

## Tilburg University

### Factors affecting the success of development projects

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# Factors Affecting the Success of Development Projects: A Behavioral Perspective

PROEFSCHRIFT

ter verkrijging van de graad van doctor aan

Tilburg University

op gezag van de rector magnificus,

prof. dr. E.H.L. Aarts,

in het openbaar te verdedigen ten overstaan van een

door het college voor promoties aangewezen commissie

in de Ruth First zaal van de Universiteit

op maandag 28 november 2016 om 14.00 uur

door

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# CHAPTER ONE

## INTRODUCTION

“Project management is about managing people to deliver results, not managing work” (Turner, 1999 in: Jugdev & Müller, 2005, p. 20).

### **1.1. Background of the Study and Problem Statement**

Critical Success Factors (CSFs) have received ample attention in project management literature during the last five decades. This is because successful project management depends on identifying key determinants of project success, usually termed CSFs (Ika, Diallo, & Thuillier, 2012; Nauman, Mansur Khan, & Ehsan, 2010; Söderlund, 2011).

Understanding the critical factors that impact the success of projects helps predict the sustainability of projects, diagnose problems, and prioritize resource allocation (Khang & Moe, 2008; Söderlund, 2011). Therefore, it is necessary for the organization to have an understanding of what the critical success factors are in order to systematically and quantitatively assess these factors, anticipate possible effects, and then choose appropriate methods of dealing with them (Kwak & Anbari, 2009).

Researchers have tried to develop some well-recognized lists of CSFs in project management (Müller & Jugdev, 2012; Pinto & Slevin, 2006; Suprpto, Bakker, & Mooi, 2015). These CSFs generally can be grouped into project context and technical and behavioral dimensions. The project context includes factors related to the nature of a project and its environment, such as project type and complexity of the environment (Dvir, Sadeh, & Malach-Pines, 2006; Nahod & Radujković, 2013). The technical dimension involves factors such as resource allocation, scope management, sharing information and knowledge across organizations, utilizing effective tools and methodologies, and managing project resources and schedules. The behavioral element encompasses factors such as leadership, team-building, management support, planning user training programs, resolving conflicts, creating a harmonious climate, and involving project beneficiaries (Belout & Gauvreau, 2004; Kendra & Taplin, 2004; Yen, Li, & Niehoff, 2008).

A thorough canvassing of literature disclosed that, while the project context and technical dimensions of project success factors have received attention, there is scant literature that

actually addresses success factors from the behavioral lens (Belout & Gauvreau, 2004; Huemann, Keegan, & Turner, 2007; Yen et al., 2008). Even from the extant literature about the role of behavioral dimensions, there is no conclusive finding about their impacts on project success (Turner & Müller, 2005; Zwikaël & Unger-Aviram, 2010). This is in line with Cooke-Davies (2002), who notes that human factors are not directly included in the conventional list of CSFs within a project context.

In view of the dominant line of project management research, it is not surprising that project managers give considerable attention to technical aspects of project management activities, which include planning, scheduling, risk management, and control (Scott-Young & Samson, 2008; Zwikaël & Unger-Aviram, 2010). However, the rate of project success has not been improving as expected, which is a red flag that calls into question the existing dominant project management discourse on CSFs and project success (Cooke-Davies, 2002; Ika, 2009; Thomas & Mengel, 2008; Williams, 2005). In this respect, some scholars (e.g. Huemann et al., 2007; Slevin & Pinto, 2004) firmly support the need for a shift from a technical orientation to the people side of project management in order to enhance the success of projects.

Emanating from the multi-faceted nature of projects, a project can be viewed from at least three perspectives. The first perspective highlights that projects are goal-oriented tasks with special characteristics. The special characteristics of projects come from their complexity, relative uniqueness, high risk, and strategic importance for a parent organization (Gareis, 2006). The second perspective views a project as a temporary organization in which human and non-human resources are combined together in order to achieve a specific purpose (Turner & Müller, 2003). The third view defines a project as a social system having its own clear boundaries that differentiate it from its environment. This approach is in line with a system theory of organization that underlines the internal dynamics of a project and its interaction with its environment (Gareis, 2006). As there are different classifications of projects, we consider development projects undertaken by Non-Governmental Organizations (NGOs), whose CSFs are empirically documented in only a few studies in the project management literature (Diallo & Thuillier, 2004, 2005; Khang & Moe, 2008).

In broad terms, NGO sector development projects focus on the achievement of social goals such as improving living standards, education, or health (Golini, Kalchschmidt, & Landoni, 2015). These projects entail encouraging and assisting the beneficiary community to actively participate in the project and to take ownership; maximizing the short-, medium-,

and long-term project benefits to alleviate poverty in a sustainable and replicable manner; using the project as a vehicle for training and building the capacity of the local community; enhancing employment opportunities through the use of labor-intensive technologies; and minimizing negative environmental impact, and thereby enhancing sustainability (Banks & Hulme, 2012; Khang & Moe, 2008).

Khang and Moe (2008) highlight three characteristics of development projects in an effort to distinguish such projects from industrial and commercial projects commonly found in the private sector. The first concerns the form of development projects, which can be socio-economic assistance to developing countries or to a specially designated group of intended beneficiaries. The second relates to the multidimensional objectives of development projects, which include poverty alleviation, living standards improvements, environmental protection, capacity-building, and development of basic physical and social infrastructures. The third characteristic of development projects is that they involve three important stakeholders, namely the funding agency, the implementing unit, and target beneficiaries. The funding agency bears the costs of the project but does not directly use the project outputs. The implementing unit is responsible for undertaking a variety of development projects. The target beneficiaries are those communities or groups of people who actually benefit from the project outputs but most commonly do not pay for the projects.

Particular to the context of development projects, Khang and Moe (2008) point out that the critical success factors can be grouped into three major categories, namely competency, motivation, and the enabling environment. Competency relates to the individual capabilities of the project manager and team members and such institutional factors as communication systems, effective control, good planning, and scheduling. Motivation implies the commitment and dedication of the project manager and team members toward the realization of a project goal. The enabling environment concerns a smooth relationship among the key stakeholders, which include funding agencies, the implementing unit, target beneficiaries, and the government.

Though the seminal work by Khang and Moe (2008) is comprehensive in identifying the critical success factors using the life cycle approach for international development projects, they undertake their macro-analysis targeting officials at donor agencies, representatives of local authorities, project managers, and team members. To the best of our knowledge, however, there is no empirical study that investigates the CSFs of development projects at a

micro level by targeting the implementing units, which are NGO sector organizations in this context.

In general management literature, organizational behavioral theories underscore that the proper use of people contributes to the successful performance of an organization (Koys, 2001). For example, a study by Guinan, Coopriider, and Faraj (1998) revealed that behavioral factors such as managerial involvement and team skills are more predictive of team performance than technology factors. However, behavioral dimensions are little researched in project management literature (Gino & Pisano, 2008; Hyväri, 2006; Pant & Baroudi, 2008). Some behavioral dimensions that have had inconclusive findings and/or been overlooked as critical success factors in project management literature are the project manager's leadership (Geoghegan & Dulewicz, 2008; Söderlund, 2004; Turner & Müller, 2005), team-building (Klein et al., 2009), problem-solving (Li, Yang, Klein, & Chen, 2011), and the beneficiary's psychological ownership of the project (Avey, Avolio, Crossley, & Luthans, 2009; Liu, Wang, Hui, & Lee, 2012).

This dissertation thus aims to add insights to the existing literature by exploring the role of behavioral factors that could be considered important determinants of project success. More specifically, the study investigates the role of leadership, team-building, the project beneficiary's participation, and psychological ownership in project management success. Accordingly, the thesis will address the following three basic research questions with special reference to NGO sector development projects in Ethiopia:

1. How does a project manager's leadership contribute to project success?
2. What is the role of team-building and team problem-solving in project success?
3. How does project beneficiaries' psychological ownership affect project success?

## **1.2. The Current Thesis**

Project success and CSFs (or in short factors) are the dominant subject of project management research. Project success reflects the extent to which project goals have been realized, and the success is usually evaluated or judged by certain principles and standards termed as criteria. The CSFs (factors for success), on the other hand, are the set of circumstances, facts, or influences that affect project success. These factors determine the success or failure of a project (Lim & Mohamed, 1999).

In the literature, scholars distinguish between the traditional triple constraint approach and a holistic view to project success (see for example, Atkinson, Crawford, & Ward, 2006;

Cooke-Davies, 2002; De Wit, 1988; Jugdev & Müller, 2005; Shenhar, Levy, & Dvir, 1997). In a triple dimension, commonly referred to as the “iron triangle,” success is measured by whether a project is done on time, within budget, and as per its scope. De Wit (1988) used this narrow definition of success to describe project management success. A holistic view to project success, meanwhile, includes the iron triangle (time, cost, and scope), benefits to the organization, and customer satisfaction (Jugdev & Müller, 2005; Shenhar et al., 1997).

Even 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 of NGOs. The project success criteria developed in these works include relevance, efficiency, effectiveness, impact, and sustainability. Relevance refers to the extent to which the project suits the priorities of the target beneficiaries, the recipient government, 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, intentionally or not. Sustainability refers to whether the benefits of the project are likely to continue after donor funding has been withdrawn.

Like project success criteria, there is a debate regarding CSFs in project management literature (Jugdev & Müller, 2005), even though efforts to develop or identify CSFs dominated the field from 1985 into the 2000s (Ika, 2009; Kuen, Zailani, & Fernando, 2009; Zwikael & Globerson, 2006). In this line of research, Pinto’s research in 1986 and his subsequent work with Slevin, resulting in 10 critical success factors, have become classic pieces of work in this field (Pinto & Slevin, 2006). These most well-known lists of CSFs pertain to project mission, top-management support, project schedule, client consultation, personnel, technical tasks, client acceptance, monitoring and feedback, communication, and troubleshooting. Their model provides one of the most widely quoted lists of critical success factors (Müller & Jugdev, 2012; Söderlund, 2004; Suprpto et al., 2015). Belassi and Tukel (1996) came up with a holistic framework for CSFs covering factors related to a firm’s internal environment (such factors as project nature, project manager and team, and organizational factors) and factors related to its external environment.

Pertaining to external environment factors, some scholars add project operating environment to the list of CSFs in a developing countries context (Akanni, Oke, & Akpomiemie, 2015; Edkins, Geraldi, Morris, & Smith, 2013; Faniran, Love, & Smith, 2000).

A project's environmental context entails such factors as political instability, excessively bureaucratic contact procedures, and lack of adequate physical infrastructure such as transportation networks, electricity supply, and telecommunications systems (Faniran et al., 2000). Although this context poses critical challenges to project managers, in this study we concentrate on factors that are under some control by a project or its parent organization implementing the project (in this case, project beneficiary' participation and stakeholder's identification).

Commentators on CSFs criticize the fact that the dominant line of research in project management literature mainly provides frameworks of CSFs from a technical point of view, while giving little attention to the behavioral perspectives (Belout & Gauvreau, 2004; Yen et al., 2008). In this regard, Söderlund (2004, p. 184) remarks that the dominant line of research treats project management as "a set of models and techniques for the planning and control of complex undertakings."

Through systematic literature review, Slevin and Pinto (2004) have identified key behavioral factors that could impact the success of a project. These behavioral factors encompass, inter alia, personal characteristics of the project manager, motivation of the project manager, project leadership, communications, staffing, cross-functional cooperation, project team-building processes, and project organization. Although Slevin and Pinto (2004) suggest key behavioral factors for successful projects, they address only the internal aspects of project organization. Their list of behavioral factors does not consider the role of stakeholder participation, particularly by the target beneficiaries, in project success. This is of paramount importance to ensure successful project completion (Pant & Baroudi, 2008), especially for development projects (Khang & Moe, 2008). Surprisingly, there is scant empirical project management literature that indicates the significant role of project leadership and team-building in project success (Klein et al., 2009; Turner & Müller, 2005) despite the fact that they are included in the list of behavioral factors.

Generally speaking, behavioral dimensions, or people skills, are the most important factors that drive successful completion of a project, and yet they are the most challenging element in project management (Pant & Baroudi, 2008; Strang, 2007; Thamhain, 2004). This fits with the observation that "project management is about managing people to deliver results, not managing work" (Turner, 1999 in: Jugdev & Müller, 2005, p. 20). The need for a more collaborative working environment among the key project stakeholders, namely project managers, project teams, and project beneficiaries, has increased the importance of

behavioral dimensions in development projects (Ika et al., 2012; Khang & Moe, 2008). As stated by Pant and Baroudi (2008), however, behavioral dimensions or people skills are the missing link in the CSFs of a project. More importantly, the inconclusive findings about the impacts of such behavioral factors as leadership, team-building, and project beneficiaries' participation on project success need further investigation.

Three core issues will be tackled in the present dissertation. Firstly, there is no satisfactory explanation of how leadership, and specifically transformational leadership, influences project success (Keegan & Den Hartog, 2004; Turner & Müller, 2005). Based on the works by Scott-Young and Samson (2008) and Turner, Huemann, and Keegan (2008), we propose team-building as a mechanism through which transformational leadership has an effect on project success. Secondly, although it is generally accepted that uncertainty is a key contingency factor (Shenhar, 2001), there are only a few studies that explain how the negative influence of project uncertainty on project success can be reduced from a behavioral perspective (Cleden, 2009; Ward & Chapman, 2008). Consequently, we introduce team problem-solving, which would weaken the negative influence of project uncertainty on project success (Anantatmula, 2010; Zwikael & Unger-Aviram, 2010). Thirdly, from the external environment side, there is little work in the project management literature that explores the mechanism through which the project beneficiary's participation promotes project success. For this purpose, we apply psychological ownership to the project context in order to explain the association between beneficiaries' participation and behavioral intentions to sustain a project, which leads to project success (Asatryan & Oh, 2008; Avey et al., 2009).

Accordingly, in order to add some insights to the existing literature, this dissertation investigates the determinants of project success from behavioral dimensions, focusing on leadership, team-building, target beneficiaries' participation, and psychological ownership. Figure 1.1 depicts the overarching framework of the study.

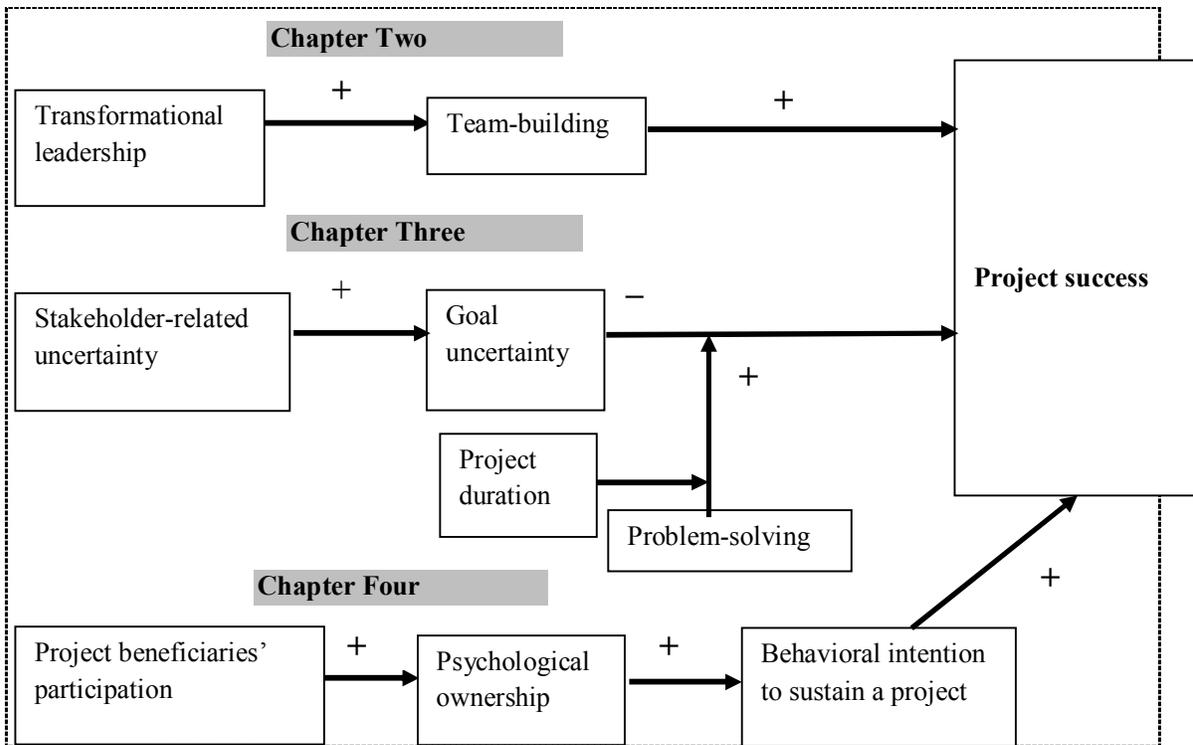


Figure 1.1: Overarching framework of the study

Source: Author's own synthesis based on the works of Belout and Gauvreau (2004), Klein et al. (2009), and Pierce and Jussila (2010)

### 1.3. Development Projects and the NGO Sector: A Bird's-eye View of the Context

In this section, we briefly present the context of the study about the concept of development and an overview of the NGO sector in Ethiopia.

#### 1.3.1. Contextualizing development

Development is a multifaceted and contentious concept looked at from different perspectives and theories. The concept has evolved over time and has been subject to ongoing debate on what constitutes development, its adequate measurement, and the means to achieve it (Fukuda-Parr & Hulme, 2011). For instance, modernization theory defines development as a process of rapid economic growth through industrialization and the adoption of modern scientific approaches to agriculture. This was popular in the 1950s and 1960s. In the 1990s, poverty reduction and human well-being were the top development agendas (Fukuda-Parr, 2004). In this line, the main goals of development should target people to lead a long and

healthy life, to be knowledgeable, and to have access to resources needed for a decent standard of living (Bhanojirao, 1991).

Since 2000, scholars and practitioners use Millennium Development Goals (MDGs) to conceptualize development (particularly for a developing countries context). The MDGs, consisting of eight goals, emerged from the United Nations Millennium Declarations in 2000 and are thought to be an unprecedented global consensus representing a model for international development (Hulme, 2009; Waage et al., 2010). These eight goals address targets to eradicate extreme poverty, achieve universal primary education, promote gender equality, improve health status (mainly related to child mortality, maternal health, and communicable diseases such as HIV/AIDS and malaria), ensure environmental sustainability, and establish a global partnership (Haines & Cassels, 2004).

MDGs have substantially guided development dialogue and the operations of development agencies including NGOs (Waage et al., 2010). For this reason, development has become one of the global agendas that can only be achieved through the collaboration efforts of different stakeholders, including NGOs (Golini et al., 2015; Kim, 2000). NGOs are any non-profit, voluntary citizen's associations organized on a local, national, or international level. They can be either "operational" or "advocacy" oriented. Operational NGOs engage in the provision of social services such as education, health, or human relief, whereas advocacy-oriented NGOs lobby governments, corporations, and international organizations (Guay, Doh, & Sinclair, 2004).

The development context in Africa, including Ethiopia, has also witnessed significant changes since the 1990s, whereby governments increasingly have adopted political reforms to permit greater pluralism and competition. This has left open space for NGOs as one of the key development architects, particularly through development projects (Cheru, 2012; Srinivas, 2009).

For the purpose of this dissertation, we consider development projects implemented by NGOs. This group of projects aims to reduce poverty and improve the well-being of the population (specifically the project beneficiaries in rural areas). Some typical examples of development projects in the context of developing countries, *inter alia*, include rural water supply, health care services, food security, environmental protection, livelihood interventions, and capacity-building (Banks & Hulme, 2012; Khang & Moe, 2008).

Despite the fact that NGO sector organizations are becoming very important in development project management (Ghaus-Pasha, 2005), there are scant empirical studies on

the critical success factors of this group of projects (Khang & Moe, 2008). The few available empirical studies investigate the success factors of NGOs at the organizational level instead of the project level. Such organizational level factors include sufficient financial resources, competent skills and capabilities of staff and management, strong leadership of the organization, commitment of project staff, favorable external environment, and appropriate organizational structure (Kurfi, 2013; Rahmato, 2008). Considering that it is vital to identify factors that contribute to the successful implementation of these projects (Ika, 2009; Thi & Swierczek, 2010), more work is needed.

### **1.3.2. The NGO sector in Ethiopia**

The emergence of NGOs in Ethiopia was associated with the tragic famine of the early 1970s in the northern part of the country, and the aim was to provide relief and rehabilitation services. Until the end of the 1970s, there were not more than 25 NGOs in the country. In the later 1980s –during the *Derg* regime – the number of NGOs reached around 70. Immediately after the overthrow of the *Derg* regime by the Federal Democratic Republic of Ethiopia (FDRE) in 1992, the participation of NGOs in development and governance issues grew unprecedentedly, both in number and in the scope of their activities (Berhanu, 2002; Rahmato, 2002, 2008). Rahmato (2002) reported that the number of NGOs reached around 246 in 2000. In 2009, the FDRE issued proclamation No. 621/2009 to manage the registration and regulation of charities and societies in the country (Federal Democratic Republic of Ethiopia, 2009). The proclamation introduces the terminologies of charities and societies instead of using the conventional terms such as NGO and civil society.

Though the current classification of civil society and/or NGO sector organizations in Ethiopia is quite unclear compared with international classification, the study's target institutions were NGOs that undertake development projects aiming at poverty reduction in Ethiopia under an umbrella of MDGs. Accordingly, the database of the *Federal Democratic Republic of Ethiopia Charities and Societies Agency* revealed that there were more than 4,000 registered NGOs, of which 331 were directly engaged in alleviating poverty through development projects in 2015, at the time of our field work. These “development organizations” undertake a broad spectrum of projects pertaining to, among other things, water supply, environmental protection, health care services, and livelihood interventions.

## **1.4. Overall Methodology**

This section briefly presents the methodology used in the dissertation. An elaborate explanation of the methodology is found in each of the three empirical chapters.

