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Transformational leadership and project success: The mediating role of team-building

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Abstract

Although the effect of transformational leadership on project success is empirically supported, less is known about the mechanisms that explain this effect. To address this issue, we propose the mediating role of team-building as a possible explanation of the relationship between transformational leadership and project success. Based on a field survey of 200 development project managers in the Ethiopian Non-Governmental Organization (NGO) sector, the results of our study indicate that team-building partially mediates the effect of transformational leadership on project success. We discuss the theoretical and practical implications of these findings.

Keywords: Project success; Team-building; Transformational leadership

1. Introduction

Critical success factors (CSFs) are an important theme of research in the project management literature (Ika et al., 2012; Nauman et al., 2010; Söderlund, 2011). This branch of the literature has increased our understanding of factors critically influencing project success. One of the CSFs identified is the leadership style of the project manager, with specifically a positive effect of transformational leadership (Anantatmula, 2010; Lindgren and Packendorff, 2009; Riaz et al., 2013; Yang et al., 2010).

Although previous research demonstrates that transformational leadership positively influences project success, there is scant work explaining the mechanisms underlying the relationship between transformational leadership and project success (Kozlowski and Ilgen, 2006; Piccolo and Colquitt, 2006; Yang et al., 2010). For instance, Piccolo and Colquitt (2006) point out that the underlying processes through which transformational leadership exerts its influences on project success have not been adequately addressed in the project management literature. Keegan and Den Hartog (2004) note that the positive effects of transformational leadership behaviors are weaker in a project context than for line managers, and they call for studies of factors moderating or mediating the relationship between transformational leadership and outcomes in order to acquire a better understanding. Similarly, Avolio et al. (2004) emphasize that a more concerted effort is required to explore the process and boundary conditions for transformational leadership leading to beneficial work behaviors.

The present study seeks to contribute to a better understanding of the mechanisms through which transformational leadership behavior of project managers influences project success. Gundersen et al. (2012) call for more research to understand the relationship between transformational leadership and team performance through the use of mediators representing team processes. Similarly, a meta-analysis by Kozlowski and Ilgen (2006) identifies transformational leadership as a promising leverage point for enhancing team processes, such as team-building. Scholars like Scott-Young

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and Samson (2008) and Turner et al. (2008) highlight the need for empirical studies on comprehensive team-building practices in a project context. Following up on these calls, this research proposes that team-building plays a significant role in mediating the relationship between transformational leadership and project success. The study assumes that transformational leader behaviors facilitate team-building interventions, which in turn are reflected in project success.

Understanding the mechanisms that cause the effect of transformational leadership on project success helps us to articulate a better theoretical understanding of this relationship. Moreover, understanding how the effect comes about can provide practical guidance for project-based organizations that want to reap the effects of transformational leadership to the fullest extent.

Using a field survey of 200 NGOs implementing diverse development projects in Ethiopia, this study analyzes the relationships between project managers' transformational leadership, team-building, and project success. In the study, we conceptualize development projects as those interventions that aim to reduce poverty and improve the well-being of rural communities (Banks and Hulme, 2012; Khang and Moe, 2008).

2. Theoretical framework

This section presents the theoretical foundations for the three constructs of the study, namely, project success, project leadership, and team-building practices.

2.1. Project success

Traditionally, project management has been associated with the fields of construction and engineering, where the project success criteria are objective, well-accepted, and measurable, usually by the conventional triangle criteria of time, budget, and compliance with the client's terms of reference, or 'quality'. Project management, however, has become ubiquitous nowadays in the service sector, as well as in areas like capacity building and social work projects (Diallo and Thuillier, 2005). The Project Management Institute (PMI) defines project success as balancing the competing demands for project quality, scope, time, and cost, as well as meeting the varying concerns and expectations of the project stakeholders (PMI, 2008, p. 9).

Ika (2015) indicates that while the 'iron triangle' (i.e., cost, time, and quality) dominated the concept of project success criteria in the 1960s to 1980s, many other criteria were added more recently. These include benefit to the organization, end user satisfaction, benefit to stakeholders, benefit to project personnel, strategic objectives of the organization, and business success.

Though there is no consensus on project success criteria in the project management literature, the works by Ika et al. (2012) and Khang and Moe (2008) are comprehensive and relevant for development projects. The criteria set forth by these authors include relevance, efficiency, effectiveness, impact, and sustainability. Relevance refers to the extent to which the project suits the priorities of the target group, the recipient, and the donor. Efficiency refers to the extent to which the project uses the least costly resources possible to achieve the desired results. Effectiveness refers to the extent to which the project meets its objectives. Impact refers to the positive and negative changes produced by the project, directly or indirectly, planned and unplanned. Sustainability refers to whether the benefits of the project are likely to continue after donor funding has been withdrawn.

2.2. Transformational leadership

Even though the topic of leadership has been under academic study for several decades, there is a dearth of empirical work in project management contexts (Söderlund, 2011; Turner and Müller, 2005; Tyssen et al., 2013). Full-range leadership theory is one of the most widely recognized theories of leadership, and it encompasses transformational, transactional, and laissez-faire styles (Sohmen, 2013). For our purpose, we focus on transformational leadership since studies have indicated its high relevance for project-oriented organizations (Gundersen et al., 2012).

There appears to be general agreement in the literature on four of the dimensions that make up transformational leadership: idealized influence, intellectual stimulation, inspirational motivation, and individualized consideration. Idealized influence is behavior that arouses strong follower emotions and identification with the leader. Inspirational motivation is shown when a leader conveys a vision that is appealing and inspiring for subordinates and provides them challenging assignments and increased expectations. Intellectual stimulation is behavior that increases followers' awareness of problems and influences them to develop innovative and/or creative approaches to solving them. Individualized consideration includes providing support, encouragement, and coaching to followers (Avolio et al., 2004; Lindgren and Packendorff, 2009).

