

The Impact of Transformational Leadership and Project Success: Mediating Role of Team Identity, Team Communication, and Team Empowerment

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Abstract

This study is grounded in the theoretical frameworks of the Resource Base View and Social-Identity Theories and intends to evaluate how the adoption of transformational leadership practices influences project success by considering facilitating function of team-identity, team-communication, and team-empowerment. The study was conducted among 350 Software project professionals in Pakistan. The study utilized PLS-SEM to analyze both direct and mediating effects. The findings revealed a notable affiliation between TL and PS. Besides, the study confirmed that team identity, communication, and empowerment act as mediator in the connection amid TL and PS. This research addresses a gap in empirical studies within developing countries, notably Pakistan by shedding light on how TL impacts PS through the lens of team-dynamics. This study stands as an early exploration into the interplay among proposed association.

Keywords: Project Success, Team-Outcomes, Transformational Leadership

Project success (PS) has been acknowledged as an enduring research trend (Shaukat et al., 2022). PS is measured on the basis of stakeholders contentment, product success and organizational effectiveness (Atkinson, 1999). A project's ability to succeed depends on various contextual elements. It is widely said that the leadership style plays a pivotal role in PS. increasingly, the literature emphasized leader stands out as a significant predictor contributing to project accomplishment (Siddiqui & Iqbal et al., 2023). Leaders encourage teamwork among employees and foster professional growth to ensure project deadline are met (Anantatmula, 2010). Leaders also demonstrate the potential to positively influence a wide array of firm performance indicators (Aung & Hallinger, 2023). A good leader possesses several attributes at individual, team, and organizational levels. For instance, when leaders prioritizes hazard management and challenges, the likelihood of PS increases. This support the notion that entrepreneurial skills enable management to navigate competitive atmosphere (Gupta et al. 2004). By fostering a cooperative climate, leaders can empower teams to solve problems thereby enhancing project performance (Sohmen, 2013). The leader also promotes a climate of knowledge-exchange that promote competence, innovation and and originality (Latif & Sajjad et al., 2020).

The literature identified a number of studies that provide information on variables influencing projects. IT and Software firms face several substantial challenges in project management. Notably, scholars like Gartner (2018) stated that there is a lower utilization of IT-system functionality/programs. Similarly, problems in communicating with stakeholders are prevalent (Queensland Report, 2011). In addition, the IT sector also struggling to cope with growing expectations to transform its global mindset (Manfreda et al., 2019). Moreover, it has become evident that practical excellence is not the primary expertise required; instead, the aptitude to build relationship with stakeholders is crucial to enhance effectiveness (Jia et al., 2018). These imperative problems highlight the multifaceted and dynamic nature of IT project management, demanding a vigorous approach to address them effectively.

To address these challenges, leaders have emerged as well-known and broadly recognized resource. Despite this, practitioners have given comparatively less focus to leaders that encompasses the development of employee talent and wealth (Byrne and Barling, 2015). The traditional leadership styles, generally associated with older industrial economies, might not sufficiently meet the requirements of the contemporary economy (Mabey et al., 2012). An inappropriate approach to leadership heightens the uncertainty adjacent to decision making thus posing a threat to PS. It is, therefore, discussing leaders' behavior from a transformational-oriented perspective becomes imperative (Aga et al., 2016). This standpoint required attention for leadership to adapt and advance in tandem with the evolving demands of modern project settings which underline the pivotal function of transformational-centric leadership approaches to ensure PS and adaptability in modern businesses.

The existing literature highlights numerous knowledge gaps regarding the effect of transformational leadership on PS, which demands further scholarly attention. First, though there is a rising interest in transformational leadership, the implementation of TL practices remains significantly underdeveloped (Khan et al., 2019; Saleem et al., 2021). PM executives have not fully integrate TL practices to improve project efficiency (Aga et al., 2016). Besides, the function of a transformational leader in achieving PS has not extensively explored in the literature (Maqbool et al., 2017). Scholars like Nauman et al. (2022) argue that TL is crucial for the success of novel PM initiatives in the IT sector context. They also indicate that empirical evidence amid TL and PS remain underexplored. Third, Fareed et al. (2023) observed limited literature stipulating how projects might be impacted with the embracing of transformational leadership practices.

The project's success does not only depend on leadership attributes rather there are several other important factors involved including team-level variables. Teamwork has emerged as intellectual human skill needed at place of work owing to the connection with numerous elements. Ozigbo et al. (2020) claimed that teams balances harmonized abilities and capacities in a project for PS, though, it requires gradual nurturing. Latif and Sajjad et al. (2020) argued that upcoming research required attention towards team dynamics including team identity, communication, and empowerment to advance sustainable results. Thus, despite teamwork being a significant factor contribute to team and organization, the mediator function in the leadership-PS affiliation needs further empirical inspection.