### **1.4.1. Epistemology and design**

Scholars claim that there is yet no widely accepted scientific frontier that dictates project management research (Gino & Pisano, 2008; Koskela & Ballard, 2006; Smyth & Morris, 2007). One of the reasons that project management theories are scant could be its eclectic and multi-disciplinary nature (Hanisch & Wald, 2011; Lalonde, Bourgault, & Findeli, 2010; Smyth & Morris, 2007). This leaves open room for researchers to follow integrative research that entails combining multiple theories such as organizational theory, psychology, leadership, operations management, and economics (Shenhar & Dvir, 2007). Taking this argument into account, this dissertation applies multiple theoretical perspectives such as social system theory, (transformational) leadership, stakeholder theory, goal theory, and social psychological models such as the theory of reasoned action and the theory of planned behavior.

The study followed a deductive approach in which the main constructs were derived from prior theories and mainly the call for more empirical studies on the effect of such behavioral dimensions as leadership, team-building, and project beneficiaries' participation on project success. It mainly used a quantitative research design that involved the application of statistical analysis on the basis of quantitative data (Babbie, 2010; Saunders, Lewis, & Thornhill, 2009). More specifically, the dissertation applied both a cross-sectional survey design and an experimental design in separate settings.

### **1.4.2. Data collection**

In order to address research questions 1 and 2, we employed a self-administered questionnaire as a part of a survey research design. The information, covering all the constructs depicted in Figure 1.1 including control variables, was collected from 236 randomly selected project managers working in NGO sector organizations in Ethiopia. Before the actual data collection, we conducted a pilot test using 40 project managers to confirm the content validity of the questionnaire. The pilot test was very helpful for revisiting some

contents of our questionnaire, particularly for constructing the typology of development projects performed by the NGO sector in Ethiopia.

For research question 3, we employed an experimental design following a vignette methodology (Aguinis & Bradley, 2014). For this purpose, we randomly established two groups (experimental and control) from undergraduate students who attended “Introduction to Management” in the Management Department of Micro Link Information Technology College in Ethiopia. The manipulated variable was project beneficiaries’ participation in needs assessment and project planning stages, while data on psychological ownership and “behavioral intention to sustain a project” was collected using a structured questionnaire.

### **1.4.3. Data analyses**

For the analysis of the data we used several methods and techniques that are commonly used in empirical project management literature (e.g., Huemann et al., 2007; Joslin & Müller, 2015; Pinto, Slevin, & English, 2009; Suprpto et al., 2015). First and foremost, we undertook exploratory and confirmatory analyses for the constructs in the study along with reliability and validity tests. We then applied mediation models using the 4-step method of Baron and Kenny (1986) in a hierarchical regression analysis. In addition to the conventional steps in the mediation model, we further undertook a test of significance of the indirect effect of the predictor variable following the procedures explained by Hayes and Preacher (2014).

Furthermore, we used a moderated mediation analysis for empirical work presented in Chapter Three. For this purpose, we ran model 18 of the PROCESS for SPSS developed by Hayes (2013) in addition to applying the procedures developed by Muller, Judd, and Yzerbyt (2005).

## **1.5. Dissertation Structure**

The dissertation has five chapters. The first chapter introduces the study, describes the context, and offers a brief methodology of the study. The next three consecutive chapters (2-4) are empirical studies based on a field survey and experimental design. The second chapter focuses on the role of project managers’ transformational leadership and team-building in project success. The third chapter of the dissertation presents another empirical study that demonstrates the damping effect (moderating role) of team problem-solving on the negative relationship between project uncertainty and project success. The fourth chapter discusses an experimental study on the role of project beneficiaries’ psychological ownership in mediating

the relationship between participation in pre-implementation phases of a project (particularly needs assessment and planning) and behavioral intentions to sustain the project. This study highlights the importance of project beneficiaries' psychological ownership in the relationship between genuine participation and required behavior (in this case behavioral intentions to ensure project sustainability). The fifth chapter of the dissertation, Conclusions, contains a summary of empirical findings, a discussion of the overall implications, both for theory and for practice, and limitations and future research directions.



## CHAPTER TWO<sup>1</sup>

### TRANSFORMATIONAL LEADERSHIP AND PROJECT SUCCESS: THE MEDIATING ROLE OF TEAM-BUILDING<sup>2</sup>

#### *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.*

*Key words: Project success, Team-building, Transformational leadership*

#### **2.1. 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). Research in this tradition 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 & Packendorff, 2009; Riaz, Tahir, & Noor, 2013; Yang, Huang, & Wu, 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 & Ilgen, 2006; Piccolo & 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

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<sup>1</sup> Parts of this chapter are based on a journal article titled ‘Transformational Leadership and Project Success: the Mediating role of Team-building’ by D.A. Aga, N. Noorderhaven, and B. Vallejo (2016) that has been published in the International Journal of Project Management (doi: <http://dx.doi.org/10.1016/j.ijproman.2016.02.012>). The candidate took a lead role in the conception and design, development and analysis of theoretical model, collection of data, analysis and interpretation of data, drafting the article and revising it critically for important intellectual content.

<sup>2</sup> The editorial style of each individual chapter has been edited slightly for consistency throughout the dissertation.

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, Zhu, Koh, and Bhatia (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, Hellesøy, and Raeder (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. In the same vein, scholars like Scott-Young and Samson (2008) and Turner et al. (2008) call for empirical studies on comprehensive team-building practices in a project context. Following up on these calls, we propose that team-building plays a significant role in mediating the relationship between transformational leadership and project success. Our premise is that transformational leader behaviors facilitate team-building interventions, which in turn are reflected in project success. This is important, because understanding the mechanism that causes the effect of transformational leadership on project success helps us to articulate a better theoretical understanding of the 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 NGO sector development projects in Ethiopia, this study examines the relationships between project managers' transformational leadership, team-building, and project success. For purpose of this study, we denote development projects as those interventions that aim to reduce poverty and improve the well-being of the rural community (Banks & Hulme, 2012; Khang & Moe, 2008).

## **2.2. Theoretical Framework**

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

### **2.2.1. 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 in the service sector nowadays, as well as in areas like capacity building and social work projects (Diallo & Thuillier, 2005). For the Project Management Institute (PMI), project success is defined 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).

Ika (2015) indicates that while the "iron triangle" (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 work by Ika et al. (2012) follows a holistic approach in measuring success 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, intentionally or not. Sustainability refers to whether the benefits of the project are likely to continue after donor funding has been withdrawn.

More specific to development projects, Khang and Moe (2008) point out the following three different dimensions of success criteria: (1) the efficiency of the implementation process, that is, "an internally oriented measure of the performance of the project team, including such criteria as staying on schedule, on budget, meeting the technical goals of the project, and maintaining smooth working relationships within the team and the parent organization"; (2) the perceived quality of the project, which includes the project team's perception of the value and usefulness of the project deliverables; and (3) the target beneficiary's satisfaction.

### 2.2.2. Transformational leadership

Though the topic of leadership is an area that has been under academic study for several decades, there is a dearth of empirical work in project management contexts (Söderlund, 2011; Turner & Müller, 2005; Tyssen, Wald, & Heidenreich, 2013). The full-range leadership theory is one of the most widely recognized theories of leadership and addresses transformational, transactional and laissez-faire styles (Sohmen, 2013).

The original version of the full-range leadership theory represents nine single-order factors which cover five transformational leadership factors, three transactional leadership factors, and one laissez-faire leadership factor. Transformational leaders aim to raise followers' awareness for transcendent collective interests and enable followers to achieve extraordinary goals. Theoretically, transformational leadership comprises of five first-order factors, namely idealized influence (attributed), idealized influence (behavior), inspirational motivation, intellectual stimulation, and individualized consideration (Antonakis, Avolio, & Sivasubramaniam, 2003).

Table 2.1: Operationalization of the leadership dimensions in MLQ

Leadership Dimensions	Definition
Transformational	
• Idealized Influence (attribute)	Demonstrates qualities that motivate respect and pride from association with him or her
• Idealized Influence (behavior)	Communicates values, purpose, and importance of organization's mission
• Inspirational Motivation	Exhibits optimism and excitement about goals and future states
• Intellectual Stimulation	Examines new perspectives for solving problems and completing tasks
• Individualized Consideration	Focuses on development and mentoring of followers and attends to their individual needs
Transactional	
• Contingent Reward	Provides rewards for satisfactory performance by followers
• Management by Exception (active)	Attends to followers' mistakes and failures to meet standards
• Management by Exception (passive)	Waits until problems become severe before attending to them and intervening
Laissez-Faire	Exhibits frequent absence and lack of involvement during critical junctures

Source: Eagly, Johannesen-Schmidt, and Van Engen (2003)

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 & Packendorff, 2009).

The second core active leadership style in full-range leadership theory is transactional leadership – an exchange process that is based on the fulfillment of contractual obligations and typically represented as setting objectives and monitoring and controlling outcomes. The theory indicates that transactional leadership has the following three first-order factors: (a) contingent reward leadership, which focuses on clarifying role and task requirements and providing followers with material or psychological rewards in exchange for the fulfillment of contractual obligations; (b) management-by-exception active (i.e., active corrective transactions), which refers to the active vigilance of a leader whose goal is to ensure that standards are met; and (c) management-by-exception passive (i.e., passive corrective transactions), a situation in which leaders take action after a behavior has created serious problems (Antonakis et al., 2003; Judge & Piccolo, 2004).

Scholars often use a Multi-factor Leadership Questionnaire (MLQ) in measuring transformational, transactional, and laissez-faire leadership styles. This instrument measures transformational leadership by five subscales, transactional leadership by three subscales, and laissez-faire leadership by one scale (Eagly et al., 2003). Table 2.1 summarizes the basic operationalizations for each of the nine leadership dimensions.

Even though transformational leadership has four distinct dimensions including idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration, these dimensions usually show high inter-correlations ( $r = .83$  on average) and can be combined into one higher-order factor. This supports a one-dimensional concept of transformational leadership (Anantamula, 2010; Antonakis et al., 2003; Avolio et al., 2004).

There is almost a general consensus on the importance of effective leadership for the success of all organizations, but it is particularly important to the project context, which is a

form of temporary organization facing a high degree of uncertainty and change (Tyssen et al., 2013). Similarly, Brockhoff (2006) indicated that complex and extraordinary tasks are performed through projects, implying the important role of effective leadership. In this respect, both transactional and leadership styles are thought to enhance organizational performance (Aarons, 2006; Pieterse, Van Knippenberg, Schippers, & Stam, 2010). The question here could be whether transactional or transformational leadership has a high relevance to the success of a project despite the fact that the two styles are not mutually exclusive and some combinations of the two may constitute effective leadership (Aarons, 2006; Tyssen et al., 2013).

From a transactional leadership point of view, the contingent reward system could motivate people, which would in turn result in a higher commitment and performance. But there is usually an “authority gap” for the project manager concerning promotion because such decisions are made by the top management of a parent organization (Tyssen et al., 2013). The implication here is that contingent reward transactional leadership might not be effective in a project context. Unlike operations, projects involve activities that are relatively unique and non-repetitive, inviting innovation and creativity (Brockhoff, 2006; Gareis, 2006). Thus, managing projects by routine procedures and rules (i.e. management by exception) would also be counter-productive (Tyssen et al., 2013).

On the other hand, studies show a high relevance of transformational leadership in a project context (Anantatmula, 2010; Gundersen et al., 2012; Yang et al., 2010). Further, Tyssen et al. (2013) highlighted some arguments about how transformational leadership could be appropriate for a project environment. First, through idealized influence (charismatic behaviors), transformational leadership emphasizes the importance of collective mission and instills feelings of devotion and loyalty in the minds of the followers toward a project goal. This in turn lets the project team incorporate long-term aims into project tasks and stimulates the team to go beyond the required expectations. Second, through inspirational motivation, transformational leadership enhances followers’ motivation and commitment. Third, through intellectual stimulation, transformational leadership encourages the project team to question the status quo and to solve problems differently, and it allows the team to exercise some degree of independence. Fourth, through individualized consideration, transformational leadership recognizes the unique needs and abilities of followers and plays the roles of coach and advisor to satisfy the individual interests of project people coming from different backgrounds.

Cognizant of the above arguments, however, work on leadership in project contexts remains relatively scarce (Turner & Müller, 2005), and transformational leadership in project settings may work differently than in the context of permanent organizations (Keegan & Den Hartog, 2004). It is important to understand the relationship between transformational leadership and project outcomes better, because this will allow a better understanding of how and why a particular leadership style leads to particular project outcomes. It will also allow companies to make the best use of transformational leadership. Particularly, Keegan and Den Hartog (2004) call for more studies investigating factors that moderate or mediate the effect of transformational leadership on project outcomes. The present study identifies team-building practices as a potentially important mediator of the relationship between transformational leadership and project success. In the next section, we will discuss team-building practices.

### **2.2.3. Team-building**

In studies on practices of human resource 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, Rozell, Mullen, & Driskell, 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 goal-setting are supposed 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 supposed 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 (latent) 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 & 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 & Masterson, 2015).

### 2.3. 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. Figure 2.1 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.

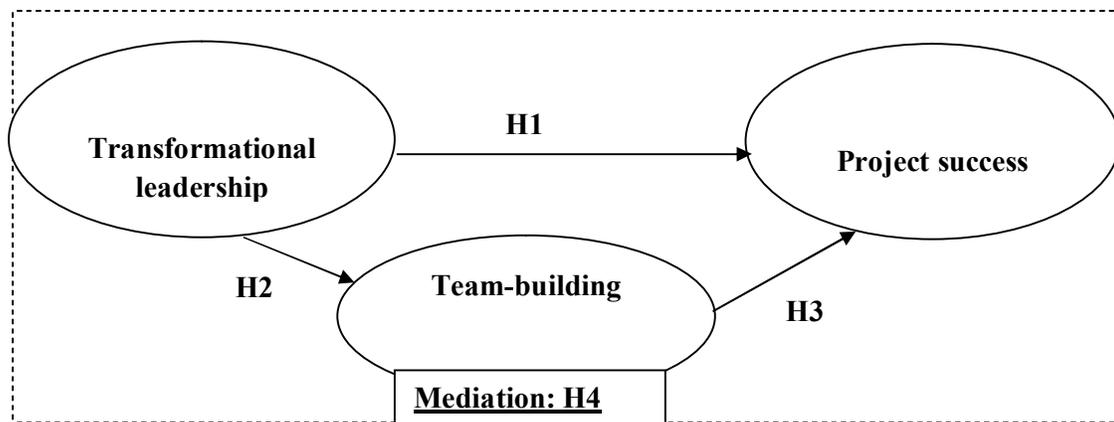


Figure 2.1: Conceptual framework of the study

Sources: Created by the authors based on Klein et al. (2009), Piccolo and Colquitt (2006), Walumbwa, Avolio, and Zhu (2008), and Yang et al. (2010)

### **2.3.1. 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 & Müller, 2005), and transformational leadership in project settings may work differently than in the context of permanent organizations (Keegan & Den Hartog, 2004).

The literature shows that appropriate behaviors by project managers play a crucial role in achieving better project success (Scott-Young & Samson, 2008; Zwikael & 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 perspectives across project teams; and emphasize the development of followers' 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.*

### **2.3.2. 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 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.*

### **2.3.3. 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, Piccolo, Jackson, Mathieu, & Saul, 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 & Samson, 2008; Zwikael & Unger-Aviram, 2010) started to examine the effects of team-building, but they used broad dimensions of HRM functions like training, pay and rewards, coordination, and empowerment, without focusing on the well-established four components of team-building (Salas, DiazGranados, Weaver, & King, 2008; Salas et al., 1999).

If such flaws in the conceptualization of the team-building interventions are avoided, team-building may be found to have positive effects on project success (Bubshait & 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, Garger, & Thomas, 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 & 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 positively influences project success.*

#### **2.3.4. 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 & 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, van Knippenberg, and Boerner (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, Peus, Weisweiler, and Frey (2013) point out that successful project performance requires trustful interaction and communication between team members.

According to Kissi, Dainty, and Tuuli (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 to 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, Chew, & Spangler, 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 & 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 & 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, Lin, Chang, & Chuang, 2013). Hence, we offer the following hypothesis:

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

## **2.4. Methods**

### **2.4.1. Research setting and participants**

Projects can be classified into different categories, among which this study considers development projects. These projects aim to improve the living conditions of a community 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 & Moe, 2008).

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

#### **2.4.2. Sample and data collection procedure**

The target institutions, representing project-based organizations, of this study 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, Kotrlik, & Higgins, 2001). From this, we obtained 300 project managers who constituted our sampling framework. These were all 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, at the level of specific projects, based on information received from the project managers. Each project manager was informed that he/she should consider only one project that was completed in the last 5 years while filling out the questionnaire. 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 2.2.

Table 2.2: 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.

### 2.4.3. Measures

#### 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 & Müller, 2015; Ngacho & Das, 2014; Todorović, Petrović, Mihić, Obradović, & Bushuyev, 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, Raz, and Shenhar (2003) use disaggregated measures of project success criteria. This study uses a composite measure of broader dimensions of project

success, based on project managers' perception of certain criteria. This approach is consistent with previous studies (Bryde, 2008; Khang & Moe, 2008; Mir & Pinnington, 2014; Pinto & Pinto, 1990; Suprpto 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.”

### **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 & Schriesheim, 2008). In order to increase the internal consistency and validity of MLQ measures, various studies (Doeleman, ten Have, & Ahaus, 2012; Tejada, Scandura, & Pillai, 2001; Tyssen, Wald, & Spieth, 2014) recommend an improved version of the MLQ. Accordingly, a transformational leadership measure comprising 13 items with higher Cronbach's alphas than the original instrument was adapted 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) and 5 (frequently, if not always).

### **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 the constructs contained in the questionnaire are indicated in Appendix 2.B.

## **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, Bradley, Kristof-Brown, & Colbert, 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; and 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 2.2 (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.

### **2.4.4. 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).

## **2.5. 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.

### **2.5.1. 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 included also 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 & Mehmood, 2011; Vinger & 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 ( $\alpha=.896$ ) 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).

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, Black, Babin, and Anderson (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 a pair (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 discriminant 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, .896, and .931 respectively (see Table 2.3). Appendix 2.A provides factor loadings for the items retained in each respective construct of the study.

Table 2.3 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.

Table 2.3: 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

All of the  $\alpha$  values for constructs are above 0.8, indicating a high degree of internal consistency in the responses (Field, 2009; Hair et al., 2010). Table 2.4 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 ( $r=0.437$ ,  $p<0.01$ ); the team-building index was also significantly correlated with project success ( $r=0.470$ ,  $p<0.01$ ) and transformational leadership ( $r=0.522$ ,  $p<0.01$ ).

Table 2.4: Correlations of study variables

Variable	1	2	3	4	5	6	7	8	9	10
1. Project success	1									
2. Transformational l.	.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

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

## 2.5.2. Hypotheses testing

Hypothesis 1 states that transformational leadership positively influences project success. Results of the hierarchical regression analysis are printed in Table 2.5. 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 ( $B=0.521$ ,  $P<0.001$ ) and uniquely explains 19.7% of the variance in project success. Hence hypothesis 1 is supported.

Table 2.5: 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
<b>Transformational leadership</b>				<b>.521***</b>	<b>.074</b>	<b>.474***</b>
R <sup>2</sup>		.073			.270	
Change in R <sup>2</sup>		.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; Of the six indicators of project types, only food security had a positive significant correlation with project success ( $B=.322$ ,  $P<0.05$ ).

Hypothesis 2 proposes that transformational leadership is positively related to team-building. The results in step 1 of Table 2.6 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 (B=0.560, P<0.001). Hypothesis 2 is therefore supported.

Table 2.6: 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
<b>Transformational leadership</b>				<b>.560***</b>	<b>.068</b>	<b>.533***</b>
R <sup>2</sup>		.078			.327	
Change in R <sup>2</sup>		.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; Of the six indicators of project types, only WASH had a positive significant correlation with project success (B=.358, P<0.05).

Hypothesis 3 states that team-building is positively related to project success. The results in step 1 of the regression in Table 2.7 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 (B=0.500, P<0.001). Hypothesis 3 is therefore supported.

Table 2.7: 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
<b>Team-building</b>				<b>.500***</b>	<b>.068</b>	<b>.479***</b>
R <sup>2</sup>		.073			.284	
Change in R <sup>2</sup>		.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

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 2.8 shows the series of regression analyses performed to test hypothesis 4. In model 1, the result showed that transformational leadership has a positive significant influence on the dependent variable, project success ( $B=.521$ ,  $P<.001$ ). 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 and the mediator variable.

The result of model 2 in Table 2.8 showed that transformational leadership has a significant positive relationship with team-building ( $B=.560$ ,  $P<.001$ ), showing that step 2 of the mediation analysis is also satisfied.

Model 3 in Table 2.8 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 ( $B=.341$ ,  $P < .001$ ). Once team-building is entered into the regression, the effect of transformational leadership on project success is reduced from  $B=.521$  to  $B=.330$ , which is step 4 of the mediation analysis. This represents a 36.6 % reduction.

Table 2.8: Regression statistics for the effect of team-building as a mediator between transformational leadership and project success

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

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

Figure 2.2 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'.

