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From Knowledge-Oriented Leadership to Information Technology Project Success: Modelling the Mediating Role of Team Empowerment

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ABSTRACT

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By applying the concept from the Resource Based View (RBV) and Social Identity Theory (SIT), this endeavor aims to determine the influence of Knowledge-Oriented Leadership (KOL) on Project Success (PS). This study further ascertains the mediating role of team empowerment in the relationship between KOL and PS. The data were gathered from 207 project team professionals working in the Information Technology (IT) sector of Pakistan. This endeavor utilized Partial Least Squares - Structural Equation Modeling to substantiate the direct and mediating effects. The result indicated that KOL significantly influences project success. Moreover, the result further validated that team empowerment mediates the relationship between KOL and PS. There is a deficiency of an empirical investigation on the relationship between KOL and PS in the context of the evolving republic. This study makes a substantial contribution to the field of IT project management by demonstrating that KOL impacts PS while team empowerment mediates this relation. This is one of the primitive endeavors that explores the inter-relationship amongst KOL, PS, and team outcome.

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Present-day project success has become the most prevailing trend of research in the dome of project management (Shaukat et al., 2022). Project success can be measured based on stakeholder satisfaction, the organizational benefit achieved, and the success of the product

(Atkinson, 1999). A successful project depends on what the customer wants and determines whether the developed project is performing the tasks for which the project was undertaken (Aga et al., 2016). Project Success (PS) can be considered as the success of the process, project, or success of an organization (McLeod et al., 2012). The success of a project is dependent upon different situational factors and the methodology selected for a project. There is a growing literature emphasizing that leadership is one of the most significant individual influential predictors of project performance and success (Aga et al., 2016; Latif & Nazeer et al., 2020). Hence, the leader has been considered a distinct resource of an organization (Galbreath, 2005).

Software and Information Technology (IT) industries are gaining much attention around the globe. Software development projects have a lasting impact on the modern business world (Dubey, 2011). Societies are now gradually dependent on computers, software, and other related technologies (Elmezain et al., 2021). The rapid growth of the software industry provides grounds for millions of people to connect with it. Moreover, the large community wants to associate with the IT industry in the future as well (Ahmed et al., 2012). Pakistan's booming IT sector recently succeeded in reaching its objectives. More than 2500 IT companies are registered in Pakistan that employ highly qualified and educated personnel. Pakistan's IT sector possesses 25 tech incubators, collaborative working spaces, and startups. Over 2.8 billion dollars in revenue are generated by the IT sector, of which \$1.6 billion comes from the export of software and IT services. Technically equipped and Microsoft-licensed specialists are worthy assets to the IT industry and the country economic development (Shahzad et al., 2017; TechJuice, 2015). To ensure the success of IT projects, IT firms pay due consideration to software project management and its anticipated leading-edge methodologies (Desmond, 2017).

IT projects are currently very large and complex owing to the integration of software, hardware, and networking in project production. Software integration and development have gotten more challenging with the introduction of smart technology. The setup, design, and ownership of modern software development projects are distinctive and complex, and these factors have a substantial impact on the performance of the project (Andersen, 2016). Extant literature highlighted various research publications conferring the factors that affect the success and or failure of a project. Mtsweni et al. (2016) argued that there is a need to identify the causes of failures and to study the critical success factors that lead to IT project success. IT industry also faces these problems widely (Gartner, 2018; Manfreda & Štemberger, 2018; Wafa et al., 2022). Following imperative problems have been pinpointed in IT sector projects: a) Lower the usage of IT systems functionalities and software applications (Gartner, 2018). b) Growing expectations to change the IT sector mindset globally (Manfreda & Štemberger, 2018). c) Rapidly changing and evolving consumer desires (Wafa et al., 2022). d) Poor leadership and managerial capabilities (Malik & Khan, 2021). e) It is not technical perfection that is the key skill, but rather the ability to collaborate and form interpersonal relationships within the organization to augment competitiveness (Jia et al., 2018).

To overcome these issues, leadership practices have been considered the most effective and widely acknowledged approach in collaboration with stakeholders (Iqbal et al., 2022). Project researchers have paid less attention to project leadership, which pertains to the expansion of human skills and prosperity (Byrne & Barling 2015; Muñiz Castillo & Gasper, 2012). The conventional leadership styles associated with old business setups are unable to fulfill modern

firms' demands (Mabey et al., 2012). An inadequate leadership style increases the unpredictability of authority, influence, and directives, endangering project success (Müller & Turner, 2007). Hence, leadership behaviors need to be discussed from a knowledge-oriented perspective (Alharthi & Khalifa, 2019; Khalifa & Hewedi, 2016).

The study of knowledge-based leadership is relatively new. The early research to discuss the significance of Knowledge-Oriented Leadership (KOL) was presented by (Donate & de Pablo, 2015). They established the KOL style for knowledge management success by integrating motivation and communication components with some characteristics of the transformational and transactional leadership styles. Later on, only a few researchers focused on the relationship between KOL and PS (Latif et al., 2021; Mariam et al., 2022; Naqshbandi & Jasimuddin, 2018; Zia, 2020). The knowledge-oriented feature of leadership is becoming an imperative attribute for information system project success (Zahur et al., 2022).

