

Time flies when you are having fun. Mediating effects of project opportunity management in the relationship between project leaders' self-efficacy and multi-dimensional project success

Abstract

Numerous studies have linked various leadership styles with project success; however, the role of project leaders' self-efficacy and project opportunity management has been rarely studied. The present study examines the effects of project leaders' self-efficacy on multi-dimensional project success, through project opportunity management. Drawing on data of 386 project professionals, the hypothesized relationships were tested using structural equation modeling (SEM) via MPlus. Empirical findings support that project opportunity management helps to explain and predict the relationship between project leaders' self-efficacy and project success. The study extends project management literature by presenting a new model of multi-dimensional project success.

Keywords Leadership self-efficacy; project opportunity management; multi-dimensional project success; structural equation modeling; Mplus.

Introduction

Opportunity is interpreted in multiple ways that will improve the performance of projects, exploit favorable situations, explore improved tradeoffs, and inspire lateral thinking in framing project strategies (Bagiu et al., 2020; Denney et al., 2020; Qazi, Daghfous & Khan, 2021; Zhong et al., 2019). Opportunity identification is about noticing a possibility to generate new commerce, or vividly improving the position of a prevailing business, resulting in organizational success (Eskerod et al., 2018; Qazi, Daghfous & Khan, 2021). In projects that have evolving nature; and are multifaceted and dynamic, the continuous and real-time management of opportunities is fundamental to project success (Hietajärvi et al., 2017). It is rational to assume that the observed

associations will be even evident in circumstances where performers directly impact the project outcomes (Bagiu et al., 2020; Denney et al., 2020; Krueger and Day, 2010). Hence, gauging leaders' self-efficacy (rather than leadership styles) would be more effective for project-based organizations that are determined to achieve success (Blomquist et al., 2016; Zaman et al., 2022). Research on project leadership styles and project success have mellowed significantly over the past few decades (Musawir et al., 2017; Zaman et al., 2022); however, contradicting conclusions remain on what factors drive project success (Viswanathan et al., 2020; Zaman et al., 2022).

The primary responsibilities of a leader are to delegate tasks, guide, support, give orders, set expectations and priorities, besides overseeing daily activities of the followers (Chin, 2015). However, this school of thought contradicts the setup of contemporary organizations. The complexity of organizational leadership has amplified because of the ever-changing conventional equilibrium of power, instabilities and uncertainties (Musawir et al., 2017; Zaman et al., 2021). Project-based economies have rapidly advanced recently, especially in the ICT industry (Zaman et al., 2019), which has brought the role of the project leaders into the limelight. Prior studies have extensively discussed the project leader's skills and proficiencies needed to complete the project effectively (Zaman et al., 2019). Moreover, numerous scholars have debated the worth of effective leadership in completing the projects successfully (e.g., Müller & Turner, 2010; Musawir et al., 2017; Zaman et al., 2022). **Organizational behavior literature suggests that self-efficacy positively correlates with managerial performance (Almutairi, 2020). Similarly, project management studies have also argued that self-efficacy positively triggers project manager's performance (Blomquist et al., 2016), but it has been seldom measured (Zaman et al., 2022).**

Recruiting the right kind of self-confident project managers is one of the crucial challenges of modern organizations, despite the availability of highly skilled and motivated workforce (Ahsan

et al., 2013; Zaman et al., 2022). Moreover, the continuous transformation of work processes and the development of new products and services call for leaders who are risk-takers with an ideal perception of threats and opportunities (Denney et al., 2020; Krueger and Day, 2010). Surprisingly, there is rare empirical evidence on how project leaders identify opportunities and threats to navigate projects toward success (Krueger and Day, 2010). Self-efficacy is defined as *“beliefs in one’s capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands”* (Wood & Bandura, 1989). Hence, leadership self-efficacy augments perceptions of opportunities and threats using dilemma tasks and gambling choices, resulting in decisions largely dependent on self-confidence in overcoming adversity (Krueger and Day, 2010; Schmitt et al., 2018; Zaman et al., 2022).

Planning and completion of a valuable change is all that any project is about (Zaman et al., 2022). This aspiration may involve a creation of tangible asset or an intangible change within the organization. In both cases, the quest for opportunities remains an innate concern. During the project execution, the outcomes are highly dependent on uncertainties, hence, opportunities should be pursued at all stages of the project (Bagiu et al., 2020; Denney et al., 2020; Zaman et al., 2022). Uncertainty triggers the pursuit of project opportunities, while self-efficacious leadership enables projects to bounce forward in delivering exceptional performance (Zaman et al., 2022). In the context of project management, the constructs of opportunity management and self-efficacy of leaders have been studied from various angles and their linkage with project success have been theoretically interpreted in prior research (Zaman et al., 2022). However, there is a lack of systematic (i.e., hypothesized, theory-based, tested, and validated) research on self-efficacy and its relation to opportunity identification and management in projects (Denney & Powell, 2020; Zaman et al., 2022). To address this critical research gap and to highlight the importance of

leadership self-efficacy, this study is first to examine the effects of project leaders' self-efficacy on the multi-dimensional project success through project opportunity management.

In the following section, we firstly present the literature on the three latent constructs explored in this research, including leadership self-efficacy (LSE), project opportunity management (POM) and project success (PS), respectively. Secondly, we then take advantage of prominent theories (e.g., social cognitive theory, self-efficacy theory, satisficing theory and regret theory), to elaborate our understanding of leadership self-efficacy and its impact on project success through the mediating role of project opportunity management. Hence, the research questions framed for this empirical research, include: (1) Does leadership self-efficacy affect project opportunity management and project success? and (2) Does project opportunity management mediates the relationship between leadership self-efficacy and project success? To address these research questions, we have chosen the information and communications technology (ICT) sector in Pakistan to analyze these potential constructs (LSE, POM, and PS). In recent years, the ICT projects have made a remarkable contribution (e.g., exceeding US\$ 1 billion of annual IT exports) to the economic transition (i.e., rebound and growth) in Pakistan by inducing the attention of overseas investors (Imran et al., 2021; Zaman et al., 2019). Hence, Pakistan is emerging as an economic powerhouse in the South Asian region as its ICT industry continues to gain recognition globally (Imran et al., 2021).

Literature review

Leadership self-efficacy

According to psychologist Bandura who originally introduced the self-efficacy concept, it is defined as “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (Bandura, 1982). Self-efficacy is the measure of individuals’ belief

that they can accomplish the given tasks and successfully achieve the desired outcome (Yasin, 2019; Zaman et al., 2022). According to social cognitive theory (Bandura, 1986), individuals possess a self-system that enables them to assess and control their motivations, thoughts, feelings and actions. Self-efficacy is the most central function of the self-system that powerfully influences individuals' performance and behaviour (Paglis, 2010; Zaman et al., 2022). Self-efficacy affects individual's choice of actions and the efforts they commit to their activities. People are usually motivated to complete the tasks that they believe they are more competent to succeed. The relation between self-efficacy and motivation and how the enhancement of one affects the other one is well studied in a variety of settings, for example, in education sector (Margolis and McCabe, 2006, Schunk, 1991), athletes and sport (Schunk, 1989, Schunk, 1995, Sari and Bayazit, 2017), health and medical services (Sim and Oh, 2012, Zhang et al., 2015). In general, individual's self-efficacy drives the decisions and choices they make at crucial stages of their lives (Zaman et al., 2022). The literature available on self-efficacy suggests that people with strong self-efficacy beliefs are not only more ambitious in pursuing the given tasks, but they are willing to contribute more towards achieving the goals, and they are better at overcoming obstacles (Anderson et al., 2008). Given that self-efficacy reflects the individual's judgment of their ability, self-report measures are the most common tool to evaluate individuals' self-efficacy beliefs (Hannah et al., 2012; Zaman et al., 2022).