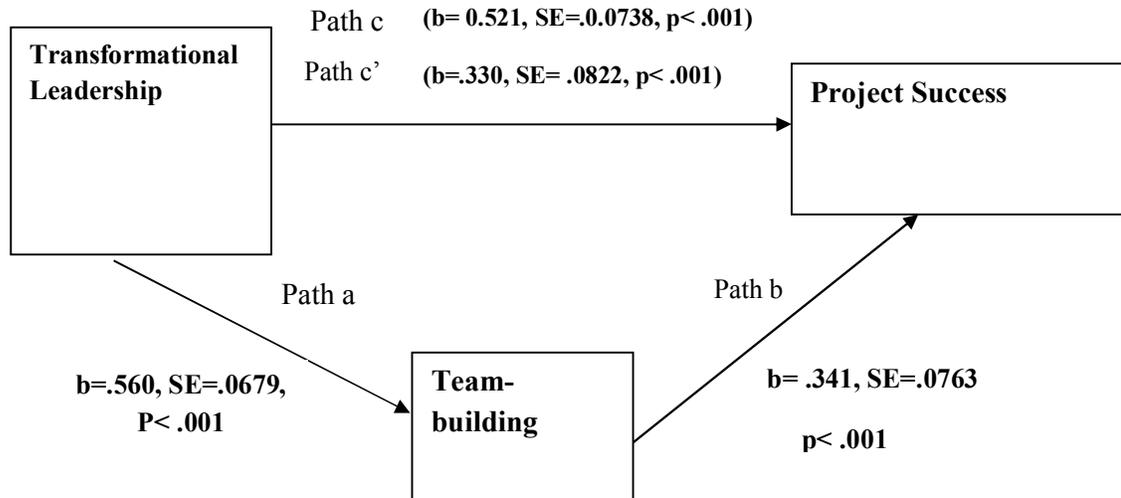


Figure 2.2: Unstandardized beta weights and standard errors representing the mediated relationship between transformational leadership and project success via team-building

A Sobel's 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.

## 2.6. 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 manager'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 classical 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 identified 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 through the partial mediating role of team-building. 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 that together motivate and empower a project team towards project success.

### **2.6.1. 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 that focus 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 & 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.

### **2.6.2. 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 & Moe, 2008;

Pinto et al., 2009; Suprpto 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 life cycle. 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 & Organ, 1986). At the time of the instrument design, we tried to reduce the common method bias by following procedural techniques recommended by Podsakoff, MacKenzie, and Podsakoff (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, Jiménez-Barrionuevo, & Gutiérrez-Gutiérrez, 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 the 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, Kaufmann, & Kraay, 2013; Ika et al., 2012). 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.

## **2.7. 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, Gillespie, Mann, & Wearing, 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.

Appendix 2.A: Assessment of factor loadings using oblique rotation by pattern matrix<sup>a</sup>

	Components		
	Team-building	Project success	Transformational leadership
Success1		.615	
Success2		.664	
Success3		.762	
Success4		.657	
Success5		.830	
Success6		.817	
Success7		.755	
Success8		.744	
Success10		.760	
Success11		.859	
Success12		.699	
Success13		.792	
Success14		.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.B: 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 for 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.

## CHAPTER THREE

### THE INFLUENCE OF PROJECT UNCERTAINTY ON PROJECT SUCCESS: DOES TEAM PROBLEM-SOLVING MATTER?<sup>3</sup>

#### Abstract

*Projects with multiple external stakeholders often face uncertainty regarding goals. Whereas a lot of literature addresses issues of uncertainty in projects, goal uncertainty remains relatively unexplored. This study employs a moderated mediation model to explore the mechanisms through which the negative influence of project goal uncertainty on project success can be mitigated. Based on data from a field survey among 224 project managers in the Non-Governmental Organization (NGO) sector in Ethiopia, we find that the interplay of project team problem-solving practices and project duration moderates the negative relationship between project uncertainty and project success. We discuss the theoretical and practical implications of these findings.*

*Key words: Project duration, project success, project uncertainty, team problem-solving*

#### 3.1. Introduction

Projects, by definition, are temporary organizations that produce unique outcomes and often are associated with uncertainties (Anantatmula, 2010). Despite the fact that project management as a discipline and profession has witnessed tremendous development over time, studies report that the rate of project failure has not been reduced (Thomas & Mengel, 2008; Williams, 2005). Thereby, the quest for ways to improve project success continues unabated.

One of the challenges project managers face in achieving project success is dealing with uncertainty (Cleden, 2009; Hong, Nahm, & Doll, 2004; Martinsuo, Korhonen, & Laine, 2014; Saunders, Gale, & Sherry, 2015; Shenhar, Dvir, Levy, & Maltz, 2001). While project planning tools such as Gantt charts, the Critical Path Method (CPM), and Program Evaluation and Review technique (PERT) help managers to organize information surrounding projects in order to make the future more predictable, unavoidably some degree of uncertainty will always remain, and this has to be dealt with by the project team during project execution (McLain, 2009; Perminova, Gustafsson, & Wikström, 2008). Consequently, there is a need

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<sup>3</sup> The editorial style of each individual chapter has been edited slightly for consistency throughout the dissertation.

for empirical studies that explore the mechanisms through which the adverse effect of project uncertainty can be mitigated.

According to Cleden (2009, p. 121), project uncertainty is “the sum of the unknown and unknowable aspects of the project, the consequences of which may threaten... [project success].” In this study, we approach project uncertainty by focusing on its sources, particularly goal-related and stakeholder-related uncertainty (Saunders et al., 2015; Ward & Chapman, 2008). The study focuses on project uncertainty emanating from fuzzy identification of stakeholders and/or stakeholders’ unclear expectations, and inability to specify a project goal (Ramasesh & Browning, 2014; Williams, 1999).

Project goal uncertainty creates many problems, which may preclude project success. Goal uncertainty usually comes from the inability to identify project stakeholders and manage their expectations (Saunders et al., 2015; Ward & Chapman, 2003, 2008). The combined effect of stakeholder uncertainty and goal uncertainty would then make managing projects very difficult. For example, if a project team lacks a full and complete understanding of project stakeholders, the team would face uncertainty, endangering goal clarity (Pich, Loch, & Meyer, 2002; Saunders et al., 2015).

Cognizant of this, Anantatmula (2010) underlines the importance of developing a culture of team problem-solving behavior, a “soft skill,” as a critical success factor in uncertain project environments. Emphasizing the importance of human resource management (HRM) in project contexts, Zwikael and Unger-Aviram (2010) find a positive relationship between team development practices and project success for long-term projects. We, therefore, propose that team-based problem-solving may weaken the negative influence of project uncertainty on project success, particularly for long-term projects, which allow for such team processes to develop.

Using field survey data from 224 project managers in the NGO sector in Ethiopia, the present study (1) examines the mediating effect of goal uncertainty on the link between stakeholder-related uncertainty and project success and (2) investigates the moderating role of the interaction between team problem-solving and project duration on the adverse influence of project uncertainty on project success.

Whitley (2006, p. 78) describes project-based organizations as those organizations in which “the knowledge, capabilities, and resources of the firm are built up through the execution of major projects.” Such organizations carry out their core operations mainly in project form, with projects being run in a more permanent context (Bredin, 2008). In this

study we look at projects from NGOs. Though NGOs form a diverse set, we select those organizations that engage in capacity development efforts by providing services to reduce poverty and improve the well-being of the population (mainly in rural areas). These “development organizations” undertake a broad spectrum of projects pertaining to, among other things, water supply, environmental protection, health care services, and livelihood interventions (Banks & Hulme, 2012; Khang & Moe, 2008).

### **3.2. Theoretical Framework**

This section presents the theoretical foundations for the core constructs of the study, namely project success, project uncertainty, and team problem-solving.

#### **3.2.1. Project success**

Project success is an important project management issue and one of the most frequently discussed topics (Belout & Gauvreau, 2004; Hanisch & Wald, 2011; Hyväri, 2006; Ika, 2009; Mir & Pinnington, 2014). The Project Management Institute (PMI) defines project success as finding an adequate balance between 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).

There is a debate in the project management literature on what constitute project success criteria (Ika, 2009; Joslin & Müller, 2015; Shokri-Ghasabeh & Kavouosi-Chabok, 2009). In the context of development projects, Khang and Moe (2008, p. 73) point out the following three different dimensions of success criteria:

(1) the efficiency of the implementation process, that is, an internally oriented measure of the performance of the project team, including such criteria as staying on schedule and on budget, meeting the technical goals of the project, and maintaining smooth working relationship[s] within the team and the parent organization; (2) the perceived quality of the project, which includes the project team’s perception of the value and usefulness of the project deliverables; and (3) the target beneficiary’s satisfaction.

### **3.2.2. Project uncertainty: Stakeholder-related uncertainty and goal uncertainty**

#### ***Overall project uncertainty***

We begin by first demarcating risk from uncertainty, as these are interrelated and confusing concepts. Cleden (2009, p. 121) captures the distinctions between risk and uncertainty in a very clear way:

A risk is an expression of a conceivable or quantifiable threat which endangers the accomplishment of one or more projects, whereas uncertainty is the sum of the unknowable aspects of the project, the consequences of which may threaten the accomplishment of one or more project goals.

Risk has attributes that include the possibility to conceive the threat it embodies; it can be quantified in terms of the likelihood and severity of its consequences; it is a manifestation of vulnerability; and its likelihood of occurrence or its consequences, if it does occur, can be reduced through a mitigation plan. This implies that we have prior knowledge about the nature, consequences, and possible solution for a given problem to be identified as a risk. The process of identifying, assessing, and mitigating a risk in order to increase the likelihood of achieving a project goal is termed as project risk management (Cleden, 2009).

On the other hand, uncertainty is a state of not knowing and a source of risk (Saunders et al., 2015). Cleden (2009) describes uncertainty as inherent and latent. The portion of inherent uncertainty that can be identified and analyzed is termed as a risk, whereas the uncertainty that remains once all the risks have been identified is the latent one.

For the purpose of this study, we consider latent uncertainty – the uncertainty that risk management cannot touch – and we approach project uncertainty in terms of its sources associated with project stakeholders and project goal uncertainty (Lechler, Edington, & Gao, 2012; Turner & Cochrane, 1993; Ward & Chapman, 2003, 2008; Williams, 1999). We will discuss stakeholder-related uncertainty and goal uncertainty in the next sections.

#### ***Stakeholder-related uncertainty in projects***

PMI (2008, p. 246) defines stakeholders in a project context as “persons and organizations such as customers, sponsors, the performing organization, and the public that are actively involved in the project, or whose interests may be positively or negatively affected by the execution or completion of the project.” These project stakeholders can be internal or external to a project team (Beringer, Jonas, & Kock, 2013; Sutterfield, Friday-

Stroud, & Shivers-Blackwell, 2006). Though managing uncertainty originating from internal stakeholders is also very important, we focus in this study on uncertainty related to external project stakeholders such as the end users, sponsors, and the government, because in development projects external stakeholders tend to be more powerful than those that are internal to the project (Aaltonen, 2011; Olander & Landin, 2008). For the NGO sector context, the primary stakeholders include intended project beneficiaries, donors (funding agencies), and the government (Brugha & Varvasovszky, 2000).

The stakeholders or parties involved in a project can be a substantial source of uncertainty (Atkinson et al., 2006; Saunders et al., 2015). This uncertainty emerges from several factors associated with each project party, including: the objectives and motivation of each party; the quality and reliability of work undertaken; the extent to which each party's objectives are aligned with the project owner's objectives; the scope for moral hazard, where one party is motivated to do things that are not in the best interests of the project owner; the actual abilities of the party; and the availability of the party. According to Ward and Chapman (2008), stakeholder-related uncertainty involves identification and definition of who the relevant stakeholders are, how they can influence a project at different stages of the project life cycle, what their project-related motives are, and the implications for the project of relationships between different stakeholders.

### ***Goal uncertainty***

In their seminal work, Turner and Cochrane (1993) explain goal uncertainty as the extent to which a project goal is well-defined or ill-defined. Uncertainty in goals represents a situation in which project requirements are ill-defined, particularly at the early stage of a project. This will in turn cause frequent project plan changes; hence, ill-defined goals propagate the adverse effect of uncertainty in the subsequent stages. Such uncertainty obstructs the functioning and effectiveness of basic project management activities such as planning, scheduling, monitoring, and control (Williams, 2005).

Wysocki and McGary (2003) elaborate a project uncertainty matrix associated with project goals by using two factors: (1) how well the project goals or requirements are understood at the beginning of the project and (2) whether the specific tasks and activities or methodology needed to execute the work of the project are known at the beginning of the project. As noted by Chiocchio and Essiembre (2009), at the outset of the project there often is only a broad understanding of the end result (project goal) and the process needed to

achieve it, implying that while projects have varying degrees of goal uncertainty these will be progressively elaborated over the lifespan of the project. If project goals continue to lack clarity for a long time over the project life cycle, stress emerges within a project team. This in turn distorts intra-team processes such as cohesion and trust, affecting project success (Chiocchio & Essiembre, 2009). Ward and Chapman (2003) also remark that goal uncertainty causes several problems, including uncertainty in estimates about project cost, duration, and quality related to particular planned activities, project controlling, and control activities.

The interesting question here is how organizations can address the adverse influence of project goal uncertainty on project success, as such uncertainty is the most important problem faced by project managers (Lenfle, 2011). As will be elaborated in the research model and hypotheses section of this paper, this study contemplates the role of team-based problem-solving in reducing the effect of project uncertainty on project success, particularly for long-term projects (Cleden, 2009; Zwikael & Unger-Aviram, 2010). We will discuss team problem-solving in the following section.

### **3.2.3. Team problem-solving**

Project teams are faced with solving the problem of how to achieve the project goals successfully (Beebe & Masterson, 2015). Problem-solving, a team-building practice (Klein et al., 2009), emphasizes the identification of major problems in the team in order to enhance task-related skills. Team members exposed to a problem-solving intervention are supposed to become involved in action planning for solutions to those problems and for implementing and evaluating those solutions (Buller & Bell, 1986). Problem-solving is an intervention whereby team members identify major problems, generate relevant information, engage in problem-solving and action planning, and implement and evaluate action plans. This intervention assumes that project teams become more effective by solving their major problems together (Sundstrom, De Meuse, & Futrell, 1990).

According to Beebe and Masterson (2015), there are six main steps in a structured problem-solving approach: (1) problem recognition and definition, (2) problem analysis, (3) generating alternative solutions, (4) selecting solutions, (5) implementing solutions, and (6) evaluating outcomes. Practicing such a structured approach helps project teams make better decisions, enhances members' satisfaction with solutions, and creates commitment to implementation. Aladwani (2002) coined the structured approach as the manifestation of problem-solving competency. Similarly, Atuahene-Gima and Wei (2011) and Sheremata

(2000) conceptualize problem-solving as a process of seeking, defining, evaluating, and implementing the solutions for a given problem. Based on this literature, we define team problem-solving as the extent to which the problem-solving practices prescribed by the structural approach are exercised by the project team. This implies that when the project team engages in problem-solving, they develop knowledge, skills, and personal traits that help them to find the right solution for project uncertainty (Shao & Müller, 2011).

### 3.3. Research Model and Hypotheses

This section presents the conceptual framework and hypothesis of the study. Figure 3.1 depicts the conceptual framework of the study with the direction of our proposed hypotheses.

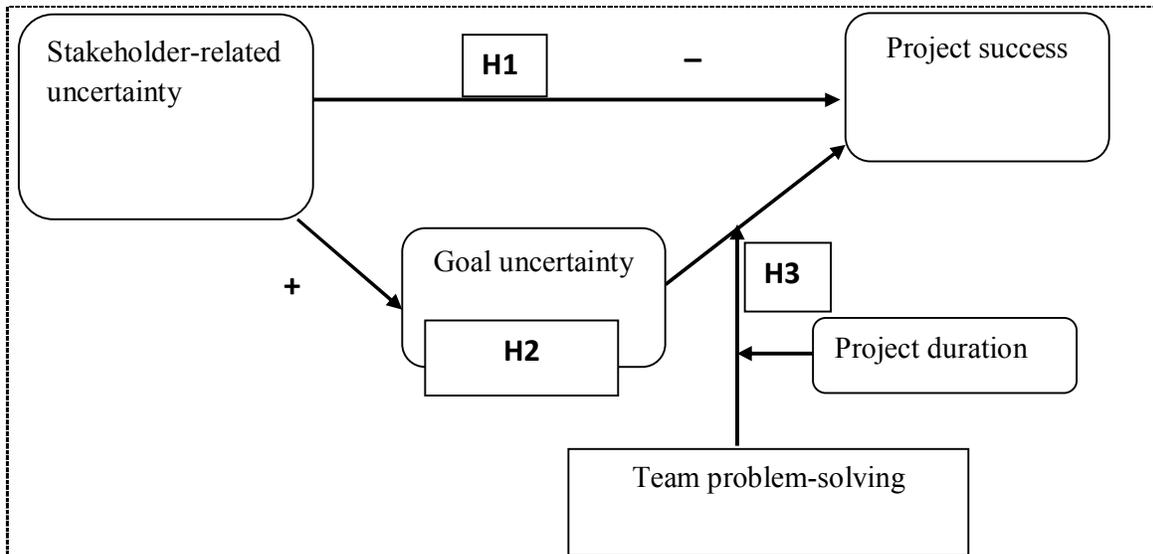


Figure 3.1: Conceptual framework of the study

#### 3.3.1. Stakeholder-related uncertainty and project success

Projects are likely to be influenced by the agenda of various stakeholders such as project beneficiaries, sponsors, governments, and other key external stakeholders (Beringer et al., 2013; Sutterfield et al., 2006). In connection with this, Jaafari (2001) underlines project stakeholders as one of the sources of project uncertainty that result in project failure. Similarly, in their theoretical work, Ramasesh and Browning (2014) show that a project that does not properly entertain the desires of its stakeholders, such as clients and end users, faces challenges in meeting its objectives.

Stakeholder theory underscores that stakeholders perceive that they have a stake or claim in the activities and outcome of a project. This inherent perception inspires stakeholders to have certain expectations, and consequently they engage in certain types of behavior, sometimes constructive and sometimes destructive (Bourne & Walker, 2006). This implies that stakeholder-related uncertainty occurs when a project-based organization or a project team fails to consider the motives and expectations of external stakeholders. This could cause stakeholders to develop a negative perception of a project and consequently show behaviors incongruent with the project objectives. They may even restrain from participation at the time of project implementation, which would ultimately have negative consequences for project success (Sutterfield et al., 2006). The case study of a construction project by Olander and Landin (2005) confirms that failure to identify the stakeholder groups and manage their demands at the outset severely obstructs the implementation stage of a project. This in turn causes cost overruns, exceeded time schedules, and incomplete planned project functionality.

The above explanations imply that when an organization identifies and manages the expectations of its external project stakeholders (stakeholder-related uncertainty), the likelihood of project success will be higher. In contrast, failure to properly identify the project stakeholders and manage the stakeholders' expectations in the early stage of project management is likely to lead to project failure (Anantatmula, 2010; Sutterfield et al., 2006). Based on the above arguments, we posit the following hypothesis:

*Hypothesis 1: Stakeholder-related uncertainty is negatively related to project success.*

### **3.3.2. The mediating role of goal uncertainty**

Goal uncertainty represents the difference between predicted and actual outcomes, which is mainly attributable to the limited availability of information for decision-making, including stakeholders' unclear expectations (Ward & Chapman, 2003). The project goal-setting process becomes more difficult as uncertainty coming from project stakeholders increases (Beringer et al., 2013; Shenhar, 2001). When the expectations of project stakeholders and their preferred level of interaction are not clearly identified at the outset, the project team may have difficulty in setting a clear project goal, which distorts proactive planning since the information needed to make decisions is not available (Jaafari, 2001).

Jun, Qiuzhen, and Qingguo (2011) indicate that the absence of understanding of stakeholder requirements within a project team prevents the project goal from being comprehensive and unambiguous. This in turn makes project outcomes that cannot meet the

stakeholders' expectations and needs more likely. Similarly, Ward and Chapman (2003) explain that uncertainty associated with project stakeholders obscures goal clarity, underlining the connection between stakeholder-related uncertainty and goal uncertainty.

By the same token, for development projects, a project team that does not identify the stakeholders at the outset will have trouble grasping the motives of the project beneficiary. This triggers uncertainty coming from stakeholders, which would in turn make the project goal ambiguous and possibly unrealistic. As a result of goal uncertainty, there will also be a high possibility for the project team to err in estimating the budget and the project duration. This would hinder the accuracy of project scope, resulting in failure to deliver the project as per the specifications. In other words, failure to consider the real expectations and motives of the stakeholders could create a lack of clarity at the time of goal-setting that breeds goal uncertainty, endangering project success. This leads us to formulate the following hypothesis:

*Hypothesis 2: Goal uncertainty mediates the relationship between stakeholder-related uncertainty and project success.*

The argumentation developed above suggests that goal uncertainty and stakeholder uncertainty put great pressure on project success. At this point, we argue that a project team can use team problem-solving techniques in order to successfully accomplish objectives in spite of goal uncertainty. Thus, the negative effect of project goal uncertainty on project success can be moderated by team problem-solving practices. In the next section, we will put forward our arguments on the moderating role of problem-solving.

### **3.3.3. The moderating role of problem-solving**

Research shows that coping with a high level of uncertainty requires multiple and diverse perspectives so as to rapidly acquire and process information. This implies that a project team working in a high uncertainty situation must find a way to avoid the adverse influence of project uncertainty on project success. This entails exerting extraordinary commitment, effort, and focus (Ensley, Pearce, & Hmieleski, 2006).

We argue that the negative effects of stakeholder-related uncertainty and goal uncertainty on project success are likely to be moderated by team problem-solving. Clenden (2009) asserts that classical problem-solving techniques can reduce project uncertainty in such a way that an area of uncertainty is restated as a problem (or set of problems), and then a solution is sought. As noted by Davies and Brady (2016), an “experiential model” of project management – which relies on flexibility and real-time learning – is required to deal with project

uncertainty. Team problem-solving practices create opportunities for team members to interact, learn from each other, and be flexible. Through the problem-solving process, a project team can break down a problem like goal uncertainty into a set of operational plans so that it is possible to find, develop, and implement effective solutions leading to project success (Atuahene-Gima & Wei, 2011).

Furthermore, research indicates that problem-solving practices, competency, and skills are important to reduce the negative consequences of project uncertainty on project success. In IT system development projects, Li et al. (2011) found that the influence of project uncertainty on project success varies with the level of team-based problem-solving behavior in such a way that effective problem-solving positively moderates the relationship. Aladwani (2002) also indicated that practicing proper problem-solving activities in a project context (particularly in an uncertain situation) would improve the performance of the project team and project success.

Despite the abundance of positive findings about the effectiveness of problem-solving, the literature recognizes that projects are not “one size fits all,” implying that team problem-solving practices are not equally effective in all project contexts (Shenhar, 2001; Turner & Müller, 2005).