2.3. Team-building

In studies on practices of human resources management (HRM) in project-based organizations, team-building is seen as a core aspect of HRM (Huemann et al., 2007; Turner et al., 2008). We adopt the team-building definition given by Klein et al. (2009, p. 3) as 'the formal and informal team-level interventions that focus on improving social relations and clarifying roles as well as solving task and interpersonal problems that affect team functioning'. In the literature, there is a consensus that there are four distinct approaches, which can also be combined. These approaches are goal-setting, developing interpersonal relations, clarifying roles, and employing problem-solving techniques (Klein et al., 2009; Salas et al., 1999). Each of the team-building practices is briefly presented below.

Goal-setting: This approach involves clarifying for the team members the general goals and specific objectives of the project, sometimes by defining subtasks and establishing timetables. Team members exposed to a goal-setting are expected to become involved in action planning to identify ways to achieve those goals. Studies show that goal-setting intervention combined with performance measurement and

feedback have in many cases been successfully applied in organizations (Salas et al., 1999).

Role-clarification/definition: This intervention entails clarifying individual role expectations, group norms, and shared responsibilities of team members (Klein et al., 2009). It emphasizes increased communication among team members regarding their respective roles within the team. Team members exposed to role-clarification activities are expected to achieve better understanding of their and others' respective roles and duties within the team (Salas et al., 1999).

Interpersonal processes: This intervention fosters frank discussion of relationships and conflicts among team members, often directed towards clearing up any hidden agendas and resolving conflicts (Klein et al., 2009). It involves an increase in team work skills, such as mutual supportiveness, communication, and sharing of feelings. This approach assumes that teams operate best with mutual trust, open communication, and confidence; it attempts to build group cohesion (Mathieu and Schulze, 2006; Salas et al., 1999).

Problem solving: The fourth team-building practice emphasizes the identification of major problems in the team's tasks in order to enhance task-related skills. It is an intervention in which team members identify major problems, generate relevant information, engage in problem-solving and action planning, and implement and evaluate action plans (Beebe and Masterson, 2015).

3. Research model and hypotheses

This section presents the conceptual framework and hypotheses of the study. It also highlights the relationships between the variables in the study. Fig. 1 depicts the conceptual framework of the study. The study argues that team-building plays a mediating role in the relationship between transformational leadership and project success.

3.1. Transformational leadership and project success

Studies show that transformational leadership has a significant effect on workplace outcomes, including project success (Anantatmula, 2010; Yang et al., 2010). However, work on leadership in project contexts remains relatively scarce (Turner and Müller, 2005), and transformational leadership in project settings may work differently than in the context of permanent organizations (Keegan and Den Hartog, 2004).

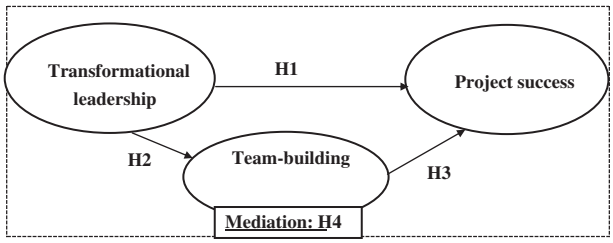

Fig. 1. Conceptual framework of the study. Source: Created by the authors based on Klein et al. (2009), Piccolo and Colquitt (2006), Walumbwa et al. (2008), and Yang et al. (2010).

The literature shows that appropriate behaviors by project managers play a crucial role in obtaining greater project success (Scott-Young and Samson, 2008; Zwikael and Unger-Aviram, 2010). Transformational leaders thus inspire followers to perform beyond their expectations. They also foster healthy working relationships (Sohmen, 2013). Such types of project managers enhance team cohesion and mutual understanding, facilitate the open exchange of ideas and analytical perspective across project teams, and emphasize the development of follower self-management or self-leadership skills. This in turn can create an atmosphere where team members exert continued effort to realize project success (Burke et al., 2006). Thereby, we propose the following research hypothesis.

Hypothesis 1. *Transformational leadership positively influences project success.*

3.2. Transformational leadership and team-building

McDonough (2000) provides four arguments explaining the influential role of the project manager's leadership style on team-building practices. First, effective project leadership is needed to delineate task boundaries for the team and allow the members to perform within those boundaries. Second, project leaders should exhibit transformational leadership, in which team members are given the freedom to explore, discuss, and make their own decisions about the techniques to employ, problems to solve, and tasks to perform. Third, an effective leadership style is vital to share information and knowledge within the team and with other groups in the organization, so that realistic decisions can be made. This involves designing communication mechanisms to share information about the focus of the project, project changes and developments, and the individual members' responsibilities. Fourth, effective project leadership is required because it enhances the team commitment by instilling a positive attitude and climate that helps to achieve project success.

Sohmen (2013) underlines that leaders must create a work environment that is conducive to team members working together in cooperative and goal-oriented efforts. Thus, effective leadership is clearly imperative in order to induce team-building. Even if the project team is high-performing with the right capabilities, it will not be successful in the absence of effective leadership (Burke et al., 2006).

A project manager's transformational leadership behavior can thus inspire a project team to perform beyond their expectations through classical team-building interventions such as goal-setting, role-clarification, interpersonal communication, and problem-solving techniques (Klein et al., 2009). The net result is a continual empowering of motivated team members to accomplish goals with visible enthusiasm, by creating team synergy rather than concentrating on individual contributions (Burke et al., 2006; Sohmen, 2013). Thus, the above arguments form the bases for the second research hypothesis of this study, which can be stated as follows:

Hypothesis 2. *Transformational leadership positively influences project team-building.*

3.3. Team-building and project success

One of the drawbacks of previous studies on team-building is the tendency to focus on outcome measures other than performance (Salas et al., 1999). In addition, the conceptualization of (the components of) team-building is often not clearly defined (LePine et al., 2008). According to Salas and his colleagues, 'Part of the problem lies in the ambiguity of what precisely is team-building and what studies should be included in an effort to integrate the effect of team-building on performance' (Salas et al., 1999, p. 313). For example, recent studies (Scott-Young and Samson, 2008; Zwikael and Unger-Aviram, 2010) have started to examine the effects of team-building, but they use broad dimensions of HRM functions like training, pay and rewards, coordination, and empowerment, without focusing on the four well-established components of team-building (Salas et al., 1999, 2008).