Leadership self-efficacy broadly refers to an individual's judgment in their ability to successfully exert leadership roles (Paglis and Green, 2002, Zaman et al., 2022). There is no agreement on how leadership self-efficacy should be measured (Paglis, 2010) due to the lack of a universally agreed definition for leadership in the literature (Paglis, 2010). Therefore to measure the leadership self-efficacy, some scholars rely on defining and evaluating the individual's efficacy beliefs targeted

at their leadership behaviors which may include formulating strategies, setting directions, motivating the team to work hard in achieving the goals (Paglis and Green, 2002, Ng et al., 2008). While self-confidence and self-efficacy are usually discussed under the domain of leadership in literature, these two concepts are entirely different concepts. Self-efficacy is the gauge to the measurement of one's belief in their capabilities for doing specific tasks. In contrast, self-confidence is a personality trait that augments an individual's attitude toward themselves (Tsai et al., 2011). Researchers concluded that self-confidence and self-efficacy are linked to how individuals feel and think about themselves, and it tremendously affects their potential to be great leaders (Zaman et al., 2022).

Building on the self-efficacy theory (Bandura, 1986), it is expected that one's credence in their abilities to participate in leadership can impact their enthusiasm or inclination towards leadership activities, involvement, performance level, and to enhance the leadership skills further. Several studies supported this statement in a broad range of disciplines. For example, Chemers et al. (2000) study on ROTC cadets concluded that higher leadership self-efficacy scores received better leadership ratings from others in a leadership training camp. In a similar study, leadership development programs improved nurses' leadership self-efficacy and collaborative engagements (Costanzo et al., 2019). The positive relationship between leadership effectiveness and self-efficacy, emotional intelligence and leadership style was also confirmed among police personnel in South Africa (Ramchunder and Martins, 2014). Leadership self-efficacy in direction setting and gaining commitment are reported to be positively correlated with the rating managers received by the subordinates for their attempts in leading change (Paglis and Green, 2002). Through a comprehensive canonical study, Anderson et al. (2008) investigated the relations between

leadership self-efficacy and several domains of leadership effectiveness and introduced a self-efficacy leadership taxonomy.

Project opportunity management

Project opportunity management is about succeeding and removing obstacles to reach the target (Zhong et al., 2019b). According to the Project Management Book of Knowledge, risks in projects are “an uncertain event or condition that if it occurs, has a positive or negative effect on at least one project objective, such as time, costs, scope or quality”. Hillson (2003) suggested that managing risks is the salient aspect of managing the measurable uncertainty in projects. While there is an ongoing debate in the literature on the definition of uncertainty and risk and their relation, there is a standard agreement that opportunity is the positive consequence of uncertainty (Olsson, 2007). Uncertainty gives birth to the risks attached to the project (Lehtiranta, 2013). Uncertain events or conditions with negative impacts on the project objectives are usually identified as threats (negative risks), and those with positive impacts are known as opportunities. Project values are significantly increased by seizing the opportunities (Browning, 2014), and successful opportunity management facilitates innovations in complex projects (Hietajärvi et al., 2017). However, traditionally risk management scholars and PR actioners pay more attention to identifying and managing threats than opportunities (Hillson, 2002, Lehtiranta, 2014, Ward and Chapman, 2003). Failing to consider opportunities resulted in the lack of practices and tools for successfully managing of opportunities (Hietajärvi et al., 2017). Another key reason for the project managers unwillingness towards opportunity management is associated with the fact that usually, threat prevention is more desirable than exploiting opportunities of the same value (Hietajärvi, Aaltonen & Haapasalo, 2017; Loosemore, 2011), which means generally, threats are overestimated

and opportunities are underestimated (Hietajärvi, Aaltonen & Haapasalo, 2017; Huemann & Martinsuo, 2016).

In the classical view, opportunity management follows the same principles and processes like risk management, through which potential opportunities are systematically recognized, examined, and was worked on (Jaafari, 2001; Zhong et al., 2019). Generally, there are five processes in opportunity management (Hillson, 2002, Hietajärvi et al., 2017). The first process is planning opportunity management, and it is to ensure that the objectives of the project are precisely identified, and stakeholders have a clear understanding of the objectives. In addition, the planning process further provides the steps to follow in the other processes. The following process is opportunity identification, in which, by using different techniques, opportunities are recognized. Then, all the listed opportunities are assessed and their potential impacts on the project are analyzed. Next comes the opportunity response planning; the appropriate responses to the identified opportunities are developed in this process. The last process is monitoring the identified opportunities and ensuring the agreed response plan is properly implemented and effective. In comparison with classical risk management, the only difference is the strategies devised for response planning. While the four common strategy to respond to risks are avoid, mitigate, transfer and accept, the response strategies when talking about opportunity management are exploit, share, enhance and ignore (Hillson, 2002).

Although opportunities are risks with positive impacts, several scholars argue that the current risk management practices are not sufficient to seize and manage project opportunities (Lehtiranta, 2014; Olsson, 2007; Qazi, Daghfous & Khan, 2021). Even though numerous techniques exist to identify and evaluate risks, like SWOT, root cause analysis, probability-impact matrix, and cause and effect diagram (Hillson, 2002; Thamhain, 2013), these tools cannot manage opportunities

properly in a project. It has been concluded from the available literature that if there is any conventional method for managing project threats, it needs to be modified to manage opportunities. However, there might be a natural resistance to employ modified methods because project practitioners adopt these methods for managing threats (Hillson, 2002). Furthermore, these techniques can help identify and evaluate single opportunities from time to time. However, in the case of continuous management of opportunity, the contributions of these tools are limited (Hietajärvi et al., 2017).

Several scholars have advised the idea of uncertainty management as a better way of managing different types of uncertainties that existed in the projects, including risks with positive and negative impacts (Jaafari, 2001, Ward and Chapman, 2003, Atkinson et al., 2006). This approach allows a wide range of uncertainty sources to be identified and managed more comprehensively throughout the project's lifecycle. It is strongly advised that opportunity and threat go side by side, and the difference is how the project managers deal with them, and to survive and thrive, we have to attend both. A plethora of opportunities are available if the program manager master's skills such as identifying, managing and transforming risks.

Project success

Traditionally project success is defined as how predefined project objectives are accomplished (Atkinson, 1999, De Wit, 1988). Projects are different in many ways, and no two projects are alike; therefore, the project's success may also depend on various factors (Müller and Turner, 2007). Thus, researchers still have not built consensus as to what project success precisely means (Baccarini, 1999, Ika, 2009). However, project success always has a positive impact on the organization's overall performance managing the project. Therefore, understanding project success is of substantial importance for research and practice (Zwikael and Meredith, 2019). The

success of any project is directly linked with how well a project manager can manage the project within the scope and cost baseline (De-Wit, 1988; Martens and Carvalho, 2016; Zaman et al., 2021). Subsequently, the research continues to identify various factors that may impact project success (Mir and Pinnington, 2014).

Project success has been addressed in literature in many ways. Initially, it is utmost to pinpoint the differences between success in project management and project success (Martens et al., 2018). Project success is also about measuring success in meeting the budget goals, schedule goals, and output goals. All the undesired items were managed perfectly: dispute management, success, and integration of staff were handled excellently, and the project went as per plan that is as per benchmark (Musawir et al., 2017). It also depends on the project success criteria, which are the indicators by which the success or failure of a project will be gauged (Viswanathan et al., 2019). Generally, the methodologies used in previous literature are mainly similar to the triple constraint or iron triangle model (Musawir et al., 2017), but project success depends on different factors (Dvir et al., 2003; Musawir et al., 2017). However, the commonly considered criteria for project success are still to be cost, schedule, and performance (De-Wit, 1988; Li et al., 2018). The project's success is highly dependent on critical scheduling (Gil and Pinto, 2018).