Previous research considers project context in different ways, but distinctions are commonly based on project size (budget and team size) and project duration (Papke-Shields, Beise, & Quan, 2010). In the present study, we assume that problem-solving works well if adequate time is given for its cognitive process as well as for the implementation of the new solution. Thus, the interaction between project duration and problem-solving would reduce the negative influence of project uncertainty on project success. According to Zwikael and Unger-Aviram (2010), the effectiveness of team-building practices in short and long projects is dissimilar. In line with this, we expect that problem-solving practices would be more effective for long-term projects than for short-term projects. Consequently, we posit the following hypothesis:

*Hypothesis 3: The interplay of problem-solving and project duration will moderate the strength of the mediated relationship between stakeholder-related uncertainty and project success via goal uncertainty, such that the mediated relationship will be weaker in longer projects than in shorter projects.*

### **3.4. Research Methods**

We employed a questionnaire survey to collect the empirical data and a moderated mediation model for data analysis. The following section presents details regarding research setting, sampling procedure, measures for the constructs and variables of the study, and methods of data analysis.

#### **3.4.1. Research setting and participants**

The research setting is NGOs that undertake projects on a regular basis and that represent project-based organizations. Data were gathered from project managers who are at the forefront of managing projects in the Ethiopian NGO sector.

#### **3.4.2. Sample and data collection procedure**

The target institutions of this study were NGOs that undertake development projects aiming at 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 are directly involved in such projects. For a target population that is geographically dispersed, the literature recommends a multi-stage random sampling technique (Babbie, 2010; Saunders et al., 2009). Accordingly, by using a two-stage sampling technique, we first randomly selected 100 NGOs to ensure the representativeness of the institutions engaging in development projects (Bartlett et al., 2001). Thereby, we obtained 300 project managers, who constituted our sampling framework. These were all 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 collection period ran from February 2015 to April 2015. Each project manager was informed that, while filling out the questionnaire, he/she should consider only one project that was 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 224 completed responses, representing a usable response rate of 74.7%.

In our sample, there were 181 men (80.8%) and 43 women (19.2%). Regarding their highest level of qualification, 67.4% of managers (n=151) had a master's degree, and the remaining 32.6% (n=73) had a bachelor's degree. Of the project managers, 52.2% worked for international NGOs (n=117) and 47.8% (n=107) for local NGOs. On average, the participants

had 5.6 years of experience as project managers in NGO sector. The mean organization or firm's age was about 23.6 years, with the number of employees ranging from 3 to 2,000. The mean project duration and the mean project team size were almost 38 months and 16 team members, respectively.

From sampled projects, food security projects and water supply/sanitation/hygiene projects had the highest frequency, with 34.8% (n=78) and 18.8% (n=42) respectively. Other project types include community/family-based child development, health care services, capacity building projects, environment-related projects, and alternative low-cost energy projects, with percentages ranging from 3.6 to 14.7.

### **3.4.3. Measures**

#### ***Project success***

For a measure of project success, scholars distinguish between task-related project outcomes (consisting of quality/effectiveness and adherence to budget and schedule) and psychological outcomes (Hoegl & Gemuenden, 2001; Ika, 2015; Pinto et al., 2009; Suprpto et al., 2015). For the purpose of this study, we consider only the task-related outcomes of project success, because project uncertainty mainly influences project effectiveness and efficiency (McLain, 2009; Perminova et al., 2008). Shortfalls in project performance are usually reported in terms of budget and time overruns and discrepancy between the actual and intended outcomes (Papke-Shields et al., 2010).

To this end, we measured project success by quality performance (i.e. whether project specifications were met) and efficiency requirements (cost and schedule performance). This approach is in line with how previous empirical work by Beringer et al. (2013), Hoegl and Gemuenden (2001), and Suprpto et al. (2015) defined project effectiveness and efficiency. Each project manager assessed each of these items on a Likert scale of 1–5 ranging between “strongly disagree” and “strongly agree.”

#### ***Stakeholder-related project uncertainty***

In line with the context of NGO sector development projects, we developed five items to measure “external” project stakeholders-related uncertainty based on the works by Atkinson et al. (2006) and Ward and Chapman (2008). We use a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree), reverse-coded to reflect project uncertainty.

### ***Goal uncertainty***

The items for the goal uncertainty measure have been adapted by reversing the items of goal clarity developed by Hoegl and Parboteeah (2003). Similar to stakeholder-related uncertainty, each item was presented in such a way that the greater the score, the higher the extent of goal uncertainty.

### ***Team problem-solving***

For a measure of problem-solving, we borrowed five items from the team-building measure developed by Aga, Noorderhaven, and Vallejo (2016).

### ***Control variables***

The age and size of the organization performing the project; the project team size; and the project manager's experience, gender, and educational level have been demonstrated to influence project success, so these variables were included as covariates (Barrick et al., 2007). In addition, we included NGO category and project type as control variables. The measures for 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 Appendix 1 (Health care service project was the reference category); and project team size as a continuous variable measured by the number of team members.

The measurement items for each of the constructs contained in the questionnaire are indicated in Appendix 3.B.

#### **3.4.4. Data analysis**

We undertook the analysis of the data in different stages. First, we undertook exploratory and confirmatory analyses for the constructs in the study along with reliability and validity tests. Second, we ran a hierarchical multiple regression analysis to test hypothesis 1, by entering the control variables in step 1 and stakeholder-related uncertainty in step 2.

In the third stage, we investigated the mediating effect of goal uncertainty on the relationship between stakeholder-related uncertainty and project success (hypothesis 2). In testing the mediated relationship, we adopted the 4-step method of Baron and Kenny (1986). For a variable to be considered as a mediator of an outcome, four specific conditions must be satisfied: (1) The independent variable must significantly affect the dependent variable, (2) the independent variable must significantly affect the mediator, (3) the mediator must significantly affect the dependent variable, and (4) the direct effect of the independent variable (in this case, stakeholder-related uncertainty) on the dependent variable (project success) is weakened when the mediator (goal uncertainty) is present; this is termed as a full mediation when the direct effect of the independent variable becomes insignificant or partial mediation when its coefficient (B) significantly drops at this step. In addition to these four conventional steps of the 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).

Next, we examined four conditions for a moderated mediation model to test hypothesis 3 (Muller et al., 2005; Preacher, Rucker, & Hayes, 2007): (a) significant effect of stakeholder-related uncertainty (X) on project success (Y), (b) significant effect of the mediator (project goal uncertainty) on the relationship between stakeholder-related uncertainty and project success, and (c) significant interaction between the mediator (project goal uncertainty) and the interplay of the moderators (problem-solving and project duration) in predicting the outcome variable (project success). To assess this third condition, we ran a hierarchical multiple regression analysis, involving control variables in the first step, all three independent variables (goal uncertainty, problem-solving, and project duration) in the second step, all three pairs of two-way interaction terms in the third step, and the three-way interaction term in the fourth step. The fourth condition entails assessing conditional indirect effect of stakeholder-related uncertainty on project success via goal uncertainty, across low or high levels of the moderators (the interplay of problem-solving and project duration). The last condition, which is the essence of moderated mediation, establishes whether the strength of the mediation through goal uncertainty differs across the levels of the moderators (Preacher et al., 2007). For the last condition, we conducted a moderated mediation analysis using model 18 of the PROCESS for SPSS developed by Hayes (2013) to test the indirect effect of stakeholder-related uncertainty on project success through goal uncertainty.

All the independent variables were mean-centered before calculation of the product terms so as to reduce the influence of multicollinearity problems and allow meaningful interpretation of coefficients. The three-way interaction term should be significant in the regression equation in order for the interaction to be interpretable (Dawson & Richter, 2006; Hayes, 2013). According to Preacher et al. (2007), moderated mediation (i.e., the mediation is moderated) occurs when the strength of an indirect effect is contingent on the level of a moderator. We applied conventional procedures for plotting simple slopes to interpret the interaction effects at one standard deviation above and below the mean of the moderator variables (Dawson & Richter, 2006).

Lastly, we tested for common method variance. In a situation where a single method is used to collect data on both the dependent and independent variables at the same time from the same source, common method bias variance might erroneously influence the analysis result (Chang, Van Witteloostuijn, & Eden, 2010). To check this problem, we employed Harmon's single factor test (using an un-rotated solution), and the result indicated that four factors were extracted, with a total variance of 71.6% and the first factor accounting for only 39.3% of total variance. Since no one factor can represent all indicators, common method variance is not a major concern in this study.

### **3.5. Results**

#### **3.5.1. Factor analysis, reliability, and validity tests**

For all four major constructs of the study, namely project success, stakeholder-related uncertainty, goal uncertainty, and problem-solving, the results of principal factor analyses produced acceptable values for a sample-size test, with KMOs above 0.5 (Field, 2009). The project success factor explains 67.3% of variability in its three items, with KMO of 0.67,  $p < 0.001$ , and a Cronbach's alpha of 0.76. For stakeholder-related uncertainty, a principal component factor analysis resulted in a good and reliable factor that explains 66.4% of variability in its five items, with KMO of .84,  $p < 0.01$ , and a Cronbach's alpha of 0.87. The goal uncertainty factor explained 80.6% of the variability in its three items, with KMO of .74,  $P < 0.001$ , and a Cronbach's alpha of .88. A single factor for problem-solving with five items explained 71.3% of the variability, with KMO of .82,  $p < .001$ , and a Cronbach's alpha of .898. Then, we computed composite means for each of the constructs by averaging their respective indicators (items).

Following exploratory analysis, we checked for discriminant validity to test whether the constructs are different from each other. Using Promax oblique rotation for the four major constructs, loading values for each indicator exceed 0.7 except for one item of project success (0.59), showing that the constructs are distinct from each other (see Appendix 3.C). Discriminant validity is also established when the square root of the average variance extracted (AVE) is larger than each other variable's correlation coefficient to the variable corresponding to the AVE value (Farrell, 2010). In Table 3.1, the square roots of the AVEs (diagonal values under correlations) are higher than the associated component correlations (off-diagonal values), thus exhibiting discriminant validity.

All of the  $\alpha$  values for constructs are 0.76 and more, indicating a high degree of internal consistency in the responses (Field, 2009; Hair et al., 2010). The inter-correlations (Table 3.1) among the variables reflect our expectations. As predicted, a significant and negative correlation exists between stakeholder-related uncertainty and project success ( $r=-.344$ ,  $P=<0.01$ ). Similarly, the correlation between goal uncertainty and project success is negative and significant ( $r=-.517$ ,  $P=<0.01$ ). In addition, the positive significant correlation between stakeholder-related uncertainty and goal uncertainty ( $r=.319$ ,  $p<0.01$ ) lends support for the indication of mediation to exist. Table 3.1 summarizes the basic descriptive statistical information about each construct used in this study.

Table 3.1: Descriptive statistics

	No. items	Mean	SD	Cronbach's Alpha	AVE	Correlations and AVE				
						1	2	3	4	5
Project success (1)	3	4.01	0.813	.76	0.519	<b>0.720</b>				
Stakeholder-related uncertainty (2)	5	1.86	0.686	.87	0.583	-.344**	<b>0.763</b>			
Goal uncertainty (3)	3	1.61	0.678	.88	0.712	-.517**	.319**	<b>0.844</b>		
Problem-solving (4)	5	4.03	0.695	.89	0.639	.279**	-.478**	-.372**	<b>0.799</b>	
Project duration (5) <sup>a</sup>		38.11	17.99	-	N/A	-.099	-.021	.123	-.037	N/A

Notes: \*\* Correlation is significant at the 0.01 level (2-tailed); N=224; the diagonal elements (in bold) are the square root of the AVEs; non-diagonal elements are zero correlations among the constructs; AVE values are N/A (not applicable) to (a) single item construct.

### 3.5.2. Hypothesis testing

Hypothesis 1 states that stakeholder-related uncertainty is negatively related to project success. The results in the first column of Table 3.2 show that stakeholder-related uncertainty has a negative significant correlation with project success ( $B=-0.396$ ,  $p<0.001$ ). Stakeholder-related uncertainty uniquely explains 10.4% of the likelihood of project failure. Hence, hypothesis 1 is supported.

Table 3.2: The effect of stakeholder-related uncertainty on project success

	(1) Project success	(2) Project success
Gender	0.295* (0.141)	0.221 (0.134)
Level of education	-0.166 (0.124)	-0.166 (0.117)
Experience	0.0137 (0.0134)	0.00515 (0.0127)
Firm age	-0.00260 (0.00548)	0.00152 (0.00525)
Firm size	-0.000118 (0.000148)	-0.000150 (0.000140)
Firm category	0.0249 (0.118)	0.0113 (0.111)
Project team size	0.00180 (0.00401)	0.000529 (0.00380)
Stakeholder-related uncertainty		-0.396*** (0.0777)
_cons	3.769*** (0.244)	4.594*** (0.282)
<i>N</i>	224	224
<i>R</i> <sup>2</sup>	0.060	0.164
<i>R</i> <sup>2</sup> - change	0.06	0.104

Notes: Standard errors in parentheses, \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Seven types of development projects were identified from the survey of 236 projects. Six dummy variables of project types were created and used as control variables for hypothesis testing. Their values are not presented in this table or the subsequent tables for the purpose of brevity.

Hypothesis 2 states that goal uncertainty mediates the negative relationship between stakeholder uncertainty and project success. Following the steps outlined by Baron and Kenny (1986), Table 3.3 presents the results of a series of multiple regressions.

Table 3.3: The mediating role of goal uncertainty

	(1) Project success	(2) Goal uncertainty	(3) Project success
Stakeholder-related uncertainty	-0.396*** (0.0777)	0.326*** (0.0655)	-0.216** (0.0731)
Gender	0.221 (0.134)	0.0484 (0.113)	0.248* (0.119)
Level of education	-0.166 (0.117)	0.0197 (0.0987)	-0.155 (0.104)
Experience	0.00515 (0.0127)	0.00228 (0.0107)	0.00640 (0.0113)
Firm age	0.00152 (0.00525)	0.000540 (0.00442)	0.00181 (0.00466)
Firm size	-0.000150 (0.000140)	0.0000879 (0.000118)	-0.000102 (0.000125)
Firm category	0.0113 (0.111)	0.124 (0.0938)	0.0795 (0.0994)
Project team size	0.000529 (0.00380)	-0.00396 (0.00320)	-0.00165 (0.00339)
Goal uncertainty			-0.550*** (0.0730)
_cons	4.594*** (0.282)	0.984*** (0.238)	5.135*** (0.261)
<i>N</i>	224	224	224
<i>R</i> <sup>2</sup>	0.164	0.147	0.343

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

Column 1 in Table 3.3 shows that stakeholder-related uncertainty (the independent variable) is significantly correlated with project success, which is the outcome variable ( $B = -0.396$ ,  $p < 0.001$ ), thereby satisfying the first condition for mediation. In column 2, stakeholder-related uncertainty is significantly correlated with goal uncertainty, which is the

mediator ( $B=0.326$ ,  $p<0.001$ ), meeting the second condition for mediation. Column 3 indicates that goal uncertainty is significantly and negatively correlated with project success ( $B=-0.550$ ,  $p<0.001$ ), satisfying the third condition for mediation. In addition, as indicated in column 3, the coefficient of stakeholder-related uncertainty dropped from ( $B=-0.396$ ,  $P<0.001$ ) to ( $B=-0.216$ ,  $p<0.001$ ), a 45.5% drop when both the independent and the mediator variables were entered into the model, implying that the fourth condition for mediation is satisfied.

To further assess the significance of the indirect effect of stakeholder-related uncertainty on project success through goal uncertainty, we ran a Sobel test. The result (Sobel test statistic=-4.15,  $SE=0.043$ ,  $p<0.001$ ) shows that goal uncertainty partially mediates the negative significant relationship between stakeholder-related uncertainty and project success.

Hypothesis 3 requires a moderated mediation analysis, in which we followed the four steps outlined by Preacher et al. (2007). In the first step, we examined the significant effect of stakeholder-related uncertainty on project success. This has been confirmed by hypothesis 1, and Table 3.3 presents these significant results. The second condition for moderated mediation has also already been supported; goal uncertainty partially mediates the negative relationship between stakeholder-related uncertainty and project success (see Table 3.3). Next, we tested the moderating effect of the interplay of problem-solving and project duration in the negative relationship between goal uncertainty and project success using a hierarchical multiple regression analysis for moderation. Column 4 in Table 3.4 shows that the three-way interaction term is significantly and positively correlated with project success ( $B=0.022$ ,  $p<0.01$ ), supporting condition 3 for moderated mediation.

Table 3.4: The moderating effect of the interplay of problem-solving and project duration on goal uncertainty

	(1) Project success	(2) Project success	(3) Project success	(4) Project success
Gender	0.295* (0.141)	0.268* (0.122)	0.273* (0.122)	0.308* (0.120)
Level of education	-0.166 (0.124)	-0.153 (0.106)	-0.156 (0.106)	-0.196 (0.104)
Experience	0.0137 (0.0134)	0.00968 (0.0116)	0.00729 (0.0115)	0.00729 (0.0112)
Firm age	-0.00260 (0.00548)	-0.000130 (0.00474)	0.00109 (0.00473)	0.00217 (0.00463)
Firm size	-0.000118 (0.000148)	-0.0000911 (0.000128)	-0.0000915 (0.000129)	-0.000121 (0.000126)
Firm category	0.0249 (0.118)	0.0940 (0.101)	0.0872 (0.101)	0.0921 (0.0987)
Project team size	0.00180 (0.00401)	-0.00121 (0.00346)	-0.00109 (0.00346)	-0.0000718 (0.00339)
Goal uncertainty centered		-0.582*** (0.0772)	-0.548*** (0.0793)	-0.574*** (0.0780)
Problem-solving centered		0.0836 (0.0752)	0.0937 (0.0779)	0.0157 (0.0799)
Project duration centered		-0.00130 (0.00279)	-0.00211 (0.00278)	0.00136 (0.00292)
Int_1			-0.0354 (0.102)	-0.114 (0.103)
Int_2			-0.0126* (0.00489)	-0.00823 (0.00497)
Int_3			-0.00616 (0.00480)	-0.00433 (0.00473)
Int_4				0.022** (0.00667)
_cons	3.769*** (0.244)	3.837*** (0.212)	3.816*** (0.212)	3.757*** (0.208)
<i>N</i>	224	224	224	224
<i>R</i> <sup>2</sup>	0.060	0.320	0.343	0.375
<i>R</i> <sup>2</sup> - change	0.060	0.260	0.023	0.0322

Notes: Standard errors in parentheses, \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ . Int\_1=goal uncertainty\*problem-solving; Int\_2=goal uncertainty\*project duration; Int\_3=problem-

solving\*project duration; Int\_4=goal uncertainty\*problem-solving\*project duration.

We then further examined whether the interplay of problem-solving and project duration moderates the indirect effect of stakeholder-related uncertainty on project success through goal uncertainty (condition 4 for moderated mediation). For this, we ran a moderated mediation model 18 of the PROCESS for SPSS designed by Hayes (2013). Table 3.5 shows that a three-way interaction is significantly and positively correlated with project success ( $B=0.0197$ ,  $p<0.01$ ), lending support for hypothesis 3.

Table 3.5: The moderating effect of the interplay of problem-solving and project duration on the indirect effect of stakeholder uncertainty

	Project success
Gender	0.273*(0.119)
Level of education	-0.200(0.103)
Experience	0.00499(0.0111)
Firm age	0.00426(0.00464)
Firm size	-0.000113(0.000125)
Firm category	0.0767(0.0976)
Team size	-0.000314(0.00335)
Goal uncertainty_centered	-0.531*** (0.0788)
Stakeholder uncertainty_centered	-0.203* (0.0797)
Problem-solving_centered	-0.0525(0.0832)
Project duration_centered	0.000132(0.00293)
Problem-solving*project duration	-0.00417(0.00467)
Goal uncertainty*problem-solving	-0.142(0.102)
Goal uncertainty* duration	-0.00798(0.00490)
Goal uncertainty*problem-solving*project duration	0.0197** (0.00662)
_cons	3.762*** (0.206)
<i>N</i>	224
<i>R</i> <sup>2</sup>	0.395

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

### 3.6. Discussion

Our study addresses the mechanisms through which the negative influence of project uncertainty (in terms of stakeholder uncertainty and goal uncertainty) on project success can be mitigated. Through exploration of processes of mediation and moderation, we proffer that the interplay of project team problem-solving practices and project duration moderates the negative relationship between project uncertainty and project success. Data from a field survey among 224 project managers in NGO sector in Ethiopia supports our model.

The findings of this study indicate that stakeholder-related uncertainty has a significant negative direct and indirect influence on the delivery of successful project outcomes. The finding that stakeholder-related uncertainty negatively influences project success is not surprising and is in line with other studies on project uncertainty (Saunders et al., 2015; Ward & Chapman, 2008). More importantly, our study explicates the mediating role of goal uncertainty in the adverse effect of stakeholder-related uncertainty on project success. This shows that stakeholder-related uncertainty gives rise to goal uncertainty, which negatively affects project performance.

Our most important contribution relates to the moderating role of the interaction between team problem-solving competence and project duration in curbing the negative direct effect of goal uncertainty and the indirect effect of stakeholder-related uncertainty on project success.

Using PROCESS for SPSS, we further examined the role of the interplay of team problem-solving and project duration in curbing the negative effect of goal uncertainty on project success. Table 3.6 shows the moderating effect of the joint interaction of problem-solving and project duration in weakening the direct effect of goal uncertainty on project success. For long projects, problem-solving reduces the negative effect of goal uncertainty on project success. This shows that the significant role of problem-solving is more pronounced for longer projects (In our sample, the long-term projects have durations of 56 months and above).