The literature underscores various gaps regarding impact of TL, team, and PS. First, contemporary studies urge further investigations to elucidate how TL effects PS (Aga et al., 2016). The embryonic nature of TL underscores the need for ongoing exploration (Abbas & Ali, 2023). Specifically, centering on TL, there is a rising call for a better understanding of its impact to achieve project outcomes. Second, the extant literature discovered the impact of TL on PS through diverse mediating pathways (Afzal et al., 2018). TL practices remain a new concept, there is a dire need to discover potential mediating mechanisms that delve deeper into the affiliation of TL with PS. Recently scholarly work advocates for investigating team-related factors, such as team identity, communication, and empowerment, to understand how these mediate the affiliation amid TL and performance consequences (e.g. Siddiqui & Shaukat et al., 2023). They further recommended incorporating team related factors within the composite frameworks in future. This underscores the significance of exploring additional pathways beyond direct relationships to grasp comprehensively the impact of TL on realizing successful project outcomes. Third, Zhang and Guo (2019) emphasized the growing adoption of leadership practices within software firms. However, the association between leadership and PS in the context of evolving states software firms is in the initial phase (Zia, 2020, Nauman et al., 2022). To address these gaps, our study aims to examine the influence of TL on PS. Additionally, we are pioneering to incorporate a comprehensive set of team outcomes as mediating variables in assessing this affiliation. The research questions are:

1. Is TL impact software firms' PS?
2. Either team identity mediates between TL and PS?
3. Whether team communication mediates between TL and PS?
4. Does team empowerment mediates between TL and PS?

This research presents weighty contributions in several key aspects. First, this study adopts an innovative approach by integrating RBV and SIT, establishing connections among TL, team outcomes, and PS (Tajfel & Turner, 1979; Barney, 1991). Leveraging SIT's insights into how individuals categorize themselves within social groupings and RBV's perspective on organizations as comprised of unique and valuable resources, this study portrays TL as a rare and valuable firm asset, similar to other scarce resources under RBV. Second, from the perspective of Social Identity Theory, the study highlights the importance of team dynamics in achieving PS. Team identity, communication and empowerment, fostered by transformational leaders who articulate a compelling vision and foster a sense of belonging, emerge as significant mediators. This highlights the role of leadership in shaping team outcomes and alignment toward project goals within the context of software projects. Third, based on RBV the study enhances our understanding of how leadership practices contribute to competitive advantage in software project management. Transformational leaders recognized by their talent to stimulate team towards a shared vision, emerges as a vibrant element in enhancing project success. The findings underscore that those organizations investing in developing transformational leadership capabilities are likely to see improved project outcomes, aligning with RBV's emphasis on leveraging internal resources for sustainable performance. Fourth, methodologically, employing PLS-SEM adds rigor to the research, and enables the investigation of

both direct relationships (between transformational leadership and project success) and indirect relationships (mediated by team identity, communication, and empowerment). This approach validates the theoretical constructs and also provides empirical evidence of their interplay in the project context. Fourth, this study holds practical implications, especially, within Pakistan's software firms. It emphasizes the importance of embracing transformational leadership practices and fostering team outcomes, highlighting their potential to significantly enhance Software project success. By introducing team identity, communication, and empowerment as facilitating factors, the study sheds light on how TL influences PS through team dynamics, offering viable insights that can positively impact project management practices. Finally, this research serves as a foundation for IT project professionals to enhance firm performance and advocate exploring TL principles within software firms.

Literature review

Transformational Leadership and Project Success

Firms typically endeavor to attain predefined goals, and their effectiveness has been evaluated to realize these established purposes (Masadeh et al., 2016). Extant literature underscored several influential elements that affect PS. According to Gallagher et al. (2015), critical elements including decisive-reasoning, improved strategies, effective communication, and leadership practices positively contribute PS. Additionally, Rehman and Iqbal (2020) contended that among various factors, leader stands out as a pivotal determinant to impact on PS. The leader skills play an important part to enhance project performance. Effective leader enhances project team knowledge and encourage creativity and critical thinking by fostering a conducive working environment. This vibrant atmosphere promotes better communication, trust, and knowledge sharing, and is believed to progress overall project implementation (ParaGonzalez et al., 2018).

Leadership encompasses explicit and implicit motivations like charisma, role models, and rewards. TL is a novel approach that fosters intellectual interest, follower empowerment, and idealized influence while motivating team through inspiration (Zaman & Abbasi., 2020). The TL approach is a great source of motivation which is recognized broadly. TL contribute to the success of projects and exhibits a significant influence on enhancing the broader performance metrics and outcomes of the entire firm. Literature highlighted that TL positively impact PS. For instance, Johnson et al. (2012) stated that leader implicit (role modeling) and explicit (reward system) motivation positively impact firm growth and performance outcome. Aga et al (2016) claimed that TL demonstrates a positive correlation with PS and play a pivotal role in leveraging superior firm performance. TL exhibits vigorous connotation with PS compared to other leadership styles. TL emphasis to inspire and motivate the workforce, foster a compelling vision, and encourage proactive problem solving aligns closely to achieve successful project outcomes. Moreover, TL significantly impacts numerous project facets, including team performance, goal achievement, adaptability to change, and overall project effectiveness that ultimately lead to heightened PS (Birasnav et al., 2011). Furthermore, TL reduce turnover risk by winning the dedication of their project teams, which ensures acceptance and success (Tyssen et al., 2014).

H1: TL has a affirmative effect on PS.

