinates to simply meet the required innovative work behavior (Zuraik & Kelly, 2018). Within the present study leader secure base back will give bolster in time of require, will encourage the supporters almost the accomplishment of their objectives and creating their aptitudes and capacities, the pioneer will provide a free hand to people while performing their part within the organization (Wu & Parker, 2017). Leaders work as group members, and through these relationships, leaders gain more influential power and followers' loyalty (Shabbir et al., 2021).

According to prior research, leaders assist people in their jobs and also lead in a welcoming environment (Mehmood, Shafiq-ur Rehman, & Ganie, 2017). As a result, leadership can foster creative behavior by assisting with many concepts for better innovative work behavior (Schuckert, Kim, Paek, & Lee, 2018; Z. Wang & Wang, 2012). A few researchers have discovered that the quality of the LMX connection is linked to subordinates' innovative work behavior (G. Wang, Oh, Courtright, & Colbert, 2011). In Pakistan, the national culture is collectivist, where power distance exists between elders and younger members of society (M. A. Khan & Panarina, 2017; Khilji, 2012).

Chapter 2

Literature Review

2.1 Leader Openness and Project Performance

Leaders are said to lead by what they do, not what they say, because it is their example to guide other members of the organization to follow them. It is also said that "crisis creates leaders". Unity is desirable, especially if there is an external threat, or if time is more difficult and personnel are needed to transfer security to the team (Trong Tuan, 2017). Leadership style is considered one of the most critical organizational factors that allow a corporation to win the opposition and attain sustainable benefits. Openness to leadership is defined as an influential relationship between leaders and followers, leading to the achievement of their common goals and project innovation (Aldulaimi, 2015).

The impact of leader openness on project innovation includes the development of new value created across organizational boundaries by market integration and project innovation, and the implementation of new value in the organization (Yun, Zhao, Park, & Shi, 2020). In this way, more employees participate in the company's project and help complete the project more effectively. Leaders are described as having a strong personality and leader openness to change employee expectations and motivations and guide progress within the organization. In short, it is a viable type of leadership where the openness of leadership and employees work together to achieve higher levels of motivation and lead to better performance on projects (G. Wang et al., 2011).

The degree of clarity in sharing task-related knowledge is referred to as openness (Schein, 2010). Openness enables the alignment of goals and expectancies and assist group participants to gain a common mutual and mutual knowledge of the project scope (McLeod & MacDonell, 2011). "Leadership is a process of giving purpose (meaningful direction) to collective effort, and causing willing effort to be expended to achieve purpose." Jacobs and Jaques (1990) "Leadership is a process of influence between a leader and those who are followers." Hollander (1992). Leadership also helps to guide individuals to progress as professionals together while having completed their Project tasks (Anantatmula, 2010).

Employees accustomed to internal collaboration, communication, and knowledge sharing are more likely to accept identifying and recognizing the value of externally generated knowledge (Lazzarotti, Manzini, Nosella, & Pellegrini, 2016). Being disposed to distinct information domains allows people to examine possibilities in a variety of fields domain, or generate sparkling combinations of information from extraordinary sources and therefore improve their capacity to create new ideas. (Salter, Ter Wal, Criscuolo, & Alexy, 2015). Full and open communication allows to broaden a shared understanding, improves the environment of the relationship, fosters commitment, guarantees that deadlines are respected, and complements trust among the partners (Zidane, Hussein, Gudmundsson, & Ekambaram, 2016).

High degree of inner social interplay in phrases of mutual trust, respect, and friendship undoubtedly impacts creativity as it improves the quality of the relationship reduce the risk of anxiety, uncertainty, strengthens the notion that the alternate companion will offer vital information, resources and social guide for innovative activities (Liu, 2013). Employees can not only build relationships with colleagues to access different ideas, but also get support and continue to pursue enough time to actually implement the ideas (J. Liu et al., 2015). High-level communication, collaboration, and team strength create an environment in which group participates hold their efforts to finish a project (S. N. Khan et al., 2019). Leader openness to others shows that employees are interested in others, help them work well, keep their interests in mind, and look for opportunities for them (Gerbasi & Prentice, 2013). A few recent studies have illustrated that the working environment in which companies has incredible suggestions for their adjustment components,

which in turn influences their advancement and the chances of survival (Eesley, Hsu, & Roberts, 2014). It creates trust and respect among employees, stimulates their collaboration, exchange of knowledge and ideas, and as a result improves the performance of innovation and project at an individual level (Rangus & Černe, 2019). Be that as it may, natural components like an authority on organizational results to a huge degree depend on how pioneers see, decipher, and react to it (Jansen et al., 2019).

Leader openness is effectively related to the concept of voice in that it refers to how openly leaders engage with suggestions and ideas from team members (Milliken, Bartel, & Kurtzberg, 2003). While leader openness is a behavioral concept in the sense that it captures the leader's involvement with ideas and suggestions, it is clear that teammates' perceptions of leader openness push leader-directed voice. Leaders of multinational corporations must deal with the challenges of their companies' global operations on a daily basis. Employees from various national backgrounds are increasingly valued as vital sources of local knowledge, diversified information, innovative thinking, and deep insight in such businesses (Tröster & Van Knippenberg, 2012).

According to the upper-echelons theory (Hambrick & Mason, 1984; Hambrick, 2007), "top management' experiences, beliefs, and personal qualities actually impact their (1) visual field (the instructions they look and hear), (2) preferential perspective (what they see and hear), and (3) explanation (how they enclose significance to what they see and hear)." 337 (Hambrick, 2007). To initiate, leaders assist teammates form social ties that foster a sense of belonging and safety within the individual (Breuer, Hüffmeier, & Hertel, 2016; Mathieu, Maynard, Rapp, & Gilson, 2008; Webber & Scott, 2008).

Successful leadership persuades people of the necessity for change, encourages new ways of thinking and problem - solving skills, and then motivates them to collaborate in order to meet project goals in complicated work environments (Anantatmula, 2010). Excellent workplace environments and friendly leadership behavior with employees play an important role in achieving organizational goals (Zeng, Zhao, & Zhao, 2020; Bailey, 2019; Tang, Bavik, Chen, Tjosvold, et al., 2015; Carmeli et al., 2010; Piccolo, Bardes, Mayer, & Judge, 2008). There is an

active debate about whether leadership theories developed primarily in Western societies have the same impact on other societies or are culturally determined (Marri, Azeem, & Nadeem, 2021; Stagnaro et al., 2013; Randeree & Ninan, 2011; Müller & Turner, 2010; Bass & Steidlmeier, 1999).

Kumaraswamy and Walker (1999) define project performance as considered variety criteria in measuring a project. This includes meeting budget, schedule, and the quality of workmanship, stakeholder's satisfaction, transfer of technology, and health and safety. Numerous projects are innovative in nature, necessitating a high level of team tenacity to continue pursuing their goals regardless of setbacks. Those who prepare members of the team with the necessary skills for developing and maintaining effective modes of communication and coordination in order to accomplish both team and individual performance objectives (Breuer et al., 2016; B. A. De Jong, Dirks, & Gillespie, 2016; Lee, Farh, & Chen, 2011; Stajkovic, Lee, & Nyberg, 2009).

Performance is a non-tangible issue, especially in the case of management performance. Therefore, an evaluation tool to improve project performance is needed to create of the best organization. The definition of project performance is distinct and there may be no frequent attractiveness standards used for its measurement (Jha & Iyer, 2007). Project performance is measured based on achievement strategic organizational goals and objectives of the project owner, as well as meeting the needs of users and key stakeholders as they relate to the project's end product (Khang, 2008).

Project performance is described as delivering results that are better than anticipated in terms of scope, quality, cost, dependability, confidentiality, and client satisfaction (Ashley et al., 1987). Over the past 40 years, numerous studies have been conducted across the globe on the variables that affect performance of the project. In spite of an abundance of investigation, problems like project delays, funding issues, quality defects, project abandonment, and project failures persist (Sekar, Viswanathan, & Sambasivan, 2018). Project performance is assessed on five dimensions: time, cost, quality, safety, and financial (Sambasivan & Soon, 2007; Tabish & Jha, 2015). A Project Leader's primary concern is to achieve performance and achievement, where performance means that shareholders' needs are

met within a defined timeframe, spending plan, expense, and assets (2008, Project Management Institute). Employees' opinions of their leaders are crucial to how they act in various situations, such as decision-making, involving and involving employees in organizational operations, and achieving organizational objectives. marriarshad. Given the increasing performance demands placed on project managers, it is crucial to comprehend the factors that influence project success at the team level (Zimmerer & Yasin, 1998).

Several studies have found a link of both a project supervisor's management style and team spirit. Engagement of various functionalities, resource acquisition as well as assistance from diverse operational segments demonstrate the significance of management support, which transfers in to other organization-wide support (Fedor, Ghosh, Caldwell, Maurer, & Singhal, 2003) proposed that organizational support—viable with top management support—was related to project success. One of the most challenging challenges for governments and enterprises is to be constantly vigilant and review their strategy for encouraging the use of technology.

556 This is especially true for emerging technologies. Policymakers at all levels of government and business must embrace a new approach. A good strategy and organizational structure for technology-based service providers may ensure that they stay on level with their competitors and even go farther by adopting this approach. The PMI commissioned a thorough research study to evaluate project leadership style as a success factor in project performance (Turner & Müller, 2005).

Projects are used to help the organization achieve its goals and objectives. Project performance is distinct from project performance. Project performance is measured against traditional performance measures including completing the task on schedule, on budget, and trying to meet scope and quality standards. Performance can be measured against entire project goals (Cleland, 2007). According to intense studies, the project's success definition has evolved over time from such a specific view on completion of the project in terms of hours, expense, and extent to a wider perspective on business requirement (Jugdev & Müller, 2005).

Furthermore, it should be stated right away that the topic of correlating project performance and leadership explanations to project innovation and leadership has

been thoroughly researched (Turner & Müller, 2005). In the case of project performance, leaders are expected to give relationships the proper weight, express their virtues, but also do so while also giving processes the proper weight (Turner & Müller, 2005). Because project performance mechanisms and project innovation are essential for a project's success, leaders must consider both leadership and managerial roles. The emphasis shifts from one role to another according to the size and nature of the project (Anantatmula, 2010).

In order to better serve the needs of the client, the project is split into smaller (result-focused) elements, or the team is granted clear objectives and guidelines. The possibility to engage in leader openness by presenting advice and suggestions is critical to project success and boosting the member's capacity to accomplish those targets. For example, in IT projects, customers often come to the development team with ideas and discuss them according to their business needs. This can change many times depending on the market and business needs (Pearce, 2006).

Leader Openness empower their subordinates by delegating power and evaluating ideas (Ou et al., 2014). Responses on performance is a key feature of leader openness (Argandona, 2015) helps team members overcome their weaknesses, helps team members in maximizing their productivity as well as achieving mandatory performance outcomes (Qian, Song, Jin, Wang, & Chen, 2018).