Prior literature has shown that project stakeholder management is also a critical factor for project success (Loosemore, 2011; Zaman et al., 2021). Shenhar et al. (2007) claim that project success is a multi-dimensional paradigm, signifying that “different individuals weigh project’s success in different ways, and at different periods” (Zaman et al., 2022). Indeed, each of the various project stakeholders perceives a project due to ethnicity, vested benefits, fears, expectations, interests, and motivations (Gil and Pinto, 2018). According to a study, a continuous search has been done to correctly identify the factors that affect project success positively (Mir and Pinnington, 2014). A

multi-dimensional approach comprises of five different independent dimensions (pro-activeness, efficiency, project understanding, impact on customers, and impact on business), which impacts the project success was mentioned. That is how to efficiently achieve project success (Erdem and Ozorhon, 2015). Moreover, reflection on project success can also modify as time advances, circumstances change, and therefore the project is viewed in extended retrospect. Consequently, time horizons also play a character because few stakeholders have short-term concerns (e.g. project manager), whereas others, the project sponsor, have longer-term interests (Zwikael & Meredith, 2019).

Research framework and hypotheses development

Leadership self-efficacy and project success

Leadership self-efficacy is the leader's self-confidence in his capabilities to successfully commence assigned tasks **and actively respond to challenges** (Zidane, 2017). A relationship between the characteristics of project success and self-efficacy was highlighted (Zaman et al., 2022; Zidane, 2017), **where success of the project has been referred as the measurable fulfilment of project scope, time, and cost. Different researchers have demonstrated that leadership self-efficacy leads to a variety of incentives** (Yasin, 2019). However, the multifaceted nature of administrative inputs guide managers to accomplish their tasks differently. Furthermore, the **leadership traits of a manager are considered vital to strategically achieve the desired goals within the stated deadlines and projected costs** (Yasin, 2019). The concept of self-efficacy is intertwined with individual's choice to grasp on to the target and bring success for the project (Kang & Yang, 2016). Moreover, as highlighted in the self-efficacy theory, an individual can exhibit the positive behaviors **that matches with particular situations to achieve project success** (Bandura & Locke, 2003). **Bandura in his theory of social learning acknowledged the expected behavioral orientation**

and expectations that are selectively applied by individuals in certain situations when appropriate (Bandura, 1986). Likewise, an individual's self-efficacy expectation (i.e., beliefs and depiction of a person's positive behavior) is triggered in order to achieve project goals successfully. This implies that if an individual possesses leadership self-efficacy, then his/her approach towards work will be proactive and due to this, the project will achieve the desired success. **The self-efficacious leader can systematically and rigorously monitor project performance, therefore, serving as catalyst to promote successful projects** (Zaman et al., 2022).

A leader's self-efficacy can be gauged through the quality of performance during project execution, and evaluation of the effective communication with those working under his/her supervision (Zaman et al., 2022). Comprehending the complexity of the tasks involved in the project execution, the project leader apprehends ideas to fully absorb him/her self in the project. The real essence of self-efficacy is to thoroughly understand what a project requires, finishing it within the timeline defined, and sticking to the scope of the project; while taking the whole project team along and keeping them on one page (Lemboye, 2019). Therefore, it is the belief of an individual to demonstrate a certain set of abilities to learn the intricate tasks, processes, and behavior, it cannot be only defined as just the caliber of a leader's abilities (Bandura, 1982). Bandura concluded that the influence of an individual's ability would be positive on the project if his/her self-efficacy has been increased while working on it. If the project leader's abilities are too high or favorable, then it will help to result in completing the project ahead of time than stipulated and will also be effective in keeping the team motivated (Bandura and Locke, 2003). If any unfavorable situation pops-up the team will deal with it with a positive approach and will come up with efficient solutions with the available resources (Blomquist et al., 2016). On the other hand, if the person is underestimating his/her abilities then it will have a negative influence on the project

as the individual lack's faith in his abilities, then these would of absolutely no help to attain the desired project outcomes (Bandura & Locke, 2003). Hence, there is a significant relationship between the success of the project and leadership self-efficacy. *As postulated by the satisficing theory, self-efficacious project leaders seek to satisfy themselves in achieving their desired project goals (e.g., scope, time and cost). Moreover, as interpreted by regret theory, the efficacious project leaders rarely regret their decisions, while they overcome complex challenges and navigate projects toward success (Bandura, 1982; Musawir et al., 2017; Zaman et al., 2021).*

H₁ Leadership self-efficacy has a significant positive effect on multi-dimensional project success.

Leadership self-efficacy and project opportunity management

To identify and manage opportunity, it is vital to study self-efficacy as self-efficacy not only talks about being acquainted with skill as it is not enough to change the individual's thinking but also believing in his skills to make a difference (i.e., perceived versus actual efficacy) (Gibbs, 2009). The argument mentioned above implies that self-efficacy is mandatory to manage opportunities (Gibbs, 2009). Self-efficacy allows the managers to be aware of their capabilities required by certain tasks, of which a pivotal one is opportunity recognition (Tumasjan & Braun, 2012). Researchers have suggested that the process of opportunity identification is iterative, autonomous, not linear, and complex; and is greatly influenced by self-efficacy. Leadership self-efficacy is prevalent in project-based organizations (Gibbs, 2009; Tumasjan & Braun, 2012). A study found that self-efficacy increases the sensitiveness towards opportunity and decreases sensitiveness towards the threat, and it is rational to assume that the observed associations will be even stronger in circumstances where players perceived that ability influences consequences (Mohammed & Billings, 2002). Numerous studies have talked about a connection between self-efficacy and perceived issue understanding and whether the issue to be controlled is an opportunity or threat

(Schmitt et al., 2018). The self-efficacious people focus their concentration on looking for the solution to the issue and cultivate the self-assurance required to take on challenging activities (Kang and Yang, 2016). Contrary to this, inefficacious people turn out to be preoccupied with insufficiencies and develop an approach that dwells on undesirable results (Wood & Bandura, 1989). This implies that people with a high level of self-efficacy foresee the positive scenarios that lead towards high performance, whereas those with a low level of self-efficacy tend to be more inclined towards the negative scenarios that demoralize performance (Gibbs, 2009).

Since opportunity and threat classification comprises the measurement of whether success or failure is likely, a rational connection can be established from envisioning incapability towards the growth of a threat and envisioning success to capture the opportunity (Gibbs, 2009). Self-efficacy measures the person's confidence in their capability to achieve outcomes. It involves both action and thoughts (Kang and Yang, 2016). Furthermore, it is purported to be a paramount factor for any project or a startup. Bandura (1982) argued that self-efficacy is a vital aspect of the opportunity identification and recognition process. Opportunity identification has been linked to self-efficacy on multiple occasions (Bandura and Locke, 2003; Gibbs, 2009; Tumasjan and Braun, 2012). To recognize opportunities, the leader must proceed through the cognitive ability that facilitates the exploitation of opportunity to the fullest. This implies that the importance of self-efficacy in the opportunity recognition process, as well as current verdicts of the constructive impact of self-efficacy on opportunity management, it can be estimated that self-efficacy has a positive impact on opportunity recognition insights and actions (Tumasjan and Braun, 2012). To reiterate, there is a universal agreement within literature flaunting self-efficacy as necessary rudiments for opportunity management (Lumpkin et al., 2001).

H₂ Leadership self-efficacy has a significant positive effect on project opportunity management.

Project opportunity management and project success

Projects are all unique, but apart from nature, each supports the behaviors that could improve the methods to work, and to manage the opportunities more effectively, and respond to the project risk management challenges (Qazi, Daghfous & Khan, 2021; Raz et al., 2002). The possibilities of uncertainty are inadequately exploited for the developments yet to experience to improve the success rate of the projects (Böhle et al., 2015). Within the debate regarding how to manage uncertainties, the insights of the critics lately have emphasized that such predicaments should not always be deemed as negative (Böhle et al., 2015). Rather, the project manager can view them as the permit to lead to the paths to discover innovative possibilities hitherto overlooked (Blomquist, Farashah & Thomas, 2016; Böhle et al., 2015). These potential positive possibilities that are there to improve the chances of success are known as opportunities. As aforementioned, the process for managing opportunity. To exploit any opportunity to reach success required a significant level of skills and changes that are just beyond the incremental modification in baselines (Lehtiranta, 2013; Youcef J-T. Zidane, 2017). This concept is associated with the postulation that the plan mapped to execute the project accordingly must be altered in the view of determining the project's success (Youcef J-T. Zidane, 2017).