If such flaws in the conceptualization of team-building interventions are avoided, team-building may be found to have positive effects on project success (Bubshait and Farooq, 1999; Salas et al., 1999). This implies that the practices of team-building components (goal-setting, interpersonal processes, role-clarification, and problem-solving) can lead to improved performance through modification of attitudes, values, problem-solving techniques, and interpersonal and group processes (LePine et al., 2008). According to this argument, team-building practices have the potential to lead to greater project success (Jacques et al., 2007; Somech, 2006). For example, a study by Hoegl and Parboteeah (2003) shows that having specific, clear, and accepted goals has a positive correlation with project success 'by directing attention, mobilizing effort, increasing persistence, and motivating strategy development' (Hoegl and Parboteeah, 2003).

Our expectation is that team-building practices do impact project success, but that this effect has not been identified in previous research because of unclear conceptualization and measurement. For example, recent meta-analysis findings indicate that team-building has a significant effect on team performance (Klein et al., 2009), a finding that likely can also be extended to project contexts. This forms the basis for the third hypothesis of this paper, which can be stated as follows:

Hypothesis 3. *Team-building practices positively influence project success.*

3.4. The mediating role of team-building

Transformational leadership helps create formal ongoing mechanisms that promote two-way communication and the exchange of information within the project team (Piccolo and Colquitt, 2006). This could obviously influence project success. Furthermore, Yang et al. (2010) underline that transformational leadership can achieve project success by augmenting the benefits of team-building practices. Components of team-building such as goal-setting, role-clarification, interpersonal relations, and problem-solving practices are implemented to enhance project team performance and have a positive influence on project success (Klein et al., 2009). As indicated by Eisenbeiss et al. (2008), success of a project comes when team members agree on project goals and approaches to goal achievement, and they establish and adhere to high quality standards through the dimensions of team-building. Similarly, Braun et al. (2013) point out that successful project performance requires trustful interaction and communication between team members.

According to Kissi et al. (2013), the extent to which team members perceive their work environment to be supportive determines their level of motivation, energy, and efforts in the course of project implementation. They also remark that leadership can influence project success by creating an environment where project teams contribute towards success. Gundersen et al. (2012) also assert that transformational leadership provides clarity about performance standards and decreases role ambiguity in projects, which engenders success. More specifically, transformational leaders have a clear vision of what the project is going to be and how it can become successful. The leader's vision, in turn, should reach the team members so that they will believe in it and become excited by it. Team-building interventions that focus on project goal-setting, role-clarification, and problem-solving would play a critical role in this communication between the project manager and the team. Further, transformational leaders who take into account followers' needs would promote positive interpersonal relations between the leader and the team as well as among the project team members (Zhu et al., 2005). Team members would then appreciate the project environment of transformational leadership and feel committed and motivated towards the accomplishment of the project goal (Kozlowski and Ilgen, 2006).

On the basis of the arguments discussed above, we propose that transformational leadership helps to enhance team-building practices, which in turn would positively influence project success. Team-building therefore may play a mediating role in the relationship between transformational leadership and project success (Kozlowski and Ilgen, 2006). It is important to investigate this link, as relatively little empirical research has focused on the mediating role of team processes such as team-building in the relationship between transformational leadership and project success (Chou et al., 2013). Hence, we offer the following hypothesis:

Hypothesis 4. *Team-building mediates the relationship between transformational leadership and project success.*

4. Methods

4.1. Research setting and participants

Projects can be classified into different categories, and this study considers development projects. These projects aim to improve the living conditions of communities in terms of economy, education, or health. The deliverables of development projects include intangible outputs (e.g., capacity building through training and education, and society empowerment) or tangible targets such as poverty alleviation and living standards improvement, environment protection, and basic physical and

social infrastructures (Golini et al., 2015; Khang and Moe, 2008).

For this study, the research setting was NGOs that engage in development projects on a regular basis and that represent project based-organizations. Data was gathered from project managers in the Ethiopian NGO sector.

4.2. Sample and data collection procedure

The study's target institutions were NGOs that undertake development projects targeting poverty reduction in Ethiopia. From the database of the Federal Democratic Republic of Ethiopia Charities and Societies Agency, we compiled a list of 331 NGOs that directly engage in alleviating poverty through development projects. For a target population that is geographically dispersed, the literature recommends a multi-stage random sampling technique design (Babbie, 2010; Saunders et al., 2009). Accordingly, we applied a two-stage sampling technique in which we first randomly selected 100 NGOs to ensure the representativeness of the institutions engaging in development projects (Bartlett et al., 2001). From this, we obtained 300 project managers who constituted our sampling framework. These were invited to participate in a questionnaire survey delivered by hand to each respondent and collected later either by hard copy or by e-mail.

The data were collected in the period between February 2015 and April 2015, based on the information provided by the project managers. Each project manager was informed that, while filling out the questionnaire, he/she should consider only one project that had been completed in the last 5 years. Out of 300 distributed questionnaires, 236 participants completed and returned the survey. After eliminating responses with substantial missing data, we analyzed 200 completed responses, representing a usable response rate of 66.7%. This compares favorably to other self-administered questionnaires (Baruch, 1999). The demographics of our sample are summarized in Table 1.

Table 1
Demographics.