Aga et al. (2016) proposed that project-team play a significant mediating role in these relationships to explore the influence of leadership practices on PS. Therefore, existing research proposes team empowerment as a mediating mechanism in the relationship between KOL and PS. A highly empowered team has administrative liberty for its members to share leadership duties, resource allocation, prompt decisions, and monitor works (Kirkman & Rosen, 1999; Manz & Sims, 1993). Moreover, empowered teams bring innovative and valuable ideas for successfully completing processes, procedures, and projects (Shin, 2014). Hence, it can be concluded that leadership implementation becomes easier with team cooperation and active participation. Latif and Sajjad et al. (2020) emphasized team-level issues, for instance, team empowerment to increase efficiency. Thus, despite team empowerment being a vital factor contributing significantly, its facilitating role in the KOL-PS relationship is not adequately inspected.

The extant literature highlights numerous knowledge gaps concerning the role of KOL, team empowerment, and project success, which require scholars' attention. *First*, although the KOL concern is emerging, the application of the KOL practices is still considerably underdeveloped (Shamim et al., 2019). However, Project management professionals have yet to infuse KOL initiatives to manage their projects more efficiently (Sahibzada et al., 2022).

Second, the role of KOL in project success has been less explored in the extant literature (Zia, 2020). Scholars like Zhang and Guo (2019) argued that KOL practices become critical to the success of new project management, particularly in IT-enabled business projects. They further stated that the relationship between the KOL and project success remains unexplored empirically. Moreover, Chaithanapat et al. (2022) noted less empirical evidence to specify what project consequences might be affected while using the KOL adoption.

Third, the existing literature showed that the impact of KOL on project success has been studied by employing various mediating mechanisms (Mariam et al., 2022; Rehman & Iqbal, 2020). KOL is an emerging concept; hence, the direct association between KOL and project success may further require a mediating mechanism. Existing research calls for the investigation of team outcome variables such as team empowerment, which further explain the effect of KOL on performance-based outcomes (for instance, Latif et al., 2021; Sahibzada et al., 2022).

Fourth, Zhang and Guo (2019) stated that the application of KOL practices has been continually growing in information technology firms. To investigate the relationship between

the KOL and PS in IT sector in the developing countries context is still in its infancy (Zia, 2020). To fill these knowledge gaps, we investigate the influence of the KOL on IT project success. We also incorporate team empowerment as a mediator for the first time in the relationship between KOL and PS. Our study's questions are:

1. *Does knowledge-oriented leadership affect information technology project success?*
2. *Either team empowerment impacts on information technology project success?*
3. *Does team empowerment mediate the relationship between KOL and PS?*

This endeavor adds to the theory in the following ways. At first, this research uses Social Identity Theory (SIT) and the Resource-based View (RBV) to link KOL, team empowerment and PS. According to SIT, personnel classify themselves and others in social groups like organizational membership (Tajfel et al., 1979). The RBV perceives business setup as a collection of distinctive resources that act as the basis of the organization's strategy and the key source of effectiveness (Barney, 1991). KOL practices are rare, iterative, fast-growing, and valuable (Latif et al., 2021; Sahibzada et al., 2022), like any other uncommon RBV resource. This endeavor enhances the literature on RBV and SIT by establishing the relationships amongst KOL, team outcomes, and PS. Second, our research makes a significant contribution in the area of KOL implementation, which can be beneficial for the IT sector of Pakistan to recognize the importance of the KOL approach and encourage team empowerment to augment greater IT project success. Third, we introduced the mediating mechanism of team empowerment through which KOL impacts project success. Fourth, this research will make a significant contribution where it serves as a foundational study in the context of Pakistan that other studies can build upon to dive deeper into the area. The study will also encourage practitioners, trainers, and IT project managers to excel in knowledge leadership practices, thereby helping to improve firm performance.

This study comprises several sections. A brief introduction of the topic and related research questions have been discussed first. Detailed literature support has been presented in section two. After that literature review, the conceptual model of the study was presented. Research methodology results and analysis have been presented subsequently. Finally, the discussion, conclusion, and future direction chapter is presented.

Literature Review

Project Success

Numerous firms are operating on a project-based approach to carry out their daily business activities (Kazmi et al., 2016). A Project is a group of experts working together to achieve a specific goal with a limited schedule and cost (Sydow et al., 2004). Project is a key asset to forge competitive advantages and generate economic value (Zhang et al., 2018). Success is characterized as the completion of a project with optimum resource utilization (Basten et al., 2011). It is apparent from the literature that measuring success is a crucial task. PS is a multi-dimensional concept. Project success is deemed an important and crucial subject of project management literature and the prime objective of numerous project-oriented firms (Yudi et al., 2018). Since a project has diverse perspectives, interpretations, and ambiguities, it can be difficult to determine project success in absolute terms (Ika, 2009; Jugdev & Müller, 2005). In the prevailing literature, the "iron triangle" that is cost, time, and quality has been widely

considered the key to project success (Atkinson, 1999). Iron triangle criteria are still regarded as essential for assessing project performance.

There is an emergent acknowledgment among researchers and policy makers that apart from the iron triangle concept, various factors such as user acceptance, stakeholder gratification, corporate effectiveness, and future opportunities played central roles in project success (Ika, 2015). Nasir and Sahibuddin (2011) categorized people, processes, and technology as a critical success factor. Belassi and Tukel (1996) classified the potential success factors into different categories pertaining to the project stakeholders, business, and external environment. Three primary success factors in project-based organizations are an influence on consumers, satisfying design goals, and advantages of the company (Wu et al., 2017). According to Bogopa and Marnewick (2022), project success depends on good leadership, a committed and motivated team, client involvement, clear requirements, and project goals. Projects must possess the satisfaction of project stakeholders, particularly the project team and client, to achieve performance excellence (Baker et al., 1997). Every software company aims to deliver software with minimum cost and time and meets the quality expected by the sponsor (Ahmed et al., 2012). Joslin and Müller (2016) stated that a project can be successful as it benefits both the organization and the stakeholders. According to Burke (2011), if a project meets time constraints (time) and financial bounds (budget) and satisfies the stakeholder (quality), it is considered a project success.