Leader openness is considered an important personal resource for leaders to invest in building trust among their followers. This allows followers to create an atmosphere of collaboration and coordination and improve project performance (Ali, Zhang, Shah, Khan, & Shah, 2020). In the context of a team, leader openness is a social process or dynamic, multi-directional collective that provides the meaning (psychological traits that people can give meaning to a collective experience) built into the performance of project (Pearce, 2006).

In IT agile projects where teams are relatively small, each member is obliged to participate in the decision-making process (as if they were a leader) and share available information and knowledge with colleagues in an unrestricted manner. To make decisions, but to achieve common goals (Scott-Young & Samson, 2008). The exchange of information and ideas improves the overall performance of the project, especially in the context of leader openness (Hoch, 2014).

There was war of words and controversy over building leader openness and its overall performance benefits (Locke, 2003; Pearce, Manz, & Sims Jr, 2008). Empirical studies indicates that leader openness exists in self-coping with undertaking groups and decision-making groups and is an critical predictor of group outcomes. Leader openness has been located to narrate to self-scores of group effectiveness (Pearce, Yoo, & Alavi, 2004), manager and customer evaluation of team effectiveness (Carson, Tesluk, & Marrone, 2007) and objective project performance (Mehra, Smith, Dixon, & Robertson, 2006).

The importance of leader openness to project performance is well documented, and the success or failure of a project is believed to be the result of how the project's stakeholders are managed (Larson & Gray, 2018). Leader openness is taken into consideration as a crucial success factor for a project, because leader openness is extra in call for than management. A survey of IT projects concludes that the scale of the project determines the significance of leader openness. The large the project, the extra its significance and style (Karlsen & Gottschalk, 2004).

Leader openness at the project level is more complex than at the organizational level. Employees of the project are tied up for a limited period of time, so the scope of action is limited and unmotivated employees can easily lose focus. Leaders want to embody worker wishes and need to preserve them encouraged. A encouraged worker will carry out higher and paintings toward reaching organization dreams effectively (S. U. Rehman, 2020).

Leader openness will permit spontaneous collaboration, both through people assembly officially or informally wherein in reaction to the needs of a selected problem, sources are pooled and distinctive talent units added to undergo in producing progressive and novel responses (Gronn, 2002). The leader-member exchange theory describes an employee's management department into two different groups. That is, relatively closed groups within the group and groups outside the group, not within the group.

A few studies on Leader Openness in last 5 years are listed below

H1: Leader Openness is positively and significantly related to Project Performance.

2018

- Ethical leadership, trust in leader and creativity: The mediated mechanism and an interacting effect Basharat Javed, Y A Rawwas, S Khandai, Kamran Shahid and Hafiz Tayyeb,
- Culturally diverse teams, creative teams Leaders' benevolent paternalism L Lu, F Li, K Leung, K Savani, Michael W. Morris
- Personality, gender, self-other agreement Kckee, Lee, Atwater, Antonakis
Journal of Occupational and
- Mindful self-leader: Mindfulness and Self-leadership Tutzer, Furtner, Marco; Sachse, Pierre
- Leader individual differences, situational parameters, and leadership outcomes Stephen Zaccaro, Jennifer Green, Samantha Dubrow, MaryJo Kolze
-

2019

- Leader trait learning, goal orientation and employee voice behavior, managerial Openness and the felt obligation Y Zhu, S Akhtar
- Innovation leadership: employee creativity, voice, and knowledge sharing H Kremer, I Villamor, H Aguinis
- Leader Humility, Team Performance ,Team PsyCap and Task Allocation Effectiveness Arménio Rego, Bradley Owens, Kai Chi Yam
- Female Leader Role Models, Empower Women in Leadership Tasks, Body Posture Mimicry Ioana Latu, Marianne Mast, Dario Bombari, Joris Lammers & Crystal L. Hoyt
- Leader Inclusiveness ,Taking Charge, Thriving at Work and Regulatory Focus N Li, QY Guo, H Wan
-

2020

Curious personality, individual differences and Openness to experience	Paul Silvia and Alexander Christensen
Transformational Leadership, Leader Attitudes , Subordinate Attitudes and Implementation Success	Farahnak, Ehrhart, Torres, and Aarons
Mindful Leadership,- Leader of Buddhist	Burmansah, Rugaiyah, Mukhtar, Nabilah, Ahmad Ripki, Arum Fatayan
Higher Education Institute	
Inclusive leadership, leader identification ,employee voice behavior and power distance	Yungui Guo, Yanting Zhu & Lihua Zhang
Leading by example: Ethical leadership, value congruence, and followers' openness	Armin Verdorfer, Claudia Peus Business Ethics: A Eur Rev

2021

Leader–follower risk orientation, intellectual stimulation, and creativity	Liu, Dust, Xu, Y Ji
Openness to experience on marketing behaviors and the bottom-line mentality	KA Graham, RS Smith
Team Creativity, Creativity Willingness, Creative Ideation, and Leader Openness on Exploratory Innovation	Samuel Senadjki, James Gaskin
Motivating Employee Voice and Inclusive Leadership	Phillip Jolly, Lindsey Lee
Personal self awareness, collective self-awareness ,authentic leadership and leader endorsement	Steffens, Nathan, Okimoto, Frank,. Haslam , Kay

 2022

Leadership, context, and follower behaviors	Velez, João; Neves, Pedro.
Mild and intense task conflict, perceived openness	Tsai, Ming-Hong.
Hindrance appraisals, Leader bottom-line mentality, Leadership drawbacks and leader neuroticism	Rice, Darryl B; Day, Steven W.
Multicultural orientation, group and leader's multicultural orientation and group therapy	Grimes, Jeffrey L; Kivlighan, D. Martin,
Employee voice, psychologization and human resource management (HRM)	M Barry, A Wilkinson - Human Resource

2.2 Impact of Leader Openness on Project Innovativeness

Individuals who are willing to try new things place a high value on intellectual matters, are intrigued by unusual thought patterns and are usually considered to be insightful and creative (McCrae & Costa, 1987). Individuals' openness to new ideas also represents their proclivity to be reflective, creative, resourceful, and perceptive Originality, an evident classic example of open mindedness, was at the edge of (Bass & Stogdill, 1990) list of the most effective correlates of leadership.

Leadership is primarily concerned with interpersonal relationships, interplay, connectivity, and collaboration. Interpersonal actions like dealings, recreation, and network relationships are increasingly exhausted as competitive organizations to regenerate their intangible resources (Savolainen & Lopez-Fresno, 2013). Organizational competitiveness is presently centered on the capacity to renew and utilize existing opportunities and abilities that are primarily human and intellectual (Slocum, 2008). People and intellectual capital are critical to achieving such benefits (Wright & McMahan, 2011; Teece, 2007).

Trust in organizations is an antecedent and a way to build innovative work environments in the knowledge era. In organizational renewal, co-creation, interaction, and relationships are stressed more and more. Thus, trust is required more but practiced less. Trust is a relational concept, which means that it emerges from interplay and mutual interaction among organizational actors (Savolainen, López-Fresno, et al., 2012). The main part of leadership work is about relationships, interaction, communication, sharing, and collaboration. As the service-dominant logic has permeated in global markets and exchanges (Lusch, Vargo, & O'Brien, 2007), services and processes undergo renewal.

In terms of intellectual capital, trust plays two roles in organizations. First, leaders may enable and foster a trusting environment with the use of the great force of trust and their human intellectual assets. Second, growing human skills for the competitiveness of the business requires a strategy and a talent called "going to lead with trust." The growth of human talents and the work conditions that enable them to be employed grow more crucial given that today's work is mostly expertise-based and strongly reliant on developing and sharing information (Savolainen et al., 2012). According to Detert and Burris (2007), When leaders pay close attention to follower ideas and take action on them, they strongly convey to followers that voice behavior in their work units is accepted and valued.

Leadership success in a group, organization, or nation promotes prosperity and growth., whereas leadership failure results in the individuals' failure, teams, organizations, and societies (Thoroughgood, Sawyer, Padilla, & Lunsford, 2018). Leadership is the most extensively researched social process in behavioral sciences, because researchers believe that leaders play an important role in the firm by having a direct impact on followers and their performance (Yukl, 2008). The ability to manage a team is an important characteristic of an effective leader. This includes actions that function to coordinate and facilitate team members' efforts (Barczak & Wilemon, 2001).

According to leadership researchers, leader behavior is a fundamental mechanism that connects leader traits to employee behavior (e.g. (Dinh & Lord, 2012; Dinh et al., 2014). According to the goal orientation study, a leader's openness to fresh suggestions from his or her followers may be increased by a learning culture

(Sijbom, Janssen, & Van Yperen, 2015). Individuals who are open to new ideas and information are more likely to succeed (McCrae & Costa, 1987). Providing the resources to the organizations for the development of capabilities is not enough. It requires coordination between the resources to establish a synchronized action (S. N. Khan et al., 2019).

The direct impact of leader openness on project performance, because openness can refer to actions and decisions made by the leader that are not only related to teamwork. The process of innovation is fraught with uncertainty. According to research, teams developing innovations deal with uncertainty both internally and externally. To deal with this uncertainty, these teams must efficiently gather, process, and disseminate information. Team leaders play an important role in fostering this information (Barczak & Wileman, 1991). Grant (1991), suggests that the teams' coordination and cooperation should be maintained to maintain the relationship between the resources and capabilities. As leadership provides the resources that are valuable, rare, and inimitable (Pesic, Milic, & Stankovic, 2013), leadership can be considered as an organization part of the resource based view framework.

The project management institute (PMI) defined success of the project as stabilizing the pressing challenges for scope of the project, cost, and quality while also attempting to address the desires and needs of the growing project participants (Pmi, 2004), p. 9. Customer impacts, endeavor productivity, employee effects, immediate success, prospective readiness, and business success all contribute to project success (Carvalho & Rabechini Jr, 2017; Rolstadås, Tommelein, Schiefloe, & Ballard, 2014; Joslin & Müller, 2015; Aarseth, Rolstadås, & Klev, 2016). When "leaders exhibit open mindedness, availability, and accessibility in their relationships with followers," it improves success of the project (Carmeli et al., 2010), p. 250. Firms competing in such dynamic and ever-changing environment are much focusing on innovation as they consider it as a key element of competitiveness (Dervitsiotis, 2010). To achieve sustainable competitive advantage, innovation is a key component for firm that enables it to stand out differently from its rivals. Orthodox and typical behavior does not lead to reforms in processes, product features, and services; to attain a flow of innovation, employees must be agreeable

and capable as they are required to have the essential aptitudes in order to innovate (J. P. De Jong & Den Hartog, 2007). People are more likely to innovate where they have adequate sovereignty and hold over their work to be able to try out novel and enhanced ways of doing things (West, Salter, Vanhaverbeke, & Chesbrough, 2014).