Table 3.6: Conditional effect of goal uncertainty on project success at values of the moderators

Project duration (in months)	Team problem-solving	Effect	Significance level (p)
20.1 (Short)	-.6948 (Never)	-.0788	P<0.01
20.1 (Short)	.0000 (Sometimes)	-.4261	
20.1 (Short)	.6948 (Often)	-.7735	
38.1 (Medium)	-.6948 (Never)	-.4966	P>0.05
38.1 (Medium)	.0000 (Sometimes)	-.5743	
38.1 (Medium)	.6948 (Often)	-.6520	
56.1 (Long)	-.6948 (Never)	-.9144	P<0.05
56.1 (Long)	.0000 (Sometimes)	-.7224	
56.1 (long)	.6948 (Often)	-.5304	

Notes: The values one SD below the mean, the mean (zero), and one SD above the mean were taken as “never,” “sometimes,” and “often,” respectively, for team problem-solving.

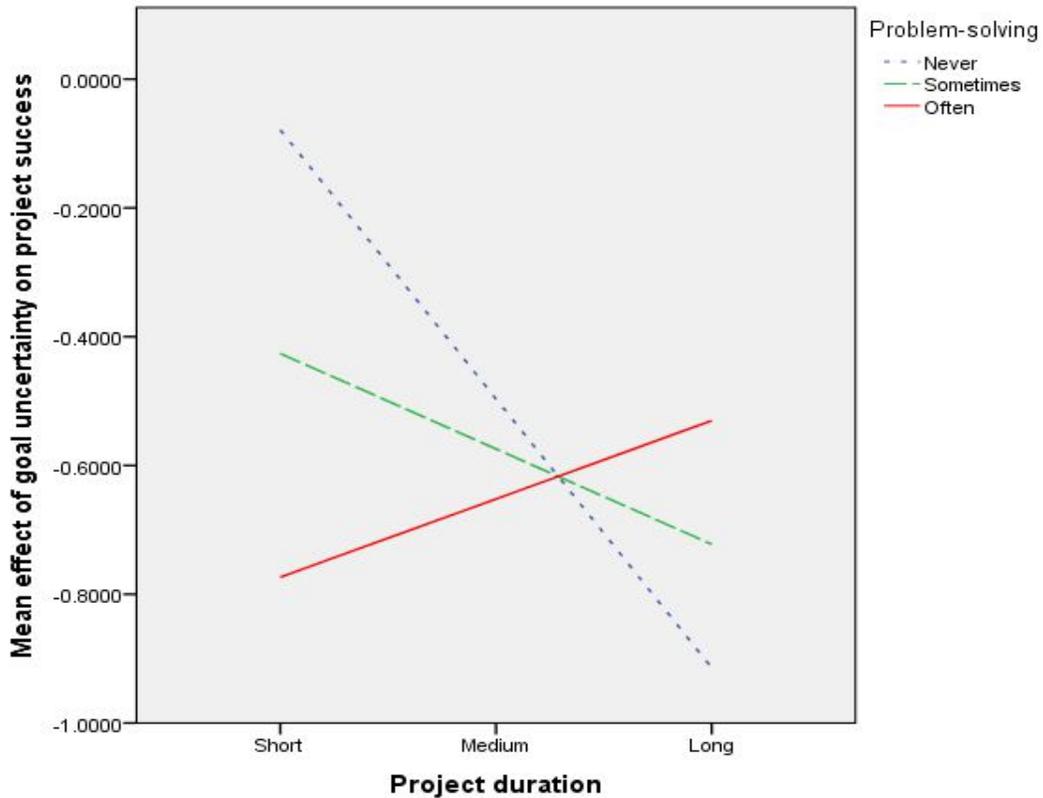


Figure 3.2: Conditional effect of goal uncertainty on project success at the values of project duration and problem-solving

Using the data in Table 3.6, Figure 3.2 shows that the negative effect of goal uncertainty on project success is smaller for long-term projects than short-term projects when the practice of team problem-solving is applied often. Similarly, the negative effect of goal uncertainty on project success becomes stronger for long-term projects than for short-term projects if there is no team problem-solving practice.

Furthermore, the interplay of problem-solving and project duration significantly moderates the negative indirect effect of stakeholder-related uncertainty on project success. Table 3.7 presents the conditional indirect effects of stakeholder-related uncertainty (through the mediating role of goal uncertainty) on project success at different values of problem-solving and project duration.

Table 3.7: Conditional indirect effect of stakeholder-related uncertainty (through the mediating role of goal uncertainty) on project success at values of the moderators

Team problem-solving	Project duration (in months)	Effect
-.6948	20.1	-.0141
-.6948	38.1	-.1416
-.6948	56.1	-.2690
.0000	20.1	-.1264
.0000	38.1	-.1732
.0000	56.1	-.2200
.6948	20.1	-.2386
.6948	38.1	-.2048
.6948	56.1	-.1711

Notes: The values one SD below the mean, the mean (zero), and one SD above the mean were taken as never, sometimes, and often for team problem-solving, respectively.

Using the data in Table 3.7, Figure 3.3 shows that the negative indirect effect of stakeholder uncertainty (through the mediating role of goal uncertainty) on project success is smaller for long-term projects than for short-term projects when the practice of team problem-solving is applied often. Similarly, the negative indirect effect of stakeholder uncertainty (through the mediating role of goal uncertainty) on project success becomes stronger for long-term projects than short-term projects if there is no team problem-solving practice.

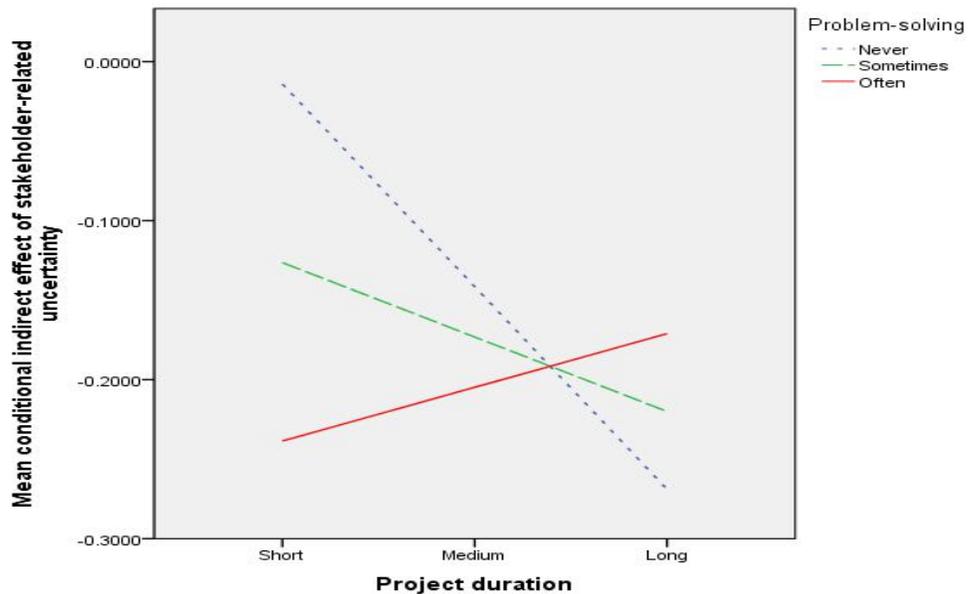


Figure 3.3: Conditional indirect effect of stakeholder-related uncertainty on project success at values of the moderators (problem-solving and project duration)

The significant damper effect of problem-solving for longer projects does make sense because uncertainty becomes more problematic as the project duration increases. The work by Johansen, Halvorsen, Haddadic, and Langlo (2014) also confirms that a classical project planning process cannot foresee all potential threats that may surface after 3 years (for projects with a long time span), signifying the importance of problem-solving for longer projects.

### **3.6.1. Theoretical and practical implications**

Our work contributes to our understanding of how managers can deal with goal uncertainty in projects. We focus on stakeholder-related uncertainty as an important antecedent of goal uncertainty, and we find that goal uncertainty partially mediates the negative effect of stakeholder-related uncertainty on project success. Hence, our study contributes to efforts to explore the relationship between stakeholder-related uncertainty and project success.

We also contribute to knowledge about the management of relationships around projects by highlighting that proper identification of project stakeholders and management of their motives and expectations is of particular importance in dealing with project uncertainty. Another contribution pertains to the key factors in managing uncertainty (Saunders et al., 2015). In line with earlier work, our study indicates that team problem-solving as a set of “soft” skills is of paramount importance to attenuate the impact of uncertainty (in this case, both the direct effect of goal uncertainty and the indirect effect of stakeholder-related uncertainty) on project success.

Our study has several practical implications. First, NGO sector organizations engaging in development projects need to effectively identify and manage the agendas of their external stakeholders in order to increase the likelihood of project success. The project stakeholder management strategy framework designed by Sutterfield et al. (2006) could serve as a practical guideline in managing uncertainty that emerges from the project stakeholders. This helps project managers to control the likelihood of project failure as well as helping them to establish strong relationships with project stakeholders, leading to a successful project.

The second practical implication of our study is the need to contain goal uncertainty. As we have demonstrated, only 32.6% of the variation in goal uncertainty is explained by external stakeholder-related uncertainty, showing that a considerable variation in goal uncertainty may come from internal factors. But goal uncertainty explains 55% of the

variation in project success in development projects. This shows that a project team and parent organization should work together to improve project goal clarity. For example, Cleeden (2009) emphasizes effective knowledge-sharing and communication practices by project organizations as an important strategy to increase goal clarity for better project success.

Third, we have demonstrated that problem-solving plays an important moderating role by reducing the negative effect of goal uncertainty on project success, particularly for long-term projects. One practical implication of this finding is the importance of problem-solving practices in an effort to attenuate the adverse influence of project uncertainty in development projects. Thus, project-oriented organizations need to give due attention to the practices of a structured team problem-solving approach. This approach comprises active participation by a project team in project-related problem identification and definition, searching for alternative solutions, selecting the best alternative and preparing its action plans, and implementing the proposed solution. The effectiveness of team problem-solving on project uncertainty could be augmented by competence enhancement programs for team members, such as experiential learning and practical sessions on team problem-solving, that help project teams to deal with situation-specific changes and challenges and to realize the project goals on time and within the budget (Li et al., 2011).

### **3.6.2. Limitations and future research directions**

The first limitation of this study relates to the measure of stakeholder-related uncertainty, which captures the average influence of various external stakeholders on project success. This operationalization fails to take into account that the relative importance of different stakeholders in influencing the project success may differ (Bourne & Walker, 2006). Therefore, future research may take into account the relative power and influence of each potential project stakeholder in measuring stakeholder-related uncertainty.

The second limitation of this study relates to confining team problem-solving to the project team level (i.e., only as an internal process). Loch, DeMeyer, and Pich (2006) indicate that problem-solving processes require establishing partnerships with other project stakeholders, particularly under conditions of high levels of uncertainty. Thus, we encourage future research to examine problem-solving practices at different levels (internal stakeholders as well as external stakeholders). In addition, future research could extend our model by

taking into account the core problem-solving dimensions such as solutions found, solution quality, and problem-solving speed (Sheremata, 2000).

Another area for future research could be the identification of the conditions under which team problem-solving becomes more or less effective in reducing the negative impact of project uncertainty on project success. In this regard, future research might, for instance, consider the interaction of trust and problem-solving techniques in curbing the adverse influence of project uncertainty on project success (Zand, 1972).

### **3.7. Conclusions**

Our study confirms that project uncertainty has transcending characteristics that cut across stakeholder management, goal planning, and team problem-solving. Thus, project uncertainty as a state of unknown goals needs a multidimensional approach so as to identify the situation and convert uncertainties into opportunities for project success. The paper also highlights how important it is for project managers to have insights into how to deal with project uncertainty (associated with stakeholders and goals) through structured problem-solving techniques.

Appendix 3.A: Demographics

Item	Frequency	%		
<b>Gender</b>				
Female	43	19.2		
Male	181	80.8		
Total	224	100		
<b>Level of education</b>				
First degree	73	32.6		
Master's degree	151	67.4		
Total	224	100		
<b>Firm category</b>				
Local NGO	107	47.8		
International NGO	117	52.2		
Total	224	100		
<b>Project type</b>				
Food security	78	34.8		
Water supply, sanitation, and hygiene projects (WASH)	42	18.8		
Environmental related	12	5.4		
Alternative low cost energy	8	3.6		
Capacity-building	23	10.3		
Community/family-based child development	33	14.7		
Health care services	28	12.5		
Total	224	100		
	Minimum	Maximum	Mean	SD
Experience as a project manager (years)	0.5	30.0	5.6	4.2
Firm age (years)	4.0	75.0	23.6	12.2
Firm size (number of employees)	3	2000	314	453
Project duration (months)	4.0	96.0	38.1	17.98
Project team size (number of team members)	2	90	15.6	14.3

Sample size (N)=224 project managers

Appendix 3.B: Measurement items

Constructs and items
Stakeholder-related uncertainty: (1) strongly disagree – (5) strongly agree
1. The identification and definition of key stakeholders were clear at the outset of the project (R).
2. The identification of possible influences of the key stakeholders on the project was clear (R).
3. The relationships between the project team and key stakeholders were clear at the outset of the project (R).
4. The motive(s) of the key donor(s) as a stakeholder was clear at the outset of the project (R).
5. The motive of the government as a stakeholder was clear at the outset of the project (R).
Goal uncertainty: (1) strongly disagree – (5) strongly agree
1. There were clear and comprehensible goals for this project (R).
2. The goals and requirements of the customers were clear for this project (R).
3. The goals and requirements of the management were clear for this project (R).
Team problem-solving practices: (1) never – (5) very often
1. Involving the project team(s) in identifying task-related problems
2. Involving the project team(s) in generating ideas concerning the causes of task-related problems
3. Participation of the project team(s) in designing action plans to solve task-related problems of the project
4. Engaging the project team(s) in the implementation of action plans to solve task-related problems
5. Engaging the project team(s) in the evaluation of action plans to solve task-related problems
Project success:(1) strongly disagree – (5) strongly agree
1. The project was completed on time.
2. The project was completed according to the budget allocated.
3. Project specifications were met by the time of handover to the target beneficiaries.

Note: R=in reverse order

Appendix 3.C: Factor loadings for each construct – Pattern Matrix<sup>a</sup>

	Components			
	Problem-solving	Stakeholder-related uncertainty	Project goal uncertainty	Project success
Prbsol2	.917			
prbsol3	.837			
prbsol4	.834			
Prbsol1	.822			
prbsol5	.806			
prstak2		.873		
prstak3		.871		
prstak1		.785		
prostak5		.746		
prstak4		.731		
GntrRe2			.926	
GNtrRe1			.896	
GntrRe3			.860	
Suess1				.890
Suess2				.871
Sues12				.590

Notes: Extraction method: Principal component analysis, Rotation method: Promax with Kaiser normalization, N=224, KMO=.849, P<0.001, total variance explained=71.6%.

a. Rotation converged in 6 iterations.

## CHAPTER FOUR<sup>4</sup>

### PROJECT BENEFICIARY PARTICIPATION AND BEHAVIORAL INTENTIONS PROMOTING PROJECT SUSTAINABILITY: THE MEDIATING ROLE OF PSYCHOLOGICAL OWNERSHIP<sup>5</sup>

#### *Abstract*

*In very recent years, a multidimensional concept of sustainability has become an issue of academic discourse in project management literature. Its main focus is on evaluating the contribution of a project to long-term sectoral development in terms of social, economic, and environmental dimensions of sustainability. Equally important, there is great concern about how to ensure that development projects (especially those projects that target improving the livelihood of the rural community in developing countries) continue to deliver their intended benefits over their intended economic life – we call this “project sustainability” in this study context. Specifically, the sustainability of development projects like irrigation and water supply projects is a critical problem that requires immediate empirically-supported solutions. For such projects to be sustainable, the behavioral intentions of the project beneficiaries toward a project greatly affect project sustainability. Applying an experimental design on college students in Ethiopia, our study reveals that active involvement of project beneficiaries during the needs assessment and planning stages has a significant positive influence on the behavioral intentions of the project beneficiaries toward project sustainability. Our study also finds that psychological ownership plays a mediator role in the relationship between project beneficiary participation and project sustainability. The study recommends that development projects should consider the demand-driven and management-for-stakeholders approaches, which seek to accentuate genuine participation of project beneficiaries in the needs assessment and planning stages of a project life cycle. Implications for project sustainability and directions for future research are discussed.*

*Key words: community participation, project sustainability, psychological ownership*

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<sup>4</sup> This chapter has been submitted to the *Development Policy Review (DPR)*

<sup>5</sup> The editorial style of each individual chapter has been edited slightly for consistency throughout the dissertation.

#### **4.1. Introduction**

One of the most important areas of concern among both project management theorists and practitioners is project sustainability, i.e., the question of whether services and products are continued after projects are completed. An increase in the number of studies on project sustainability signifies the importance attached to this construct for the success of the projects (Barasa & Jelagat, 2013; Bredillet, 2008; Olsson, Johansen, Langlo, & Torp, 2008).

However, many development projects at the grassroots level like irrigation and rural water systems face challenges of sustainability, often attributed to a lack of authentic participation in project decision-making by the intended beneficiaries (Mansuri & Rao, 2004; Olukotun, 2008). This necessitates the initiation of participatory planning and implementation of development projects (Marks & Davis, 2012). Studies show that community participation in project decision-making, particularly at the planning stage, has been considered as a solution for the problems of project sustainability (Khwaja, 2004; Madajewicz, Tompsett, & Habib, 2014; Stiglitz, 2002). For instance, an empirical study by Khwaja (2004) indicates that community participation in non-technical decisions that involve choosing what project to construct (i.e., what need is important) and deciding how to use and manage the project, has a strong positive correlation with project sustainability as measured by the aspect of project maintenance. Similarly, a study by Dvir et al. (2003) shows that the origination and initiation phase, in which major decisions on project objectives and planning for the project's execution are made, has a significant influence on the project's success and sustainability.

This study will introduce the intermediary role of psychological ownership (PO) in the effect of project beneficiary participation in the needs assessment and planning stages on development project sustainability. In other words, the study will explore whether PO partially or fully mediates the relationship between community participation and project sustainability. Psychological ownership implies that people are likely to feel ownership for things that they create, shape, or produce. Feeling that one owns something can have powerful motivational properties, as people care for and nurture their possessions (Avey et al., 2009; Liu et al., 2012).

Though there is rich literature about the benefits of PO in improving organizational commitment, job satisfaction, efficacy, and social identity, there is little work about the role of PO in project contexts (Asatryan & Oh, 2008; Avey et al., 2009; Pierce & Jussila, 2010; Pierce, Kostova, & Dirks, 2001). Thus, the present study attempts to extend the concept of

psychological ownership to the context of projects and to empirically gauge its effect on project sustainability in an experimental laboratory study. The purpose of this article is twofold. The first objective is to investigate the impact of community participation on PO of the project beneficiaries. The second objective is to test the mediating role of PO in the relationship between community participation and project sustainability.

## **4.2. Theoretical Framework**

This section presents the theoretical framework of the study to give brief explanations on the constructs of the study: participation, psychological ownership, and project sustainability.

### **4.2.1. Participation**

For the purpose of this study, the emphasis is on community participation, which can be defined as the active involvement in development projects of a specific group with shared needs living in a defined geographical area. Through this social process, the community actively pursues identification of their needs, makes decisions, and establishes mechanisms to materialize these needs (Campbell & Jovchelovitch, 2000; Shediak-Rizkallah & Bone, 1998). Referring to development projects, Paul (1987) indicates that communities should participate in all project stages that entail assessing of the local situation, defining of the local problems, setting of priorities, making decisions, planning of action programs to solve the problems, sharing responsibility in project implementation, and evaluating and modifying the projects. It is “an active process by which beneficiary/client groups influence the direction and execution of a development project with a view to enhancing their well-being in terms of income, personal growth, self-reliance or other values they cherish” (Paul, 1987, p. 2).

According to Brett (2003, p. 5), participation is an empowering process in which “people, in partnership with each other and those able to assist them, identify problems and needs, mobilize resources, and assume responsibility to plan, manage, control and assess the individual and collective actions that they themselves decide upon.” Studies also show that financial contribution by the beneficiary during the implementation stage can be considered as a form of participation that positively influences the overall project success and sustainability (Finsterbusch & Van Wicklin, 1987).

In the context of development projects, there are different approaches to classifying the types of participation. De Beer (1996) distinguishes between two approaches to participation: participation as involvement and popular participation. Participation as involvement

emphasizes institutional initiatives by external agents (like government, NGOs, and donor agencies) who identify the needs of the community, decide the planning action, manage the projects, and mobilize communities or groups to become involved. This can be considered a top-down model of participation that involves the co-option of communities in the implementation of projects resulting from top-down decision-making (Lyons, Smuts, & Stephens, 2001). On the other hand, popular participation emphasizes a people-centered approach in which the beneficiaries are the main actors and decision-makers (De Beer, 1996).

Some scholars (Barasa & Jelagat, 2013; Madajewicz et al., 2014) identify “extractionist” and “authentic” participation levels in development projects. Extractionist participation treats people (local people) as objects, excluded from decision-making responsibilities regarding planning and their initiatives. Contrary to this, authentic participation represents the ideal model, whereby the community initiates the project through participatory needs identification and planning. Under this level of participation, the intended beneficiaries/community members take part in decision-making about implementation arrangements and sharing of the benefits and costs of the development project. This approach would allow the intended project beneficiaries to actively participate in decision-making, with the external agents acting mainly as facilitators and sources of funds (Mansuri & Rao, 2004; Olukotun, 2008).

Arnstein (1969) popularizes the levels of participation in hierarchical order, devising a ladder of participation comprising eight levels: manipulation, therapy, informing, consultation, placation, partnership, delegated power, and citizen control. On the basis of this ladder, participation refers to “the positioning of participatory initiatives on the continuum from manipulating participation for the achievement of externally identified project goals to the empowerment of the actors to define such goals themselves, as well as the actions required to achieve them” (Campbell & Vainio-Mattila, 2003, p. 420). Related to the ladder of participation, Michener (1998) describes four types of participation as nominal, instrumental, representative, and transformative, arranged from weak participation to strong participation forms.