Knowledge-oriented Leadership

Leadership is a shared, communal, and performance-based pattern of impacting subordinates to attain desired goals (Fischer et al., 2017) by applying various factors including motivation, reinforcement, and communication excellence (Von Krogh et al., 2012). However, these features might become inadequate in the case of desired objectives pertaining to knowledge concern (Shariq et al., 2019). Moreover, firm leaders and managers need to exhibit divergent behaviors to lead subordinates by applying the concept from a knowledge lens in a knowledge-based working setting (Rivière & Sitar, 2003). The theory of KOL has evolved in recent times (Donate & de Pablo, 2015; Shamim et al., 2019), and the idea of knowledge leadership and knowledge management is still in the primary phase (Yang et al., 2014). The quick improvement of new advancements and computerized correspondences has expanded the importance of KOL as a primary source of an upper hand. The analysts have arrived at the resolution that knowledge-oriented leadership is significant for an organization's success, regardless of whether it is hard to accomplish. KOL is one of the most significant and basic initiative methodologies in the organization, and knowledge is expected for every attribute, quality, and style of administration (Gharama et al., 2020b). Besides knowledge creation and sharing, KOL helps strengthen the employee's motivation (Isaac et al., 2019).

KOL can be defined as a combined or individual disposition or activity that encourages the most recent and the main information to be shared and utilized to change the reasoning and aggregate result (Mabey et al., 2012). KOL feels comfortable in a relationship-oriented environment to extend cooperation and help project team members pledge a valuable knowledge-based process policy and make its successful implementation (Liu & Phillips 2011). Knowledge leadership is crucial for an organization to improve its exhibition through the powerful turn of events and execution of knowledge management processes (Donate & de

Pablo, 2015). KOL should reflect as a bench-mark, stimulate learning by motivation and endowing the team mentally and by knowledge, standardize learning by arrangement of encouragement & exercise, foster a society that learns from mistakes, support discipline & adopt knowledge storing, sharing, and application systems (Naqshbandi & Jasimuddin, 2018).

Team Empowerment

A team is a collection of people who collaborate to solve issues or to complete tasks (Hackman, 1987; Manz & Sims, 1993). A team usually operates collectively to achieve desired common objectives. Teamwork refers to persons uniting and harmonizing their expertise to pursue a shared goal. The empowerment concept refers to developing a person's or a group's authority and abilities (Rothwell et al., 2009). Spreitzer (1995a) stated that empowerment is intrinsic task motivation instigated by a person's positive or favorable attitude towards their professional life, which is their work role. Teams have proliferated in corporate sectors; researchers have concentrated on employee empowerment to achieve their goals (Somech, 2005; Spreitzer, 1995b). According to Kirkman and Rosen (2000), team empowerment is just as significant as individual empowerment. They discovered that those who believed their team had a lot of power were more willing to pitch in and compromise for the team to succeed.

Many claims have been made in recent years by researchers and management consultants who are studying the effectiveness of teams for firms (Aga et al., 2016; Latif & Nazeer et al., 2020). Teams are explicitly believed to help companies and organizations achieve better results through enhanced employee performance, productivity, organizational responsiveness, and adaptability (Friedman & Casner-Lotto, 2002; Melita Prati et al., 2003). These advantages are frequently credited to the good effects of teams on employee attitudes including job satisfaction, motivation, and productivity, as well as work engagement (Mitchell et al., 2001). Team empowerment aims to improve team processes, individual and team traits, and organizational environments and structures (Salas et al., 2008). Team empowerment is key to efficient project management, by which the team possesses all the skills required to deal with different situations and has the authority to make decisions pertinent to the undertaken project (Cockburn & Highsmith, 2001). Team empowerment plays a crucial role in project-based activities because the project manager gives the authority to take managerial decisions for the project (Birkinshaw, 2018). In addition, the project team has more control over management decisions and governance processes (Van Waardenburg & Van Vliet, 2013). Moreover, team empowerment produces more successful projects (Gerster et al., 2018).

Knowledge-Oriented Leadership and Project Success

Firms are usually stand to achieve established objectives, and their performance is assessed to evaluate the realization of their anticipated objectives (Masa'deh et al., 2016). Past literature highlighted that various factors impact project success. Gallagher et al. (2015) argued that incorporating decisive reasoning, adaptability, investment, improvement, documentation, execution, quality confirmation, correspondence, project feedback, and leadership contributes to project success. Scholars like Rehman and Iqbal (2020) argued that, apart from other factors, leadership is a vital source of impacting project success. Project manager skills are crucial in enhancing project performance (Maqbool et al., 2017). Leaders improve workers' information and figure out how to urge them to be creative with critical thinking apparatuses that give a

scholarly feeling and motivate subordinates, upgrade correspondence, trust, and the sharing of information is supposed to advance better project execution (Para-Gonzalez et al., 2018).

KOL has the capabilities of both transformational and transactional leader components (Donate & de Pablo, 2015). The extant literature highlighted that a knowledge-oriented leader is a great source of project performance and success. For instance, Meso and Smith (2000) stated that firms' knowledge resource support to outperform and accomplish higher levels of organizational performance. Al-Hakim and Hassan (2016) found a significant correlation between KOL and PS. Latif et al. (2021) affirmed that KOL has a substantial effect on project success. Likewise, Mariam et al. (2022) confirm a significant connotation between knowledge-oriented leadership and project success. Based on these directions, this study proposed the subsequent hypothesis.