Mediating Role of Team Identity

Team identity refers to as collective mindset and sense of belonging that project team share within organized team dynamics (Fiol & O'Conner, 2005). It emerges from a collective commitment to a shared vision, common objectives, and collaborative efforts toward achieving common goals (Kerzner, 2003). Team identity is an essential aspect of teamwork, fostering open communication, mutual understanding, and collaboration. Identification within a team leads to a socialist mindset, enabling coordination and cooperation among project team members (Taggar & Haines, 2006). A strong sense of identification encourages mutual attraction and interdependence, reducing domineering behavior among team members. A shared team identity encourages better interaction among team members and increases overall team effectiveness by prioritizing collective interests over individual objectives (Knippenberg et al., 2004). Extant literature highlighted that clear, consistent, and agreed-upon objectives significantly enhance project performance by directing focus, mobilizing commitment, and motivating action plans (Hoegl & Parboteeah, 2003). Team recognition intensity not only influences the collaborative behavior within the team but also impacts its outcomes. Project leaders play a critical role in shaping team identity and members' sense of belonging, emphasizing the importance of fostering identity within teams for effective project outcomes (Knippenberg et al., 2004).

The mediating function of team identity in the affiliation between TL and PS underscores a critical link to understand how leadership dynamics affect project outcomes. TL recognized by their

talent to stimulate team towards a shared vision and positively impacts team dynamics which includes team communication, empowerment, and identity (Rafferty & Griffin, 2004). TL foster a sense of shared identity among teams through visionary approach and interpersonal skills (Ashforth & Humphrey, 1995). This shared identity is cultivated by enriching the team above individual interests, accentuate collective goals, and develop a cohesive entity with shared values (Knippenberg et al., 2004).

The development of a robust team identity is directly allied to advance team efficiency and performance. It encourages a sense of commitment, agreement, and accountability within teams, align individual efforts with the central team objectives. As a result, when team identity is well established through TL practices, team identity acts as a mediating factor that positively effects PS (Jaussi & Dionne, 2003). A cohesive and aligned team identity motivates workforce to prioritize team objectives over individual, foster collaboration, innovation, and a collective drive to achieve PS (Lin et al., 2012). In essence, the facilitating function of team identity in the affiliation amid leadership practices and PS highlights the significance of cohesive team dynamics and collective purpose in driving successful project outcomes including performance and success (Latif & Sajjad et al., 2020).

H2: Team identity mediate the affiliation amid TL and PS.

Mediating Role of Team Communication

According to Patrashkova et al. (2013), regular communication would enhance the flow of information sharing among team members and improve team performance, which will result in the success of Information technology projects. In the present era, the majority of Information technology companies use a team approach to complete difficult jobs that cannot be completed by lone workers. Teams are frequently created with the idea that they will help firms achieve deadlines, make the most use of resources, coordinate among themselves better, lessen the stress on individuals, and leverage more advanced and complex technology (Ryan & O'Connor, 2013). Complex IT projects frequently involve unstructured activities and tasks (Schwalbe, 2007). These projects demand specialized knowledge from a variety of different domains to be completed (Faraj & Sproull, 2000). Therefore, IT organizations must implement a thorough communication strategy for teams, as collaborative teamwork increases PS (Douglas et al., 2006).

Teamwork requires effective communication with the team, which is dynamic for both team performance and operational situation alertness. Janssen et al. (2015) discovered that teams with more frequent internal communication performed better. Therefore, when the team members possess all the knowledge necessary for the project's achievement, advanced project performance is predicted to be certain (Mathieu et al., 2017). The type of task is crucial in the effort to foster teamwork. Communication, as advised by the PMBOK, is the strongest factor defining the effectiveness of the team project among the nine knowledge areas. Becerik et al., 2012, emphasizes that leaders and project management can efficiently complete project by means of effective communication. Likewise, team communication meaningfully contributes to PS (Davis, 2017). Patrashkova et al. (2013) found that team communication enhances analytical abilities and upsurges team members' knowledge. Moreover, team communication fosters strong relationships among team members. Park et al., (2012) noted that team communication creates dedicated atmosphere and play a crucial part in boosting PS.

The literature emphasizes the facilitating function of team communication in the affiliation amid TL and PS. For example, Ryan and O'Connor, (2013) highlighted that effective communication helps project teams to well comprehend stakeholders needs and high-quality products. Team communication is essential for measuring PS. Urdangarin et al. (2008) stressed that poor communication among project team may become a source of project deferments and, in some cases, even project failure. Therefore, team communication is an important facilitating element in the affiliation amid TL and PS. Scholars like Yue et al. (2019) argued that leader not only enhance team communication but also delivers a distinctive products to end users. Aga et al. (2016) establish an affirmative effect of team outcomes among TL and PS relation. Afzal et al. (2018) argued that leaders induce communication competency in their project team. They further stated that by fostering an environment that encourages open and efficient communication, leaders enable team members to exchange ideas, collaborate effectively, and resolve issues promptly. This enhanced communication capability within the team significantly impacts PS by ensuring clarity in objectives, promoting quicker decisions and contributing to the successful attainment of project milestones and strategic goals.

H3: Team communication mediate the affiliation amid TL and PS.