Although more refined categorizations are possible, we will assume that overall, community participation in development projects may take two main forms depending on the relative importance of the power of outsiders and direct beneficiaries as key stakeholders in development projects: passive participation and genuine participation (Botes & Van Rensburg, 2000; Brett, 2003; Michener, 1998). In passive participation, external agents dominate the decision-making stages of projects, whereas genuine participation provides real

opportunity for the direct beneficiaries to exercise control over development projects right from the initiation stage.

Passive participation and genuine participation conditions will be considered in this study in order to experimentally manipulate community participation. Passive participation relates to the conventional blueprint approach, whereby social factors are seen as peripheral to the project. The basic assumption here is that “projects introduced by outsiders are likely to be consistent with the local felt needs and less likely to have perverse social effects” (Tacconi & Tisdell, 1992). This results in ousting the beneficiaries from the decision-making process. The key characteristic of this form of participation is that decision-making about needs assessment and planning a project is in the hands of outsiders and relates to externally predetermined objectives (Botes & Van Rensburg, 2000).

Genuine participation, however, assumes that the intended beneficiaries should take part in key decision-making issues regarding the project. This form of participation gives opportunities for local people to have control over the project (Madajewicz et al., 2014; Mansuri & Rao, 2004). Similarly, Prokopy (2005) posits that genuine participation can only occur in situations where communities are given the chance to decide about what type of project they want, when they want it, and how they want it. Two modalities are worth mentioning in genuine participation. One modality is to let the members of the community make all decisions without any interference from the external agents such as Non-Governmental Organizations (NGOs). This may, however, leave loopholes for dominance by elites in the community (Barasa & Jelagat, 2013; Madajewicz et al., 2014). In addition, community participation in technical matters of project decision-making may not have a positive impact on project sustainability (Khwaja, 2004). The other modality is to let the external agents (like NGOs) act as facilitators in key decision-making of the project in a participatory approach. This is particularly important to minimize the risk of dominance by a few individuals in the community (Madajewicz et al., 2014). The latter modality will be used for the manipulation of genuine participation in this study.

Finsterbusch and Van Wicklin (1987) provide important arguments supporting the need for beneficiary participation in development projects. The first argument is that beneficiary participation helps to build upon indigenous knowledge for the local community. Beneficiary participation also ensures that the felt needs of the community are considered, and this effort results in better project design. The other benefit of participation is that it fosters commitment and creates local level awareness, competence, and capacity, which are the foundations for

sustainability of development projects. Mansuri and Rao (2012) also assert that beneficiary participation helps to weed out bad projects during the project selection stage, to ensure design feasibility and adequacy of scale, and to monitor the project over the implementation and operation periods.

Though community participation is very critical, Brett (2003) argues that local people's participation works well primarily for small-scale projects. Examples of such projects include the management of schools and roads, health centers, water schemes, and sanitation and credit services. However, "real" participation involving direct control by local people is virtually impossible for large-scale projects (such as major roads, tertiary education, and national and global R&D programs). Rather, such large projects require complex technology and decisions made at the national level (Brett, 2003).

Furthermore, some authors (Mansuri & Rao, 2004; Olukotun, 2008) show that community participation in key project decisions has a number of benefits: (i) It will lead to better designed projects, as the community has more complete knowledge about local problems at the grassroots level; (ii) it will lead to better targeted benefits; (iii) it will lead to more cost effectiveness; (iv) it will lead to more equitable distribution of project benefits; (v) it will lead to less corruption; (vi) it strengthens the capabilities of the citizenry to undertake self-initiated development activities; and (vii) it improves the match between what a community needs and what it obtains. Thus, community participation in key project decisions leads to projects that are more consistent with the preference of the target beneficiary.

Projects often pass through five interrelated stages – commonly called the project life cycle: needs assessment, conceptual designs and feasibility, action planning, implementation, and operation and maintenance (McConville & Mihelcic, 2007). Table 4.1 indicates the core activities at each stage. The involvement and participation of the beneficiaries in the first three stages (project design and planning) ensure the behavioral intentions to sustain the project (Pollnac & Pomeroy, 2005). Some projects face challenges at later stages (implementation and operation and maintenance) because the community feel left out during the design and planning stages (Cloete, Groenewald, & Van Wyk, 1996; Rifkin, Muller, & Bichmann, 1988).

Table 4.1: Stages in project life cycle

Needs assessment	Determine demand and gather background information. Generally initiated with request for intervention and ended with decision to proceed or abort.
Conceptual designs and feasibility study	Alternative plans and technologies developed and assessed. May begin with brainstorming session for solutions across range of improvements and end with design selection.
Action planning	Design finalized, including schematics and budget, and action plan developed.
Implementation	Includes pre-construction, pilot construction, construction, training, and education.
Operation & maintenance	Includes use, management, upkeep, continued training and education, monitoring and evaluation, and expansion.

Source: Adapted from McConville and Mihelcic (2007)

Above all, community participation in development interventions (projects) gives assurance of project sustainability. “Satisfying the needs of the present generation without compromising the future generations to meet their own needs” has become a challenging issue in sustainable development. As part and parcel of sustainable development, the designing and execution of projects that can be sustainable after intervention is of paramount importance. This requires people-centered development and more participatory and responsible engagement by the end users in the development efforts to ensure sustainability (Ofuoku, 2011). Thus, the direct beneficiaries of development projects should be given more information, responsibility, and decision-making power over the project life cycle (Botchway, 2001; Stiglitz, 2002).

Whenever direct beneficiaries of the project (the targeted community in this study context) participate in the process from its inception up to implementation, they will be more willing to increase their investment in the project operation and maintenance, hence contributing to project sustainability. Thus, participation in project decision-making is a necessary condition for increases in satisfaction and project outcomes like sustainability. However, mere participation is not sufficient; the community should also develop a sense of ownership (psychological ownership) through an “authentic” participatory approach toward the project (Madajewicz et al., 2014).

#### 4.2.2. Psychological ownership

There is scant literature on the impact of psychological ownership in the context of project management. However, the concept has been employed in organizational behavior settings. Psychological ownership refers to “that state in which individuals feel as though the target of ownership (material or immaterial in nature) or a piece of it is theirs” (Pierce et al., 2001, p. 299). Psychological ownership represents the feeling of possessiveness and of being psychologically tied to an object without the presence of formal or legal claims of ownership (Mayhew, Ashkanasy, Bramble, & Gardner, 2007; Olckers & Du Plessis, 2012).

Pierce, Kostova, and Dirks (2003) elaborate the construct of psychological ownership into three distinguishing features. First, psychological ownership encompasses the concept of “mine,” which represents a feeling of possession toward a particular object that can be either material (like work or tools) or immaterial (like organization or project or ideas). This feature answers the question: “What do I feel is mine?” Second, psychological ownership reflects a relationship between an individual and an object; this psychological link leads to a situation where the object is considered as a part of the extended self. Referring to the relationship between the person and the object, Ozler, Yilmaz, and Ozler (2008) underscore the importance of looking at whether the initiation of this interaction is on the part of the person or the object (for something that defines the person – for example, a team or organization). The idea of “to own” the object, when the person identifies the object, and “to belong to” the object, when the object identifies the person, come into this juncture. Third, the state of psychological ownership has both cognitive and affective elements. The cognitive core reflects the awareness, beliefs, and thoughts about the target of ownership. The affective core reflects that a feeling of possession *per se* produces pleasure, which is accompanied by a sense of efficacy and competence. The affective component makes an individual develop a sense of personal ownership for an object (e.g., “This project is MINE!”) or collective ownership shared with a group (e.g., “The project idea is OURS!”).

The work by Pierce and Jussila (2010, p. 812) introduces the construct of collective psychological ownership as an extension of psychological ownership at the individual level, which implies a collectively held notion of an “us,” and a collective sense that the target of ownership (e.g., workspace, project, idea, product created) is collectively “ours.” Collective psychological ownership results in shared feelings, knowledge, and beliefs about the target of ownership and about individual and collective rights (e.g., use, control) and responsibilities (e.g., protection of) in relation to that target. Collective psychological ownership – a shared

sense of ownership – combines the individual perceptions of psychological ownership within a particular group. At the individual level, personal feelings of ownership emerge through person–target interactions, whereas the emergence of a shared sense of ownership (i.e., collective psychological ownership) is seen as dependent upon person-object, other person-object, and person-to-person interactions (Pierce & Jussila, 2010).

For the purpose of this study, psychological ownership refers to the community members' feelings of possession and psychological connection to a project as a whole. The construct of psychological ownership is sometimes confused with some other interrelated concepts such as organizational commitment, job satisfaction, and organizational identification. In attempting to distinguish these related constructs, Ozler et al. (2008) and Pierce et al. (2001) make the following remarks: Psychological ownership answers the question “To what extent do I feel that this organization belongs to me?” Organizational commitment searches for the answer to “Should I stay in this organization and why?” Job satisfaction answers “What kind of judgments do I have about my job?” And identification involves defining oneself using elements of an organization's identity.

The literature establishes three important routes through which psychological ownership emerges: (1) coming to know the target intimately, (2) self-investment in the target, and (3) exercise of control over the target of ownership (Pierce et al., 2001; Van Dyne & Pierce, 2004).

The first route for the development of a sense of psychological ownership involves having intimate knowledge about the target through a living relationship with the target. The more information, the better knowledge, and the longer the association of an individual with the target, the stronger the experience of psychological ownership toward the target will be. In other words, people will form a closer bond with the target through obtaining intimate knowledge about it, and this will maximize the degree of perceived ownership (Pierce et al., 2001; Van Dyne & Pierce, 2004). In the context of development projects, an individual who has intimate knowledge and familiarity about a projects' initiation, design, and mode of implementation would have strong psychological ties with that project.

The second route by which psychological ownership occurs is through investing oneself into the target. Investment is not necessarily in terms of financial aspects, but it may take various forms such as energy, time, skill, ideas, values, and effort. Literature shows that there is a positive relationship between the extent of the individual's personal investment in the

target and the individual's feelings of psychological ownership toward that target (Pierce et al., 2001; Van Dyne & Pierce, 2004).

The third route relates to the control or power individuals have over a target. When people have control over a material or immaterial target and develop a level of perceived control over the target, this will increase their psychological ownership toward it (Pierce et al., 2001; Van Dyne & Pierce, 2004).

Studies clearly prove that organizational psychological ownership has a positive influence on the way individuals think and behave (Madajewicz et al., 2014). By the same token, the present study argues that project beneficiaries with higher feelings of ownership will have a higher level of motivation to participate in the activities contributing to project sustainability; they will have a higher willingness to share their money and labor for protection and maintenance of the project.

In summary, people with strong psychological ownership have the feeling of "It is MINE!" toward tangible and intangible objects (Pierce & Jussila, 2010). In light of project management, people who possess an above-average tendency to control, know, and invest themselves into the project during needs assessment and planning stages would have higher feeling of psychological ownership. Consequently, this sense of ownership makes people more willing to assume responsibilities and spend their time and energy in ensuring the project's sustainability through protecting and maintaining it (Madajewicz et al., 2014; Mansuri & Rao, 2004). Conversely, where feelings of psychological ownership are lacking, we expect that interest in and motivation to sustain projects will dwindle.

#### **4.2.3. Behavioral intentions for project sustainability**

The focus of this study is on the (indirect) effect of psychological ownership on project sustainability. Project sustainability is critical for the long-term success of a project, but in practice it is often lacking, especially in development projects (Økland, 2015). For the purpose of this article, the meaning of project sustainability can be captured by the following two definitions. The first definition relates to the behaviors of the end-users toward sustaining the operation of the project. Accordingly, Wood defines [project] sustainability as "a [project] which is capable of being supported and maintained by a community or individual over an extended period of time with an absolute minimum of outside assistance" (Wood, 1994, p. 133). The second definition considers the continuation of the project's services and products after its completion. In this respect, Shediak-Rizkallah and Bone (1998) define project

sustainability as the ability of development projects such as water facilities or irrigation schemes to continue a flow of benefits at a specified level for a long period after project inputs have ceased.

Carter, Tyrrel, and Howsam (1999) ascribe the causes of unsustainable development projects to factors that are related to direct beneficiaries in situations where: (i) communities or households may not be convinced of the desirability of the project in the first place, (ii) they may not be actively involved in covering the financial costs that communities are expected to raise as a contribution to capital or recurrent expenses, (iii) they may not feel ownership of the new infrastructure, and (iv) they underestimate the expected benefits from the projects.

The measurement issue of project sustainability is worth highlighting for this study. Though there are no universally acceptable criteria in measuring project sustainability, the literature indicates that it can be measured from at least three perspectives: continuation of benefits after completion of the project, institutionalization of the project, and the creation of capacity-building at the community level (Shediac-Rizkallah & Bone, 1998). Continuation of benefits is measured by the percentage of goods and services maintained and delivered; for instance, with water supply projects this can be expressed by measures such as the percentage of the water supply in good condition, the economic value of benefits, the percentage of target population reached, or equality of access. Institutionalization of the project can be assessed in terms of the extent to which the local organizations and local leaders are strong enough to maintain and protect the project infrastructure or systems. The capacity-building dimensions can be evaluated by the level of community empowerment and project-related capacity and skills (Bossert, 1990; Paul, 1987; Shediac-Rizkallah & Bone, 1998; Vallejo & Wehn, 2016).

On the other hand, there are proxy measures related to factors that determine project sustainability as conceptualized in the three perspectives. These proximate determinants of project sustainability, which denote the approach selected for this study, entail assessing the behavioral intentions of the direct beneficiaries, such as whether or not they actively participate in the activities that help in sustaining the projects. Of particular importance are the behavioral intentions that include willingness to pay for recurrent costs, to contribute labor for maintenance, and to protect the project output after its completion (Lyons et al., 2001; Shediac-Rizkallah & Bone, 1998).

### 4.3. Research Model and Hypotheses

This section presents the conceptual framework and hypotheses of the study. It also highlights the relationships between the constructs and variables of the study. Figure 4.1 depicts the conceptual framework of the study. The study argues that psychological ownership plays a mediating role in the relationship between the participation of the project beneficiaries (community) in project decision-making and the behavioral intentions that promote project sustainability.

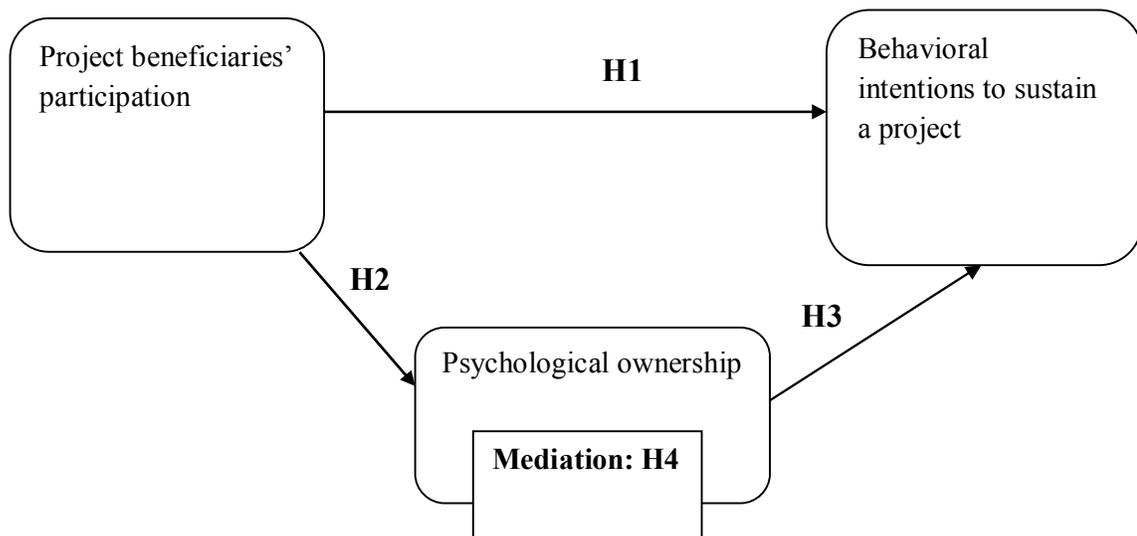


Figure 4.1: Conceptual framework of the study

Source: Authors' own synthesis based on Barasa and Jelagat (2013), Madajewicz et al. (2014), Lyons et al. (2001), and Stiglitz (2002)

#### 4.3.1. Participation and behavioral intentions that promote project sustainability

Participation is considered a useful tool in enhancing the effectiveness, efficiency, and coverage of project benefits. It is also important to encourage self-reliance of the project beneficiaries. Although the participation of different stakeholders is needed, the intended participants (project beneficiaries) are very important because these people are the ones who decide to continue or to stop using the services created by development projects (Mansuri & Rao, 2004; Stiglitz, 2002).

Studies indicate that there is a plausible direction of causality that participation in decision-making by the intended beneficiary influences project outcomes like project sustainability (Isham, Narayan, & Pritchett, 1995; Khwaja, 2004; Mansuri & Rao, 2004).

This calls for participatory needs identification and planning for project initiation to serve the preferences and needs of the grassroots population. In line with this, Mansuri and Rao (2012) underline that participatory development could produce projects that are not only better aligned with the preferences and needs of the beneficiaries, but are also of higher quality and more likely to be sustainable. Other studies point out that community participation in project decision-making is essential to the sustainability of projects (De Beer, 1996; Finsterbusch & Van Wicklin, 1987; Lyons et al., 2001; Mansuri & Rao, 2004; Olukotun, 2008; Stiglitz, 2002). Similarly, McConville and Mihelcic (2007) assert that community participation in the project design and planning stages of development projects is one of the important factors that determines project sustainability.

Though the above literature indicates the potential importance of project beneficiaries' participation for project sustainability, there is a lack of conclusive empirical finding in this area (Isham et al., 1995; Manikutty, 1997; Nagrah, Chaudhry, & Giordano, 2016; Prokopy, 2005). The present study aims to answer calls for more rigorous empirical testing of hypotheses about the effect of beneficiaries' participation on behavioral intentions promoting project sustainability.

As proposed in the literature, a high level of participation (i.e., genuine participation) by the intended project beneficiaries is considered the most effective option as compared with little voice (i.e., passive participation), since the former provides both symbolic benefits and a sense of control over the outcomes (Brett, 2003; Hideg, Michela, & Ferris, 2011; Michener, 1998). This implies that the effect of participation on project sustainability may be greater when genuine participation is used, compared with passive participation. Therefore, genuine participation in needs assessment and planning of a project by the direct beneficiaries is a critical factor in ensuring project sustainability (Barasa & Jelagat, 2013). Hence, we put forward the following hypothesis:

*Hypothesis 1: Project beneficiaries offered genuine participation in the needs assessment and planning stages of a project will be more likely to have behavioral intentions promoting project sustainability than those offered passive participation.*

#### **4.3.2. Participation and psychological ownership**

As discussed above, the literature establishes that PO toward a certain object (material or immaterial) emerges through three key routes: perceived control, having greater knowledge of and familiarity with an object, and opportunity to create an object (Mayhew

et al., 2007; Pierce et al., 2003). Community participation in a project's needs assessment and planning could create these antecedents of PO. Community members, for example, may participate in expressing their preferences to project performing organizations during the project needs assessment and planning stages. This interaction makes them experience psychological ownership and feel satisfied with the participation process (Asatryan & Oh, 2008). In this regard, Pierce et al. (2003, p. 92) posit that "people come to find themselves psychologically tied to things as a result of their active participation or association with those things." When project beneficiaries invest their time and effort during participation in project needs assessment and planning stages, it leads to feelings of possession (psychological ownership) toward the project. Therefore, our next hypothesis reads as follows:

*Hypothesis 2: Project beneficiaries offered genuine participation in the needs assessment and planning stages of a project will be more likely to experience psychological ownership toward the project.*

#### **4.3.3. Psychological ownership and behavioral intentions for project sustainability**

From the psychological ownership literature, three important outcomes of PO are worth mentioning: positive attitudes, self-concept, and sense of responsibility. People tend to evaluate objects and ideas more favorably when they feel a sense of ownership for the target. The sense of ownership, in turn, becomes linked to a self-concept situation in which people start to feel and act about certain targets that are ours as we feel and act about ourselves (Van Dyne & Pierce, 2004). Similarly, Mayhew et al. (2007) stress that a feeling of possession is a part of the extended self and a loss of possession is equated to a loss of self. This indicates that individuals who experience PO toward a project should want to maintain their associations with it, resulting in behaviors that promote project sustainability. When people develop feelings of ownership toward a certain material or immaterial target, then they would perceive that possession as a part of their extended self and increase their sense of responsibility, triggering them to invest time and energy into cultivating it (Baer & Brown, 2012; Chung & Moon, 2011).

Overall, those who have high levels of PO are likely to experience the project as an extended part of themselves. As a result, PO will influence responsibility, commitment, pride, caring, and protective behaviors directed toward the target of ownership (development project). Therefore, psychological ownership helps to build positive attitudes

about the project and a sense of responsibility among the beneficiaries in terms of ensuring its maintenance and protection (Olukotun, 2008). More importantly, psychological ownership enhances the behavioral intentions of beneficiaries to sustain the project, which would in turn maximize the likelihood of project sustainability (Prokopy, 2005). Thereby, the third hypothesis of the study is:

*Hypothesis 3: Psychological ownership positively influences behavioral intentions of the project beneficiaries that increase the likelihood of project sustainability.*

#### **4.3.4. The mediating role of psychological ownership**

Several empirical studies show that participation in project decision-making by intended beneficiaries has a positive impact on project sustainability (De Beer, 1996; Khwaja, 2004; Kleemeier, 2000; Madajewicz et al., 2014; Mansuri & Rao, 2004, 2012; Stiglitz, 2002). However, studies on the relationships between participation and project sustainability overlook the boundary conditions under which the relationship works effectively. We, therefore, propose that psychological ownership acts as a mediator for the effect of participation on project sustainability, since beneficiaries' participation in development projects enhances the sense of ownership (Mansuri & Rao, 2004; Olukotun, 2008; Stiglitz, 2002). In line with this, studies indicate that a high level of feeling of ownership can be obtained when the intended beneficiaries participate in and influence the conception, design, and mode of implementation of a development project (Campbell & Vainio-Mattila, 2003; Marks & Davis, 2012).