H1: Knowledge-oriented leadership has a positive impact on project success.

Team Empowerment and Project Success

Team empowerment plays an important role for efficient project management by which the team possesses all the skills required to deal with different situations and has the authority to make decisions pertinent to the project (Cockburn & Highsmith, 2001). Team empowerment is considered an important factor in project management and the project manager has a delicate authority over project teams to take managerial decisions (Birkinshaw, 2018). In addition, the project team has more control over management decisions and governance processes (Van Waardenburg & Van Vliet, 2013). In doing so, an empowered team produces more successful projects (Gerster et al., 2018). According to Beck et al. (2001), a highly empowered project team develops the best design, produces unique features, and provides quality software to the customer. Harter et al. (2002) underline that team empowerment increases team productivity, further contributing to successful project completion. Team empowerment increases the performance outcomes, and the team finds meaning in the project (Kirkman et al., 2004).

The extant literature highlighted that team empowerment is a great source of project performance and success. For instance, Butler et al. (2018) argued that team empowerment positively impacts sustainable project performance. They further stated that the organization needs to include a team empowerment strategy as a part of the organizational long-term decision-making plan and develop such an environment where empowerment culture prevails throughout the organization. Khan et al. (2020) concluded that team empowerment has a positive association with project success. Roth et al. (2020) stated that team empowerment is an essential mechanism by which design thinking influences project success. Aga et al. (2016) found that project teams significantly contribute to project success. Khan et al. (2020, p.1322) stated that team empowerment significantly augments their performance, which in turn increases project success. Based on these lines of logic, this study proposed the following hypothesis.

H2: Team empowerment has a positive impact on project success.

Mediating role of Team Empowerment

Team empowerment essentially adds to the general improvement in efficiency (Ul Haq et al., 2018). The empowered team secures their position undertakings as significant and effective

and utilizes various innovative ways of accomplishing their goals (Javed et al., 2017). Chandra et al. (2011) argued that an empowered team induces constructive efforts to augment greater project success. Besides, experienced and empowered team members can efficiently complete the project (Hsu, 2017). Jha (2014) stated that team empowerment feeling is not treated as a fancy statement of an organization. As an alternative, organizations need to transform their governance, structure, strategies, and procedures to empower project team members. In addition, organizations are required to modify their conventional top-down management framework characterized by superior centralization and stimulate a participative decision-making environment (Hassan et al., 2017). In doing so, the team feels empowered and would further attempt to develop a bridge between leadership and PS.

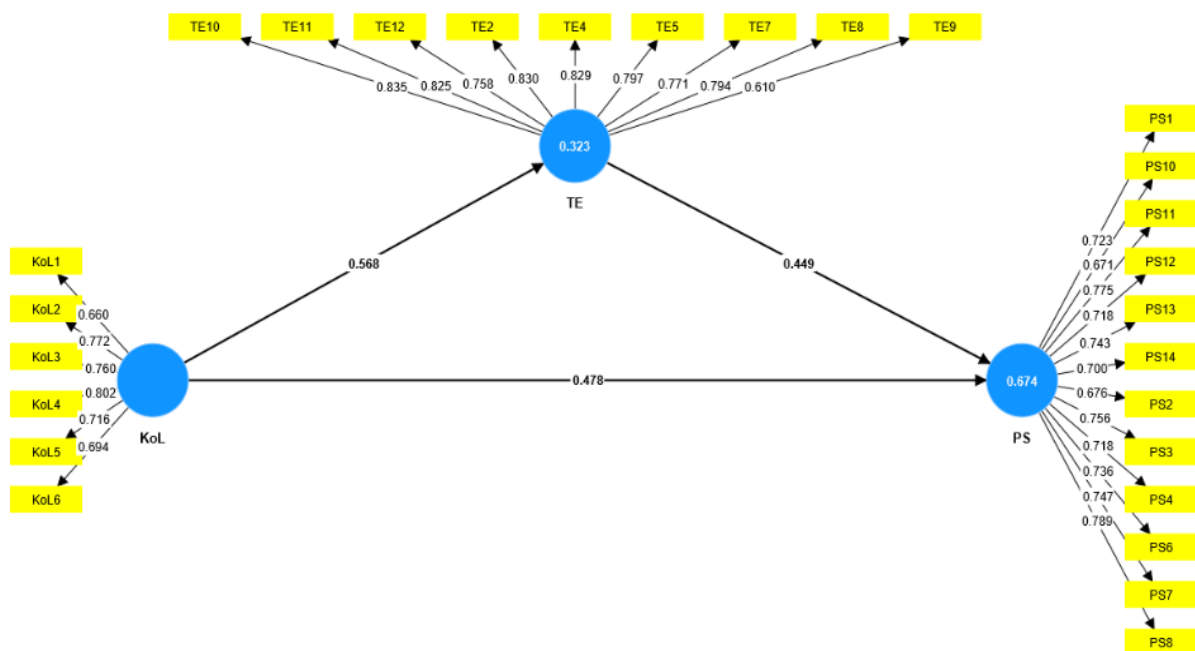
The extant literature highlighted that team empowerment mediates the relationship between leadership style and PS. For instance, Sanjaghi et al. (2012) analyzed the mediating role of team empowerment in the relationship between transformational leadership style and organizational performance and found significant mediation. Baird and Baard (2021) investigated the relationship among managerial control, team empowerment, and performance outcomes. The results revealed significant team empowerment mediation between leadership and team performance relationships. Abualoush et al. (2018) argued that team empowerment is a contributing antecedent of knowledge-oriented leadership that helps in producing more successful projects. Wong and Laschinger (2013) asserted that authentic leadership style positively contributes to structural empowerment, enhancing higher performance. Schermuly et al. (2013) affirmed that team psychological empowerment significantly contributes to the relationship between leadership member exchange and innovative behavior. Khattak et al. (2022) evaluated the impact of leaders on PS with the facilitating mechanism of team empowerment and found it significant. Zahur et al. (2022) indicated that knowledge-based leadership significantly influenced innovative teamwork in enterprise resource planning, eventually resulting in project success. Based on the preceding discussion, we proposed the following hypothesis.