Mediating role of Team Empowerment

Team empowerment is an important element of project management where the team has overall abilities needed to handle various circumstances and has the authority to make prompt decision (Cockburn & Highsmith, 2001). TE play a crucial role in efficient project management as managers grants the right to make certain project decisions (Birkinshaw, 2018). Besides, the proficient teams are in a better position to influence governance and managerial decision. Likewise, Gerster et al. (2018) stated that empowered teams' supplements notable projects that succeeded.

Team empowerment is crucial in enhancing agility and novelty in software development projects. Various characteristics of TE play significant roles in the success of a software development teams (Kirkman & Roser, 1999). Potency refers to the team collective credence that their decisions will benefit the organization, while meaningfulness pertains to the importance of the tasks performed by the project team. Autonomy involves the level of authority, autonomy, and right team members have in decision, fostering ownership and creativity (Dikert, 2016). Research indicates that team empowerment boosts productivity, leading to more successful IT oriented projects (Harter et al., 2002). Coordinated orientation and teamwork, essential aspects of empowerment, boost performance outcomes and provide team members with a sense of purpose (Vidgen & Wang, 2009). Overall, TE confidently effects PS, making it a critical element in project management (Moe et al., 2019; Shalley et al., 2004).

The existing literature underscores the crucial facilitating function of TE in the relationship between TL and PS. For example, Tian et al. (2015) posited that TE facilitates better hazard management and sustainable outcomes, which, in turn, enhance PS. Jha (2014) emphasized that TE should not be regarded as a mere organizational catchphrase. Instead, firms must revamp their authoritative control and measures to genuinely empower project teams. Grag et al. (2022) highlighted the necessity to shift away from traditional top-down management frameworks considered by high centralism, and towards fostering a participative decision-making atmosphere. Such transformation enables project team to feel empowered, thereby bridging the gap between leaders and PS. Gardner et al. (2012) noted that empowered teams are adept at recognizing issues and exploring multiple resolutions which contribute to the successful project achievement. Additionally, Hsu (2017) and Hughes et al. (2020) argued that effective communication and empowered-team can efficiently complete projects.

H4: Team empowerment mediate the affiliation amid TL and PS.

Research Methodology

Research Design

Research design advocates a research venture cycle (Zikmund et al., 2003). The design of an examination is described by a researcher's plan, which defines the methodology and system for collecting and analyzing the relevant data. This research is based on quantitative in nature and employs a time horizon. The data is cross-sectional and gathered at a single point in time. The quantitative objective is to scrutinize the numerical properties and relationships emerging from the data for each topic, aiding in the development and support of the research's theoretical foundations. Consequently, researchers can make informed judgments and address inquiries about the problem by accumulating numerical data and establishing connections using statistical models. To validate the current research data and arrive at the correct findings, this study performed a thorough quantitative analysis. A legitimate strategy for the data collection process was chosen to obtain significant information. Survey questionnaires have been widely utilized for research purposes (Barling, 2014), and thus, this research employed questionnaires as the primary source for data collection.

Sample and Procedure

Software firms play a significant part in the economic progression of developing countries. As a result, the effective completion of those projects gained rising focus within evolving countries like Pakistan, there is an increasing prominence in the adoption of leadership practices. The extant literature recognized leadership as an important contributor to software projects success (Latif & Nazeer et al., 2020). The move toward leadership practices is driven by project complexity and the necessity for an effective strategy to manage uncertain consumer demands, which is crucial for attaining PS (Siddiqui & Shaukat et al., 2023). However, creating a supportive atmosphere is crucial for IT professionals to materialize innovative concepts into their novel products (Shahzad et al., 2017). Hence, exploring the relationship between leadership practices and PS becomes imperative, especially within technically proficient software firms. The scope of this research is directed to evaluate the proposed research model among employees working in Pakistan's software firms. Specifically, the

study aims to investigate software-developing firms, considering their potential for more extensive adoption of leadership practices (Siddiqui & Shaukat et al., 2023).

The present research is quantitative, cross-sectional, and survey questionnaire-based. In quantitative research, two common methodologies have been utilized by scholars mainly survey-based research and experiment-based research (Creswell, 2016). Survey-based research is a well-known tool for data collection (Groenewald, 2004). This research is a co-relational designed to determine the impact of TL on PS with the mediating role of team outcomes. Project-based organizations in the IT sector made up the study's sample population. The Pakistan software industry has been approached to obtain the necessary data for further analysis and to generalize the result. The units of analysis for this study were project managers and project team members. A convenience sampling technique was used for data collection. Data was collected through personally distributed survey questionnaires and via online Google form to project managers and team members working in Pakistani software houses. Participants were encouraged to be confident in the information they provided for this study. The questionnaire was divided into two main sections. At first, respondents were asked to provide their demographic information such as gender, age, qualification, and experience. In the later section, questions were asked about the study's variables including TL, PS, and team outcomes. A total of 500 questionnaires were distributed among project managers and team members in software houses. Out of which 388 questionnaires were received back. 38 questionnaires were not properly filled or had missing entries, which were not utilized further. A total of 350 questionnaires were used with a response rate of 70% for further analysis. The data represented that male respondents included 308 (88%) and female respondents included 42 (12%). 242 (69.1%) of respondents held a graduation degree along with an average job tenure in a software house was about 6 to 10 years. The respondents were relatively young approx. age between 31 to 40 years. The data were collected from Jun 2023 to Dec 2023.

