The Relationship between Project Governance and Project Success

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Abstract

This study looks at the relationship between project governance and project success from an Agency Theory and Stewardship Theory perspective. For that project governance was operationalized respectively as a) the extent of shareholder versus stakeholder orientation and b) the extent of behavior versus outcome control, both exercised by the parent organization over its project. A cross-sectional, worldwide online survey yielded 254 usable responses. Factor and regression analyses indicate that project success correlates with increasing stakeholder orientation of the parent organization, while the types of control mechanisms do not correlate with project success. Results support the importance of stewardship approaches in the context of successful projects.

Keywords: Project governance, project success, agency theory, stewardship theory

Introduction

Forty years of research have brought up a variety of new success factors (i.e. those elements that, when applied during a project's life cycle, increase the project's chances to be successful) and extended the number of success criteria (i.e. those measures applied at the end of the project to judge on the project's success). Project success is hereby seen as the achievement of a particular combination of objective and subjective measures, manifested in the success criteria and measured at the end of a project (Müller & Judgev, 2012). But success rates still do not meet expectations (Judgev & Müller, 2005; Lehtonen & Martinsuo, 2006). Because of that, researchers have started to widen the scope of possible success factors and focus more on the structural characteristics of the project context and its impact on success. One of these factors is project governance, which has

grown exponentially in popularity since 2005 (Biesenthal & Wilden, 2014). This stream of literature identifies the structural characteristics needed for successful project execution (Müller & Lecoeuvre, 2014). Project governance is “the use of systems, structures of authority, and processes to allocate resources and coordinate or control activity in a project” (Pinto, 2014, p. 384), it coexists within the corporate governance framework with the objective to support projects in achieving their organizational objectives (Müller, 2009). The majority of published research on project governance is conceptual, supplemented by some qualitative studies and very little quantitative evidence on the relationship between project governance and project success. Among the few quantitative studies are Wang and Chen's (2006) assessment of governance impact on success in ERP projects, and Müller and Martinsuo’s (2015) investigation of the role of project governance in the relationship between relational norms between project buyers and suppliers and their joint project’s success. However, both studies showed an important role of governance, but were confined to the IT industry. This is in contrast to general management studies, where the link between corporate governance, management performance, and shareholder value is well researched (Amzaleg, Azar, Ben-Zion, & Rosenfeld, 2014; Core, Holthausen, & Larcker, 1999; Lazonick & O’Sullivan, 2000; Maher & Andersson, 2000). As project governance is aligned with corporate governance and good corporate governance is associated with management performance, a link between project governance and project success may be assumed. This will be addressed in the present paper

The purpose of this study is to investigate the relationship between project governance and project success. The aim is to understand which forms of project governance relate with project success. To achieve this, the following research question is posed:

What is the relationship between project governance and project success?

To answer this question, we first empirically test the correlation between project governance and project success. After that we discuss some of the underlying assumptions, which, when met, may provide indicators for a limited causality. The unit of analysis is the relationship between project

governance and project success. The study uses the governance paradigms framework from Müller and Lecoeuvre (2014), which identifies two governance dimensions: a) a continuum of the extent of shareholder versus stakeholder orientation (following Clarke, 2004), and b) a continuum on the level of behavior versus outcome control (following Ouchi 1980), as exercised by the project's parent organization. This allows for the contrasting views of agency and stewardship theory. Agency theory is hereby seen as a proxy in explaining behavior in more shareholder-oriented governance structures, where contracts and process control structures are used to manage the self-serving behavior of managers for the *maximization of shareholder wealth* (Berle & Means, 1968; Friedman, 1962). Contrarily, stewardship theory is taken as a lens explaining behavior in more stakeholder-oriented governance structures, where trust and controlling by outcomes/results serve as a mechanism to govern towards the achievement of organizational goals by balancing the requirements of a diverse set of stakeholders (Davis, Schoorman & Donaldson, 1997, Müller, 2011).

The study is relevant for practitioners developing success related governance structures by pointing out the success related governance approaches, and for academics in developing contingency theories of project performance and results.

The next section reviews literature on governance, project success, and agency and stewardship theories from which the hypotheses are derived, followed by the research methodology, results and discussion sections. The paper finishes with the study's conclusions and its implications.