Opportunities are variations, events, and factors that might bring changes in the project and make it able to get the finish, with the desired outcomes, ahead of the time or at a much lower cost than agreed upon at the initiation of the project (Denney & Powell, 2020). Opportunities are also the variations, events, and factors that can bring about changes that can make the project provide more efficient functionality to lead to the generation of more revenues than expected after the project is delivered (Denney & Powell, 2020; Dupont and Eskerod, 2016). Critics have pondered upon the link between the opportunity management and the success of the project on multiple. The literature identifies several factors regarding managing uncertainty that can ultimately affect the success of

the projects. The factors like teamwork, competence, internal communication, and support from the management have been considered to be the most powerful elements in efficiently managing the opportunities occasions (Böhle et al., 2015; Lehtiranta, 2013; Youcef J-T. Zidane, 2017). Moreover, designing a holistic approach to recognize and capture the opportunities could be difficult unless the project manager holds the characteristic of self-efficacy as seizing and managing opportunities is a mechanistic task (Kang and Yang, 2016). Project opportunity management can enhance the performance of the project, as an efficient mechanism can provide means for accomplishing the goals of a creative project (Qazi, Daghfous & Khan, 2021). Opportunity management not only enhances the performance of the project. It also empowers the shared opportunity management mechanism by establishing a no-blame environment, eventually increasing the capacity of innovation and to deal with complexities (Olsson, 2007; Qazi, Daghfous & Khan, 2021). Therefore, the key purpose of opportunity management is to help the program managers to achieve key goals in the most efficient method possible.

H₃ Project opportunity management has a significant positive effect on multi-dimensional project success.

Mediating role of project opportunity management

Self-efficacy is important to recognize and manage opportunity as it imposes that only acquiring skills is not important, but it is vital to change what an individual thinks and how much he believes in his skills and abilities is what actually makes the difference (perceived vs. self-efficacy) (Krueger and Day, 2010). This suggests that self-efficacy may successfully distinguish between who will be capable of identifying opportunities and who will not (Faizah et al., 2015). Knowledge of self allows individuals to recognize opportunities that ultimately lead to project success (Chapman et al., 2012; Ward and Chapman, 2003). Self-efficacy then has further dimensions and

many researchers purport that task-specific self-efficacy is a better prognosticator of task success than generalized self-efficacy (Kang and Yang, 2016). The person's ability to deliver the outstanding outcomes of a project can manage opportunities and achieve the success of the project (Qazi, Daghfous & Khan, 2021; Zaman et al., 2022). If the individual has robust inside confidence on his strengths, then it is a higher level of self-efficacy, and then even with a low budget, the project achieves success. To progress and achieve the skills, self-efficacy is a crucial variable for projects, especially megaprojects (Yasin, 2019; Zaman et al., 2022).

The leaders may contradict risk-taking as they have their own interpretations for risk and usually, they tend to classify it into two categories threats and opportunities (Krueger and Day, 2010). Whenever the situation is controllable, they will call it an opportunity, and if it is not, then it will be referred to as a threat (Huemann and Martinsuo, 2016). Leaders with high self-efficacy always tend to grasp more opportunities than others. Leadership self-efficacy leads to effective opportunity management and that improves the chances of project success (Zaman et al., 2022). For quite some time now, risk and uncertainty management has been a common interest in huge projects. The researchers consider that uncertainty management and evaluation is mainly an ex-post process (Hietajärvi et al., 2017). A leader's beliefs in one's capabilities to organize and execute the project successfully tend to identify the opportunities in advance and manage them well to achieve the desired results from the project (Gibbs, 2009; Kang and Yang, 2016). Once the opportunities are properly identified and exploited then the success of the project is certain, therefore, leaders tend to identify the opportunities beforehand so that they can get the maximum benefit out of it (Zaman et al., 2022). The individuals with high self-efficacy perform better on projects. Thus, it shows that leadership self-efficacy significantly impacts the process of opportunity management in any project and that leads to the success of the project.

H₄ Project opportunity management positively mediates the relationship between leadership self-efficacy and multi-dimensional project success.

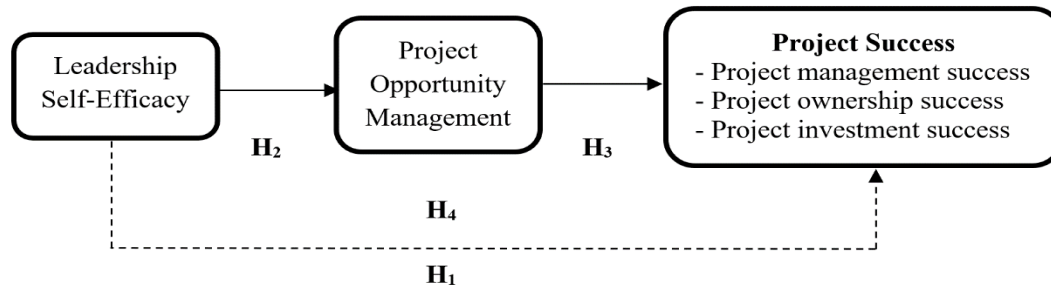


Figure 1 Conceptual Framework of Multi-Dimensional Project Success

Methods

Sampling and procedure

The present study used the quantitative, exploratory and explanatory approaches to empirically examine the direct effects of leadership self-efficacy on multi-dimensional project success, also involving the mediating effects of project opportunity management (Musawir et al., 2017). The researcher's intervention was minimal, as the empirical evidence for hypotheses testing was determined based on the data gathered directly from the study participants. Therefore, the data collection procedure was free of any subjectivity, preconceived notion, or inclination (Khwaja, Jusoh & Nor, 2019). The study focus included project professionals representing the emerging information and communications technology (ICT) industry in Pakistan. The study used self-reported and self-administered questionnaires to gather data from 403 project professionals in the ICT industry (Zaman, Nadeem & Nawaz, 2020). The initial data (N=60) was also pilot tested (Khwaja, Jusoh & Nor, 2019). To fill out the designed questionnaires, the respondents were given a time of one week, the information received was kept highly confidential and the results were only presented in the statistical data form.

A combination of non-probabilistic sampling techniques (including snowballing and convenience) was considered useful for data collection (e.g., broad exploration of project professionals in cost-effective and time-efficient manner), as the ICT firms were quite reluctant to share information due to serious concerns over privacy breach (Khwaja, Jusoh & Nor, 2019; Zaman, Nadeem & Nawaz, 2020). Importantly, probabilistic sampling frame in the context of developing countries has been considered infeasible due to inadequate public records, as well as extreme difficulty to access information (Sarhadi, Hasanzadeh & Hoseini, 2021). Hence, numerous studies in project management have argued snowballing and convenience-based sampling techniques as valid for inferential statistics using structural equation modeling (SEM) (Zaman et al., 2022). The respondents were reached through professional and personal contacts. To sufficiently ensure the impartiality of each individual's response, all study participants (i.e., representing interconnected network of project professionals in ICT industry) were contacted in different time intervals with satisfactory assurance for participant's anonymous and confidentiality of responses. The aforementioned procedural remedies (including respondent's lack of knowledge about the study's conceptual model) avoided participant's response bias, and to ensure case-independence to proceed with SEM (Zaman et al., 2022). Around 450 questionnaires were circulated among the respondents, and that resulted in 403 completed responses. However, after careful review of the gathered data, the results were grounded on the analysis of 386 finalized responses. The remaining responses were discarded as they were either not properly filled or were never responded (Khwaja, Jusoh & Nor, 2019). The confidentiality of the respondent's personal details was strictly maintained during and after the process of data collection (Zaman et al., 2022).