Instrumentation and Measures

The scale for variables questionnaire was adopted from extant literature. The questionnaire items included five variables as shown in the research model. All variables items were measured using a five-point Likert scale ranging from strongly disagree to strongly agree.

Transformational leadership. The scale for TL was adopted from (Aga et al., 2016). All 13 items have been adopted. The sample questions of TL include "leadership provides appealing images about the project to my team". Scholars like Fareed et al. (2022) have utilized the same scale.

Team identity. The scale for team identity has been adopted from (Luhtanen & Crocker, 1992). All 4 items have been adopted. The sample questions of team communication include "The team I belonged to was an important reflection of who I am." Scholars like Heere and James (2007) have utilized the same scale.

Team Communication. The scale for team communication is adopted from (Roberts et al., 2004). All 5 items have been adopted. The sample questions of team communication are "everyone on the team has a chance to express their opinion". Scholars like Siddiqui and Ali et al. (2023) have utilized the same scale.

Team Empowerment. The scale for team empowerment has been adopted from the research work of (Spreitzer, 1995). All 6 items have been adopted. The sample questions of team empowerment include "there was significant autonomy in determining how I do my job". Scholars like Khan et al. (2020) have utilized the same scale.

Project success. The scale for PS is adopted from (Aga et al., 2016). All 14 items have been adopted. The sample questions of PS include "the outcomes of the project are used by its intended end-users". Scholars like Shaukat et al. (2022) have utilized the same scale.

Data Analysis Procedure

For data analysis, IBM SPSS version 21 and Smart-PLS4 statistical packages were used. Several procedures were carried out during the data analysis process including the following:

1. Data entering and screening were done through IBM SPSS and only filtered data were selected for data analysis.
2. The reliability of the variables was tested using outer loading, Cronbach's alpha, and composite reliability.
3. The convergent validity of the variables was tested using the average variance extracted.
4. The discriminant validity was tested using the HTMT ratio.
5. Structural equation modeling was performed to determine the significant relationship among variables.

6. The Preacher and Hayes method was utilized for carrying out mediation and to find out the effect of mediators between independent and dependent variables.

Analysis and results

Measurement and Structural Model

This study evaluate the measurement model in various ways which include: outer loadings, Cronbach's alpha, composite reliability, convergent validity, and discriminant validity. The normal threshold range of outer loadings is > 0.50 . (Gefen and Straub, 2005). All the items' outer loading meets the criteria. The composite reliability normal range of a construct is 0.7 (Bagozzi and Yi, 1988). The result showed that all variables possessed higher composite reliability. Besides, Saunders, Lewis, and Thornhill (2009) stated that Cronbach's coefficient alpha is a general technique to assess the internal consistency of multiple items. Cronbach's coefficient alpha normal range of a variable is 0.7 (Nunnally, 1978). The results of the study indicated that reliability has been well established using Cronbach's alpha.

The convergent validity measured through average variance extracted (AVE) for whom the acceptable limit is 0.5 (Fornell and Larcker, 1981). Subsequently, all variables hold convergent validity. To assess the discriminant validity of the constructs included, this study adopted two fundamental approaches. Initially, a thorough examination of individual items was conducted for cross loadings. The results from the cross loading values revealed that none of the items exhibited higher loadings on alternative constructs. Secondly, the study analyzed the HTMT ratio. According to Henseler, Ringle, and Sarstedt (2015) the acceptable limit of HTMT-ratio is < 0.9 and the relevant confidence interval is 1. The result showed that HTMT values and confidence interval values of each variable are less than 0.9 and 1 respectively, thus establishing convergent validity. Reliability and validity statistics are presented in Table 1~3.

Hypotheses Testing

This study evaluate hypotheses testing by analyzing the direct and mediating impact. H1 assessed whether TL has a substantial impact on PS. The results showed that TL has a positive and significant influence on PS ($\beta = 0.28$, $t = 4.61$, $p < 0.00$), therefore H1 of the study supported. The study assessed mediation analysis using three mediator variables (a) team communication (b) team identity and (c) team empowerment, between the relationship of predictor variable TL and PS (H2~H4). To access the mediation result, a bootstrapping procedure was performed through Smart PLS-4. The result indicated that the indirect effect of TL through mediators found significant (H2: $\beta = 0.16$, $t = 3.42$, $p < 0.00$, H3: $\beta = 0.14$, $t = 4.16$, $p < 0.00$, H4: $\beta = 0.07$, $t = 1.36$, $p < 0.00$). The total effect of TL on PS is significant ($\beta = 0.66$, $t = 19.10$, $p < 0.00$). With the inclusion of the mediators the effect of TL on PS is still significant ($\beta = 0.28$, $t = 4.61$, $p < 0.00$). This reflected complementary partial mediation, therefore H2~H4 of the research supported. Direct and mediating effects are presented in Table 4~5.