Pierce and Jussila (2010) and Pierce et al. (2001) indicate that a sense of psychological ownership is promoted by the extent to which an individual has control over an outcome and is intimately knowing and investing oneself in a target. Genuine participation provides a community with a degree of control, and after participating in the design and implementation of a project, people inevitably invest their time and effort to contribute to the sustainability of the project. Compared with passive participation, genuine participation is particularly likely to promote a sense of psychological ownership.

In addition, genuine participation involves providing influence over outcomes, and psychological ownership is driven by a sense of influence over an object. Hence it stands to reason that genuine participation should lead to a greater sense of psychological ownership. Supporting this notion, research has suggested that the presence of strong psychological ownership makes community members invest more of their time, energy, and necessary

monetary contributions into the target, thereby reinforcing the project's sustainability (Pierce & Jussila, 2010; Pierce et al., 2001).

Psychological ownership is stimulated by an individual's investment of himself or herself in the target. As a result of this self-investment, individuals become more motivated to protect and promote the target. Applied to the present situation, people who enjoy genuine participation in the formulation, design, and mode of implementation of development projects would have an increased sense of psychological ownership over that project. This in turn, leads to more favorable attitudes toward the project and greater willingness to promote the likelihood of project sustainability. According to Olukotun (2008), when communities are involved in a project's initiation and mode of implementation, they will have an interest in maintaining and protecting the project. This would in turn increase the likelihood of project sustainability. Contrary to this, passive participation would not enhance psychological ownership, which in turn would be associated with less favorable attitudes and less willingness to promote project sustainability.

Scholars indicate that effective participation may lead to increased feelings of ownership and commitment to the project on the part of beneficiaries. This feeling of possession would serve as an intermediate variable that contributes to the positive behavioral intentions of the beneficiaries to sustain the project (Finsterbusch & Van Wicklin, 1987; Manikutty, 1997). In this way, PO carries over the effect of participation to the felt responsibility to the project (to nurture, provide for, protect, and maintain). The more individuals feel they own a part of the project through genuine participation, the more likely they are to have behavioral intentions to sustain the project.

Thus, in general, individuals who have an opportunity to participate in project planning would be more likely to experience higher levels of PO. Feelings of possession would create a sense of responsibility that influences behavior (in this case, manifested by behavioral intentions that enhance project sustainability) (Olckers & Du Plessis, 2012). Accordingly, we examine psychological ownership as a mediator, which helps to explain how genuine participation influences behavioral intentions for project sustainability. Hence, we offer the following hypothesis:

*Hypothesis 4: Psychological ownership acts as a mediator in explaining the relationship between participation and behavioral intentions of project beneficiaries that promote project sustainability.*

#### **4.4. Methods**

The aim of the study was to investigate the role of psychological ownership (the moderating variable) in the relationship between project beneficiaries' participation (the independent variable) and behavioral intentions to sustain a project (the dependent variable). The study mainly sought to establish cause-effect relationships between the independent and dependent variables. According to Heckman and Smith (1995), there are two main approaches to address a research question related to policy evaluation: non-experimental design and experimental design.

Non-experimental design heavily depends on the use of variety of micro-data sources, statistical methods, and behavioral models to assess the effect of certain programs or treatments on a given expected outcome (behavioral intention to sustain a project in our case). Though non-experimental design produces reliable estimates of the mean impacts of particular treatments (Cook, Shadish, & Wong, 2008), creating a treatment group and a control group that are relatively identical in all characteristics (except the induced variable) is problematic (Agodini & Dynarski, 2004). Again, simple comparison of beneficiaries of projects managed by a participatory approach and beneficiaries of projects managed by a non-participatory approach is likely to be misleading. This is mainly because differences in participants' behavioral intentions to sustain a project may come simply from differences in unobserved variables such as motivation and project types instead of participation per se. Therefore, an experimental design was appropriate to eliminate other plausible causal variables by assigning participants to different experimental conditions. Further, the limited application of the concepts of psychological ownership, and behavioral intentions in a project context makes an experimental design preferable over a non-experimental design (Babbie, 2010).

Next, we will present detailed methodological issues about participants and design, procedure and materials, manipulation of the independent variable (in our case, participation), measures of the variables, and data analysis techniques.

##### **4.4.1. Participants and design**

Participants were first-year undergraduate students who attended "Introduction to Management" in the Management Department of Micro Link Information Technology College in Ethiopia. The researcher invited 100 students to participate in role-play exercises

on the project identification and planning stages of a project cycle. Out of the invited students, 92 students attended the simulation exercise and filled out a questionnaire that assessed their perceptions about a sense of PO toward the project and their behavioral intentions toward project sustainability. Participants were randomly assigned to one of two experimental conditions: genuine (47 subjects) or passive participation (45 subjects). The participants received course credit for participation.

#### **4.4.2. Procedure and materials**

Each participant was provided with a booklet containing the scenario for the exercise. The booklet describes a real site where the project is supposed to be implemented. Participants were asked to imagine that they personally have experienced the situation as described in the scenario. In other words, participants were instructed to immerse themselves in the role of a member of a household living in the area of the expected project. This was done to make the laboratory setting resemble an actual field setting. In addition to the experimenter and two assistants, the experimental setting was led by a facilitator who has an educational background in development projects and has rich experience in NGOs.

A week after the booklet had been distributed, participants followed a pre-experimental session that aimed to recapitulate the necessary information about the project context (local description) and the project performing organization (NGO). This pre-experimental session took around three hours.

Next, participants were randomly divided into two groups that were assigned the manipulations of genuine or passive participation, which were consistent with past operationalizations of a similar nature and level of participation (Aguinis & Bradley, 2014; Hideg et al., 2011; Hunton & Beeler, 1997). Drawing from the works by Cloete et al. (1996) and Rifkin et al. (1988), participation in project identification and planning activities involved the definition of project goals and activities, the mobilization of resources, and the methodology of project evaluation.

After this stage, questionnaires were distributed to the two groups of participants in order to measure their psychological ownership toward the project as well as their behavioral intentions toward project sustainability. In addition, a section in the questionnaire had the function of a manipulation check. After having completed the questionnaire, the participants were debriefed.

#### **4.4.3. Manipulation of “participation”**

Under the experimental group condition, the facilitator with rich experience in the participatory approach in civil society projects actively involved all participants in making key project decisions by using tools of the participatory approach such as Participatory Rural Appraisal (Tufte & Mefalopulos, 2009). The key decision-making areas in the project, among other things, included:

- a) Conducting the needs assessment and planning stage of the project based on the problems in the stated local area;
- b) Prioritizing the problems and selecting one critical problem;
- c) Initiating the project idea (giving a name to the project, writing a brief project description)<sup>6</sup>;
- d) Designing the implementation arrangements for the initiated project (e.g. project activities);
- e) Determining the share and contributions of the members of community households in terms of money, labor, etc. that would be invested during project implementation;
- f) Making an appointment to start the actual implementation of the project after technical works are completed.

Under the control/passive participation group condition, the facilitator (from the project performing organization) dominated the decision-making process, after an extended period of information gathering from the members of community households. Participants were told that their suggestions were welcomed to improve the preparation of a new project (next-time project) in their locality. However, for this time the suggestions could not be incorporated into the focal project idea<sup>7</sup> as it was already identified, designed, and ready for implementation. This model is characterized by the “top-down” approach to development in which decisions are made by a centralized organization, such as a local government or an NGO (Madajewicz et al., 2014; Mansuri & Rao, 2004).

#### **4.4.4. Measures**

##### ***Dependent variable: Behavioral intentions for project sustainability***

Behavioral intentions, the study’s dependent variable, are indications of whether project beneficiaries intend to engage in behaviors that promote project sustainability. The theory

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<sup>6</sup> An irrigation project idea was brought up by the participants in the “experimental group.”

<sup>7</sup> For the “control group,” the facilitator imposed a “clean water supply” project idea.

of reasoned action indicates that behavior can be predicted from intentions (in terms of action, target, context, and time) that match directly with that behavior (Ajzen, 1991; Baker & Crompton, 2000). Accordingly, this article considers the proxy measure of project sustainability in terms of the propensity of intended beneficiaries to achieve project sustainability (Finsterbusch & Van Wicklin, 1987; Mansuri & Rao, 2004). A six-item measure with a seven-point Likert scale (ranging from strongly disagree to strongly agree) was developed based on related studies (Lyons et al., 2001; Martland, 2012; Olukotun, 2008).

***Mediator variable: Psychological ownership***

PO was measured using a nine-item measure developed by Van Dyne and Pierce (2004) and other scholars (Avey et al., 2009; Ozler et al., 2008). The measures of PO developed in the context of an organizational setting were reworded to reflect the project context (for example, “I feel like this is MY project”). Respondents were required to rate the extent to which they agree or disagree with a series of statements on seven-point Likert-type scales (1=strongly disagree; 7=strongly agree). The measurement items for each of the constructs in the questionnaire are printed in Appendix 4.A.

**4.4.5. Data analysis techniques**

***Manipulation checks:*** To check our manipulation of participation, we asked participants to indicate their degree of participation in the project needs assessment and planning stages on a seven-point measuring scale (1=highly uninvolved to 7=highly involved) using five questions. The theme of the questions centered on how participants rate their level of participation/involvement in the needs assessment and planning stages of the project.

To test the effect of participation on behavioral intentions that promote a project sustainability (hypothesis 1), an independent *t* test was conducted with the participation types (i.e., conditions: genuine vs. passive) as a grouping variable and behavioral intentions about project sustainability as the outcome variable. Similarly, we employed an independent *t* test for hypotheses 2. To test hypothesis 3, we undertook a simple regression analysis. In order to investigate the mediator role of psychological ownership (hypothesis 4), the steps recommended by Baron and Kenny (1986) and Frazier, Tix, and Barron (2004) were followed. According to Baron and Kenny (1986), a mediation analysis entails performing

four steps. In step 1 of the mediation analysis, the independent variable — in this case, project beneficiaries' participation — must be related to the dependent variable (i.e., behavioral intentions to sustain a project). In step 2, the independent variable must be related to the mediator variable, PO. In step 3, the mediator variable must significantly relate to the dependent variable. In the last step, 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 concurrently. Besides to these four steps of mediation analysis, we further performed a test of significance of the indirect effect of the predictor variable following the procedures explained by (Hayes & Preacher, 2014).

#### **4.5. Results**

##### ***Sample characteristics***

Participants in our study have an average age of 27 years old (SD=5.39) and about 4.2 years of work experience (SD=3.20). Out of 87 total participants, 50.6 percent were female students.

##### ***Manipulation check***

Of the experimental group (genuine participation situation), three participants provided incomplete information for question items in the manipulation check. As a result, only the remaining 44 questionnaires were used for the analysis. Two participants of the control group (non-participatory approach) provided incomplete information for the manipulation check questions. As a result, 43 questionnaires were considered acceptable.

As indicated in Table 4.2, participants in the genuine participation condition perceived higher involvement in the project needs assessment and planning stages (M=6.0273, SD=0.65214) than participants in the non-participatory condition (M=1.4047, SD=0.44612,  $t(85)=38.502, p<0.001$ ).

Table 4.2: Descriptive statistics for the manipulation check

Condition	Degree of participation in the project needs assessment and planning stages	
	Mean	SD
Participatory approach (n=44)	6.0273	0.65214
Non-participatory approach (n=43)	1.4047	0.44612

Source: Authors' survey data

### ***Hypotheses testing***

Hypothesis 1 is concerned with the effect of the level of participation (genuine versus passive) on perceived behavioral intentions to promote project sustainability. Table 4.3 provides the means of the behavioral intention scores. The effect of project beneficiary participation on behavioral intention scores is significant, with  $t(85) = -22.88$ ,  $P < 0.001$ . Supporting hypothesis 1, participants who were assigned to the participatory condition expressed stronger behavioral intentions to promote project sustainability ( $M = 5.992$ ,  $SD = 0.723$ ) than participants in the non-participatory approach group ( $M = 2.481$ ,  $SD = 0.710$ ). Therefore, hypothesis 1 is not rejected.

Table 4.3: Project beneficiary participation as a predictor of behavioral intentions to sustain a project

Conditions	Behavioral intentions to sustain a project (Y)	
	Mean	SD
Non-participatory approach/control group (n=43)	2.481	0.710
Participatory approach (n=44)	5.992	0.723

Notes:  $t(85) = -22.88$ ,  $P < 0.001$

Hypothesis 2 proposes that project beneficiaries' participation is positively related to PO toward a project. The results of an independent t-test (Table 4.4) reveal that those assigned to the participatory condition ( $M = 6.154$ ,  $SD = 0.655$ ) had significantly higher positive PO toward a project than those assigned to the non-participatory approach ( $M = 1.861$ ,  $SD = 0.551$ ). Thus, hypothesis 2 is not rejected.

Table 4.4: The effect of participation on PO toward the project

Conditions	PO	
	Mean	SD
Non-participatory approach/control group (n=43)	1.861	0.551
Participatory approach (n=44)	6.154	0.655

Notes:  $t(85) = -33.039, p < 0.001$ .

Hypothesis 3 states that PO is positively related to behavioral intentions promoting the likelihood of project sustainability. The results in Table 4.5 show a strong and highly significant relationship between PO and behavioral intentions to sustain a project ( $\beta=0.806, P<0.001$ ). This finding offers strong support for not rejecting H3.

Table 4.5: Unstandardized coefficients of regression analysis for PO & behavioral intentions to sustain a project

	(1)
	Behavioral intentions to sustain a project
Psychological ownership	0.806 <sup>***</sup> (0.0290)
_Constant	1.006 <sup>***</sup> (0.133)
<i>N</i>	87
<i>R</i> <sup>2</sup>	0.901

Note: Standard errors in parentheses: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

We next tested whether the relation between participation in the needs assessment and planning stages of a project and behavioral intentions toward project sustainability was mediated by PO (hypothesis 4). Following a four-step approach proposed by Baron and Kenny (1986), statistics of the simple mediation analysis of the data from the experimental study are shown in Table 4.6. In model 1, the result shows that project beneficiaries' participation has a positive significant influence on behavioral intentions to sustain a project ( $b=3.512, P<0.001$ ). Thereby, step 1 of the mediational analysis is satisfied. In model 2,

beneficiaries' participation is significantly correlated with PO, which is the mediator ( $b=0.4.294, p<0.001$ ), meeting the second condition for mediation.

Table 4.6: Summary statistics for unstandardized coefficients of simple mediation

	Model 1 (Step 1)	Model 2 (Step 2)	Model 3 (Steps 3 & 4)
	Intention	PO	Intention
Condition <sup>†</sup>	3.512*** (0.154)	4.294*** (0.130)	0.691 (0.478)
Psychological ownership			0.657*** (0.107)
Constant	2.481*** (0.109)	1.860*** (0.0924)	1.258*** (0.219)
<i>N</i>	87	87	87
<i>R</i> <sup>2</sup>	0.860	0.928	0.903

Notes: Standard errors in parentheses, \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ , †the conditions are [0=participatory approach; 1= non-participatory approach].

Model 3 in Table 4.6 entails performing a hierarchical regression analysis by using both the independent variable (beneficiaries' participation) and the mediator (PO) as potential predictors of behavioral intention. The results indicate that PO is a significant predictor of behavioral intentions to sustain a project ( $b=0.657, SE=0.107, P<0.001$ ). Moreover, project beneficiary participation was no longer a significant predictor of behavioral intentions to promote project sustainability after controlling for the mediator, PO ( $b=0.183, SE=0.478, P>0.05$ ). Approximately 90% of the variance in behavioral intentions to sustain a project was accounted for by the predictors ( $R^2=.903$ ). Sobel's test confirmed the significant indirect effect of psychological ownership ( $Z=6.04, SE=.48, p<.001$ ). Thus, hypothesis 4 is not rejected.

In summing up the results from the mediation analysis, Figure 4.2 indicates the outputs from the regression analysis by taking the raw (unstandardized) regression coefficients and the corresponding standard errors for the above steps: (a) PO was positively related to participation ( $b=4.294, p<0.001$ ), (b) participation was positively related to behavioral

intentions ( $b=3.512, p<0.001$ ), and (c) when both PO and participation were entered into the regression, the estimate of participation's effect dropped (becoming non-significant;  $b=0.691, ns$ ) and PO remained significant ( $b=0.657, p<0.001$ ).

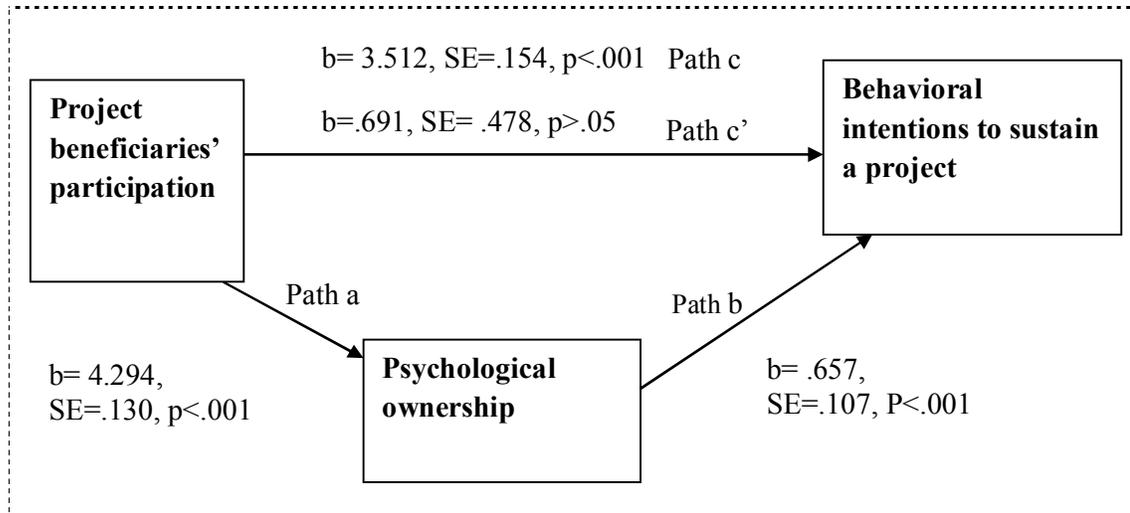


Figure 4.2: Outputs from mediation analysis in our model

#### 4.6. Discussion

Our study investigates whether active involvement of project beneficiaries during the needs assessment and planning stages of a project affects PO, which in turn can enhance the behavioral intentions of project beneficiaries towards project sustainability. The study employed a mediation model with an experimental design on a sample of 87 students (44 in the experimental group and 43 in the control group) by letting the participants play the role of project beneficiaries in the project needs assessment and planning stages. In line with the expectations, the result showed that participants under the genuine participation condition (experimental group) elicited higher positive behavioral intentions to sustain development projects than those under the passive participation condition (control group). The finding indicated that PO mediates the relationship between project beneficiary participation and behavioral intentions that promote project sustainability.

Our study makes several contributions to the project management literature. First, our findings complement previous studies on PO (Mayhew et al., 2007; Olckers & Du Plessis, 2012) by indicating that PO in the absence of formal and legal ownership can improve beneficiary behavioral intentions, in our study those aimed toward project sustainability.

A second contribution of our study is the application of PO in the context of project management. Ours is the first study we know of to experimentally test the mediating role of PO in the project context. This research supports the hypothesis that genuine participation in the needs assessment and planning stages of development projects is positively related to behavioral intentions promoting project sustainability. Psychological ownership appears to be an important aspect of the relationship between project beneficiary participation and the behaviors that determine project sustainability. The findings underline the relevance of PO in explaining the strong positive effect of genuine participation on behavioral intentions promoting project sustainability.

A straightforward practical implication of our research is that the management of development projects should consider the genuine participation of the project beneficiaries in the stages of needs assessment and planning. Genuine participation can instill a sense of PO that further ensures the sustainability of a project, in the absence of any formal or legal claims of ownership. In development projects, the creation of feelings of possession toward the project is a necessary condition to improve the behavioral intentions promoting project sustainability.

The study underlined that community participation during the project needs assessment and planning stages can be a mechanism to improve the PO of the people toward a project. In the context of project management, organizations can instill a sense of PO for the project beneficiaries through a genuine participatory approach in the needs assessment and planning stages. This does not mean that project beneficiary participation at the later stages of a project is not important, but we could not test for this in our experimental design. The finding of this study is in line with previous studies on general management in organizations that propose three routes for PO to emerge: coming to know the target, self-investment in the target, and exercise of control over the target (Pierce, Jussila, & Cummings, 2009). Applying this logic to development projects means that development projects should actively involve the target community (beneficiary) starting from the needs assessment and planning stages.

#### **4.6.1. Limitations and future research directions**

Our study has several limitations. First, our participants were undergraduate students, raising questions about the generalizability of the results to the real beneficiaries of a project. However, although undergraduate students, the participants were relatively old (27 years old on average), and had significant work experience (more than 4 years on average). Moreover,

participants were led to assume the role of the project beneficiaries as if they lived in the environment explained in the vignette scenario (Aguinis & Bradley, 2014). Thus, the target participants were relevant in our study. The second potential limitation of this research is the use of a case scenario in manipulating the level of participation in the project needs assessment and planning stages. This poses the problem that participants may not perceive the manipulated social setting as real. In addition, a scenario study is characterized by weak external validity despite having strong internal validity (Leary, 2012). In this regard, we encourage researchers to test our model using a quasi-experimental design in a field setting.

The third limitation relates to the question of how well intentions predict behavior. Our study builds on classical social psychological models – such as the theory of reasoned action and the theory of planned behavior – that propose intention to perform as the most immediate and important predictor of a person’s behavior (Sheeran, 2002; van Hooft, Born, Taris, Van der Flier, & Blonk, 2005; Webb & Sheeran, 2006). Though the gap between intentions and behavior is not negligible, a meta-analysis by Sheeran (2002) concludes that intentions remain the key predictor of behavior for social and applied psychologists. In the context of our experiment, the likelihood that expressed behavioral intentions would be linked to actual behaviors in practices is strengthened by the extensive discussion of the case, which made the situation salient to the students.