H3: Team empowerment mediates the relationship between knowledge-oriented leadership and project success.

Research Model

As presented in [Figure 1](#), this study framework consists of 3 variables: KOL, team empowerment, and PS. KOL is an independent variable and affects the rest of the variables. Team empowerment is a mediating variable that represents a relationship between dependent and independent variables. Project success is a dependent-variable that is affected by all other-variables.

Figure 1
Measurement Model



Method

Sample and Procedure

Information Technology is playing a protuberant part in the economic progression of evolving republics (Shaukat et al., 2022). Therefore, the successful completion of projects has increasingly paid attention to the consideration of leadership competencies in emerging republics context, for instance Pakistan (Iqbal et al., 2018). Past studies highlighted entrepreneurial leadership as a strategic driver of IT project success (Latif & Nazeer et al., 2020). Software companies are moving toward leadership practices for sustainable growth, production, development, and consumption (Li et al., 2020). Hence, it is imperious to examine the connotation between KOL and project success in those technologically equipped IT firms (Donate & de Pablo, 2015). Therefore, we selected employees working in the Information Technology Sector of Pakistan to evaluate the relationship between the proposed variables. IT firms make up the study sample as these enterprises perhaps have a wider coverage of the adaptation of leadership practices (Iqbal et al., 2018).

The current study is quantitative, cross-sectional, and survey questionnaire-based. In quantitative research, 2-common methodologies have been utilized by scholars, mainly survey-based research and experiment-based research (Creswell, 2016). Survey questionnaires-based research is a well-known tool for data collection (Groenewald, 2004). This research is a correlational designed to determine the effect of KOL on PS with the facilitating part of team empowerment. The Pakistan's IT firms have been approached to obtain the necessary data for further analysis and to generalize the result accordingly. The unit of analysis for this study were project managers and project team members. A convenience sampling technique was used to gather data in an efficient manner.

Project-based organizations in the IT sector made up the study's sample population. The data was gathered from project managers, supervisors, and team members working in Pakistani software industries through creating a Google form (online) keeping in mind the safety

measures due to the current pandemic situation as well as via personal visit where applicable. Participants were encouraged to be confident in the information they provided for this research. The questionnaire was divided into two main sections. At first, respondents were requested to furnish demographical detail mainly gender, age, qualification, and experience. In the subsequent section, questions were asked about the research variables KOL, PS, and team empowerment. A five-point Likert scale, from strongly agree to strongly disagree, has been used. A total of 340 questionnaires were distributed among project managers and team members in construction-related firms. Out of which 233 questionnaires were received back. Following the completion of the data-gathering process for the research study, each of the gathered questionnaires was assigned a specific number. A total of 26 surveys were rejected because numerous statements were left blank by study participants, leaving data gaps. There were no missing data points in the items relevant to the study constructs in the remaining 207 useable replies (60.88% response rate). Respondents in the current research were asked to provide demographic information. The participants' demographical details are presented in [Table 1](#).

Instrumentation and Measures

For the current study, the research questionnaire was prepared based on previously identified scales. The questionnaire items included three variables including the independent variable (KOL), the dependent variable (project success), and the mediator variable (team empowerment). The questionnaire items are presented in [Appendix A](#).

Knowledge-Oriented Leadership: The scale for KOL has been adopted from the research work of (Donate & De Pablo, 2015). All six items have been adopted. The sample question of KOL is “leadership has been creating an environment for responsible employee behavior and teamwork”. The scale was originally developed to observe the leader's behavior, which creates a healthy environment for teamwork, promotes learning, acts as an advisor, helps in the acquisition of knowledge, and rewards the project team as well.

Project Success. The scale for project success has been adopted from the research of Aga et al. (2016). All 14 items have been adopted. The sample question of project success is “whether the project has been completed on time and within budget with expected outcomes”.

Team Empowerment. The scale for team empowerment has been adopted from the research of (Kirkman et al., 2004). All 12 items have been adopted. The sample question of team empowerment is “project team can get a lot done when it works hard”. The scale was developed to describe numerous project team performance-related aspects, which include team's confidence, hard work, productivity, the significance of their work, impact on the client, and how the team makes a difference in the organization.

Table 1

Demographics Profiling of Respondents

Criteria		No of participants	%
Gender	Male	139	32.9
	Female	68	67.1
Age	21 - 30	99	47.8
	31 - 40	91	44.0
	41 - 50	15	7.2
	51 and above	2	1.0
	Education	Bachelor	99
	Masters	104	50.2
	PhD	4	1.9

Data Analysis Procedure

In this research, IBM SPSS has been used for data entering and screening, and only filtered data were selected for data analysis. This research used Smart PLS-4 software for model assessment. Partial least square-structural equation modeling has been applied to examine the research data gathered from the respondents. PLS-SEM is a nascent tool for data examination, which is widely accepted by the researchers of social and business sciences (Hair et al., 2014). The PLS-SEM process normally consists of two separate parts, which include model's assessment of measurement and structural bases (Ringle et al., 2020). The measurement model evaluates constructs outer loading, Cronbach alpha, convergent and discriminant validity to carry forward further analysis while the structural model estimates path coefficients and checks significance level. Furthermore, PLS-SEM technique has been widely acknowledged in the leadership studies for data analysis generalization of the results (Aga et al., 2016; Shaukat et al., 2022).