Innovativeness has been identified as an important factor in the growth of businesses in both the service and manufacturing sectors (Zheng, Wu, & Xie, 2017). Innovativeness as a project need is an essential factor that can influence anticipated outcomes, such as employees' innovative behavior (Tehseen & Sajilan, 2016). Researchers have suggested that when leaders, organizations, and job roles help employees, their performance with varying behaviors may improve (Ullah, Akhtar, Shahzadi, Farooq, & Yasmin, 2016).

The capacity to innovate is crucial for organizations since it is a primary driver of generating revenues, competitive edge, and value for shareholders (Kock et al., 2007). Colleagues can learn useful information from each other through information sharing, and they can also be inspired to innovate by one another's ideas and approaches to challenges through debate (Gerlach, Hundeling, & Rosing, 2020). Projects give importance to a high degree of uncertainty as a result of both business uncertainty and technology uncertainty as firms place more focus on innovation (Brettel, Mauer, Engelen, & Küpper, 2012).

H2: Leader Openness has a positive impact on Project Innovativeness.

A few studies on Project Innovativeness in last 5 years are listed below;

2.3 Impact of Project Innovativeness on Project Performance

Every organization strives to improve its performance in new ways. Sometimes they use better benefits and salary structures, sometimes organizations improve their culture, and many other aspects for the sake of improved performance and increasing work efficiency (Nanjundeswaraswamy & Swamy, 2014).

2018

Business models and innovativeness of potential renewable energy projects in Africa	Budzianowski, Nantongo, Bamutura, Rwema, Lyambai, Abimana, Akumu, Alokore , Babalola , Gachuri, Diab, Ituze , Kiprono , Kouakou, Kukeera , Megne, Muceka , Mugumya , Mwon-gereza, Nwadiaru , Sow
Co-creation on project performance Transformational Leadership Promote Innovation in Construction? Innovation Climate and the Multi-level Project Requirements	Boris Rojas, Li Liu, Duanfang Lu Yanchun Zhang, Junwei Zheng, and Amos Darko
Business Case Control, Portfolio Monitoring Intensity, Project Innovativeness	Nguyen, Killen, Kock, Gemünden
The Project-oriented Organization	HG Gemünden, P Lehner, A Kock

2019

Innovation projects: It's impact on innovativeness	T Jissink, F Schweitzer, R Rohrbeck
Stakeholder Involvement ,Innovative Character of Projects and on Project Performance	José Nederhand and Erik Hans Klijn
Project Innovativeness on Project Flexibility, Project Risk, Project Performance, and Business Success in Financial Services	P Tiwari, B Suresha
Resistance, an innovation project's innovativeness and risk	T Röth, P Spieth –
R&D project innovativeness perceptions	Oliver Gretsche, Carsten Schultz & Alexander Kock

2020

Knowledge absorptive capacity, project innovativeness: internal and external social capital	Fouzia Kanwal , Chunyong Tang , Atiq Rehman , Tehmina Kanwal & Sayed Sharif
Costly and Costless Signals, Innovativeness in Equity Crowdfunding	Francesca Pietro, Luca Grilli & Francesca Masciarelli
Implementation of an innovative, effects arising in the internal and external environment	Dilyara Zaynullina
Transformational Leadership and Financial Performance: Learning Orientation and Firm Innovativeness	Ploychompoo
Sustainable Innovativeness, Big Data and Big Data Analytics Capability	Michael Song, Haili Zhang and Jinjin Heng

2021	
Identification of the level of innovativeness of a complex major construction project	Violetta Politi
Leadership, culture, intellectual capital and knowledge	Wioleta Kucharska
Demands for Innovativeness Reshape Epistemic Practices	Ruth Falkenberg
Project Work, Innovativeness Potential for innovation in a project-based organization's structure	H.C. Lankman (Coenraad)
Entrepreneurial orientation, innovation project and portfolio management	Alexander Kock, and Hans Georg Gemünden

2022	
Firm capabilities, technology and business innovativeness (Malaysia)	Bamgbade, Nawi, Kamaruddeen, Adeleke & Salimon
Government support, organizational innovativeness and community participation in renewable energy project success: Pakistan	Shahid Hussain , Wang Xueting , Rashid Maqbool, Mustansar Hussain, Muhammad Shahnawaz
Lean Startup Method Hampers Breakthrough Innovations and Company's Innovativeness	ZB Yordanova
Human capital, information technology capability, innovativeness and organizational performance	Marchiori, Rodrigues, Popadiuk, Mainardes
Balancing knowledge sharing with protecting: The efficacy of formal control in open innovation projects	Marcel Ahlfänger, Hans Georg Gemunden, Jens Leker

Innovation is strongly associated with novelty, creativity, and theories such as continuity, low patience, and a structured method. Certain variables, such as quantity, competence, consistency, time, expenses, and difficulty, can be used to define the innovation value of products or services ([Z. Wang & Wang, 2012](#)).

Innovation is not only associated with process and product innovation (technological innovation) but also associated with organizational innovation (non-technological innovation). Project scenarios are shifting, with methodologies for project management being implemented to a broad range of projects across a growing variety of businesses ([Jensen, Thuesen, & Geraldi, 2016](#)). This switch in the project landscape is backed by a stronger reliance on the project portfolio's

strategic contribution, as well as the requirement for enhanced levels of creativity speed of response, and agility (Kock & Georg Gemünden, 2016; Kopmann, Kock, Killen, & Gemünden, 2017).

A project is a short-term endeavor undertaken to generate a one-of-a-kind product, service, or outcome (Pmi, 2004). An innovation is the procedure of transforming a concept or invention into a product or service that creates value and for which customers pay. The concept must be reproducible at a low cost and must meet a particular requirement to be considered an innovation (Yordanova, 2018). As for the definition of innovation, there is broad agreement among innovation scholars that this occurrence is defined broadly as the conversion of information into innovative products, procedures, and assistance.

Because 'innovation' refers to the method of continuous innovation as well as its outcomes, the attribute 'innovative' identifies a feature of such a procedure. So, an innovative solution that whose performance is indeed an advancement, or an innovative idea is an initiative that is unique, contains a few unique features and characteristics, and is carried out using some novel tools and approaches. Undertakings that have used suggestions to create outputs with a planned schedule and which are comprehensively controlled strive to achieve something innovative, in a novel way, or to enhance something already having existed. (Yordanova, 2018).

A company's success is thought to depend on its ability to innovate and be creative. Even though creativity and novelty have some similar traits, they differ in their digitalization and incorporation strategies, which is what makes them unique. This limits the scope of idea generation. Therefore, creativity can be seen as part of innovation (N. Anderson, Potočnik, & Zhou, 2014). We survive in a project societal structure and are surrounded by projects and innovations in the projects everywhere in our work careers (Lundin et al., 2015). Earlier research has demonstrated that when a project is completed using novel ideas and methods, it exceeds the performance of traditional projects (Aubry, Lièvre, & Hobbs, 2010).

As sectors of the economy reach the boundaries of knowledge, the prospect of incorporating and trying to adapt external latest technology begins to diminish. A supportive environment for organizational innovation, supported from both the

government and private sectors, is necessary for creating and developing cutting-edge goods and procedures to keep up with competitors. Innovation is frequently accomplished through the use of accessible technology and top-notch capacity to explore, as well as various types of data and information processes ([Rajapathirana & Hui, 2018](#)).

A growing body of academic research has shown a relationship between information acquisition and creative thinking. In their study, the researchers discovered that information from alliance partners influences the organization's knowledge growth, which ultimately leads to innovation. Examples include the fact that there is a significant link between learning and technological growth, as shown by ([Qandah, Suifan, Obeidat, et al., 2020](#)) (Innovation in process and product design.) Similar findings were made by ([Mafabi, Munene, & Ntayi, 2012](#)), who discovered a positive and significant link between knowledge acquisition and structure innovation.

Project innovation is the creation of innovation in goods and services with the assistance of leadership openness that encourages members of the organization to look for new things and use their imagination in pursuing fresh ideas. Is dedicated to encouraging ([Toaldo, Didonet, & Luce, 2013](#)). The growing emphasis on innovation in society, particularly as a source of competitive advantage, places a premium on creating good methods to manage innovation for beneficial results. Employees who are familiar with collaborating, communicating, and sharing information organizationally are more likely to be open to determining and recognizing the value of relying on external knowledge ([Lazzarotti et al., 2016](#)).

Project management strategies have mainly been based on a logical decision. Logic that arose from the requirements of tackling different, technical projects ([Söderlund, 2011](#); [Turner, Anbari, & Bredillet, 2013](#)). Projects are always different in nature and challenging because every project start for specific goal which is arduous in nature so organization who do complex projects must have a mechanism of motivation for employees by delegating authorities to lower level employees for specific task, empowerment creates self-efficacy and confidence for better attainment of goals and encourages them to perform good ([Ghoshal & Bartlett, 1994](#)). Leaders also encourage their employees to devote themselves and contribute to their administrations on a higher level. Employees that show innovation in projects

are persuaded to value their job more and therefore believe that their actions have a favorable impact on project performance (F. Yuan & Woodman, 2010). To increase project performance in a company, both the openness of the leader and the competencies of the employees must be identified in order for innovative projects to be developed (Mas-Tur & Ribeiro Soriano, 2014). Furthermore, project innovation is important in the association among leader openness as well as performance improvement (Schoemaker, Heaton, & Teece, 2018).

H3: Project Innovativeness has a positive impact Project Performance.