Measures

Project opportunity management was measured by using a developed scale including 10-items (represented by POM1 to POM10), based on prominent studies on opportunity management, and more specifically in the context of managing opportunities in temporary (i.e., project-based) organizations (Browning, 2014; Browning & Hillson, 2003; Chapman, Ward & Wiley, 2012; Eskerod, Ang & Andersen, 2018; Hietajärvi et al., 2017; Olsson, 2007). The leadership self-efficacy was measured by using an adapted scale of 11-items (represented by LSE1 to LSE11) based on the works of Burns (2018), Chemers et al. (2001) and Ng et al. (2008). The LSE adapted has also been validated recently by Zaman et al. (2022). Project success was measured by using an adapted scale from seminal research by Ul-Musawir et al. (2017), including an overall 11-items that measured each of its three dimensions, involving (1) project management success (5-items) (represented by PMS1 to PMS5), (2) project ownership success (3-items) (represented by POS1 to POS3), and (3) project investment success (3-items) (represented by PIS1 to PIS3) respectively (Ul-Musawir et al., 2017; Zaman et al., 2022). The participant's responses were collected on 5-point Likert scale ranging from 1 to 5 (representing 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree) (Zaman et al., 2022). Before proceeding with the collection of study data, all measures (including newly developed and adapted scales) were carefully refined based on constructive feedback shared by senior academics (n=6) and industry practitioners (n=4), that adequately ensured the psychometric properties of all scales (Ul-Musawir et al., 2017; Zaman et al., 2021).

Data Analysis and Results

Model estimation using structural equation modeling

Covariance-based structural equation modeling (CB-SEM) with Mplus software (Wang & Wang, 2019) was used for the estimation of overall results, including data normality, model fitness, reliability and validity (through measurement model assessment), and hypotheses testing (through structural model assessment with the bootstrapping procedure), respectively (Mueller & Hancock, 2019).

Data Normality

Skewed data impacts the Chronbach's alpha value therefore, it must be checked before calculating the value of Chronbah's alpha (Khwaja, Jusoh, & Nor, 2019; Zaman et al., 2021). The data normality table showed that the skewness and kurtosis are either close to zero except for PMS that shows a small departure from zero. Moreover, if we calculate the z values (the skewness and kurtosis values should be between -1.96 to +1.96), it shows that the data is a little skewed and kurtotic, but it does not differ significantly from normality (Mueller & Hancock, 2019). That means our data is normally distributed. Additionally, we have also checked the validity of data by factor loading analysis (Mueller & Hancock, 2019; Wang & Wang, 2019).

Table 1
Data Normality (N=386)

Variables	Minimum	Maximum	Mean	SD	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	SE	Statistic	SE
POM	1.00	5.00	2.8731	0.73357	-0.088	.124	-0.028	.248
LSE	1.00	5.00	2.3066	0.82503	0.750	.124	0.428	.248
PMS	1.00	5.00	4.0210	0.60864	-0.645	.124	1.263	.248
POS	1.00	5.00	3.4991	0.82152	-0.497	.124	0.306	.248
PIS	1.00	5.00	3.7963	0.54417	-0.726	.124	0.677	.248

Note: POM=Project Opportunity Management; LSE=Leadership Self-Efficacy; PMS=Project Management Success; POS=Project Opportunity Success; PIS=Project Investment Success; SE=standard error

Exploratory and confirmatory factor analysis (EFA/CFA)

In the next step of statistical estimations, the factor loading, reliability, and validity of the latent constructs (i.e., POM, LSE, PMS, POS, and PIS) based on the study sample (N=386) was determined (Mueller & Hancock, 2019). Table 2 illustrates the result of factor loadings, reliability, and validity of the scale items in the measurement model (Wang & Wang, 2019; Zaman, 2020). The prevailing rule of thumb is that the value of Cronbach's alpha test must be equal to or greater than 0.7 as it indicates the item's internal consistency (Fornell and Larcker, 2016). The Cronbach's Alpha α and composite reliability (CR) of all latent constructs were above 0.7. We also observed the values of average variance extracted (AVE) for discriminant validity were greater than 0.5, which demonstrated convergent validity and indicating good reliability (Fornell and Larcker, 2016). The CR of instruments ranged from 0.876 to 0.959, the values are higher than the defined threshold value of 0.70 (Zaman, 2020). Once we observed that the criteria have been fulfilled for the reliability and validity of all latent constructs, we carried out further analysis for CB-SEM analysis (Mueller & Hancock, 2019). Furthermore, the Heterotrait–Monotrait Ratio (HTMT) criterion values were less than 1, whereas the discriminant validity outcomes (reported in table 3) empirically confirmed that multicollinearity issue was non-existent. Hence, the discriminant validity for all of the latent constructs (i.e., LSE, POM, POM, POS and PIS) was well established (Mueller & Hancock, 2019; Zaman et al., 2021).

Table 2

Factor loadings, reliability, and validity of the measurement model (N=386)

Constructs and Items	label	ρ	λ
Project Opportunity Management (POM)			
<i>(AVE=0.703; Cronbach's Alpha=0.959; Composite Reliability=0.962)</i>			
<i>In our ICT project...</i>			
We retain agility to respond to sudden developments (either negative or positive)	POM1	0.824	0.816
We allocate significant effort to identify, assess, and manage risks and opportunities	POM2	0.834	0.881
We remain vigilant against unforeseen risks and emerging opportunities	POM3	0.832	0.868
We minimize probability of adverse outcomes	POM4	0.874	0.914
We take initiatives to enhance opportunities	POM5	0.928	0.831
We aggressively exploit opportunities	POM6	0.875	0.780
We have a special alertness or sensitivity toward opportunities	POM7	0.940	0.927
We can usually spot a real opportunity	POM8	0.897	0.884
We enjoy just thinking about and/or looking for new opportunities	POM9	0.750	0.762
We consider ourselves to be opportunistic	POM10	0.683	0.701
Leadership Self-efficacy (LSE)			
<i>(AVE=0.588; Cronbach's Alpha=0.910; Composite Reliability=0.911)</i>			
<i>In our ICT project, the leadership...</i>			
Is able to achieve most of the project goals	LSE1	0.530	0.616
Is always certain to accomplish difficult project-related tasks.	LSE2	0.517	0.616
Can achieve outcomes that are important for the project	LSE3	0.682	0.708
Can succeed at most any endeavor relating to the project	LSE4	0.524	0.556
Can successfully overcome many challenges faced by the project	LSE5	0.841	0.748
Can effectively lead on many different project-related tasks.	LSE6	0.889	0.790
Can lead most of the project-related tasks very well, as compared to other projects	LSE7	0.817	0.765
Can perform quite well, even when things get tough	LSE8	0.776	0.810
Never gives up on things before completing them	LSE9	0.560	0.706
Feel confident and secure in achieving the project goals	LSE10	0.716	0.762
Diligently handles unexpected issues/problems in the project	LSE11	0.596	0.537
Project Management Success (PMS)			
<i>(AVE=0.603; Cronbach's Alpha=0.880; Composite Reliability=0.883)</i>			
<i>In our ICT project...</i>			
The budgetary goals have been satisfactorily accomplished.	PMS1	0.626	0.669
the scheduling goals have been satisfactorily accomplished.	PMS2	0.938	0.878
the required outputs have been satisfactorily delivered.	PMS3	0.785	0.789
undesired outcomes have been managed and avoided.	PMS4	0.709	0.758
the project plans have been successfully achieved.	PMS5	0.731	0.772
Project Ownership Success (POS)			
<i>(AVE=0.736; Cronbach's Alpha=0.889; Composite Reliability=0.893)</i>			
<i>In our ICT project...</i>			
the owner's achieved their planned target outcomes.	POS1	0.785	0.816
the owner's intended purpose was successfully followed.	POS2	0.894	0.881
the owner's intended purpose was successfully met.	POS3	0.866	0.875

Project Investment Success (PIS)

(AVE=0.702; Cronbach's Alpha=0.874; Composite Reliability=0.876)

In our ICT project...,

the target outcomes supported the achievement of overall project objectives.

the investment objectives have been successfully accomplished.

the expected investment benefits have been successfully accomplished.