Item	Frequency	%
Gender		
Female	35	17.5
Male	165	82.5
Total	200	100
Level of education		
First degree	65	32.5
Master's degree	135	67.5
Total	200	100
Firm category		
Local NGO	96	48.0
International NGO	104	52.0
Total	200	100
Project type*		
Food security	68	34.0
Water supply, sanitation, and hygiene projects (WASH)	36	18.0
Environmental related	10	5.0
Alternative low cost energy	8	4.0
Capacity building	21	10.5
Community/family-based child development	30	15.0
Health care services	27	13.5
Total	200	100

	Minimum	Maximum	Mean
Experience as project manager (years)	1.0	30.0	5.6
Firm age (years)	4.0	75.0	23.6
Firm size (number of employees)	3	2000	335
Project duration (months)	4.0	96.0	37.8
Project team size (number of employees)	2	291	17

Notes: Sample size (N) = 200 project managers; *From these seven types of development projects identified from the survey, six dummy variables of project types were created and used as control variables for hypothesis testing. The values are not presented in the subsequent tables for the purpose of brevity.

4.3. Measures

4.3.1. Project success (dependent variable)

There is no well-established approach in the project management literature for measuring project success, and there is a debate on what actually constitutes project success (Ika, 2009; Joslin and Müller, 2015; Ngacho and Das, 2014; Todorović et al., 2015). For example, some scholars (Kissi et al., 2013; Yang et al., 2010) use composite measures of project success criteria, whereas other scholars like Diallo and Thuillier (2004) and Dvir et al. (2003) use disaggregated measures of project success criteria. This study uses a composite measure of a multi-dimensional construct of project success, based on project managers' perception of certain criteria. This approach is consistent with previous studies (Bryde, 2008; Khang and Moe, 2008; Mir and Pinnington, 2014; Pinto and Pinto, 1990; Suprapto et al., 2015). This project success measure consists of 14 items, covering time, cost, performance, client use, satisfaction, and effectiveness. The project managers assessed each of these items on a Likert scale of 1–5 ranging between 'strongly disagree' and 'strongly agree'.

4.3.2. Transformational leadership (the independent variable)

In measuring leadership style, the Multi-Factor Leadership Questionnaire (MLQ) has become a popular and well-validated instrument in leadership research. The MLQ includes 36 items measuring three core leadership styles: transformational, transactional, and laissez-faire (Hinkin and Schriesheim, 2008). In order to increase the internal consistency and validity of MLQ measures, various studies (Doeleman et al., 2012; Tejeda et al., 2001; Tyssen et al., 2014) recommend an improved version of the MLQ. Accordingly, we adapted a transformational leadership measure comprising 13 items with higher Cronbach's alphas than the original instrument from Arif and Mehmood (2011) and Vinger and Cilliers (2006). The five-point Likert-type scales were anchored on the extremes of 1 (not at all) to 5 (frequently, if not always).

4.3.3. Project team-building

The mediator variable in the model is project team-building. According to studies by Klein et al. (2009) and Salas et al. (1999), team-building is a multi-dimensional construct that entails interventions promoting interpersonal relations, role-clarification,

and the use of problem-solving and goal-setting techniques for the success of a project. However, a survey of the literature uncovered no measure of project team-building deemed appropriate for this study. Consequently, the measurement scales for the list of the team-building practices have been developed on the basis of the meta-analysis by Klein et al. (2009). Accordingly, a 17-item instrument representing four broad areas of team-building practices was developed for this study: goal-setting (4 items), interpersonal relations (5 items), role-clarification (3 items), and problem solving (5 items). Each item was rated on a five-point Likert scale ranging from 1 (never) to 5 (always).

The measurement items for each of the constructs contained in the questionnaire are indicated in Appendix 2.

4.3.4. Covariates

The age and size of the organization performing the project, the project's duration, the project team size, and the project manager's experience, gender, and educational level have been demonstrated to influence project success, and so these variables were included as covariates (Barrick et al., 2007). In addition, we considered the NGO category and project type as control variables. The measures for the control variables were as follows: gender as a binary variable (0 = female, 1 = male); level of education as a binary variable (0 = first degree, 1 = master's degree); experience as a continuous variable measured by years of experience as a project manager; organization age as a continuous variable measured by service years of the NGO; organization size as a continuous variable measured by the number of employees; organization category as a dummy variable (0 = local NGO, 1 = international NGO); type of project as one of six categorical variables referring to the project types indicated in Table 1 (health care service project was the reference category); project duration as a continuous variable measured by the duration of a project in months; and project team size as a continuous variable measured by the number of team members.

4.4. Data analysis

We undertook the analysis of the data in different ways. First, we undertook exploratory and confirmatory analyses for the constructs in the study. Second, we ran hierarchical multiple regression analyses to test the proposed hypotheses regarding the relationships among transformational leadership, project team-building, and project success.

Next, we investigated the mediating effect of team-building on the relationship between transformation leadership and project success. In testing the mediated relationship, we adopted the four-step method initially designed by Baron and Kenny (1986) and encapsulated by Hayes (2013). Firstly, the independent variable must be related to the dependent variable (i.e., project success). Secondly, the independent variable—in this case, transformational leadership—must be related to the mediator variable, team-building. Thirdly, the mediator variable—in this case, team-building—must significantly relate to the dependent variable. Finally, when the mediator variable is controlled for, the relationship (i.e., the coefficient) between the independent variable and the dependent variable should be either no longer significant (full mediation) or substantially reduced (partial mediation). In a hierarchical regression analysis, the last two steps are performed simultaneously. In addition to these four steps of mediation analysis, we further undertook a test of significance of the indirect effect of the predictor variable following the procedures explained by Hayes and Preacher (2014).

5. Results

The results are described in the order in which the analyses were conducted. First, we present the validity and reliability analyses of the scales. Second, we report the regression results for the main effects of transformational leadership and team-building. Third, we present results of the four-stage mediation analysis.