A few studies on Project Performance in last 5 years are listed below

2018	
Knowledge sharing, absorptive capacity ,project performance	Imran, Ata and Murad
Behavioral Competencies on Project Performance	Nika Gruden and Aljaz Stare
Goal orientations, leader-leader exchange, trust, and the outcomes of project performance	Hong, Ying Lin
Trust, Commitment, and Openness on Research Project Performance	Masoumeh, Bassam and Youcef
Job Burnout, Work-Family Conflict and Project Performance ,Organizational Support	Guangdong , Yue Wu, Hongyang , and Chenglong
2019	
Building Information Modeling and Project Performance	Bryan, John
Quality management practices and inter-organizational project performance, governance mechanisms	Ping Lu , Xiangyang Cai, Zhuping Wei, Yinqiu Song , Jianlin Wu
Megaproject Governance, Project Performance:	Yongkui Li, Yilong Han, Mingxian Luo, Yan Zhang
Organizational Justice, Project Performance, and Key Success Factors	Christine and David James Bryd
Team diversity, project performance	Guangdong, Xianbo, Jian, George

2020

Project Performance in the Construction Industry	Rayan Assaad, Islam El-Adaway, and Ibrahim Abotaleb
Customer knowledge management capability, project performance and Strategic agility	Syed Haider and Umar Kayani
Project Performance, Machine Learning Approach and Entrepreneurship Orientation	Sima, Mahour
Team wisdom and on project performance	Ali E.Akgün
Contractual Governance, Trust in Improving Construction Project Performance and Dynamic Perspective	Ling Yan and Lihan Zhang

2021

Interpersonal conflicts, Team knowledge management, trust on Project performance, psychological capital, problem solving competence	Jingqiang, Mohsin, Rimsha, Rehana & Edwin
Job burnout on Project performance, Work–life balance, organizational support	Muhammad, Raja Khalid, Syyed, Ahsen, Imran
BIM-related factors affecting construction project performance	Nguyen, Nguyen and Vu , Serdar
The impact of COVID-19, safety parameters on energy project performance: analytical hierarchy process	Shahid, Wang, Talib, Asif, and Muhammad
Teams and Project Performance: An Ability, Motivation, and Opportunity Approach	Àngels, Torben, Lívia Lopes, and Tiago

2022

Multi-project Work and Project Performance	Anatoli ,Tuuli , Torben
Team Member Personal Style in Project Performance	Zvi , Richard and Gary
Fairness perceptions on conflicts and project performance in Chinese megaprojects	Lele , Hui , Shuyun , Die , Qun , Mingqiang Zou Adkins & Junwei
Construction project performance areas for Indian construction projects	Prachi Ingle & Gangadhar Mahesh
Team formation, Belbin's roles, students' performance and project based learning	Aranzabal, Epelde Artetxe

2.4 Mediating Role of Project Innovativeness between Leader Openness and Project Performance

Innovation is a diverse term with different explanations. That is described as the outcomes of emerging businesses, product innovations, fresh suppliers, unique manufacturing processes, as well as latest organization structure. It is additionally recognized as the creation and deployment of new products, thoughts, procedures, and facilities involving creativity. This is an example of procedures, goods, or innovative business models (Sabatier, Craig-Kennard, & Mangematin, 2012). Project innovation includes improving the project implementation process, optimizing the decision-making process, improving project quality, and reducing project costs (Zheng et al., 2017).

The general definition of innovation calls it refers to it as a multidimensional actions involving both creative thinking and execution. In addition, innovation can be defined as a deliberate implementation inside a team or process that is adopted and designed for the benefit of a group, individual, or even an organization (Kline & Rosenberg, 2010). Innovation is a result and a process, as innovation is a extensive category that consists of production, assimilation, recruitment, market development, product and service expansion and renewal, and the improvement and establishment of latest models and management systems. These different perspectives on innovation make it clear that innovation is going past creativity.

The ability of a project to innovate is closely linked with the creation and utilization of information available within the organization with the help of managers and employees. More specifically, knowledge management and leadership openness could perform a significant function in supporting as well as encouraging project innovativeness. According to researchers, leaders who are creative and open generate advanced frameworks as well as techniques for project portfolios; those who are more future oriented and responsive (design methods by which enhanced ideas are established) while there is greater motivation amongst members of the group; they

take on more new projects and they are more capable of dealing with uncertainty (Gemünden, Lehner, & Kock, 2018).

Private-sector innovation is critical for long-term growth in the economy for any societal structure. As a result, the large percentage of companies all over the world expend significant funds (funds, time, and human capital) in quest of novel innovative opportunities in the marketplace. The ability of leaders to think creatively and innovatively, to be open to new ideas, and to be eager to attempt new things are all qualities of being open to new experiences. Provided that innovation projects require sturdy top management support (Kirsch et al., 2000), upper executives who endorses its employees' innovative capabilities will complete more innovation projects than top management that doesn't.

Firms must continuously adapt their services and products to fresh challenges and opportunities as technologies, consumer wants, and competitive market change. Countries, businesses, and industrial organizations have all validated the link between innovations and economic progress. The technological advancement allows innovators to advance to the front lines of the market. As a result, one of the vital success factors in international competition is the utilization of technology (in addition to its growth)(Khalili, 2016).

Complexity in projects emerges from a variety of sources, and traditional project management techniques are ineffective at dealing with these kind of inherent complexities. Complexity necessitates project leaders who can apply their knowledge and experience to the specific issue at hand. Individual procedures, personal skills, and societal factors that use the project leader's experience and expertise to picture, establish, and connect the wicked problem are referred to as knowledge-based practices (KBPs) (Owen, Koskela, Henrich, & Codinhoto, 2006).

Building personal relationships with consumers may assist business managers in gaining quick access to information about customers, competitive activities and behavior, market trends, and other events that may affect the company. Organizations must remember that their workers' ability to perform increases as they get a greater understanding of the world around them. Businesses may take advantage of new chances by using and utilizing fresh knowledge to deliver outcomes that are distinct from the competition.

While a leader's openness to organizational innovation would therefore make a contribution to the performance and inventiveness of projects which go beyond conventional or monotonous norms, innovative projects could be seen as a good indicator of an organization's desire to be innovative with its projects (Arokiasamy, Nguyen, & Nguyen, 2021). Project innovation emphasizes a leader's openness to new ideas and quick response when making decisions. It encompasses the set of beliefs and actions that influence the management of innovation and change (Toaldo et al., 2013). An innovative project that blends innovation and creativity can encourage employees to set high standards to improve project development and performance (Choi & Choi, 2014). Innovation is a complex set of ideals, norms, obligations and business traditions that will influence innovation projects if implemented properly (Choi & Choi, 2014). Furthermore, employees can easily exchange information through leader openness, and such communication can ultimately motivate the creation of fresh advancements which lead to improved project outcomes (Toaldo et al., 2013).

To sustain innovation in projects, leaders must establish a foundation of creativity and openness, which is rooted in the need for continuous improvement in project performance. Such platforms will help foster a culture of acceptance and guide organizations through periodic transformation cycles (Arokiasamy et al., 2021). Project Innovation is therefore a key tool for adapting to the rapidly changing business environment (Aboramadan, Albashiti, Alharazin, & Zaidoune, 2020) as it can play a vital role in improving project performance and maintaining a competitive advantage (Bari & Fanchen, 2017).

Project performance is influenced by the underlying leader openness that represents an important micro-foundation of the project's innovative capabilities (Teece, 2007). Project innovation is usually generated by individuals or teams within an organization (West et al., 2014). Openness to leadership and the individual's ability to design collaborative knowledge-building processes play a key role in project innovation (Chatenier, Verstegen, Biemans, Mulder, & Omta, 2010). An individual is someone who works with a leader to identify and leverage new and innovative ideas, and who can generate new ideas more efficiently through the openness and teamwork of the leader (Salter et al., 2015). Possessing a variety of informational

interests enables one to investigate possibilities in various fields, to create new kinds of information from unique sources, and to thereby increase one's capacity for original idea generation (Salter et al., 2015). The assumption that the organization member provides the relevant data, funds, and sociocultural support required for creative projects is enhanced by a good degree of organization's internal relationship in terms of integrity, dignity, and companionship. This improves the value of relationships, lowers the risk of anxiety and uncertainty, and lowers the likelihood of these negative emotions (Liu, 2013).

A leader's openness to others demonstrates that employees should care about others in factors that enable them succeed, keep a close eye on their preferences, and look for innovative opportunity to improve project performance (Gerbasi & Prentice, 2013). The role of the leader's openness is regarded as a crucial component in the project innovation literature. Implementing advancement entails challenging the power structure, encountering opposition, disagreement, as well as requiring focused effort. This involves great leadership (Rangus & Černe, 2019).

Awareness of digitalization requires increased collaboration and communication not only between leaders, as well as between impacted employees and supervisors. Thus, innovative concepts, procedures, interactions, as well as openness may have a positive business and financial benefits. Therefore, IT sector leaders, managers, and researchers need to be aware of the different innovation paths of the project (Padilla-Meléndez & Garrido-Moreno, 2012). Companies that can innovate can offer new products and services, improve processes faster, meet market needs, and seize opportunities than non-innovative companies (Aboramadan et al., 2020).

The ability to innovate project enhances the ability to adapt to dynamic environments and improve project performance. Therefore, the openness of leaders can indirectly affect the projects performance through innovation as an instrumental variable (Rhee, Park, & Lee, 2010). Thus, innovative concepts, procedures, interactions, as well as openness may have a positive business and financial benefits. Leader Openness affects project innovativeness, and this affects project performance. Companies with greater openness recognize the needs of the market environment and pursue new things with innovation. More innovative projects can achieve better performance (Jun, Lee, & Park, 2021).

The role of innovation in the relationship between leadership openness and project performance is practically and theoretically important for the role of innovation. Affects the design of management interventions. If the mediation model is correct, the best way to improve the performance of innovation is to embrace leadership openness. This promotes innovation capabilities and improves project performance. (Aboramadan et al., 2020).

The theory is then proposed that when project innovation is important, the positive link between leadership openness and project performance can be strengthened. According to the relevant literature, the mediation mechanism of project innovation between project implementation and leadership openness has not been tested in the Asian context (Paracha, Qamar, Mirza, Hassan, & Waqas, 2012). The mediating role of project innovation means that leader openness does not increase project performance directly but indirectly through project innovation

H4: Project Innovativeness positively mediates the relationship between Leader Openness on Project Performance.

2.5 Moderating Role of Technical Knowledge between Leader Openness and Project Innovativeness

Global capitalism and information technology advancements are both realities and opportunities for companies in the twenty-first century. As a result, it became evident that businesses began to invest heavily in innovative data-enabled technology in recent years (Tsai & Tang, 2012). This trend is also boosted by some incredible and disruptive technological marvels (e.g., blockchain) over the last couple of years, increase in global contestability, and even quicker client requirements (Marinagi, Trivellas, & Sakas, 2014). Only technological innovation can raise living standards in the long run.

According to the definition, knowledge is defined as "knowledge that is useful, practical, and at least in part derived from human experience." Experience and observation are two methods of gaining knowledge. According to Abbas et al.

(2020), knowledge is composed of three types of information: framed knowledge, contextual information, and trained insight. For individuals who are well-versed in the subject, everything begins and ends in their thoughts. "Knowledge" is defined as a serious, action-oriented commitment that goes beyond the standard concept of "justified genuine belief" to accomplish anything. The authors (Abdi & Senin, 2015) argue that knowledge resources are linked to innovation and that these resources influence a firm's ability to innovate.

The world is shifting toward a knowledge-based economy, and knowledge has become an essential requirement for organizations, serving not only as a source of information but also as a means of managing it so that organizations can become more vibrant, competitive, and high-performing (Son et al., 2020; Arias-Pérez, Lozada, & Henao-García, 2020). Employees are the foundation of any organization and, in many ways, the most important tool for gaining a competitive advantage, such as image, firm reputation, talent, and knowledge. According to Son et al. (2020), knowledge is basically available in the minds of employees, so organizations try to find and develop strategies for discovering and implementing knowledge in order to exploit organizational performance using various leadership behaviors approaches.

In today's digital world, technology has become an increasingly vital component for businesses to compete and flourish. As a result of this research, the importance of Technical Knowledge (TK) in the acquisition, sharing, and implementation of innovation has been recognized. If you want to be more explicit, the process of learning includes both the usage of previously learned information and the acquisition of brand-new knowledge. Corporate knowledge is gathered by entering specific information from existing documents or implicit knowledge from the organization's employees into a repository maintained by the company. To get information from the outside, (Al-Abbad, Alshawabkeh, & Rumman, 2020) recommend that a firm engage individuals who possess the necessary competencies and purchase knowledge assets such as patents and academic publications.