PIS1	0.741	0.788
PIS2	0.887	0.844
PIS3	0.909	0.878

Measurement model fit statistics:

a. Absolute fit indices ($\chi^2 = 874.575$, $df = 448$, $P = 0.000$, $\chi^2/df = 1.952$, $SRMR = 0.043$, $RMSEA = 0.055$);

b. Incremental fit indices ($TLI = 0.957$, and $CFI = 0.961$)

Note. ρ = Factor loadings at 0.40 using EFA; λ = Standardized factors loadings using CFA;

a = Cronbach Alpha; CR = Composite Reliability; AVE = Average variance extracted

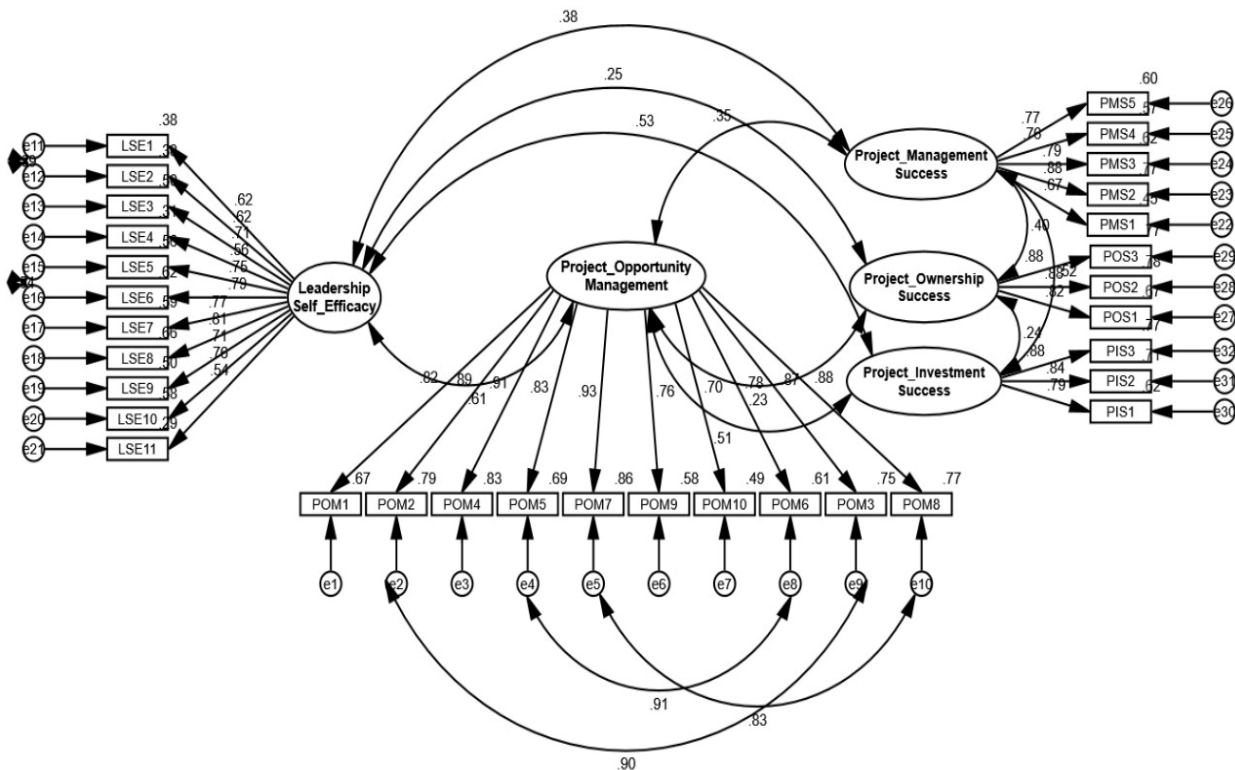


Figure 2 Measurement Model of Multi-Dimensional Project Success

Table 3
Discriminant validity of constructs (N=386)

	MSV	POM	LSE	PMS	POS	PIS
POM	0.377	0.839				
LSE	0.377	0.614	0.698			
PMS	0.275	0.353	0.382	0.776		
POS	0.157	0.232	0.245	0.396	0.858	
PIS	0.280	0.511	0.529	0.525	0.244	0.838

Note: POM=Project Opportunity Management; LSE=Leadership Self-Efficacy; PMS=Project Management Success; POS=Project Ownership Success; PIS=Project Investment Success; MSV=Maximum Shared Variance (threshold MSV<1)

SEM Path Modeling Outcomes

In the measurement model, the factor loading of each construct showed an acceptable value with the estimated least value at 0.140 and the highest value at 0.711. Before running the CB-SEM analysis, autocorrelation and multicollinearity issues were already checked, which showed no such issues (Mueller & Hancock, 2019). Figure 3 graphically represents the structural model analysis that examined the relationships between a leader's self-efficacy, project opportunity management, and project success (Wang & Wang, 2019; Zaman, 2020). The results indicated strongly significant positive associations among these latent constructs. The coefficient of determination (R^2) explained the amount of variability in a dependent (i.e., endogenous) variable, explained or caused by its relationship with another (i.e., independent) variable (Zaman, 2020). Here the value R^2 for variance in PS was 0.746. This value disclosed a strong proportion of variance for PS explained by LSE. It implies that 74.6% variance in project success is explained by the predictor variable that is LSE. The results ($\beta = 0.464$, $t = 10.286$, $p < 0.01$) indicated a strong positive relationship between leadership self-efficacy and project success, hence supporting the first hypothesis, i.e., leadership self-efficacy has a significant positive effect on multi-dimensional project success (Mueller & Hancock, 2019; Zaman, 2020). Moreover, the R-square value for the second relationship (i.e., between leader's self-efficacy and project opportunity management) was estimated as 0.624. It implies that 62.4% variance in project opportunity management is explained by the predictor variable, that is LSE. The second hypothesis stated that leadership self-efficacy has a significantly positive relationship with POM. The values ($\beta = 0.614$, $t = 9.549$, $p < 0.01$) proved support to H2 i.e., leadership self-efficacy have a significant positive effect on project opportunity management (Wang & Wang, 2019). Furthermore, a positive relationship between POM and PS has also been confirmed through the CB-SEM estimations ($\beta = 0.243$, $t = 3.802$, $p < 0.01$) (Mueller & Hancock, 2019; Wang & Wang, 2019; Zaman, 2020).