Table 1.*Factor loading, reliability, and validity*

Variables		loadings	Alpha	CR	AVE
	PS1	0.75			
	PS2	0.75			
	PS3	0.69			
	PS4	0.72			
	PS5	0.78			
	PS6	0.77			
Project success	PS7	0.73	0.94	0.94	0.56
	PS8	0.74			
	PS9	0.68			
	PS10	0.76			
	PS11	0.81			
	PS12	0.77			
	PS13	0.81			
	PS14	0.78			
	TL1	0.70			
	TL2	0.63			
	TL3	0.65			
	TL4	0.67			
	TL5	0.72			
Transformational leadership	TL6	0.68	0.91	0.91	0.50
	TL8	0.71			
	TL9	0.74			
	TL10	0.84			
	TL11	0.76			
	TL12	0.72			
	TL13	0.70			
	TI1	0.85			
Team identity	TI2	0.84	0.83	0.84	0.66
	TI3	0.78			
	TI4	0.81			
	TC1	0.76			
	TC2	0.74			
Team communication	TC3	0.82	0.84	0.84	0.61
	TC4	0.77			
	TC5	0.82			

	TE1	0.75			
	TE2	0.81			
Team empowerment	TE3	0.81	0.86	0.86	0.59
	TE4	0.74			
	TE5	0.77			
	TE6	0.74			

Table 2.
Cross loading analysis

Variables		PS	TC	TE	TI	TL
	PS1	0.749	0.511	0.521	0.488	0.507
	PS10	0.756	0.549	0.511	0.498	0.484
	PS11	0.814	0.496	0.557	0.522	0.504
	PS12	0.768	0.484	0.487	0.48	0.469
	PS13	0.81	0.54	0.533	0.559	0.538
	PS14	0.783	0.518	0.532	0.533	0.523
Project Success	PS2	0.749	0.462	0.469	0.48	0.446
	PS3	0.687	0.464	0.433	0.451	0.437
	PS4	0.719	0.463	0.481	0.496	0.517
	PS5	0.779	0.485	0.501	0.465	0.483
	PS6	0.767	0.5	0.47	0.507	0.501
	PS7	0.729	0.447	0.554	0.49	0.536
	PS8	0.741	0.469	0.537	0.459	0.559
	PS9	0.677	0.465	0.463	0.465	0.502
	TC1	0.511	0.756	0.482	0.365	0.461
	TC2	0.411	0.739	0.461	0.425	0.4
Team communication	TC3	0.533	0.822	0.593	0.492	0.484
	TC4	0.524	0.774	0.522	0.43	0.45
	TC5	0.557	0.824	0.642	0.485	0.513
	TE1	0.537	0.599	0.745	0.544	0.559
	TE2	0.526	0.566	0.807	0.481	0.525
Team empowerment	TE3	0.538	0.589	0.813	0.578	0.562
	TE4	0.457	0.502	0.737	0.444	0.555
	TE5	0.564	0.474	0.771	0.527	0.574
	TE6	0.459	0.465	0.739	0.496	0.503
	TI1	0.533	0.482	0.548	0.847	0.485
Team identity	TI2	0.579	0.524	0.575	0.836	0.479
	TI3	0.435	0.339	0.49	0.778	0.402
	TI4	0.577	0.469	0.559	0.805	0.45

	TL1	0.469	0.385	0.464	0.3	0.7
	TL10	0.591	0.542	0.679	0.552	0.836
	TL11	0.504	0.412	0.547	0.463	0.756
	TL12	0.469	0.508	0.542	0.433	0.717
	TL13	0.51	0.468	0.533	0.44	0.699
Transformational leadership	TL2	0.446	0.335	0.363	0.382	0.634
	TL3	0.404	0.318	0.417	0.298	0.649
	TL4	0.413	0.309	0.432	0.364	0.667
	TL5	0.484	0.427	0.482	0.34	0.721
	TL6	0.474	0.396	0.434	0.347	0.676
	TL8	0.417	0.393	0.528	0.391	0.713
	TL9	0.46	0.475	0.558	0.372	0.736

Table 3.
HTMT ratio

	PS	TC	TE	TI	TL
Project success					
Team communication	0.726				
Team empowerment	0.741	0.808			
Team identity	0.733	0.661	0.783		
Transformational leadership	0.715	0.663	0.792	0.628	

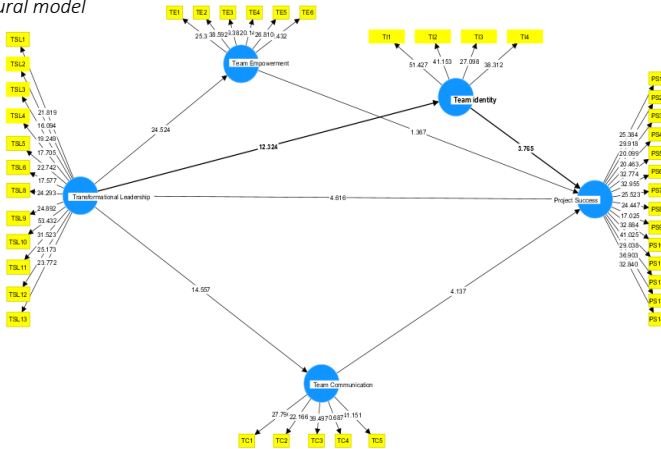
Table 4.
Direct Effect

	Beta	Stdev	t	P	Decision
H1: TL->PS	0.28	0.06	4.61	0.00	Supported

Table 5.
Mediation Effect

	Total effect			Direct effect			Indirect effect			
	Beta	T	p	Beta	t	p	Hypotheses	Beta	t	p
TL->PS	0.66	19.10	0.00	0.28	4.61	0.00	H2: TL->TI->PS	0.16	3.42	0.00
							H3: TL->TC->PS	0.14	4.16	0.00
							H4: TL->TE->PS	0.07	1.36	0.08