5.1. Validity and reliability analyses

For the project success measure, an exploratory principal components factor analysis (PCFA) was performed to investigate the structure of the data. This analysis resulted in three components explaining 67.5% of total variance. From the 14 items in the project success measure, one was rejected since it alone loaded on the third component. After excluding this item, the 13 remaining items loaded on two components, namely, project efficiency and stakeholder satisfaction, with a total of 63.5% explained variance. However, a one-factor model accounted for 55.1% of the sample variance and also included the only two items that had high loadings on the second factor. Consequently, these 13 items were averaged to form a single index of project success (Cronbach alpha = 0.93).

For the measure of transformational leadership, we used 13 items from a short version of the Multi-level Questionnaire (Arif and Mehmood, 2011; Vinger and Cilliers, 2006) as one construct, since we did not have any a priori expectation that individual components of transformational leadership would differentially affect either the practices of team-building or project success. After deleting one item with a factor loading below 0.5, the composite of transformational leadership was computed from scores consisting of 12 items ($\alpha = .894$) measuring idealized influence behavior (2 items), inspirational motivation (4 items), intellectual stimulation (3 items), and individualized consideration (3 items). This procedure is consistent with empirical work by Avolio et al. (2004), Judge and Piccolo (2004), and Nemanich and Keller (2007).

For the measure of team-building, PCFA reduced 17 items into three components, namely interpersonal relations/role-clarification, problem-solving, and goal-setting. One item with high factor loadings in both the first and the second component was dropped, and a PCFA was run for 16 items. In this PCFA, 16 items loaded on three components, namely interpersonal relations/role-clarification, problem-solving, and goal-setting, accounting for 66.6% of total variance. The correlations between these three components were found to be high, with coefficients above 0.6, showing that there is convergent validity (Martinez-Martin, 2010).

Table 2
Number of items, Cronbach's alpha, means, and SD.

Construct	Number of items	Cronbach's alpha	Mean	SD
Project success	13	.930	4.10	.642
Transformational leadership	12	.896	3.90	.584
Team-building	14	.931	4.03	.614

After the exploratory analysis, we undertook confirmatory analysis to test how well the measured variables represent the constructs. We followed the procedures recommended by Hair et al. (2010) to test for discriminant validity. First, we performed Promax oblique rotation for the three core variables of this study—namely, project success, transformational leadership, and team-building—on a pair-wise basis. Then, we computed the average variance extracted (AVE) for each of the factors/constructs in pairs (in this case, project success with transformational leadership, project success with team-building, and transformational leadership with team-building). Based on the discriminant validity exercise, we dropped two items of team-building since one item was cross-loaded to the success measure and the other one was cross-loaded to transformational leadership.

Next, we compared the AVEs with the squared correlations for each pair of factors. In all cases, the AVE was greater than the correlation squared, hence discriminate validity was established. The analyses of internal homogeneity also showed acceptable results. Cronbach's alphas for project success, transformational leadership, and team-building measures were .930, .840, and .931 respectively (see Table 2). Appendix 1 provides factor loadings for the items retained in each respective construct of the study.

Table 2 shows the revised number of items, the Cronbach's alphas, and the means and standard deviations for the three core composite constructs used in this study.

All of the constructs' α values are above 0.8, indicating a high degree of internal consistency in the responses (Field, 2009; Hair et al., 2010). Table 3 presents inter-correlations among the variables. As predicted, significant and positive correlations exist among transformational leadership, team-building, and project success. Transformational leadership and project success were significantly correlated ($r = 0.437$, $p < 0.01$), and the team-building index was also significantly correlated with project success ($r = 0.470$, $p < 0.01$) and transformational leadership ($r = 0.522$, $p < 0.01$).

5.2. Hypotheses testing

Hypothesis 1 states that transformational leadership positively influences project success. Results of the hierarchical regression analysis are printed in Table 4. In step 1, only the control variables were included in the model. None of the control variables was found to be significant in explaining project success. The result of step 2 indicates that transformational leadership has a significant and positive relationship with project success ($\beta = 0.521$, $P < 0.001$) and uniquely explains 19.7% of the variance in project success. Hence, Hypothesis 1 is supported.

Hypothesis 2 proposes that transformational leadership is positively related to team-building. The results in step 1 of Table 5 indicate that the control variables had a negligible effect on team-building. On the other hand, transformational leadership uniquely contributed 24.9% of the variance in team-building upon its addition to the model in step 2. The results further show a strong and highly significant relationship between transformational leadership and team-building ($\beta = 0.560$, $P < 0.001$). Hypothesis 2 is therefore supported.

Hypothesis 3 states that team-building is positively related to project success. The results in step 1 of the regression in Table 6 indicate that the control variables had a negligible effect on project success. On the other hand, team-building uniquely contributed 21.1% of the variance in project success upon its addition to the model in step 2. The results show a strong and highly significant relationship between team-building and project success ($\beta = 0.500$, $P < 0.001$). Hypothesis 3 is therefore supported.

The Baron and Kenny (1986) procedure was used to examine the extent to which the relationship between transformational leadership and project success was mediated by team-building (Hypothesis 4). Accordingly, Table 7 shows the series of regression analyses performed to test Hypothesis 4. In model 1, the result indicates that transformational leadership has a positive significant influence on the dependent variable, project success ($\beta = .521$, $P < .001$). This shows that the independent variable (i.e., transformational leadership) is correlated with the study's dependent variable (project success). Thus, step 1 of the mediation analysis is satisfied.

Step 2 of the mediation analysis entails providing evidence for a significant relationship between the independent variable

Table 3
Correlations of study variables.