Results

This section is further divided into three sub-sections, which include 1) descriptive statistics of constructs, 2) measurement model specification, and 3) structural model assessment.

Descriptive Statistics of Constructs

Descriptive statistics were analyzed to highlight the fundamental features of KOL, project success, and team empowerment. The outcomes of descriptive analysis indicate the mean and standard deviation values of each item, as depicted in Table 2. The mean value of 4.05 demonstrates that the respondents agree with the knowledge-oriented leadership items. The mean value of 3.86 means the respondents agree with team empowerment items. The mean value of 3.86 means the respondents agree with the questionnaire items of project success.

Table 2

Descriptive Statistics of Constructs

Items	M	SD
<i>KOL1</i>	4.14	1.12
<i>KOL2</i>	3.95	0.99
<i>KOL3</i>	3.85	1.07
<i>KOL4</i>	3.71	1.02
<i>KOL5</i>	3.89	1.05
<i>KOL6</i>	3.63	1.34
<i>TE1</i>	4.12	1.02
<i>TE2</i>	4.15	1.02
<i>TE3</i>	4.12	0.99
<i>TE4</i>	4.13	0.99
<i>TE5</i>	4.08	0.94
<i>TE6</i>	4.26	0.85
<i>TE7</i>	4.04	1.04
<i>TE8</i>	3.91	1.05
<i>TE9</i>	3.57	1.27
<i>TE10</i>	4.07	1.01
<i>TE11</i>	4.08	0.96
<i>TE12</i>	4.08	0.93
<i>PS1</i>	3.90	1.09
<i>PS2</i>	3.95	1.02
<i>PS3</i>	3.85	0.96
<i>PS4</i>	3.85	0.88
<i>PS5</i>	3.84	1.05
<i>PS6</i>	3.84	1.03
<i>PS7</i>	3.90	1.02
<i>PS8</i>	3.80	1.07

<i>PS9</i>	3.71	1.07
<i>PS10</i>	3.89	1.04
<i>PS11</i>	3.90	0.96
<i>PS12</i>	3.80	1.01
<i>PS13</i>	3.94	0.88
<i>PS14</i>	3.95	1.01

Note. KOL: knowledge-oriented leadership; PS: project success; TE: team building

Measurement Model

We evaluate the measurement model in five ways, which include loadings, Cronbachs alpha, composite reliability, convergent, and discriminant validity (Table 3). The normal threshold range of loadings is $> .50$ (Bagozzi & Yi, 1988; Gefen & Straub, 2005). All the items' outer loading lies within the prescribed limit; however, one team Building (TB5) item was removed due to low factor loadings. The composite reliability normal range of a construct is $.70$ (Bagozzi & Yi, 1988). The result has shown all variables possessed higher composite reliability. Besides, Saunders et al. (2009) stated that Alpha is a general method to assess the internal consistency of items. Cronbach's coefficient alpha normal range of a variable is $.70$ (Nunnally, 1978). The results affirm that data reliability has been established through Cronbach's alpha. The details are presented in Table 3.

Table 3

Factor Loading, Reliability, and Validity

Variable(s)	Items	Loadings	Alpha	CR	AVE
Knowledge oriented leadership	KoL1	.66	.82	.87	.54
	KoL2	.77			
	KoL3	.76			
	KoL4	.80			
	KoL5	.71			
	KoL6	.69			
Team Empowerment	TE2	.83	.92	.93	.61
	TE4	.82			
	TE5	.79			
	TE7	.77			
	TE8	.79			
	TE9	.61			
Project Success	TE10	.83	.92	.93	.53
	TE11	.82			
	TE12	.75			
	PS1	.72			
	PS2	.67			
	PS3	.75			
	PS4	.71			
	PS6	.73			
	PS7	.74			
	PS8	.78			
	PS10	.67			
	PS11	.77			
	PS12	.71			
	PS13	.74			
PS14	.70				

Note. KOL: knowledge-oriented leadership; PS: project success; TE: team building

We measure convergent validity through Average Variance Extracted (AVE) for whom the acceptable limit is $.50$ (Fornell & Larker, 1981). Subsequently, all variables hold convergent validity. In order to examine discriminant validity, we analyzed the HTMT ratio. According to

Henseler et al. (2015), the acceptable limit of the HTMT ratio is $< .90$, and the relevant confidence interval-up is 1. Table 4 shows that HTMT values and confidence interval values of each variable are $< .90$ and 1, thus establishing convergent validity. Moreover, Fornell and Larcker (1981) recommend that the square root of the AVE of a construct must be larger than the correlations among the rest of the constructs. Table 4 shows that this study fulfills the criteria of Fornell and Larcker.