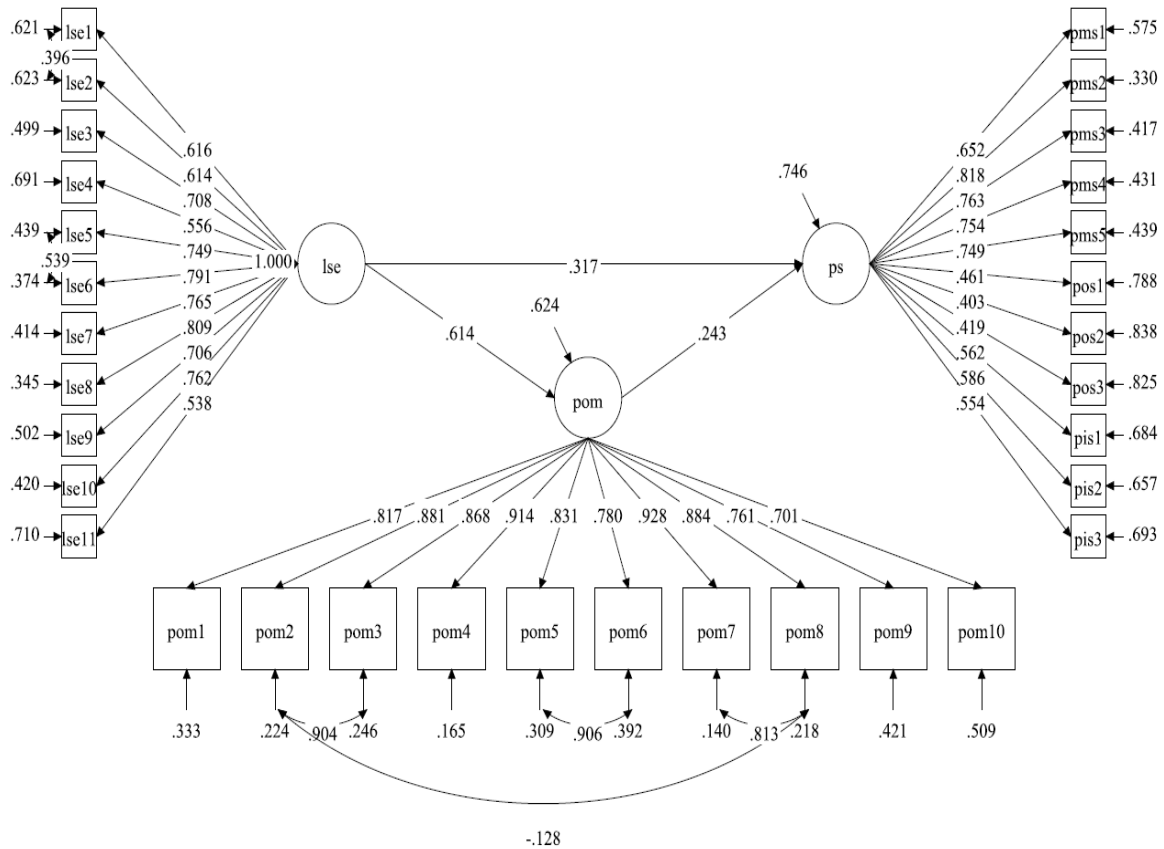


Figure 3 Structural Model of Multi-Dimensional Project Success (second-order)

In the conceptualized model (shown as Figure 1), H4 represented the mediation hypothesis (i.e., project opportunity management mediates the relationship between leadership self-efficacy and multi-dimensional project success) that assumed how and in what manner leadership self-efficacy (LSE) impacts project success (PS) through project opportunity management (Mueller & Hancock, 2019; Zaman, 2020). SEM bootstrapping method was used to analyze of direct effect of LSE on PS as well as its indirect influence (i.e., through project opportunity management as a mediator) (Wang & Wang, 2019). The direct influence of leadership self-efficacy on project success was significant. Whereas, after the inclusion of the mediating variable, i.e., project opportunity management, the direct relationship (i.e., effects of leadership self-efficacy on project success) remained statistically significant ($\beta = 0.317$, $t = 4.501$, $p < 0.01$). This implies that **POM** partially

mediates the relationship between LSE and PS, also statistically confirmed by the value of variance accounted for (VAF = 37%, i.e., less than 80%). The results in Table 4 provided empirical support for the fourth hypothesis acceptance (Mueller & Hancock, 2019; Wang & Wang, 2019). Overall, these results highlight varying degree of project success (including project management success, project investment success and project ownership success) being largely driven by project opportunity management and self-efficacy of project leaders in Pakistan’s ICT industry (Zaman et al., 2022). Interestingly, these results also clearly reflect the higher tendencies of project management success (mean value=4.0210), project investment management (mean value=3.7963) and project ownership success (mean value=3.4991) in Pakistan’s ICT industry, even though a marginal level of project opportunity management (mean value=2.8731) is realized, apparently due to shortcomings in self-efficacy at the project leadership level (mean value=2.3066) (Zaman et al., 2022).

Table 4
Results of CB-SEM Hypotheses Testing (N=386)

Hypotheses	Relationships	Path Coefficients	<i>t</i> -statistics	<i>p</i> -values	Outcomes
<i>H1</i>	LSE → PS	0.464**	10.286	< 0.01	Accepted
<i>H2</i>	LSE → POM	0.614**	9.549	< 0.01	Accepted
<i>H3</i>	POM → PS	0.243**	3.802	< 0.01	Accepted
<i>H4</i>	LSE → POM → PS	0.317**	4.501	< 0.01	Accepted

Note: LSE=Leadership Self-Efficacy; PS=Project Success (second-order); POM=Project Opportunity Management; ** $p < 0.01$

Discussion

Success in projects can be wired confidently and securely with leader’s self-efficacy and project opportunity management (Hietajärvi et al., 2017; Zaman et al., 2022). These novel findings presented through a combination of unique relationships (e.g., mediating role of project opportunity management in linking leadership self-efficacy and project success), highlighted that

the notion of success in projects can be significantly enhanced through LSE and POM. In the management domain, self-efficacy has been debated as a significant predictor of managerial performance (Kang and Yang, 2016). The present study concluded that self-efficacy is indeed a construct, a prominent one, for predicting the behavior of project leaders and eventually their probability of achieving success in projects. Moreover, the present study also highlighted the usefulness of leader's self-efficacy in managing project opportunities. This progression of new knowledge on leadership self-efficacy and project opportunity management as well as their relationship to project success, provides an extension to prior studies that have overlooked these potential constructs (i.e., LSE and POM) as predictors of project success (Chapman et al., 2012; Paglis, 2010; Zaman et al., 2022). Self-confidence in one's abilities is critical for project leaders as they have to manage a team by making the right choices and decisions. Whatever that can be achieved through various stages of any project is subjected to the level of uncertainty (Denney et al., 2020) comprising risks and the pursuit of potential opportunities. The quest for exploiting opportunities to improve project performance requires self-efficacious project leadership that explores new ways of using project resources more efficiently (Johansen et al., 2019; Zhong et al., 2019). Hence, our findings provide empirical support to prior studies that have conceived leadership self-efficacy as a predictor of opportunity management (Denney et al., 2020; Kang and Yang, 2016; Schmitt et al., 2018).

Opportunity management in projects requires exploration and realization of all possible ways of advancing project performance, including imaginative and lateral thinking, articulating strategies, exploitation of fortunate situations, elimination of hostile events (or behaviors), and looking for better tradeoffs in achieving measurable and/or even non-measurable projects goals. Therefore, the present study goes beyond the scope of the iron-triangle (i.e., scope, cost, and time) and

validates project opportunity management as a potential predictor of project success. Moreover, leadership self-efficacy provides vital grounds for the successful pursuit and completion of projects that ultimately reassures prosperity and survival of organizations in the long term (Kang and Yang, 2016; Zaman et al., 2022). Hence, the finding of this research also validates these theoretical predictions by highlighting the positive impact of leadership self-efficacy on multi-dimensional project success. These findings complement prior studies that have also concluded that leadership efficacy is fundamental for achieving project success (Lemboye, 2019; Yasin, 2019; Zaman et al., 2022). Lastly, the findings revealed new evidence that the relationship between leadership self-efficacy and project success is positively mediated by project opportunity management. Interesting, these findings highlight that a project would remain in limbo unless project managers become opportunity managers, which is largely dependent on their leadership self-efficacy (Zaman et al., 2022). Hence, project opportunity management bridges project managers efforts and capabilities (e.g., leadership efficacy) with preferred project outcomes (i.e., project success). This new evidence on the mediating role of project opportunity management extends to the arguments raised by prior studies that opportunity management leads to surprising results in organizations and in particular projects, while facing perpetual uncertainties embedded with risks and opportunities (Lemboye, 2019; Yasin, 2019; Zaman et al., 2022).