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Project success	1										
2. Transformational leadership	.437**	1									
3. Team-building	.470**	.522**	1								
4. Gender	.085	.095	.024	1							
5. Level of education	−.026	−.071	.007	.018	1						
6. Experience	.099	.050	.077	.069	.094	1					
7. Firm age	−.050	−.072	.029	.063	.126	.069	1				
8. Firm size	−.040	.043	.143*	.046	.229**	.031	.531**	1			
9. Firm category	−.003	.065	.012	.058	.188**	−.046	.127	.325**	1		
10. Project duration	−.153*	−.044	−.016	−0.048	−.070	.100	.169*	.114	.079	1	
11. Project team size	.058	.064	.077	.061	.115	−.004	.099	.058	.139*	−.038	1

Notes: ** Correlation is significant at the 0.01 level (2-tailed), * Correlation is significant at the 0.05 level (2-tailed).

Table 4
Regression analysis of transformational leadership as a predictor of project success.

Variables	Project success					
	Step 1			Step 2		
	B	SE	Beta	*B*	SE	Beta
Gender	.110	.122	.065	.014	.110	.008
Level of education	−.031	.104	−.023	.051	.094	.037
Experience	.019	.011	.126	.013	.010	.091
Firm age	−.005	.005	−.092	−.001	.004	−.021
Firm size	−.000	.000	−.032	−.000	.000	−.058
Firm category	.063	.101	.063	.010	.090	.008
Project duration	−.005	.003	−.005	−.007**	.002	−.208**
Project team size	.001	.002	.001	.001	.002	.002
Transformational leadership				.521***	.074	.474***
R^2		.073			.270	
Change in R^2		.073			.197	
F-change		1.040			49.742***	
ANOVA (*F*)		1.040			4.542***	

Notes: ** $p < 0.01$, ***$p < 0.001$. Sample size = 200, *B*: unstandardized beta; SE: standard error; Beta: standardized beta; only food security from the six indicators of project types had a positive significant correlation with project success ($B = .322$, $P < 0.05$).

and the mediator variable. The result of model 2 in Table 7 indicates that transformational leadership has a significant positive relationship with team-building ($\beta = .560$, P < .001), showing that step 2 of the mediation analysis is also satisfied.

Model 3 in Table 7 entails performing step 3 and step 4 of the mediation analysis concurrently. Step 3 confirms that team-building, the mediator variable, is significantly related to project success ($\beta = .341$, $P < .001$). Once team-building is entered into the regression, the effect of transformational leadership on project success is reduced from $\beta = .521$ to $\beta = .330$, which is step 4 of the mediation analysis. This represents a 36.6% reduction.

Fig. 2 summarizes the results from the mediation analysis in Table 7 by taking the raw (unstandardized) regression coefficients and the corresponding standard errors for paths c, a, b, and c′.

Table 5
Regression analysis of transformational leadership as a predictor of team-building.

Variables	Team-building					
	Step 1			Step 2		
	B	SE	Beta	*B*	SE	Beta
Gender	.051	.117	.032	−.052	.101	−.032
Level of education	−.048	.100	−.037	.040	.086	.030
Experience	.011	.011	.076	.005	.009	.036
Firm age	−.007	.005	−.132	−.003	.004	−.053
Firm size	.000	.000	.169	.000	.000	.139
Firm category	−.023	.096	−.019	−.079	.083	−.064
Project duration	.001	.003	.026	−.001	.002	−.042
Project team size	.002	.002	.099	.001	.002	.058
Transformational leadership				.560***	.068	.533***
R^2		.078			.327	
Change in R^2		.078			.249	
F-change		1.117			67.974***	
ANOVA (*F*)		1.117			5.952***	

Notes: ***$p < 0.001$. Sample size = 200, *B*: unstandardized beta; SE: standard error; Beta: standardized beta; only WASH from the six indicators of project types had a positive significant correlation with project success ($B = .358$, $P < 0.05$).

Table 6
Regression analysis of team-building as a predictor of project success.

Variables	Project success					
	Step 1			Step 2		
	B	SE	Beta	*B*	SE	Beta
Gender	.110	.122	.065	.084	.108	.050
Level of education	−.031	.104	−.023	−.007	.092	−.005
Experience	.019	.011	.126	.013	.010	.090
Firm age	−.005	.005	−.092	−.002	.004	−.028
Firm size	−.000	.000	−.032	.000	.000	−.112
Firm category	.063	.101	.049	.074	.089	.058
Project duration	−.005	.003	−.148	−.006*	.002	−.160*
Project team size	.001	.002	.039	.000	.002	−.008
Team-building				.500***	.068	.479***
R^2		.073			.284	
Change in R^2		.073			.211	
F-change		1.040			54.282***	
ANOVA (*F*)		1.040			4.869***	

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; Sample size = 200, *B*: unstandardized beta; SE: standard error; Beta: standardized beta.

Table 7
Regression statistics for the effect of team-building as a mediator between transformational leadership and project success.

	Model 1 (path c)	Model 2 (path a)	Model 3 (paths b and c′)
	Project success	Team-building	Project success
Transformational leadership	0.521***	0.560***	0.330***
	(0.0738)	(0.0679)	(0.0823)
Gender	0.0140	−0.0518	0.0317
	(0.110)	(0.101)	(0.105)
Level of education	0.0508	0.0399	0.0372
	(0.0936)	(0.0861)	(0.0891)
Experience	0.0135	0.00512	0.0117
	(0.00989)	(0.00910)	(0.00943)
Firm age	−0.00113	−0.00268	−0.000213
	(0.00430)	(0.00396)	(0.00410)
Firm size	−0.0000781	0.000180	−0.000139
	(0.000109)	(0.000100)	(0.000105)
Firm category	0.0103	−0.0790	0.0373
	(0.0899)	(0.0827)	(0.0858)
Project duration	−0.00723**	−0.00140	−0.00675**
	(0.00239)	(0.00220)	(0.00228)
Team size	0.0000638	0.00146	−0.000434
	(0.00173)	(0.00160)	(0.00165)
Team-building			0.341***
			(0.0763)
_cons	2.129***	1.734***	1.538***
	(0.333)	(0.306)	(0.343)
N	200	200	200
R^2	0.270	0.327	0.342

Notes: Standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

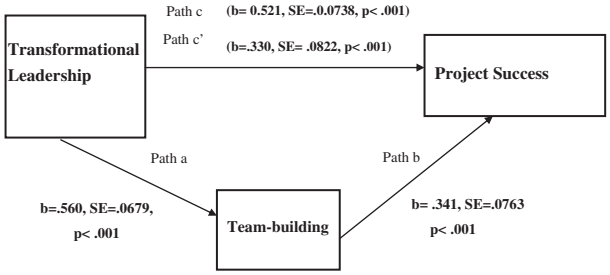

Fig. 2. Unstandardized beta weights and standard errors representing the mediated relationship between transformational leadership and project success via team-building.