The assessment gave an in-depth overview of the extent of technological and innovative advancement in terms of project performance across countries and their various development levels. Based on studies, it was determined by analyzing and

was evidenced that technological readiness and innovation possibility are significant proponents of economic development and growth (Owen et al., 2006).

Technical knowledge is the knowledge used within a technological activity, at the level of abstraction of anything that the species has created or made (Keirl, 2017), technical knowledge is the associated knowledge adopted within this particular context for activity. Technical knowledge here can thus be taken as the technical norms associated with a context (B. A. De Jong et al., 2016) or the procedural skills for operating within a context (Reinsfield & Williams, 2018). Technical knowledge, in its various forms, is utilized in technical activity, however, its application is transdisciplinary in nature and highly context-specific.

Technology and technical knowledge are increasingly viewed as capital resources as well as important sources of competitive differentiation. Whenever the subject matter of goods and services, as well as the production process, became much more complicated and skillful, the foundation of competitiveness shifted from asset reserves to intellectual capital (Lai & Lin, 2012). Technology as an essential component of Project performance. Information technology, with a strong foundation for automation solutions, focused on developing, applying, disseminating and sharing knowledge (Rani, Abdullah, & Mohtar, 2013). Management tools that enable technologies knowledge improves project innovation, coding and transfer. New tech knowledge could be divided into four categories: equipment, business applications and database management systems, groupware, and smart tools (Mojibi, Khojasteh, & Khojasteh-Ghamari, 2015).

Technology has a significant impact on everyday life, both at the individual and professional levels. Basic technical knowledge is essential for optimal functioning according to business needs (Zaman, Nawaz, & Nadeem, 2020). Because implementing and using the technology requires specific skills technology. Everyone on the project team, including the program manager, should be familiar with the software in its totality. As technology is constantly changing, leaders need to understand and build technology quotients in order to make informed decisions about the implementation of technology as well as the investments associated with it to build innovation in the project (Zaman et al., 2020). In the same vein, project innovation can be essential in linking resources based on technical knowledge and

creativity, because an attitude towards the use of technology is essential to effective use of the organization's resources and skills (S. N. Khan et al., 2019).

"Innovation is knowledge, not action." Various types of information from various sources are combined to create innovative thinking through adaptation, development, and integration (Pacione, 2015). One such information isn't really restricted to technological information on the product that develops; it also includes stages of understanding market demands and market direction, as well as knowing well how to incorporate information to lead to innovation (Tidd & Bessant, 2020). Project innovation could be defined as a set of techniques and safety measures that could be implemented in advance and during the implementation of ambiguous initiatives to reduce the risk of adverse effects on organizational performance (March, 1991).

Project innovation and productivity could be achieved by the implementation of thoughts, latest findings in the creation of goods or new services, management practices, processes, methods of work, as well as technologies (Chahal & Bakshi, 2015). Technologically improvement initiatives require access to deep, focused sources of practical knowledge and technological know-how for developing innovative projects (Swink, 2000). Studies show that executives with low technology knowledge scores tend to make poor business decisions and lead to project innovation failures (Panko, 2008).

When implementing a system for project management, it turns out that an organization will incur more costs if it lacks technical knowledge. Conversely, individuals with a deep understanding of technology will achieve successful projects through project innovation (Kappelman, McLean, Johnson, & Gerhart, 2014). Experts believe that implementing the right technology is an asset of the organization's long-term strategy for project innovation and project success (Bartels et al., 2006).

Openness to leadership is believed to support innovation projects (Bono & Judge, 2004). Strive to achieve successful project innovation with a strong project innovation vision, confidence and effective decision making, and with the help of leader openness, by introducing products and Innovative service for customers (Song & Noh, 2006). Leaders should engage their employees in technology and project innovation to develop unique products and services to generate profits in the market

and successful project innovation must be based on good technical knowledge resources. Therefore, there should be a high correlation between a leader's openness and project innovation and technical know-how (Lai & Lin, 2012). Leader openness can encourage team members to consider different sources and come up with new ideas and solutions for the project innovation (Shim & Kim, 2018).

Integration of market information and technological knowledge is critical to project success and innovation, but each management function area is more likely to specialize in the processing of commercial or technological information only (Olson, Walker Jr, Ruekerf, & Bonnerd, 2001; Shim & Kim, 2018). A higher level of integration of technical knowledge means more opportunities and unique situations to access new knowledge and skills conducive to creating project innovative ideas (Koka & Prescott, 2008). Enterprises with high technical knowledge often use research and development activities for long-term orientation and allocation of costs to support research and development investment to make innovation in their projects (Clausen, Pohjola, Sapprasert, & Verspagen, 2012).

Traditionally, performance is determined by three primary concerns: expense, duration, and reliability. The information technology field is among the industries with the highest failure rate in completing projects on time and under budget (Owen et al., 2006). Therefore, IT designs have been widely regarded as among the most difficult to manage due to the numerous changing circumstances, specific requirements, mineral wealth, organizational structures, and technological advances that are employed (Hatamleh, Hiyassat, Sweis, & Sweis, 2018). Although there are many obstacles and barriers to project innovation in IT, effective execution of innovation can have an impact on its performance, either directly or indirectly (Sayyed, Hatamleh, & Alaya, 2021). Project innovation involves both hard and soft competencies. Technical skills, subject knowledge, and expertise, such as general IT expertise, management experience, planning, monitoring, risk assessment, and expertise such as planning and control, are examples of hard skills. Soft skills are intangible and are primarily concerned with managing and cooperating with people and promoting "relationships" between and within organizations. Knowledge management and understanding about dealing with individuals inside the organization culture, leader openness, and managerial skills are examples of

such skills (Kirsch et al., 2000). Technological knowledge is an important resource for the development of new products, the portfolio of knowledge available at the start of an innovation project should play an important role in project performance (Kahn, Barczak, Nicholas, Ledwith, & Perks, 2012).

Because of the associated complexity of project technical information, designers are less reliant merely on their base of knowledge to determine the best way to enhance quality of the design. (Schmidt, Yan, Wagner, & Lucianetti, 2021). So the higher the external input rate, the more novel the overall technical knowledge may be on the project innovativeness. In contrast, with little technical knowledge interdependence, development projects are simple because they are modular, reducing the overall need for novel knowledge.

As shown in previous studies, IT professionals need both hard and soft skills to achieve higher performance (Byrd & Turner, 2001). Leaders are constantly looking for new ways to acquire technical knowledge to improve performance with innovation in the project (Ahmad, Rehman, & Ilyas, 2019). Technical knowledge acquisition is a continuous and ongoing process for employees to acquire newly updated technical knowledge in order to effectively respond to project innovations (Muqadas, Ilyas, Aslam, et al., 2016). Increasing trends in business uncertainty require creativity, innovation, leader openness and sustainable performance for an organization to exist and progress. Existing literature suggests two key drivers for ensuring project performance. Innovation and technical knowledge (Derus & Abdul-Aziz, 2016). Project innovations in information technology have redefined how to perform and complete work smoothly and effectively with the moderating effect of technical knowledge (Muqadas et al., 2016). There is also agreement among researchers that the technical know-how and information in addition to the leader's openness in relevant discipline is of paramount significance for innovation (U. U. Rehman, Ilyas, Aslam, & Imran, 2016). In general, most frameworks agree that leaders need openness and technical skills to use technology to innovate their projects (Iordache, Mariën, & Baelden, 2017). For IT projects, for instance, if IT firms need to create a competitive advantage that could set them other than others, including building technical reputation, they want to drive their skills in dealing with innovation in their projects (Helsper, 2008).

Successful technology project innovations are stated to improve the time, cost, and process performance that are key constraints on IT project success and performance. Successful project innovation is the product of successful integration. In addition, one of the challenges of integration lies in managing the risks associated with the adoption, development and integration of these knowledge assets due to the level of uncertainty in innovation projects (Henderson & Clark, 1990).

As a result, the uncertainty level is linked to a novelty of a project's advancement that also helps to measure how closely the innovation is linked to existing information or product lines. Therefore, novelty is a measure to classify the innovation of a project in terms of knowledge (Kalogerakis, Lüthje, & Herstatt, 2010). Therefore, it depends on how much new ideas are included in the innovation. It can range from low novelty, which involves only improvements to existing products, to high novelty, where entirely new products or processes are developed (Kalogerakis et al., 2010)

H5: Technical Knowledge positively moderates the impact of Leader Openness on Project Innovativeness in such a way that if Technical Knowledge is high, it will strengthen the relationship between Leader Openness on Project Innovation.

A few studies on Technical Knowledge in last 4 years are listed below

2018	
Technical knowledge creation	Søberg, Peder Veng; Chaudhuri, Atanu
Local soil quality and technical knowledge	Brice Prudat, Lena Bloemertz, and Nikolaus Kuhn
Successful Cyber Performance, Cyber security Workforce and Technical Skills	Jessica and Robert
The impact of Age Acoustic addressee-detection, and technical knowledge	Ingo , Tang, Alicia
Knowledge Sharing, Individual Creativity	Joosung Lee

2019

- Technical and Didactic Knowledge of the Moodle LMS Cabero-Almenara, Maria Arancibia, Annachiara Prete
- Accounting education programs and technical knowledge James , Kent
- Online faculty, cultivating technical, pedagogical and content knowledge in a distance program Sharla Berry
- Critical Reflection in a Short-Term Study Abroad, Technical Knowledge and Experience to Elicit Cultural Awareness Roberts, Raulerson, R. Telg, A. Harder and N. Stedma
- Technical knowledge, Privacy paradox, Online privacy and security behaviors, privacy awareness, and financial resources Susanne, Menno , Marianne , Pieter , Janina
-

2020

- Technical knowledge in cultural Heritage. E. Cantatore , M. Lasorella , F. Fatiguso
- Indigenous Technical Knowledge and Livestock Sectors Lenka, Sasanka; Satpathy, Abhijeet
- The competence assessment of Offshore Installation Managers and Control Room Operators in emergency response, and the lack of effective assessment of underpinning technical knowledge and understanding Maureen Jennings
- Examining Users' Adoption of Precision Medicine: Medical Technical Knowledge Xingyuan Wang, Yun Liu and Hongchen Liu
- Indigenous technical Knowledge and their application in pest Management K. Naharki*and M. Jaishi
-

2021

Empowering impact of technical and legal knowledge on rejecting tracking cookies	Joanna Strycharz, Edith Smit, Natali Helberger, Gudavan Noort
Gender-biases in sharing and recognizing technical knowledge on Stack Overflow	S. J. Brooke
Technical language processing: Unlocking maintenance knowledge	Michael Brundage, Thurston Sexton, Melinda Hodkiewicz, Alden Dima, Sarah Lukens
Scientific and technical knowledge of sugarcane cover-management USLE/RUSLE factor	Gustavo Casoni, RochaGerd Sparovek
Technical knowledge in the development of technological culture of students of higher technical educational institutions	Alimjonova Gulnoza

2.6 Indirect impact of Leader Openness on Project Performance

Additionally, the Present research suggests a moderated mediation model ([Preacher, Rucker, & Hayes, 2007](#)) with a causal indirect impact of Leader Openness on Project Performance via Project Innovativeness. Despite, Leader Openness, people with a low level of Technical Knowledge might be less likely to engage in Innovative thinking. As a result, those with a high level of technical knowledge would be less susceptible than those who have a low level of Technical Knowledge. Technical Knowledge serves as an asset and prospect shield, potentially assisting employees in acquiring new resources and minimizing resource scarcity in the event of external pressures.