The fourth limitation of this study is the fact that none of the study participants received any tangible benefit from the project simulated by the vignette approach. However, the literature on economic experiments shows that participants are relatively insensitive to the level of the reward they can gain (Cameron, 1999). This makes us confident that the response behavior of our participants is not qualitatively different from that in a situation with real benefits.

Finally, the present study identified PO as a factor mediating the interaction between project beneficiary participation and behaviors fostering project sustainability. Previous literature (e.g. Botchway, 2001; Brett, 2003; Lyons et al., 2001) documents such mediating variables as community capacity building and empowerment in the relationship between participation and project sustainability. Future research could attempt to identify other potential mediators and moderators.

#### **4.7. Conclusions**

Development projects targeting rural communities for the purpose of alleviating poverty are imperative in developing countries. But such projects face challenges of sustainability. To address this problem, organizations (mainly NGOs) need to find ways to enhance project sustainability. This research proposed and tested the viability of using a well-established project management tool – beneficiary participation – to help solve the sustainability issue in a development project context. We specifically found that genuine participation in the needs assessment and planning stages instills psychological ownership in project beneficiaries, which in turn leads to positive behavioral intentions that promote project sustainability. Therefore, development projects should consider demand-driven and management-for-stakeholders approaches, which seek to accentuate genuine participation by project beneficiaries in the needs assessment and planning stages of the project life cycle.

Appendix 4.A: *Measurement items*

**Psychological ownership**

1. I feel like this is MY project.
2. I feel that I am one of the owners of this project.
3. Most people that directly benefit from this project feel as though they own the project.
4. I sense that this project is OUR project.
5. It is hard for me to think of this project as MINE.
6. I feel that this project belongs to me.
7. I am responsible for the project we designed.
8. I am totally comfortable being a part of this project.
9. I feel like I own this project.

**Behavioral intentions for project sustainability**

1. I am very concerned about the proper functioning of the project for a long period of time.
2. I am very concerned whether the project will be properly maintained.
3. I am willing to contribute my money for the maintenance of the project, if the need arises.
4. I am willing to contribute my labor for the maintenance of the project, if the need arises.
5. I expect that there will be a fair distribution of the project benefits among the beneficiaries.
6. I expect that the infrastructure of this project will be protected and maintained by the community members.

**For manipulation check:**

1. Your level of involvement in the needs assessment of the project.
2. Your level of involvement in the selection of the project idea.
3. Your level of involvement in defining the project objectives and activities.
4. Your level of involvement in making decisions about the mobilization of resources for the project.
5. Your level of involvement in making decisions about the methodology of project monitoring and evaluation.



## **CHAPTER FIVE**

### **CONCLUSIONS<sup>8</sup>**

#### **5.1. Introduction**

Project success and the critical success factors associated with project success (CSFs) are very important research topics in project management literature. Since the 1970s many scholars have contributed to a better understanding of critical success factors, with the aim of improving project outcomes (Ika et al., 2012; Söderlund, 2011). In a broad sense, the well-known CSFs in the literature can be grouped into project context and technical and behavioral dimensions (Diallo & Thuillier, 2004; Dvir et al., 2006; Kwak & Anbari, 2009; Pinto & Slevin, 2006).

Though much research in project management has been devoted to identifying the reasons for success and failures of projects, with the exception of a few studies (e.g., Belout & Gauvreau, 2004; Yen et al., 2008), there is a tendency to underemphasize behavioral dimensions as success factors. Even from the existing scant literature about the role of behavioral dimensions, there is no conclusive finding about their impacts on project success (Zwikael & Unger-Aviram, 2010). Some of the areas of behavioral dimensions with inconclusive findings and/or overlooked as critical success factors in project management literature are project managers' leadership (Geoghegan & Dulewicz, 2008; Turner & Müller, 2005), team-building (Salas et al., 1999), problem-solving (Li et al., 2011), and beneficiaries' psychological ownership toward a project (Avey et al., 2009; Liu et al., 2012).

This PhD dissertation aims to contribute to the existing literature by filling in the aforementioned gaps. Accordingly, the dissertation has sought to address the following three core research questions:

1. How does a project manager's leadership contribute to project success?
2. What is the role of team-building and team problem-solving in project success?
3. How does project beneficiaries' psychological ownership affect project success?

More specifically, the existing literature still shows significant gaps awaiting further investigation, three of which were tackled in the present dissertation. Firstly, there is no satisfactory explanation of how leadership, and specifically transformational leadership,

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<sup>8</sup> The editorial style of each individual chapter has been edited slightly for consistency throughout the dissertation.

influences project success (Keegan & Den Hartog, 2004; Turner & Müller, 2005). Based on the works by Scott-Young and Samson (2008) and Turner et al. (2008), we introduced team-building as a factor playing a significant role in mediating the relationship between transformational leadership and project success. Secondly, although it is generally accepted that uncertainty is a key contingency factor (Shenhar, 2001), there are only a few studies that document how the negative influence of project uncertainty on project success can be mitigated from a behavioral perspective (Cleden, 2009; Ward & Chapman, 2008). In this regard, we proposed that team-based problem-solving would attenuate the negative influence of project uncertainty on project success (Anantamula, 2010; Zwikael & Unger-Aviram, 2010). Thirdly, there is little work in the project management literature that explicates the mechanism through which the project beneficiaries' participation promotes project success (Asatryan & Oh, 2008; Avey et al., 2009).

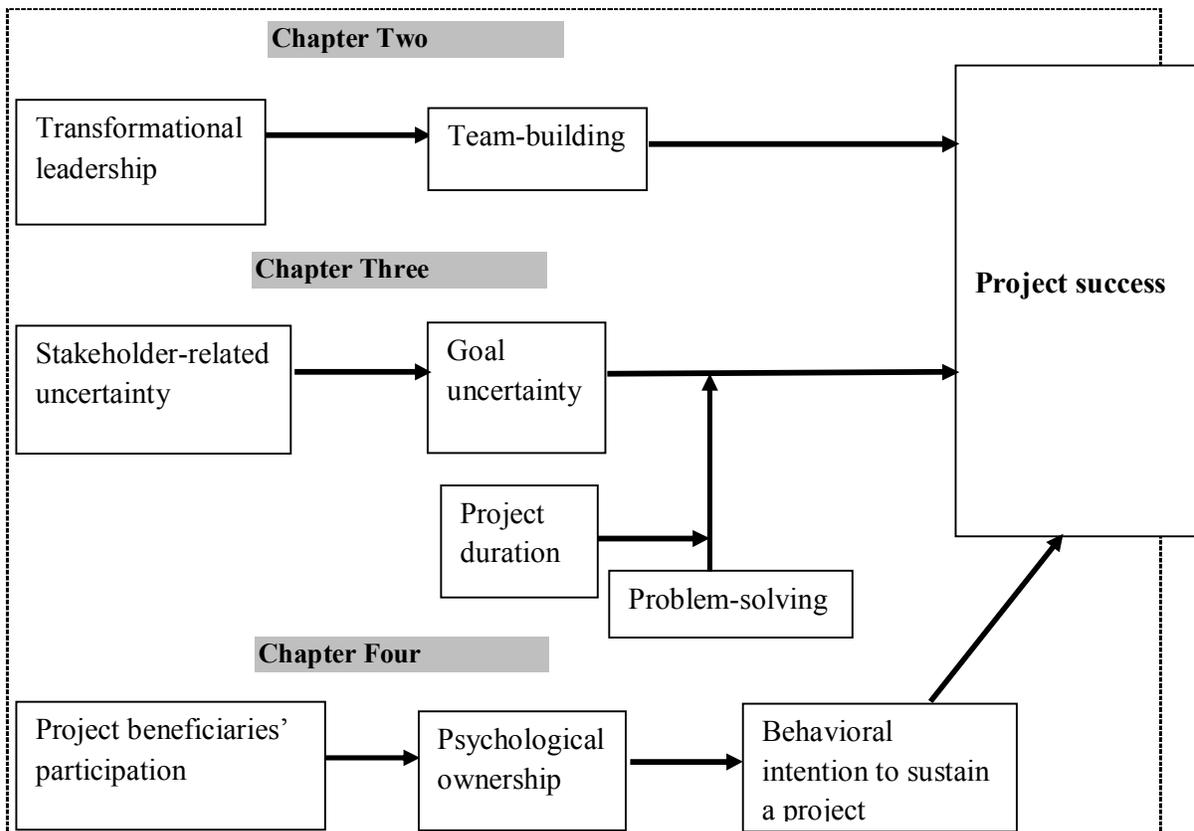


Figure 5.1: Overall framework of the study

Source: Author's own synthesis based on the works of Belout and Gauvreau (2004), Klein et al. (2009), and Barasa and Jelagat (2013)

Figure 5.1 depicts the overarching conceptual framework of the dissertation. The figure has three causal chains. The first pertains to the mediating role of team-building in the relationship between a project manager's transformational leadership and project success. The second pertains to the moderating role of the joint interaction of team problem-solving and project duration in the negative relationship between project uncertainty and project success. The third pertains to the mediating role of psychological ownership in the relationship between community participation and project sustainability. These issues have been addressed by the second, third, and fourth chapters of the dissertation, respectively.

In the remaining sections of this chapter, we will briefly summarize the empirical findings and subsequently discuss theoretical and practical implications of the dissertation.

## **5.2. Empirical Findings**

This PhD dissertation has three separate empirical chapters. Using a field survey, the dissertation presents empirical findings in Chapter Two and Chapter Three. In addition, Chapter Four of the dissertation offers empirical findings based on an experimental study.

In Chapter Two, the study shows that a project manager's transformational leadership and project team-building positively influence project success. Chiefly, this study indicates that team-building reinforces the positive relationship between transformational leadership and project success. The second empirical study, presented in Chapter Three of the dissertation, investigates the mediating role of the combined effect of problem-solving and project duration in the relationship between project uncertainty and project success. Accordingly, the study demonstrates that project uncertainty, both stakeholder-related uncertainty and goal uncertainty, negatively influences project success. Applying a moderated mediation model, the study reveals that the interplay of problem-solving and project duration moderates the strength of the mediated relationship between stakeholder-related uncertainty and project success via goal uncertainty, such that the mediated relationship becomes weaker in longer projects than in shorter projects.

In Chapter Four, using an experimental design, the study finds that active involvement of project beneficiaries during the needs assessment and planning stages has a significant positive influence on the behavioral intentions promoting project sustainability. Moreover, it finds that psychological ownership plays a mediating role in the relationship between project beneficiaries' participation and behavioral intentions promoting project sustainability.

### **5.3. Theoretical Implications**

Several theoretical contributions can be drawn from the findings of this dissertation. First and foremost, the findings demonstrate that behavioral dimensions such as leadership, team-building, project beneficiaries' participation, and psychological ownership are central to project success. This provides additional support from a behavioral perspective for the "Factor School" of project management (Söderlund, 2011). It shows that theorizing about critical success factors for projects will remain incomplete unless key behavioral factors are taken into account.

The second contribution concerns the role of transformational leadership in project success. Unlike the conclusion by Turner and Müller (2005), the results of our study indicate that transformational leadership, operationalized as a one-dimensional measure, contributes to project success directly, as well as indirectly via team-building. The implication of these findings is of great importance for leadership studies, which have underemphasized the role of project managers in project success (Turner & Müller, 2005; Tyssen et al., 2014). The relative neglect of the leadership role in explaining project success is surprising, but can perhaps be explained by the traditional emphasis in the project management literature on "hard" factors (Cooke-Davies, 2002). This study shows that leadership contributes in several ways to project success, and it seems likely that additional research will unveil even more mechanisms through which the leadership factor plays a role.

The third theoretical implication of this study concerns the significant role of team-building in project success. Prior studies have produced mixed results regarding the effect of project team-building on project success. Our finding shows that team-building significantly reinforces the effect of transformational leadership on project success. Furthermore, the study adds to the team-development literature by developing a comprehensive and internally reliable measure for team-building interventions based on the works by Klein et al. (2009) and Salas et al. (1999). Fourth, the finding that team problem-solving helps to reduce the negative influence of project uncertainty (as operationalized by stakeholder-related uncertainty and goal uncertainty) on project success is another addition to the studies concerning the role of team problem-solving in project success. These findings together point to the importance of taking behavioral processes within projects seriously. Traditionally, the focus in project research has been on scheduling, resource allocation, budgeting, project

control, risk management, and critical chain project management (Pinto, 2002; Söderlund, 2004), but the scope of studies must be increased to include “soft” behavioral factors as well.

Fifth, the findings demonstrate that the connection between project beneficiaries’ participation and psychological ownership leads to behavioral intentions that promote project sustainability. This would provide additional support for the theory of reasoned action that attributes real behavior to intentions (Ajzen, 1991; Baker & Crompton, 2000). Additionally, the finding that psychological ownership mediates the relationship between participation and behavioral intentions in a project’s setting would complement prior studies (Mayhew et al., 2007; Olckers & Du Plessis, 2012) that confirm the significant effect of psychological ownership on employee performance. For the project literature, this finding is in tune with the phrase “a project is not an island” (Engwall, 2003). Especially for development projects, opening up the internal definition and management of the project to those who are the intended beneficiaries is of prime importance if the project outcomes are to be sustainable. This finding may also be generalizable to other types of projects (e.g., house construction), with far-reaching consequences for our ideas of how such projects can be optimally managed.

Sixth, the study contributes to stakeholder theory in two ways. One relates to the fact that fuzzy identification of stakeholders and/or stakeholders’ unclear expectations could lead to inability to specify a project goal, resulting in project uncertainty. This would in turn reduce the likelihood of project success. The other relates to the finding that participation of project beneficiaries in decision-making at the early stages of a project contributes to the creation of a sense of psychological ownership. Consequently, project beneficiaries would develop positive behavioral intentions to promote project success and sustainability. Thus, the most important implication here would be the key role of stakeholders in project success (Littau, Jujagiri, & Adlbrecht, 2010).

All together, the findings of this study contribute to a form of project leadership theory that should consider a project as a social system (Gareis, 2006) and recognize a shared (distributed) approach to leadership instead of an individualized focus on the project manager (Lindgren & Packendorff, 2009). A project as a temporary social system implies there should be regular interactions within the project team (internally) and effective communication and collaboration between a project and its stakeholders (externally). A distributed leadership approach views project leadership as emerging from social interaction between the project team and project manager rather than solely from the project leader (Lindgren & Packendorff, 2009). This “contemporary” project leadership would ensure the practices of team-building

and establish collaborative relationships with a diverse group of project stakeholders so as to attain project success (Ramsing, 2009). The essence of “traditional” project leadership, on the other hand, emphasizes undertaking task-oriented project activities, while relations could be put aside temporarily for a project to succeed (Lindgren & Packendorff, 2009). Thus, the findings in this study reflect the need to shift from traditional project leadership to a “contemporary” project leadership.

#### **5.4. Practical and Policy Implications**

The study shows the importance of behavioral dimensions – both internal and external to project organizations – for successful project management. On the internal side, leadership and team-building, *ceteris paribus*, are important behavioral dimensions that are crucial in determining project success.

With regard to leadership, project managers’ transformational leadership has a significant influence on project success both directly and through the mediating role of team-building. The practical implications of these findings are key for project organizations and project managers. One implication relating to project organizations is that they need to work towards the development of transformational leadership behaviors. As indicated by prior studies (e.g., Avolio et al., 2004; Lindgren & Packendorff, 2009), transformational leadership involves behaving as a model for the project team and leading the team through inspirational motivation, intellectual stimulation, and individual consideration approaches. These are not behaviors that may be assumed to be part of the repertoire of all project managers. Though great care is needed during the recruitment and selection stages, organizations should also perform a variety of activities to make sure that project managers develop and practice transformational leadership. Beyond the self-motivation of project managers, organizations should introduce training programs, on a regular basis, that help project managers develop and practice the behaviors of transformational leadership. The other implication relates to the point that project managers should put time and energy into project team development. Particularly, they need to plan, implement, and monitor the implementation of team-building practices over a project life cycle. This would in turn strengthen the important role of team-building in fostering an environment for success.

The second internal behavioral dimension concerns team-building and entails implementing strategies such as goal-setting, role clarification, interpersonal relations, and problem-solving. The straightforward implication of this is that project organizations should

give due attention to instilling team-building as a work culture. One way could be through investing in team-building strategies and teamwork training across a project life cycle, namely conceptualization, planning, execution, and termination (Patanakul, Iewwongcharoen, & Milosevic, 2010). Specifically, goal-setting and role clarification can be mainly done for the first two stages of a project life cycle, while activities targeting interpersonal relations and problem-solving need to be undertaken throughout a project. Taken together, these first two recommendations have far-reaching implications for the way managers of project-based organizations, such as NGOs, should think about project management.

In addition to team-building's contribution to enhancing project success, it could have the potential to mitigate the negative influence of project uncertainty on project success. In particular, our study shows that the proper practice of team problem-solving – one of the components of team-building – is crucial to reduce the negative effect of project uncertainty on project success. This implies that project managers should empower project teams to practice team problem-solving so that they can address context-specific problems (Li et al., 2011).

External to the project organization, our study indicates that project beneficiaries' participation and their psychological ownership of a project can improve the likelihood of project success. One straightforward practical implication from this finding is that genuine participation of project beneficiaries in the conception and planning stages of a project requires serious attention from project organizations. Thus, NGOs – in our context – should follow the bottom-up approach in identifying the needs and demands of the community by involving the community in all project stages. Particularly in the conception and planning stages, project beneficiaries should take part in a number of things such as assessing the local situation, defining the local problems, setting priorities, making decisions, planning action programs to solve the problems, sharing responsibility in project implementation, and evaluating and modifying the project (Paul, 1987). As a result, the community would develop feelings of psychological ownership toward a project, which would in turn facilitate the creation of behavioral intentions that promote project success and project sustainability.

Moreover, in relation to the external environment, the finding pertaining to the negative effect of stakeholder-related uncertainty and goal uncertainty on project success calls for proper stakeholder management. This suggests that project organizations could contain project uncertainty through stakeholder identification, classification, analysis, and management approach formulation (Littau et al., 2010). These two findings with regard to

external project constituencies – stakeholders and beneficiaries – imply that a more traditional approach in which those involved in the project execution form a relatively closed community is no longer optimal. This project execution community needs to make its boundaries more porous and open up to relevant actors in the environment.

To sum up the practical implications mentioned above, project managers' leadership and team-building as internal to project organization play an important role in determining development project success. Hence, organizations should attempt to develop a conducive environment that nurtures a culture of transformational leadership and team-building, which in turn will enhance project success (Jiang, Klein, & Chen, 2001). External to project organizations, stakeholder-related factors such as participation in the early stages of a project and psychological ownership contribute to the success of development projects. Overall, NGO sector organizations should explicitly consider the above-mentioned behavioral dimensions in the management of a development project over its life cycle. This would in turn maximize the contribution of the NGO sector in the realization of “Sustainable Development Goals” (SDGs), the successor framework to MDGs (Gore, 2015).

### **5.5. Limitations of the Study 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 as perceived by project managers, instead of objective data regarding project success. Though supervisory ratings are prone to biases, there is evidence that objective measures and subjective ratings are consistently similar (Nathan & Alexander, 1988). We employed multiple scale items for the measure of project success in order to capture all possible information on the construct and to increase its reliability, just as prior studies have done (Khang & Moe, 2008; Pinto et al., 2009; Suprpto et al., 2015). Nevertheless, cognizant of the potential limitations of subjective measures, we recommend that future studies also include objective measures of project success from project documents like budget plans and closing reports. Moreover, we encourage conducting case studies for an assessment of factors leading to 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 in two of our studies, which limits inferences about causal relations. We therefore recommend that longitudinal studies be conducted on the effects of project managers' transformational leadership, team-building, and project uncertainty on project success over the project life cycle. Alternatively, future studies could benefit from experimental designs (as in our third study), which by manipulating variables are better able to identify causal relationships.

The third limitation concerns our data-collection instruments. 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 can lead 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 & 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 based on these procedures and tests is that common method variance is unlikely to bias our results. Another limitation related to our data collection instruments is that the measure of stakeholder-related uncertainty, which captures the average influence of various external stakeholders on project success, fails to capture the relative importance of different stakeholders in influencing the project success (Bourne & Walker, 2006). Therefore, future research may take into account the relative power and influence of each potential project stakeholder in measuring stakeholder-related uncertainty.

The fourth limitation of our study is that we used a self-reported form to measure transformational leadership, which 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). Nevertheless, future research would benefit from a design that directly targets project team members in measuring project leadership behaviors.

The fifth limitation 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 & Wehn, 2016). One finding 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.

The sixth limitation is related to our experimental design, presented in Chapter Five, in which the participants were undergraduate students, raising questions about the generalizability of the results to the real beneficiaries of a project. However, the participants were led to assume the role of the project beneficiaries as if they lived in the environment explained in the vignette scenario (Aguinis & Bradley, 2014). Thus, the target participants were relevant in our study. Nevertheless, the use of a case scenario in manipulating the level of participation in project needs assessment and planning stages may pose the problem that participants may not perceive the manipulated social setting as real. Particularly, a scenario study is characterized by weak external validity despite having strong internal validity (Leary, 2012). Thus, we encourage researchers to test our experimental design model using a quasi-experimental design in a field setting.

Another area for future research concerns the role of gender in project management. In our study, we could not find significant results indicating that gender differences of project managers are related to differences in project success and practices of transformational leadership and team-building. One possible explanation for this, in part, could be the small number of female project managers (they constituted only about 19%) in our sample. This confirms that the field of project management is still dominated by men (Henderson & Stackman, 2010). Therefore, more research is required to examine the glass ceiling barriers that prevent females from becoming project managers. In addition, it is important that future research explores the role of gender differences in project success, leadership, and team-building practices. In the meantime, it should be acknowledged that our study, with all of its limitations in this regard, does not provide any *prima facie* evidence of a significant gender effect in the behavioral processes studied.

We hope that, taken together, our studies will help improve the success rate of development projects, both in Ethiopia and elsewhere, and that the dissertation in this way may make a small contribution to the improvement of living conditions of the people in these countries.

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