A Sobel test was further undertaken to test the significance of the indirect effect of transformational leadership by taking the raw (unstandardized) regression coefficients and the corresponding standard errors for path a and path b. The result (Sobel's test statistic = 3.93, SE = 0.049, $P < 0.001$) confirms the significance of the indirect effect of transformational leadership on project success through its positive relationship with team-building. Hence, team-building partially mediates the relationship between transformational leadership and project success, thereby supporting Hypothesis 4.

6. Discussion

The purpose of the present study was to investigate the linkage between transformational leadership and project success through the mediating role of team-building. As predicted, we found a positive association between a project manager's transformational leadership and project success. This finding shows that the project manger's leadership style plays an important part in project success. Essentially, a transformational project manager motivates and inspires team members towards a holistic conception of project success, characterized by efficiency, effectiveness, and stakeholder satisfaction. This finding answers the call by Turner and Müller (2005), who underlined that the project management literature failed to give sufficient attention to the role of project managers' leadership styles. We also found that team-building is positively related to project success. This finding confirms the meta-analysis by Klein et al. (2009). Our study also suggests that the combined set of team-building interventions such as project goal-setting, role-clarification, interpersonal relations, and problem-solving creates a highly empowered and committed project team. Through these classic team-building practices, organizations and project managers are more likely to improve team members' knowledge about the project goals, roles and responsibilities, interpersonal communication, and problem-solving skills, which would in turn influence project success.

Second, and perhaps more importantly, we demonstrated that team-building partially mediates the relationship between a project manager's transformational leadership and project success. This is the first study that explicitly identifies the mediating role of team-building in the relationship between transformational leadership and project success. Thus, we have contributed to existing efforts towards understanding how transformational leadership influences project success. This finding suggests that project managers exhibiting transformational leadership are more likely to create the team-building practices in a project environment that will help them to realize project success. These practices include project goal-setting, role-clarification, interpersonal relations, and problem-solving techniques, which together motivate and empower a project team towards project success.

6.1. Theoretical and practical implications

The present study contributes to the project management literature by integrating leadership theory and a team-building model. The results of our study show that team-building interventions link the relationship between transformational leadership and project success. This advances our understanding of transformational leadership and team-building in engendering project success.

As expected, transformational leadership was statistically significant in explaining project success, both with and without the mediating role of team-building. Our research helps to uncover how transformational leadership behaviors can contribute to project success, by demonstrating the important role of team-building practices. Transformational leadership is conducive to the deployment of team-building activities, which in turn significantly contribute to positive project outcomes. This implies that the positive effect of transformational leadership on project success will be strongest when the organizational context facilitates team-building activities. Our finding that the mediation effect of team-building is only partial indicates that there are still other mechanisms at work in the relationship between transformational leadership and project success. Future studies could aim to uncover these.

Our study also adds to project team development theory by developing a comprehensive and internally reliable measure for team-building interventions for the first time based on the works by Klein et al. (2009), and Salas et al. (1999). Unlike the operationalization by Wang and Howell (2010), who viewed team-building as a dimension of transformational leadership, we showed that team-building is an independent construct that entails practices designed to support team performance.

Several practical implications can also be drawn from the finding that the project manager's transformational leadership enhances project success through team-building. One implication highlights the importance of traditional team-building interventions that entail formal and informal team-level interventions focused on improving social relations and clarifying roles, as well as solving tasks and interpersonal problems that affect team functioning (Klein et al., 2009). This implies that there is a higher probability for projects to be successful when the components of team-building are used properly. This finding is consistent with previous research on the positive relation between team-building and team performance (Klein et al., 2009). Another practical implication is that providing transformational leadership training to project managers, especially by using action learning (Gundersen et al., 2012; Leonard and Lang, 2010), can be a way for project-based organizations to improve their performance. This

also implies that training and development efforts for project leaders should focus on how to apply techniques of team-building and to maximize the benefits thereof along with conventional leadership training programs.

6.2. Limitations and future research directions

Our study has several limitations that should be taken into account when interpreting the findings, and some of these points are opportunities for future research. First, the results are based on subjective ratings instead of objective data regarding project success. However, we employed multiple scale items for the measure of project success in order to capture all possible information on the construct, just as prior studies had done (Khang and Moe, 2008; Pinto et al., 2009; Suprapto et al., 2015). Cognizant of the potential limitations of subjective measures, we recommend that future studies focus on also including objective measures of project success from project documents like budget plans and closing reports. Moreover, we encourage case studies to assess project success from multiple sources, such as project managers, team members, beneficiaries, sponsors, and other stakeholders. This approach would help to document in-depth knowledge of emergent and challenging issues for leadership and teams in development project contexts (Gundersen et al., 2012).

Second, we applied a cross-sectional research design, which limits inferences about causal direction. We therefore recommend that longitudinal studies be conducted on the effects of project managers' transformational leadership and team-building on project success over the project lifecycle. Alternatively, future studies could benefit from experimental designs, which by manipulating variables are better able to identify causal relationships.