H6: The indirect effect of Leader Openness on Project Performance through Project Innovativeness is predicted to be significant for those who have high Technical Knowledge and non-significant for those who have low Technical Knowledge.

2.7 Conceptual Framework

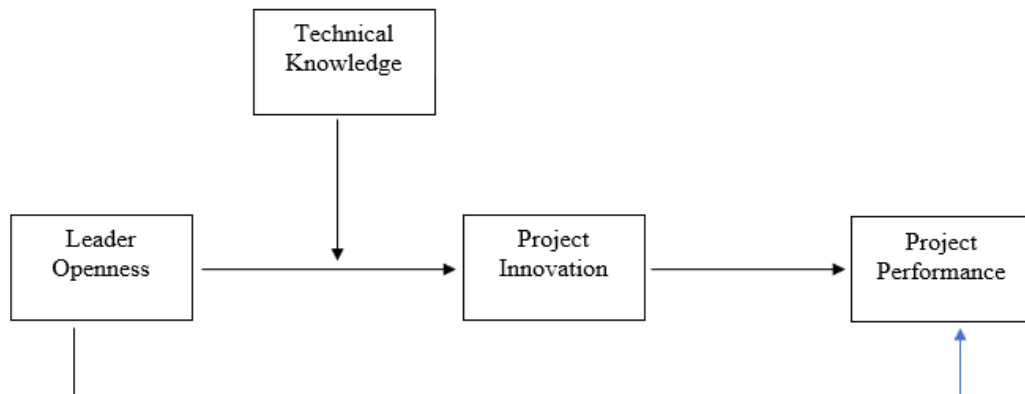


FIGURE 2.1: Impact of Leader Openness on Project Performance with Mediating Role of Project Innovation and Moderating Role of Technical Knowledge

Chapter 3

Research Methodology

This chapter describes the methodology used to investigate the antecedents and outcomes of Leader Openness. The role of Project Innovativeness as a mediator between Leader Openness and Project Performance was investigated. In contrast, the role of Technical knowledge as a moderator between Leader Openness and Project Innovativeness was tested. It contains the Research design, Research approach, Time horizon, unit of analysis, sampling, Measurement, and Pilot testing of the study.

3.1 Research Design

3.1.1 Type of the Study

The time horizon for the present study was planned to be a time lag design. We collected data in three-time lags. This study is casual in nature, supposed to investigate the antecedents of Leader Openness and to explore outcomes of Leader Openness.

3.1.2 Study Environment

In the natural work environment, quantitative data was collected using questionnaires. Questionnaires were adapted from previous studies, and a Likert scale was

used to calculate the responses. All questionnaire forms were graded on a five-point scale. A five point Likert scale was used, with 1 representing the least intense attitude or behavior. and 5 measured the most intense attitude or behavior.

3.1.3 Unit of Analysis

Unit of Analysis refers to the entity or object that is being studied for research purposes. That entity may be an individual, group of individuals, dyads, organizations, or even cultures. Unit of analysis used in the study was employees. Employees working in IT organizations from public and private sector institutions were considered as the unit of analysis.

3.1.4 Time horizon

To avoid the common method bias, a time lag study was conducted. Data was collected in 3 time lags. Each time Lag lasted at least 2 weeks. The time lag is defined as the amount of time that passes between a stimulation and a feedback, or between effect and cause. Numerous conceptual analysis had found that as the time lag between two measurements grows, the effects diminish ([Griffeth, Hom, & Gaertner, 2000](#); [Hulin, Henry, & Noon, 1990](#); [Atkinson, 2000](#)). Whereas no broad findings can be drawn from current studies, a thumb rule is that suggests that effects decreases as the time lags increase ([Dormann & Griffin, 2015](#)).

3.1.5 Data Collection Process

Data were gathered in natural settings from full-time workforce in three time lags. In the initial phase, data about demographics, Leader Openness were captured. This first activity was followed by a two-week period of data collection to tackle the problem of common bias. In the second term data for Technical Knowledge and Project innovativeness was collected with a gap of two weeks. Thereby, in the final stage, the responses were collected for Project Performance. Data for Leader Openness and Project Innovativeness were collected from employees. For Technical Knowledge and Project Performance data was collected from Leaders.

3.2 Sampling

3.2.1 Population

Population includes employees working in Information Technology companies of metropolitan cities (Rawalpindi and Islamabad) of Pakistan. Population is unknown thus g power analysis will be used to collect data. According to which minimum sample size for this study is 119. 300 Questionnaires were distributed (including hardcopy questionnaires and online questionnaires) to receive the maximum responses.

3.2.2 Sampling Technique

Purposive sampling, also known as judgement sampling, is the intentional selection of a participant based on the attributes the participant owns. It is a non - probability sampling technique that does not require conceptual framework or a predetermined number of participants. Simply stated, the researcher determines what must be known and then seeks out individuals who are capable and willing to provide the data through experience or knowledge (Etikan, Musa, Alkassim, et al., 2016) Purposive sampling technique was used since data was collected from employees with minimum of 1 year of experience and companies operating for minimum of 2 years.

3.2.3 Data Instrumentation

Adopted questionnaires are used for data collection. Surveys were distributed directly and online (both) with immediate response. Four demographic variables in the questionnaire are also included including information regarding the respondent's gender, age, qualification, and work experience. The current study's instruments were a structured questionnaire based on the Likert scale. All of these scales were acceptable after undergoing reliability testing. The previously created questionnaire for each variable was used. Information was obtained through analysis

selected from a variety of approved sources through the collection of these questionnaires. Other variables of study include Leader Openness, Technical Knowledge, Project Innovation, and Project Performance.

The Questionnaire includes 22 questions in total having 5 sections i.e. demographics, leader openness, project innovation, technical knowledge and project performance. Demographic data includes variables such as gender, age, qualification and experience that are collected to generate results more reliable and credible by ensuring the confidentiality of respondents' information.

3.3 Measurement

3.3.1 Leader Openness

Leader Openness was measured using 3 items from (Ashford, Rothbard, Piderit, & Dutton, 1998) top management openness scale. Employees responded on a 5-point scale (strongly disagree, 5 strongly agree). The items were (a) My supervisor is open to suggestions, (b) Good ideas get serious consideration from my supervisor and (c) When good suggestions are made to my supervisor, they receive a fair evaluation.

3.3.2 Technical Knowledge

Technical knowledge was measured using 4 items scale based on (Kim et al., 2017) to be answered on 5-point scales ranging from 1 (strongly disagree) to 5 (strongly agree). There were a total of 4 items some of the scale items are (a) IT personnel have knowledge to create capable decision support systems (e.g., data-mining and analytics models) and (b) IT personnel are capable in terms of managing technological project life cycle.

3.3.3 Project Innovativeness

Project Innovativeness was measured using 5 item adapted from (Salomo, Weise, & Gemünden, 2007) to be answered on 5-point scales ranging from 1 (strongly

disagree) to 5 (strongly agree): There we total 5 items, some of them are (a) The novelty of the originally anticipated project results was very high compared to other projects, (b) The originally anticipated results addressed new user/customer need that we have not addressed before, (c) At the beginning of the project we did not yet have the necessary technical knowledge, (d) At the beginning of the project we had little practical experience in the application of the required technology.

3.3.4 Project Performance

A 6 item scale was used to assess Project Performance, developed by (Popaitoon & Siengthai, 2014) and adopted by (Ali et al., 2020) from a scale. A five-point Likert scale, with 1 indicating (strongly disagree) to 5 indicating (strongly agree). (a) Project is meeting operational specifications, (b) Project is meeting technical specifications and (c) Project is meeting time goals.

3.3.5 Ethical Considerations

Throughout the data collection process, it must be ensured that candidates are participating in the study of their own free will and consent, and that they are not subjected to undue pressure. The anonymity of the participants will be our top priority, and the answers will be kept strictly confidential. In no way shall violent or inappropriate language be used in the questionnaire-based process of data collection. Participants must not be misled or physically harmed in any way. Furthermore, participants must be free to withdraw from the study if they so wish.

3.3.6 Pilot Testing

Performing pilot tests before running them on a large scale is a very productive and successful strategy to prevent many risks associated with wasted money and time. Therefore, a pilot test of about 20 questionnaires was conducted. It was done to help respondents recognize and agree with the proposed hypothesis. After pilot testing, the variables were fine and the scale was determined to be accurate for further analysis. Further data will be collected if the required statistics are obtained.

3.3.7 Reliability Analysis of Scales Used

Reliability is evaluated when you test the same item and produce the same consistent result or result over and over again. Scale reliability indicates the capacity of the scale when tested multiple times to provide consistent results. The reliability test was performed using Cronbach's alpha, which showed the internal reliability of the variable. Reliability is mostly checked with Cronbach alpha, which gives data about the internal consistency of the variables.

It was shown that there is a relationship between the variables. Cronbach alpha scales between 0 and 1. The higher the value, the more reliable the strategy that the scale is expected to measure. Cronbach values above 0.7 are considered consistent, and calculations for certain sets of configurations below 0.7 are considered unreliable.

3.3.8 Data Analysis Technique

After collecting the data, we investigated it with SPSS software version 22. In examining the data, the following points were considered.

- First, only the correctly completed questionnaire was selected for analysis.
- Questionnaire of each variable was implied and used for data analysis.
- Sample characteristics were examined using a frequency table.
- Descriptive statistics were conducted by using numerical values.
- The Reliability of all variables was checked through Cronbach alpha.
- Correlation of all variable was computed.
- One way Anova test was conducted.

3.4 Sample Characteristics

Innovation—the implementation of creative ideas—is one of the most important factors of competitive advantage in 21st century organizations. Leaders can

bring in innovation by diversity and by engaging the employees. Employees are more likely to raise their voices and engage in when they are a member of a work-group with standards for expressing ideas, thoughts, and concerns. The following descriptive analysis depicts the diversity of organizations based on gender, age, qualification, and experience, etc.