Figure 1.
Structural model



Discussion, Implications and Future Direction

Discussion

The study aims to analyze the association between TL, team identity, communication, empowerment, and PS. The significance of the proposed hypotheses confirms the resource-based view (RBV) and utilizes social identity theory (SIT). This study establishes the positive impact of TL on Software PS. The current result aligned with the findings of the extant investigation which support and witness the significant association between TL and performance-centered outcomes (Afzal et al., 2018; Abbas & Ali, 2023). This indicates that Software firms characterized by TL can handle risk, make prompt decisions, and become the source of PS. This advances the affirmation that TL encompasses inspiring and motivating followers through a compelling vision, fostering innovation and change, encouraging individual growth and development, and building strong relationships within the team to achieve shared goals and objectives (Aga et al., 2016).

This study affirms the positive and significant effect of TL on PS. The outcomes established this hypothesized relationship. Scholars such as Abbas and Ali (2023) examined the intricate relationship between TL and PS. Their findings robustly supported a substantial and noteworthy association between these two constructs. Latif & Nazeer et al. (2020) validated and reinforced these findings, affirming a substantial and significant impact of leadership practices on the success of projects. Afzal et al. (2018) examined the impact of TL on PS and yield compelling evidence for a positive correlation of TL with PS. Likewise, Zia (2020) delve into the intricate relationship between leadership practices and project based performance and found a direct influence of TL on PS. Moreover, Aga et al. (2016) conducted a research mainly focused on the link between TL and PS. They further revealed that a notable and satisfactory interrelationship between TL and PS.

This study scrutinize the mediating role of team identity between the relationship of TL and PS. The outcomes notably affirm the positive effect which is consistent with the prior literature. For instance, Mitchell et al. (2015) delve into a substantial influence of leadership on team identity through a cross sectional examination study. The research emphasized that leader fosters the utilization of unique attributes within project team to realize collective goals, thereby mitigating risks by valuing team members. Similarly, Huettermann et al. (2014) stated that leadership behaviors impact team identity and uncover the noteworthy influence of leaders through leadership practices including provide guidance, encourage involvement, role model, and foster teamwork. Additionally, the work by Kearney and Gebert (2009) reinforces the notion that charismatic and transformational leadership styles are intricately linked with team identification, further solidifying the understanding of the relationship between leadership and team identity to augment project performance and success.

This study found a significant mediating role of team communication in the relationship between TL and PS. The outcomes established this hypothesized relationship. The investigation delved into the mediating role of team communication in the relationship between TL and PS, aligning with prior literature's emphasis on the pivotal role of effective communication within project teams (Ryan & O'Connor, 2013). The findings substantiate earlier research indicating that consistent and open

communication among team members enhances information flow, thereby positively influencing team performance and contributing to project success, particularly in IT projects (Douglas et al., 2006).

This correlation has been attributed to the complexity of IT projects, necessitating cohesive teamwork and knowledge exchange for successful outcomes (Schwalbe, 2007). Extant literature suggests the significance of communication within project teams, emphasizing its role in improving problem-solving skills, team member knowledge, commitment, and decision-making processes (Park et al., 2012; Patrashkova et al., 2013). Empirical evidence demonstrated that leadership focuses on fostering robust communication channels and enhances team understanding of project requirements and customer needs, ultimately driving quality project outcomes (Becerik-Gerber et al., 2012; Davis, 2017). Moreover, findings from Yue et al. (2019) and Afzal et al. (2018) reinforce the assertion that effective TL induces competent team communication, contributing significantly to PS.

The findings showed an affirmative mediating role of team empowerment in the connection between TL and PS which is consistent with the extant literature. For instance, Sanjaghi et al. (2012) conducted a study on the oil industries in Tehran, investigating the mediating impact of team empowerment in the relationship between TL and firm performance and found a significant impact. Similarly, Baird and Baard (2021) explored the relationship between managerial control, team empowerment, and performance, revealing that team empowerment significantly mediated the relationship between leadership and performance outcomes. Moreover, Wong et al. (2013) proposed an association between authentic leadership and structural empowerment, suggesting that this relationship positively influences performance outcomes. Their research underlines the significance of structural empowerment in enhancing performance based outcomes. Further supporting the mediating role of team empowerment, Schermuly et al. (2013) investigated team empowerment as a mediator between leader-member exchange and innovative behavior, affirming a positive contribution of team empowerment to fostering innovative conduct.