Theoretical implications

The primary contributions of this research are multifold. It contributes to theorizing on project opportunity management and leadership self-efficacy to study the impact on project success (Denney et al., 2020; Kang and Yang, 2016; Lehtiranta, 2013; Viswanathan et al., 2019). First, we theorized the relationship between leadership self-efficacy and project success (Blomquist et al., 2016; Zaman et al., 2022), in order to explore the positive effect of LSE on PS. Secondly, we

studied the impact of project opportunity management on the relationship between leadership self-efficacy and project success as a potential mediator, which is also a unique theoretical contribution of this research. The present research validates that leadership self-efficacy has a positive impact on project success. Moreover, the conceptualization and testing of the mediating role of project opportunity management, established that **opportunity management** positively mediates the relationship between leadership self-efficacy and project success. **Lastly, the present research has significantly expanded the project management literature by exploring these interesting relationship (i.e., leadership self-efficacy, opportunity management, and multi-dimensional project success) that were previously untested and/or rarely researched (Zaman et al., 2022).** Additionally, the present study has ignited new theoretical directions to comprehend self-efficacy, opportunity management and multi-dimensional success in projects, while observing beyond the ICT project's perspective in Pakistan. Based on theoretical and empirical evidence, the present study has responded to some of the most critical (and unanswered) questions in project management, including; (1) Does leadership self-efficacy impacts project opportunity management and project success? (2) Does project opportunity management mediate the relationship between leadership self-efficacy and project success?

Practical implications

The present study's structural model provides a practical guide to opportunity management at all decision stages (e.g., scoping choices, planning choices, undertaking risks, and potential benefits arising out of uncertain events) and levels of project management (e.g., project leadership and team members), which directly correlates with real-life examples of frequent project failures (e.g., 200% cost overrun in Denver International Airport megaproject due to overaggressive scoping), as well as project success (e.g., financial/business success of World Trade Center, New York City)

(Kendrick, 2015; Shenhar & Holzmann, 2017). Importantly, project leadership self-efficacy is critical in harvesting new and existing opportunities to increase the project's benefits and impact, while decreasing its cost and time (e.g., Apollo Moon-Landing program that enabled the United States to declare victory against the Soviet Union in the space race) (Shenhar & Holzmann, 2017; Zaman et al., 2021). There are, however, more than a few practical implications of this study. This study also provides knowledge to the practitioners about how opportunities can be identified during a project by self-efficacious leaders and how it can make the process of opportunity management more efficient and effective (Shenhar & Holzmann, 2017). Project opportunity management should be configured inside the project's central procedures and be combined with other project management maneuvers (Hietajärvi et al., 2017). The study findings also empirically demonstrate that leadership self-efficacy improves the success rate of a project (Lemboye, 2019). Therefore, it is recommended that the managers hired for projects should be self-efficacious so that they have enough confidence in themselves to carry out necessary tasks efficiently, as they delegate the tasks to others and motivate them.

A self-efficacious leader is the one who direct teams to exploit opportunities arising out of uncertain events, and foster's team motivation to bring in new ideas and explore possible avenues for project success (Zaman et al., 2022). Leadership self-efficacy is a trait that allows managers to readjust and implement project activities to exploit new opportunities that enables firms to achieve desired project outcomes (Zaman et al., 2022). Managers can take this initiative by delegating their power (as much as possible), besides respecting team member's opinions and encouraging their efforts. In project opportunity management, leadership self-efficacy remains central as it ignites self-confidence and commitment despite being confronted with obstacles in accomplishing project success (Lemboye, 2019; Schmitt et al., 2018; Zaman et al., 2022). Therefore, the project leaders

should realize the repercussions of self-doubt and lack of confidence that can cause harm to the performance and success in projects. While self-efficacy and self-confidence in individuals is affected by several psychological factors, there is no simple solution to improve workplace self-efficacy (Blomquist, Farashah & Thomas, 2016; Zaman et al., 2022). Some intervention strategies, including special social trainings, have been advised to enhance self-efficacy in variety of contexts. For instance, psychosocial training programs on coping strategy to manage imposed changes has shown positive impacts on the self-efficacy of primary school teachers (Cicotto et al., 2014). Also, many studies reported a positive impact of communication skills and interpersonal skills training on self-efficacy of health professionals (Mata et al., 2021). Learning from these studies, project leaders may encourage social skills training to improve workplace self-efficacy besides increasing opportunities for project performance and success (Zaman et al., 2019).

Limitations and future research

As expected, every research has certain limitations, and that paves the way for future investigations. The present study is no different. At all times, numerous factors can be incorporated while investigating in the same area of research (Zaman et al., 2022). Firstly, a novel model of multi-dimensional project success was developed (including leadership self-efficacy and project opportunity management) and empirically tested in the context of emerging ICT industry in Pakistan (Zaman et al., 2019). The external validity of these findings (i.e., generalizability beyond the unique cultural context of Pakistan) may be limited, however, its application to other nations and industries can be redefined and retested, as the conceptual model was not culturally bound, rather framed on theoretical arguments based on cross-disciplinary and cross-cultural studies (Copola et al., 2021; Li et al., 2021; Zaman et al., 2019). Secondly, the data collected was cross-sectional; hence in the future, researchers can use time lag. Thirdly, the sample size was only 386

for this research; it can be increased to solidify and improve the research results. The sample size was relatively small, which may hinder the generalization of results at a broader level. Finally, the data was only collected from the project managers working in ICT industry in Pakistan, however, future studies may consider to collect study data from different countries and/or industries. This empirical study is simply a preliminary argument regarding the potential role of leadership efficacy and project opportunity management in delivering multi-dimensional project success (i.e., project management success, project ownership success and project investment success). There is a plethora of critical success factors (CSF's) in projects which researchers can investigate in future studies. **Related constructs (e.g., transformational leadership and team voice) can add more deeper insights in ICT projects by an extension of prominent theories (e.g., social cognitive theory, self-efficacy theory, satisficing theory and regret theory) as presented in this research (Zaman et al., 2022).** Moreover, future studies may also empirically examine new relationships by involving potential moderators and/or mediators (e.g., management innovation, team voice, leadership support, trust, and risk-taking), which might provide more enticing and definite results. **These recommendations for future studies guide further exploration and understanding of the varying degree of impact of other CSF's on project success (Musawir et al., 2017; Zaman et al., 2022).**

Conclusion

The present study is first to demonstrate how project opportunity management impacts the relationship between leadership self-efficacy and project success (Denney et al., 2020; Lemboye, 2019; Zhong et al., 2019b). The findings confirmed that project opportunity management plays a critical role as a positive mediator between leadership self-efficacy and project success. **As demonstrated by prior research, opportunity management serves as a building block for success (Li et al., 2018; Schmitt et al., 2018; Zhong et al., 2019), whereas, leadership self-efficacy**

increases the chances of properly identifying opportunities and their management, which ultimately leads to project success (Lemboye, 2019; Zaman et al., 2022). The findings have also confirmed that self-efficacy is now a vital trait for any leader to run a project successfully. Hence, leadership self-efficacy is an ability that every project leader must have, and not only that, but managers should also develop this ability in their followers (Zaman et al., 2022). This trait of having self-confidence in themselves consequently empowers team members to achieve desired project goals that is central to project success (Zaman et al., 2022). Furthermore, this study also builds a strong narrative that project opportunity management plays a decisive role in improving the chances of project success (Hietajärvi et al., 2017; Johansen et al., 2019). Hence, the present study offers strategic insights to project-based organizations in the ICT industry that demands project leaders to be self-confident, influential and persuasive to gain exclusive attention of multiple-stakeholders, especially project teams. The present study concludes that leadership self-efficacy is indispensable in order to foster self-confidence among teams, also to react to the changing project realities and experimenting ways to optimize on project opportunities as they become available and more visible (Hietajärvi et al., 2017; Zaman et al., 2022).

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