TABLE 3.1: Frequency by Gender

Gender	Frequency	Percentage
Male	189	68.2
Female	87	31.4
Prefer not to say	1	0.4
Total	277	100

Questionnaires were distributed among the employees working in Information Technology companies of metropolitan cities (Rawalpindi and Islamabad) of Pakistan to collect the data. We have received 277 responses out of a total of 300 questionnaires with a 92.3% response rate. The numbers of male respondents are higher falling into our purposive data collection than females as IT sector of Rawalpindi and Islamabad is Male dominant. There a total of 189 males and 89 females among the respondents, that depicts 68.2% male and 31.4 % female respectively.

TABLE 3.2: Frequency by Age

Age Group	Frequency	Percentage
18-25	126	45.5
26-33	106	38.2
34-41	37	13.4
42-49	5	1.8
50 & above	3	1.1
Total	277	100

Respondents of different age groups filled the questionnaires. Respondents with age group of 18 to 25-years were 106, the respondent between 26 to 33-years were

106, the respondents between 34 to 41-year age were 37, while the respondent between 42 to 49-year age were 5 whereas there were only 3 respondents between the age of 50 & above as shown.

TABLE 3.3: Frequency by Qualification

Qualification	Frequency	Percentage
Intermediate	28	10.1
Bachelors	139	50.2
Masters	86	31
MS/M.Phil	16	5.8
PhD	8	2.9
Total	277	100

The education qualification of the respondents varies as per the survey. 28 respondent education level was Intermediate, 139 respondents had bachelor degree while the respondents with Masters were 86. Respondents that reported to have MS/M.Phil degree were 16 and the rest of the 8 respondents had PhD degree.

TABLE 3.4: Frequency by Experience

Experience	Frequency	Percentage
5-Jan	155	56
13-Jun	99	35.7
14-21	17	6.1
22- 29	3	1.1
30 and above	3	1.1
Total	277	100

The respondents having experience of 0 to 5 years were 155, respondents with experience of 6-13 years were 99, 14-21 years experienced respondents were 17, 3 respondents were 22-29 year experienced and 3 respondents had professional experience of 30 and above as shown in table.

Chapter 4

Results

4.1 Data Analysis

This chapter is comprised of the results of the analysis in both narrative form and tabular form. Descriptive statistics, correlations, reliabilities, and the effects of linear mediated and moderated regression analysis are identified. Inside the subsequent segment, the observed findings were considered in light of various tests to confirm the importance and relationship of the selected variables using software IBM SPSS.

4.1.1 Descriptive Statistics

In descriptive statistics we discussed the basic information about the data that was collected for research purpose. The descriptive statistics here include the Minimum values, Maximum values, Sample Size, Mean, and Sd. Deviation. All the four variables (Leader Openness, Technical Knowledge, Project Innovativeness and Project Performance) were recorded on five point Likert scale such as 1 representing as “Strongly Disagree” and 5 representing as “Strongly Agree”. **Table 4.1** gives an insight for the descriptive statistics of the current data. For the given four variables the sample size was 277. Mean values reflect the concentration of responses. The mean value of Leader Openness was 3.98 it indicates the respondent agreed to Leader Openness presence in project-based organizations of Rawalpindi and Islamabad. The mean value of Technical Knowledge was 4.06, it

represents that the respondents agreed that Technical Knowledge plays a positive role in projects. The mean value of the Project Innovativeness was 3.87, suggesting that the respondents believed that Project Innovativeness has a positive impact on Project Performance. The mean value of Project Performance was 3.97, which indicates that the respondents believed Project Performance was crucial.

TABLE 4.1: Descriptive Statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Dev.
LO	277	1	5	3.988	0.85777
TK	277	1	5	4.0677	0.74038
PI	277	1.4	5	3.8773	0.71987
PP	277	1.5	5	3.9765	0.72908
Valid N (listwise)	277				

4.2 Correlation Analysis

Analysis of correlation is a method of statistical evaluation, which is used to define the strong points of a relationship between statistically continuous which calculated variables. Analysis of the correlation also tests the path of variables about their relationship. The values of correlation of Leader Openness and Technical Knowledge ($r = 0.490$, $p < 0.01$) predict that Leader Openness was positively and significantly correlated with Technical Knowledge. The values of correlation of Leader Openness and Project Innovativeness ($r = 0.526$, $p < 0.01$) predict that Leader Openness was positively and significantly correlated with Project Innovativeness. The values of correlation of Leader Openness and Project Performance ($r = 0.549$, $p < 0.01$) predict that Leader Openness was positively and significantly correlated with Project Performance. The values of correlation of Technical Knowledge and Project Innovativeness ($r = 0.488$, $p < 0.01$) predict that Technical Knowledge was positively and significantly correlated with Project Innovativeness. The values of correlation of Technical Knowledge and Project Performance ($r = 0.539$, $p < 0.01$) predict that Technical Knowledge was positively and significantly correlated with Project Performance.

TABLE 4.2: Correlations

Correlations				
	LO	TK	PI	PP
Leader Openness	1			
Technical Knowledge	.490**	1		
Project Innovativeness	.526**	.488**	1	
Project Performance	.549**	.539**	.625**	1

**Correlation is significant at the 0.01 level (2-tailed).

The values of correlation of Project Innovativeness and Project Performance ($r = 0.625$, $p < 0.01$) predict that Project Innovativeness was positively and significantly correlated with Project Performance.

4.3 Reliability Analysis

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The test was significant at $p < 0.00$, Cronbach's alpha values indicate substantial reliability for all variables, specifically all values are greater than 0.7, which shows that the data is reliable for further analysis. The Cronbach's Alpha values which depict the reliability of each scale are given below in table 4.3.

TABLE 4.3: Reliability Analysis

Variable	Items	Cronbach's Alpha
Leader Openness	3	0.753
Technical Knowledge	4	0.705
Project Innovativeness	5	0.734
Project Performance	6	0.799

Correlation analysis is employed to establish the link between the variables. The findings of a correlation study simply demonstrate the existence of two variables; they do not demonstrate their causal relationship. Regression analysis employs a variety of methods and technologies, such as the full scale method developed by (Hayes, Montoya, & Rockwood, 2017) using SPSS to examine mediation and moderation. **Table 4.4** provides the results for the direct, mediation, moderation, and moderated mediation hypotheses. (Hayes et al., 2017) Model 7 of the PROCESS macro was employed to test the hypothesized model.

Test of Hypothesis 1

H1: Leader Openness will have significant positive impact on Project Performance.

H1 results in Table showed that Leader Openness is significantly associated to Project Performance ($\beta = .25$, $p < 0.00$), thus H1 hypothesis of the study is accepted.

Test of Hypothesis 2

H2: Leader Openness has a positive impact on Project Innovativeness.

Table 5 findings in H2 shows that Leader Openness has a positive impact on Project Innovativeness. ($\beta = .52$, $p < 0.00$) indicating that there is linear relationship between Leader Openness and the Project Innovativeness. Moreover, the sign of β showed that this relationship is positive.

Test of Hypothesis 3

H3: Project Innovativeness has a positive impact Project Performance.

Results of H3 in Table showed that Project Innovativeness positively affects Project Performance. As ($\beta = 0.47$, $p < 0.00$) indicating that there is linear relationship between Project Innovativeness and the Project Performance. Moreover, the sign of β showed that this relationship is positive.

Test of Hypothesis 4

H4: Project Innovativeness positively mediates the impact of Leader Openness on Project Performance.

Results of H4 in table indicated that Project Innovativeness positively mediated Leader Openness and Project Performance ($\beta = 1.07$).

TABLE 4.4: Indirect Effect

Indirect Effect				
	Index	Boot SE	Boot LLCI	Boot ULCI
LO→PI→PP	0.1075	0.0269	0.0596	0.1657

4.3.1 Test of Hypothesis 5

H5: Technical Knowledge positively moderates the impact of Leader Openness on Project Innovativeness in such a way that if Technical Knowledge is high, it will strengthen the relationship between Leader Openness on Project Innovativeness.

Results of H5 in table show that Technical Knowledge positively moderates the relationship between Leader openness and Project Innovativeness ($\beta=0.22$, $p<0.00$).

TABLE 4.5: Moderation Analysis

Moderation				
	Index	Boot SE	Boot LLCI	Boot ULCI
Int_1	0.2238	0.0431	0.1435	0.313

N = 277, Model 7 results, Bootstrap = 5000, 95% confidence interval. *p < 0.05, **p < 0.01. LL, lower limit; UL, upper limit; SE, standard error. Boot, Bootstrap; Impact of Leader Openness on Project Performance with mediation of Project Innovativeness and moderation of Technical Knowledge

Testing Hypothesis 6

The indirect effect of Leader Openness on Project Performance through Project Innovativeness is predicted to be significant for those who have high Technical Knowledge and non-significant for those who have low Technical Knowledge.

TABLE 4.6: Conditional Process Analysis and Conditional Indirect Effect

Conditional Indirect Effects of LO on PP through TK							
				Effect	Boot SE	Boot SE	Boot ULCI
TK (Low)	-1 SD	(3.25)		0.0708	0.0313	0.0141	0.1389
TK (Mean)	(4)			0.1514	0.0289	0.0991	0.2136
TK (High)	+1 SD	(5)		0.2588	0.0437	0.1824	0.3516

4.3.2 Summary of Hypothesis

TABLE 4.7: Summary of Hypothesis

Hypothesis	Statement	Status
H1	Leader Openness is positively and significantly related to Project Performance.	Supported
H2	Leader Openness has a positive impact on Project Innovativeness	Supported
H3	Project Innovativeness has a positive impact on Project Performance	Supported
H4	Project Innovativeness positively mediates the impact of Leader Openness between Project Performance.	Supported
H5	Technical Knowledge positively moderates the impact of Leader Openness on Project Innovativeness in such a way that if Technical Knowledge is high, it will strengthen the relationship between Leader Openness on Project Innovativeness.	Supported
H6	The indirect effect of Leader Openness on Project Performance through Project Innovativeness is predicted to be significant for those who have high Technical Knowledge and non-significant for those who have low Technical Knowledge.	Supported

Chapter 5

Discussion and Conclusion

5.1 Introduction

This chapter includes hypothesis relationship details and also their justification of acceptance and rejection including the theoretical implication, practical implication, strengths and weaknesses of the study and future directions. In the current study, we centered on testing the impact of Leader Openness on Project performance.

5.2 Discussion

5.2.1 Leader Openness and Project Performance

H1: Leader Openness has a significant positive impact on Project Performance.

The results of this study show that there is a significant relation between Leader Openness and Project Performance. When the leader is open to the new ideas, experiences and makes sure inclusion of employee suggestions in decision making, it increases the sense of responsibility and value to the subordinates thus team will be able to think collectively and involve themselves in decision making and work profoundly to provide effective performance. This adds to the employee performance leading to outstanding project Performance.