Table 4

HTMT ratio and Fornell and Larcker Criterion

Variables	KOL	PS	TE
Fornell and Larcker Criterion			
Knowledge oriented leadership	.73		
Project success	.73	.73	
Team empowerment	.56	.72	.78
HTMT Ratio			
Variables	KOL	PS	TE
Knowledge oriented leadership			
Project success	.83		
Team empowerment	.63	.77	

Structural Model

For the present research study, the Structure Equation Model (SEM) is evaluated by the prescribed guidelines of Hair et al. (2017). In the first phase, we evaluated the coefficient of determination (R^2) and the predictive relevance measure (Q^2). The results reflected that 67% ($R^2 = .67$) change was observed in project success, and 32% ($R^2 = .32$) variance accounted for team empowerment due to knowledge-oriented leadership, which shows the model has adequate predictive accuracy (Hair et al., 2017). Besides, we measured Q^2 by using the blindfolding technique. The Q^2 values of project success and team empowerment are .53 and .31, respectively, which are greater than zero and subsequently characterize the robust predictive significance of the SEM framework (Hair et al., 2017).

Hypotheses Testing

We evaluate hypotheses by analyzing the direct and mediating impact (Table 5, 6). H1 assessed whether knowledge-oriented leadership positively influences project success. As presented in Table 5, the findings reflected that KOL has a positive influence on project success ($\beta = .47$, $t = 9.16$, $p < .000$); therefore, H1 of the study was supported. We assessed H2 whether team empowerment has a considerable effect on project success. The findings reflected that team empowerment has a positive influence on project success ($\beta = .44$, $t = 8.57$, $p < .000$); therefore, the H2 of the study was supported. We assessed mediation analysis using the mediator variable team empowerment between predictor variable KOL and criterion variable PS (H3). To ascertain the mediation result, we performed bootstrapping in Smart PLS-4. As shown in Table 6, the result indicated that the indirect effect of KOL through team empowerment on PS was found to be substantial (H3: $t = 5.83$, $p < .000$). The total effect of KOL on PS was substantial ($t = 15.70$, $p < .000$). With the inclusion of the mediator the influence of KOL on PS was still substantial ($t = 9.16$, $p < .000$). This reflected complementary partial mediation; therefore, H3 of the research was supported.

Table 5*Direct Analysis*

	Std Beta	STDEV	T Statistics	P-Values	5.0%	95.0%
KoL -> PS	0.478	0.052	9.166	0.000	0.389	0.561
TE -> PS	0.449	0.052	8.571	0.000	0.362	0.534

Table 6*Mediation Analysis*

Total Effect (KOL→PS)			Direct Effect (KOL→PS)			Indirect Effects of (KOL→PS)		
Coefficient	<i>t</i>	<i>p</i>	Coefficient	<i>t</i>	<i>p</i>	Coefficient	<i>t</i>	<i>p</i>
KOL → PS	15.70	.000	KOL → PS	9.16	.000	KOL → TE → PS	5.83	.000

Hypotheses result (summary)

Hypotheses	Relationship	Results
H1	KOL -> PS	Accepted
H2	TE -> PS	Accepted
H3	KOL -> TE -> PS	Accepted

Discussion

The study aims to analyze the connotation between knowledge-oriented leadership, team empowerment, and project success. The significance of the proposed hypotheses confirms the Knowledge-Based View (KBV) and utilizes Social Identity Theory (SIT). This study affirms the positive and significant influence of KOL on IT project success. The outcomes established this hypothesized relationship. The findings align with extant literature which supports and witness the significant impact of KOL on PS (e.g., Al-Hakim & Hassan, 2016; Gold et al., 2001; Latif et al., 2021; Mariam et al., 2022; Naqshbandi & Jasimuddin, 2018; Rehman & Iqbal, 2020; Zia, 2020). Scholars like Rehman and Iqbal (2020) questioned whether there is a relationship between KOL and project performance. They found that KOL has a direct and substantial influence on project performance. Similarly, our results support the opinion of Gold et al. (2001), who argued that firms' KM initiatives including leadership, firm culture, and structure, augment firm effectiveness and success. In addition, the study of Naqshbandi and Jasimuddin (2018) validated an affirmative relationship between KOL and project innovation performance.

Zia (2020) hypothesized whether and how Knowledge-oriented leadership is linked with project-based innovation performance. The scholar found that there is a direct impact of KOL on PS. Latif et al. (2021) found a substantial effect of knowledge leadership on project success. Moreover, Mariam et al. (2022, p.1) found a substantial correlation between KOL and PS among project-based employees. The positive and significant relationship between knowledge leaders and PS is also confirmed by the study of Al-Hakim and Hassan (2016), which is consistent with the results of our study.

This study affirms the positive and significant effect of team empowerment on project success. The outcomes established this hypothesized relationship. The findings also align with extant literature that supports and witnesses the significant impact of team empowerment (e.g., Aga et al., 2016; Khattak et al., 2022; Roth et al., 2020; Rowlinson & Cheung, 2008). Scholars Roth et al. (2020) emphasized the importance of team motivation and team empowerment in project-based organizations. They argue that team empowerment is an essential mechanism by which design thinking influences project success. Aga et al. (2016) argued that project team intervention supports team leads in accomplishing project management activities. They found

that team-level variables significantly impact project success. Khan et al. (2020) argued that project-based employees with higher creative initiatives are expected to augment PS when they hold greater team empowerment. Their results showed that team empowerment has a positive association with project success.

Latif and Sajjad et al. (2020) analyzed various team outcomes on project performance and success and found substantiate. Rowlinson and Cheung (2008) developed a model for managing stakeholders that associates empowerment with project goals. Moreover, Khattak et al. (2022) found team empowerment as a contributing factor to project success. Khan et al. (2020, p.1322) stated that team empowerment significantly augments their performance, which in turn increases project success. This affirms the validity of SIT. Hence, this study found that team empowerment improves the level of commitment between team members so the project management activities are implemented more efficiently. Team empowerment builds strong cohesion between the team members, which directly leads the project toward success.