Finally, the existing literature highlights the positive association between transformational leadership, team identity, team communication, team performance, and project success. For instance, scholars like Khan et al. (2019) and Saleem et al. (2021) found a substantial effect of TL on PS. Aga et al (2016) hypothesized whether TL impacts on PS. Their findings highlight a positive relationship between TL and PS. Similarly, scholars like Maqbool et al. (2017) claimed a significant impact of TL on PS. In addition, Nauman et al. (2022) argue that TL is crucial for the success of new project management initiatives, particularly in IT-enabled business projects. Fareed et al. (2023) found a positive relationship between TL and PS. These published works are aligned with the outcomes of the current study. Similarly, the extant body of literature highlights the mediating role of team outcomes in the relationship between leadership and project success. For instance, scholars like Latif et al. (2020) consider various team-related variables including team identity, team communication, and team performance as mediators in their research model. They found that team-related variables positively intervene in the proposed relationship and augment firm performance effectively. In addition, Mombeuil et al. (2023) developed a research model to analyze the relationship between leadership and project success with the mediating role of team identity. They found the significant mediating role of team identity in the relationship between leadership and project success. Similarly, Paolucci et al. (2018) developed a research model to analyze the relationship between transformational leadership and team effectiveness with the mediating role of affective team communication. They found that affective team communication is a significant mediator in the proposed relationship. In addition, Yang et al. (2018) considered team commitment as a mediator in the relationship between the project manager and R&D Project Performance. They found that team commitment positively intervenes in this relationship. Similarly, the extant literature highlighted a significant mediating role of team empowerment in the relationship between TL and PS. For instance, Tian et al. (2015) argued that team empowerment enabled better ways to mitigate risks and bring sustainable outcomes which further augment PS. In addition, scholars like Siddiqui and Shaukat et al. (2023) developed a research framework to analyze the relationship between leadership style, team empowerment, and IT project success. They found that team empowerment positively mediates the relationship between leadership and PS. These published works are aligned with the findings of the current study.

Conclusion

This research identified important and innovative factors, namely the TL and team-related outcomes as pivotal elements that significantly contribute to PS. This study represents one of the earliest attempts to establish a proposed framework by linking TL attributes with PS and utilizing team outcomes as a mediating mechanism. Emphasizing the key elements of TL, such as team communi-

tion, team identity and team empowerment, this study aimed to enhance PS. The findings demonstrated a significant impact of TL on software PS, with team communication, identity and empowerment mediating this relationship. As a result, the study concludes that transformational leader plays a vital role in achieving successful projects within software companies in Pakistan. Moreover, the study recommended that software firms should prioritize better team communication, establish identity, and empower teams to facilitate effective decision-making, thereby enhancing project management efficiency and success. It advocates for policymakers and project leaders to strategize and implement TL practices seamlessly. Additionally, it underscores the significance of fostering a dynamic environment and empowering teams as critical factors for proficiently augmenting projects. Overall, the study underscores the importance of TL and team outcomes in ensuring more efficient project outcomes and emphasizes the necessity for strategic planning to facilitate successful project execution.

Research implications

This research delves into both theoretical insights and practical implications perceived by the software sectors of Pakistan. The findings strongly affirm the substantial role of TL practices in enhancing critical facets such as team communication, identity establishment, empowerment, and ultimately PS. TL fosters better team communication, establishes cohesive team identity, and empowers team members to effectively mitigate project complexity. The implementation of TL practices by project managers within software firms elevates team-level outcomes through improved communication, stronger team identity, and increased empowerment and also significantly enhances overall PS. This study underscores the imperative for software firms to prioritize and adopt TL practices. By focusing on nurturing TL within their managerial approaches, firms can notably improve team related outcomes. This can be achieved by fostering professional growth opportunities, creating and maintaining a vibrant and conducive working environment, and promoting the well-being, safety, and ethical conduct of team members within the firm. Such measures contribute significantly to enhance team dynamics and consequently augment PS. Subsequently, the adoption and effective management of TL within software firms become pivotal to achieve elevated levels of success, ultimately positioning these firms in a superior stage to effectively navigate TL and team outcomes, thereby fostering continued prosperity and success.

Limitations and Future Research Directions

The study has a few limitations. Firstly, the data gathered from employees working in the Software sector of Pakistan, therefore, this framework should be applied in other contexts. The cross-sectional data-gathering approach was used in the present research while in future research longitudinal data-gathering techniques can be also valuable. This research was conducted on a relatively small number of respondents. In the future, the number of participants should be increased. This study utilized team communication, identity and team empowerment as mediators, future endeavors should include other team outcomes including team building, team efficacy, team commitment, and team performance as mediating variables between the relationship of TL and PS. Moreover, in today's business context, with a heightened focus on sustainability and the pursuit of Sustainable Development Goals (SDGs), sustainable leadership emerged as a significant aspect of business environments. Given this shift, it becomes crucial to delve into the influence of sustainable leadership on a firm's sustainable performance. Furthermore, exploring the possible mediating impact of green innovation and frugal innovation between sustainable leadership and sustainable performance, coupled with an investigation of the moderating role of knowledge center culture in the relationship between sustainable leadership and knowledge absorptive capacity, represents a promising avenue for future research.

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