Roberson and Perry (2022), found leader availability and openness are key elements of inclusion as leaders listen to and learn from different perspectives. In the last two decades, trend of adapting to Leader Openness has grown, resulting in the enhanced performance of team members. Across the different phases of a project life cycle, different team members are involved in leadership and work together under each other supervision (Hoegl & Muethel, 2016). Because voice involves suggestions to do something differently, leader behaviors signaling an openness to or appreciation for change should be a critical contextual influence on employee willingness to speak up (Detert & Burris, 2007).

5.2.2 Leader Openness, Project Innovativeness and Project Performance

H2: Leader Openness has a positive impact on Project Innovativeness.

H3: Project Innovativeness has a positive impact Project Performance.

H4: Project Innovativeness positively mediates the impact of Leader Openness on Project Performance.

The study's findings demonstrate that Project Innovativeness considerably and positively mediates the link between Leader Openness and Project Performance. Leaders can take the initiative to involve the subordinates in decision making and building a trust between the leader and the subordinates, adding to the employee's confidence in sharing new ideas or simply sharing the problems, this tactic may be fruitful for the team as a whole as well as the organization under Leader Openness. Additionally, the effects of Leader Openness on project team processes and outcomes start to have a cumulative impact on Project Performance. According to the research, Leader Openness significantly influences Project Performance.

Leaders Openness promotes higher levels of initiative and invention among team members, whose behavior has been linked to team performance. The majority of cutting-edge research focuses on essential management options and actions that support the bottom-up approach to innovation. In order to create a positive team environment, leaders are necessary (Bass & Steidlmeier, 1999). They can do this by rewarding them and motivating them with work autonomy (Hemlin & Rasmussen,

2006; Hunter, Bedell-Avers, & Mumford, 2007). Therefore, leaders have two tasks: on the one hand, they assist teams and people in achieving innovation in their work, and on the other, they oversee the organization's goals for achieving innovation (Hemlin & Rasmussen, 2006).

5.2.3 Technical Knowledge as a Moderator between the Relationship of Leader Openness and Project Innovativeness

Results indicated that by letting people contribute in accordance with leadership standards and guidelines and by creating a supportive work environment, a leader can influence their pro-active conduct, which in turn results an increase in Project performance. Leaders establish a good team environment (N. R. Anderson & West, 1998), help to solve problems (Tierney, Farmer, & Graen, 1999), give crucial excitement (Bass & Steidlmeier, 1999), and help team members understand one another (Scott-Young & Samson, 2008).

Technology has become an increasingly vital component for firms to compete and prosper in today's digital world. Employee's agility in embracing existing technologies to improve the productivity of its industries, with a focus on his/her ability to fully utilize information and communication technologies (ICT) in daily activities by acquiring Technical Knowledge is vital. It makes no difference whether the technology used was developed within or outside of national borders in terms of its ability to boost productivity. The main point is that firms in the country have access to advanced products and blueprints, as well as the ability to use them.

5.3 Conclusion

In this study, four variables—Leader Openness as an independent variable, Project Innovativeness as a mediator, Project Performance as a dependent variable, and Technical Knowledge as a moderator—were extensively explored to ascertain their significance in project management. The results of the hypothesis show that

Project Performance is positively and significantly connected to Leader Openness and that Project Innovativeness mediates this relationship. The association between leader openness and project performance is accordingly moderated by technical knowledge; for instance, when project innovativeness is high, the relationship between leader openness and project performance would be stronger. Based on the findings discussed above, this study concluded that if leader openness is encouraged within organizations, the performance of project-based teams could be improved. This is because it can give team members more freedom to carry out their duties and give them the option to choose the methods that work best for them. Additionally, when a team's projects are inventive and its members possess technical knowledge, they will work harder to accomplish their intended goals, as seen by their improved performance. Additionally, based on the findings, it is possible to draw the conclusion that teams can work more effectively as a team while implementing project innovation inside their company when the leader is open to new ideas and the team has technical knowledge of the task at hand.

5.4 Recommendations

5.4.1 Theoretical Implications

The current study contributes significantly to the project management domains of Leader openness and Project Performance. Technical Knowledge has rarely been investigated in the previous literature in the project management context; any single individual seldom possess all of the knowledge and skills required to direct or carry the entire project performance (Pearce et al., 2004). The current research primarily demonstrates a Leader Openness impact on Project Performance, whereas Technical Knowledge was a novel variable that had not previously been investigated in the context of Leader Openness and Project Performance.

5.4.2 Practical Implications

The study's findings have several implications for managers in project-based companies regarding academic skills and educational techniques. Project managers can

implement such interventions (for instance, leadership and management training and technical training) within the organization to support technical knowledge, innovation, and leader openness. The research findings support the importance of Leader Openness in achieving Project Performance because they have a direct impact on it. More crucially, Leader openness may enhance Project Innovativeness, creating a more supportive learning environment. Based on theoretical justifications and actual data, this study hypothesizes that Project Innovative influences project performance directly by inspiring Leader Openness and Technical Knowledge to work toward common goals.

Since Pakistan experiences a high rate of failure to accomplish the success of the project team, this study is crucial for both leaders and subordinates. It is recommended that project managers in various project-based organizations share ideas with their team and let the teams share their ideas and suggestions. Moreover, managers need to make sure that this approach will not be misused either inside or outside the company. In the end, these managers' being open to new ideas and promoting creativity results in performance improvement.

As a result, the organization is able to accomplish the project's intended goal thanks to the successful implementation of project activities. Managers can accomplish this through empowering their staff members and appreciating their initiatives. Employees are able to assess how their efforts and labor affect the performance of various project teams as a result. By investing in their development (i.e. Technical skills training), promoting innovativeness and, managers may help their staff members fulfill their responsibilities more confidently, successfully, and efficiently.

In the context of project management literature, this study will aid researchers in comprehending the underlying circumstances that may be affecting project team performance. It also demonstrates how a leader's behavior exemplifies a team's innovative attitude, which helps teams become more motivated and focused on achieving their objectives.

5.4.3 Limitations and Future Directions

Some limitations were noted in this study. First, this analysis ignored other operational and project-based organizations while concentrating on Project-based IT organizations. Second, the Leader trait (i.e. Leader Openness) was the main focus of this study. The research was conducted in the metropolitan cities (Rawalpindi and Islamabad) of Pakistan due to geographical restrictions. This study was conducted in Pakistan, but future work may look into other contexts to conduct a comparative study.

This study focused on one trait of Leader (Leader Openness) with moderating role of Technical Knowledge, other dimensions of leader traits in association with Technical Knowledge can be explored. Also, future research can investigate the effect of Leader Openness on Project Performance by including other variables as mediators and moderators in this relationship

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Appendix-A

Questionnaire

Dear Respondent

I am a student of MS Project Management at Capital University of Sciences and Technology, Islamabad. I am researching the impact of Impact of Leader Openness on Project Performance with moderating role of Technical Knowledge and mediating role of Project Innovativeness. You can help me by filling out the questionnaire. I appreciate your participation in my study and I assure you that your responses will be held confidential and will only be used for education purposes.

Secret Code: _____

Amreen,

MS PM Research Scholar,

Faculty of Management and Social Sciences,

Capital University Science and Technology, Islamabad.

Section 1: Demographics

Gender	1- Male 2- Female, 3- Prefer not say
Age(years)	1(18-25) 2 (26-33), 3 (34-41), 4 (42-49), 5 (50-above)
Qualification	1 (Intermediate), 2 (Bachelor), 3 (Master) 4 (MS/M.Phil.), 5 (PhD)
Experience(years)	1 (1-5), 2 (6-13), 3 (14-21), 4 (22-29), 5 (20-above)

Section 2: Leader Openness

Please mark a (✓) in the appropriate column to indicate whether you agree or disagree with each of the following statements:

1= strongly disagree, 2= Disagree, 3 = Neutral, 4= Agree, 5= Strongly Agree..

Sr. No	Items					
1	The supervisor is open to suggestions	1	2	3	4	5
2	Good ideas get serious consideration from my supervisor	1	2	3	4	5
3	When good suggestions are made to my supervisor, they receive a fair evaluation.	1	2	3	4	5

Section 3: Project Innovativeness

Please mark a (✓) in the appropriate column to indicate whether you agree or disagree with each of the following statements:

1= strongly disagree, 2= Disagree, 3 = Neutral, 4= Agree, 5= Strongly Agree..

Sr. No	Items					
1	The novelty of the originally anticipated project results was very high compared to other projects.	1	2	3	4	5
2	The originally anticipated project results addressed new user/ customer needs that we have not addressed before.	1	2	3	4	5
3	At the beginning of the project we did not yet have the necessary technical knowledge	1	2	3	4	5

4	At the beginning of the project we had little practical experience in the application of the required technology	1	2	3	4	5
5	In our project we could only partially rely on the existing technological competence of the company	1	2	3	4	5

Appendix-B

Questionnaire

Dear Respondent

I am a student of MS Project Management at Capital University of Sciences and Technology, Islamabad. I am researching the impact of Impact of Leader Openness on Project Performance with moderating role of Technical Knowledge and mediating role of Project Innovativeness. You can help me by filling out the questionnaire. I appreciate your participation in my study and I assure you that your responses will be held confidential and will only be used for education purposes.

Secret Code: -----

Amreen,

MS PM Research Scholar,

Faculty of Management and Social Sciences,

Capital University Science and Technology, Islamabad.

Section 1: Demographics

Gender	1- Male 2- Female, 3- Prefer not say
Age(years)	1(18-25) 2 (26-33), 3 (34-41), 4 (42-49), 5 (50-above)
Qualification	1 (Intermediate), 2 (Bachelor), 3 (Master) 4 (MS/M.Phil.), 5 (PhD)
Experience(years)	1 (1-5), 2 (6-13), 3 (14-21), 4 (22-29), 5 (20-above)

Section 2: Technical Knowledge

Please mark a (√) in the appropriate column to indicate whether you agree or disagree with each of the following statements:

1= strongly disagree, 2= Disagree, 3 = Neutral, 4= Agree, 5= Strongly Agree..

Sr. No	Items					
1	IT personnel have knowledge to create capable decision support systems (e.g., data-mining and analytics models).	1	2	3	4	5
2	Our IT personnel are skilled in multiple types of databases (e.g., network, relational, object-oriented)	1	2	3	4	5
3	Our IT personnel are skilled in multiple structured programming, CASE methods, or tools	1	2	3	4	5
4	Our IT personnel are skilled in multiple main-frame computer operating systems	1	2	3	4	5

Section 3: Project Performance

Please mark a (✓) in the appropriate column to indicate whether you agree or disagree with each of the following statements:

1= strongly disagree, 2= Disagree, 3 = Neutral, 4= Agree, 5= Strongly Agree..

Sr. No	Items					
1	Project is meeting operational specifications.	1	2	3	4	5
2	Project is meeting technical specifications.	1	2	3	4	5
3	Project is meeting time goals.	1	2	3	4	5
4	Project is meeting budget goals.	1	2	3	4	5
5	Project is fulfilling client needs.	1	2	3	4	5
6	Client is satisfied with the project's performance.	1	2	3	4	5