This study confirms the positive mediating role of team empowerment in the relationship between the PS. The outcomes established this hypothesized relationship. Scholars Abualoush et al. (2018) argued that team empowerment is a contributing antecedent of knowledge-oriented leadership that helps in producing more successful projects. Team empowerment plays a significant role in the flexibility and innovation of projects (Annosi et al., 2016) and impacts project management activities positively (Suresh & Jaleel, 2015). This affirms the validity of SIT. Knowledge-oriented leaders inspire institutionalized learning by motivating and empowering team members through training and development initiatives (Naqshbandi & Jasimuddin, 2018). The high-level empowered team solves the problem that arises, takes appropriate decisions for a project, and executes the project on time and in the most successful manner (Dhir et al., 2019).

The current results aligned with the findings of the extant investigation, which supports and witnesses the significant mediating role of team empowerment (Khattak et al., 2022; Zahur et al., 2022). Khattak et al. (2022) evaluated the effect of leadership on project success through the mediating mechanism of team empowerment and job engagement in IT firms and found significant mediation. The findings of Zahur et al. (2022) indicated that knowledge-based leadership significantly influenced innovative teamwork in enterprise resource planning, eventually resulting in project success. Hence, this study found that project team members augment project success by utilizing their skills, talent, and abilities and by the support of empowerment from their knowledge-oriented leadership. Moreover, Rapp et al. (2016) concluded that team empowerment positively intercedes the relationship between team-based leadership, team process, and performance outcomes.

Conclusion

This research highlighted imperious novel constructs, knowledge-oriented leadership, and team-related outcomes that make the project successful (Mariam et al., 2022; Zahur et al., 2022). The study offered one of the earliest endeavors to establish the hypothesized framework that links knowledge-oriented leadership with project success by applying the facilitating mechanism of team empowerment. This study highlighted the key elements of knowledge-oriented leadership as mediating variables including team empowerment to augment project success. The findings showed that KOL impacts IT project success, whereas team empowerment mediates this relationship. Hence, it is concluded that knowledge-oriented

leadership plays an important role in accomplishing the projects of software companies in Pakistan. It is also concluded that IT firms should empower their teams to make effective decisions for efficient project management and success. Policymakers and leaders should develop a strategic plan for the smooth implementation of the KOL practices, provide a vibrant environment, and empower the team to complete a project in a more effective modus.

Research Implications

This endeavor highlights the theoretical and applied implications explored in the IT sectors of Pakistan. The outcomes affirm the role of KOL in enlightening team empowerment and project success. KOL eliminates project complexity through team communication and team empowerment. The implementation of KOL practices by IT managers not only advances their team-level outcomes using team empowerment but also results in improving project success. This shows that firms should focus on KOL initiatives that improve team outcomes by paying attention to professional growth, providing a vibrant environment, and enriching team health, safety, and conduct within the firm. By doing this, IT firms might become in a superior stage to manage knowledge-oriented leadership practices and team outcomes to prosper success.

Limitations and Future Research

A few shortcomings of the study are discussed below, which can be further explored in future research. First, the data was gathered from employees working in the IT sector of Pakistan; therefore, this framework should be applied in different study settings. Second, the cross-sectional data-gathering approach was used, while in future research, longitudinal data-gathering techniques can also be valuable. Third, this research was conducted on a relatively small number of respondents. In the future, the number of participants should be increased. Fourth, this study utilized team empowerment as a mediator variable; future endeavors should include other team outcomes including team building, team identity, team commitment, and team performance as mediating variables between KOL and PS. Finally, in light of the growing emphasis on sustainability and the quest of Sustainable Development Goals (SDGs), sustainable leadership is gaining prominence in business setups. In this connection, the mediating role of green innovation between sustainable leadership and sustainable performance is a promising avenue for future research.

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Appendix A (Questionnaire)

Knowledge-oriented leadership

1. Leadership has been creating an environment for responsible employee behavior and teamwork
2. Managers are used to assuming the role of knowledge leaders, which is mainly characterized by openness, tolerance of mistakes, and mediation for the achievement of the firm's objectives
3. Managers promote learning from experience, tolerating mistakes up to a certain point
4. Managers behave as advisers, and controls are just an assessment of the accomplishment of objectives
5. Managers promote the acquisition of external knowledge
6. Managers reward employees who share and apply their knowledge

Project success

1. The project was completed on time
2. The project was completed according to the budget allocated
3. The outcomes of the project are used by its intended end users
4. The outcomes of the project are likely to be sustained
5. The outcomes of the project have directly benefited the intended end users, either through increasing efficiency or effectiveness
6. Given the problem for which it was developed, the project seems to do the best job of solving that problem
7. I was satisfied with the process by which the project was implemented
8. Project team members were satisfied with the process by which the project was implemented
9. The project had no or minimal start-up problems because it was readily accepted by its end users
10. The project has directly led to improved performance for the end users/target beneficiaries
11. The project has made a visible positive impact on the target beneficiaries
12. Project specifications were met by the time of handover to the target beneficiaries
13. The target beneficiaries were satisfied with the outcomes of the project
14. Our principal donors were satisfied with the outcomes of the project implementation

Team empowerment

1. My team has confidence in itself
2. My team can get a lot done when it works hard
3. My team believes that it can be very productive
4. My team believes that its projects are significant
5. My team feels that its tasks are worthwhile
6. My team feels that its work is meaningful
7. My team can select different ways to do the team's work
8. My team determines as a team how things are done in the team
9. My team makes its own choices without being told by management
10. My team has a positive impact on this company's customers
11. My team performs tasks that matter to this company
12. My team makes a difference in this organization