The third limitation concerns our data collection instrument. Since we employed a single method of data collection (self-report questionnaires) for different constructs from the same source at the same time, common method bias could be a concern. This leads to common method variance, variance that is attributed to the measurement method rather than the constructs of interest, which may influence some hypothesized relationships between constructs in the research model (Podsakoff and Organ, 1986). At the time of the instrument design, we tried to reduce the common method bias by following procedural techniques recommended by Podsakoff et al. (2012). Our conclusion of these procedures and tests is that common method variance is unlikely to bias the results.

The fourth limitation of our study is that we used a self-reported form to measure transformational leadership that may be susceptible to bias and overstatement. However, self-ratings of managers on their leadership behavior were in conformity with the ratings of their subordinates in previous studies, suggesting that self-reports of leadership are valid measures (Doeleman et al., 2012; García-Morales et al., 2012; Thite, 2000). Regardless of this, future research would benefit from a design that directly targets project team members in measuring project leadership behaviors.

A final limitation to our study is that we have focused on one particular type of project (development projects) in one country (Ethiopia). Moreover, the heterogeneous nature of the development projects in our sample in terms of project type, project duration, and project team members could be another limitation. However, development projects are important in their own right, and there currently is a drive to reach a better understanding of the factors that lead to their success or failure (e.g., Denizer et al., 2013; Ika et al., 2012; Vallejo and Wehn, 2016). One outcome of these studies is that although there are significant differences between countries, the variance in project success is larger within countries than between countries (Denizer et al., 2013). This implies that our findings can likely be generalized beyond Ethiopia to other (developing) economies.

Since this is the first study that explicitly found a significant mediating role of team-building in the relationship between transformational leadership and project success, we strongly encourage researchers to further validate and extend our model. Beyond the validation of our model, we also invite research that focuses on the relative importance of the team-building dimensions in the relationship between transformational leadership and project success.

7. Conclusions

Increased knowledge about the factors influencing project success is of great importance to project-based organizations. We have demonstrated that within the context of development projects, transformational leadership has both direct and indirect influences on project success. In addition, we showed that team-building as a critical project success factor plays a mediating role in the relationship between transformational leadership and project success. Thus, project-oriented organizations need to promote a transformational leadership style among project managers, e.g., through selection and leadership development programs, as indicated by previous empirical studies (Braun et al., 2013; Eisenbeiss et al., 2008; Lee et al., 2010). This would in turn create a working project climate conducive to team-building practices like project goal-setting, role-clarification, interpersonal relations, and problem-solving techniques. We hope that our study will inspire future research on project team-building and project success.

Conflict of interest

The authors declare that there is no conflict of interest.

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Appendix 1. Assessment of factor loadings using oblique rotation by pattern matrix[a]

	Components		
	Team-building	Project success	Transformational leadership
Success 1		.615	
Success 2		.664	
Success 3		.762	
Success 4		.657	
Success 5		.830	
Success 6		.817	
Success 7		.755	
Success 8		.744	
Success 10		.760	
Success 11		.859	
Success 12		.699	
Success 13		.792	
Success 14		.717	
V_2_Goalsetting2	.664		
V_3_Goalsetting3	.665		
V_4_Goalsetting4	.754		
V_6_InterpersonalRxns2	.601		
V_7_InterpersonalRxns3	.719		
V_9_InterpersonalRxns5	.647		
V_10_RoleClarification1	.744		
V_11_RoleClarification2	.801		
V_12_RoleClarification3	.793		
V_13_ProblemSolving1	.768		
V_14_ProblemSolving2	.796		
V_15_ProblemSolving3	.752		
V_16_ProblemSolving4	.739		
V_17_ProblemSolving5	.737		
Inspirational motivation 1			.553
Intellectual stimulation 1			.697
Individual consideration 1			.654
Idealized influence 2			.670
Inspirational motivation 2			.603
Intellectual stimulation 2			.806
Individual consideration 2			.670
Idealized influence 3			.626
Inspirational motivation 3			.779
Intellectual stimulation 3			.754
Individual consideration 3			.650
Inspirational motivation 4			.621

Extraction method: Principal component analysis; rotation method: Promax with Kaiser normalization.
a. Rotation converged in 5 iterations.

Appendix 2: Measurement items

Project success

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

Transformational leadership

1. Team members have complete faith in me.
2. I provide appealing images about the project to my team.
3. I enable team members to think about old problems in new ways.
4. I give personal attention to a team member who seems neglected.
5. Team members are proud of being associated with me.
6. I let my team know that I am confident that the project goals will be achieved.
7. I provide team members with new ways of looking at puzzling things.
8. I help each member of the team to develop his/her strengths.
9. I make the team members feel good to be around me.
10. I help team members find meaning in their work.
11. I get team members to rethink ideas that they had never questioned before.
12. I am attentive to the unique concerns of each team member.
13. I show my team that I am optimistic about the future of the project.

Team-building

1. Setting project goals on a participatory basis by the team.
2. Involving project team members in action planning to identify ways to achieve project goals.
3. Making the basic goals of the project clear to the project team.
4. Letting the project team receive timely feedback on performance in relation to goals of the project.
5. Encouraging team members to meet with each other during the project.
6. Discussing relationships among project members frankly.

7. Discussing conflicts among project team members frankly.
8. Conducting training programs on communication skills for the project team.
9. Creating opportunities for sharing of feelings among the project team.
10. Clarifying role expectations of each team member.
11. Giving information about the shared responsibilities of team members.
12. Making project norms familiar to each team member.
13. Involving the project team(s) in identifying task-related problems.
14. Involving the project team(s) in generating ideas concerning the causes of task-related problems.
15. Participation of the project team(s) in designing action plans to solve task-related problems of the project.
16. Engaging the project team(s) in the implementation of action plans to solve task-related problems.
17. Engaging the project team(s) in the evaluation of action plans to solve task-related problems.

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