Literature Review and Hypotheses

Governance as a success factor on projects

Building on the early success factor models by Pinto, Slevin and Prescott (Pinto & Prescott, 1988; Pinto & Slevin, 1988), which covered organizational effectiveness and technical validity, the development of success factors diversified significantly over the years. Researchers soon realized that success factors without structure, grouping, and context would result in increased project risks; therefore, success factor frameworks were introduced such as those fostering multi-dimensionality

and idiosyncrasy of factors (Baccarini, 1999; Shenhar, Dvir, Levy, & Maltz, 2001b). Further research showed the importance of soft factors such as teamwork (Hoegl & Gemuenden, 2001) or leadership styles of project managers (Turner & Müller, 2005) and the shared leadership by the team (Cox, Pearce, & Perry, 2003) (see Judgev & Müller (2005) a for complete review). Serra & Kunc (Serra & Kunc, 2014) showed the link between strategy planning and execution using Benefits Realization Management (BRM) as a success factor. The importance of project governance as a success factor in large scale investment projects was empirically assessed in two qualitative case studies in South Africa. Using Delphi and nominal group techniques the researchers found strong agreement among the interviewees that the application of governance principles affects project success (Bekker & Steyn, 2008). A recent quantitative study on the impact of project management methodologies on project success in different project governance contexts used the analysis framework from Sharma, Durand and Gur-Arie (1981). Results indicated that governance has neither a pure moderating nor a mediating role in the methodology – success relationship, thus it indicates that governance is an antecedent variable. This is in line with conceptual studies, which perceive governance to span the entire life-cycle of temporary organizations, such as projects. Especially the organization's shareholder or stakeholder orientation, as well as the organizational control structures can be assumed to exist before individual projects are launched in these organizations. Hence, Stinchcombe's (1965) theory may apply, which suggests that "the founding characteristics imprinted at the birth of an organization influence its subsequent behavior" (Van de Ven, 2007, p. 169). Therefore we assume "temporal precedence of the cause [project governance] occurring before the effect [project success, measured at the end of the project]" (Van de Ven, 2007, p. 169), contingent on the criteria that governance structures are setup by organizations independent of their project types, thus governance structures are not chosen depending on the project at hand, If this is the case, the empirical test fulfills the first of three criteria for causality, as proposed by the 19th century philosopher John Stuart Mills and more recently by Andrew van den Ven (2007). The other two criteria (covariation or correlation, and absence of spurious factors) are addressed in the analysis section of this paper. A discussion about a possible causal relationship between project governance and project success follows in the conclusion section.

Project Success

Historically the understanding of project success criteria has evolved from the simplistic triple constraint concept, known as the iron triangle to something that encompasses many additional success criteria such as quality, stakeholder satisfaction, and knowledge management. (Atkinson, 1999; Judgev & Müller, 2005; Müller & Judgev, 2012; Shenhar & Dvir, 2007). In terms of measuring success, a variety of models for measuring project success were developed, such as the popular ones are by Pinto and Prescott (1988), Shenhar, Tishler, Dvir, Lipovetsky, and Lechler (2002), Hoegl and Gemünden (2001), or Turner and Müller (2006), which are all designed with different underlying assumptions.

An amalgamation of these models was done by Khan, Turner, and Maqsood (2013), who analyzed the literature on success criteria of the past 40 years. Their model for measuring success was selected for this study as it is based on most recent literature, which is a superset of the success criteria from the leading researchers on project success. Their model offers a balance between hard and soft factors and measures 25 success criteria variables organized in the five dimensions. The model contains the three criteria, which are typically termed the iron triangle (dimension 1 below), plus four additional project success criteria dimensions:

1. Project efficiency,
2. Organizational benefits,
3. Project impact,
4. Stakeholder satisfaction, and
5. Future potential.

Appendix 1 contains the list of success criteria variables (questions).

In this paper, project success is assessed for its correlation with project governance and then discussed as a possible dependent variable in a causal relationship.

Project Governance

According to Klakegg et al. (2009), it is important that governance covers all levels of the organization, starting with corporate governance flowing from the board level to the management level responsible for execution, and down to the project level of governance. The definition of corporate governance from the Organization for Economic Co-operation and Development (OECD) is:

“Involving a set of relationships between a company’s management, its board, its shareholders and other stakeholders [...] and should provide proper incentives for the board and management to pursue objectives that are in the interests of the company and its shareholders and should facilitate effective monitoring *OECD* (2004, p. 11)”.

Project-related governance is based on and aligned with corporate governance; but focuses on the governance of individual projects. The Project Management Institute (PMI®) defines project governance as “an oversight function that is aligned with the organization’s governance model and that encompasses the project lifecycle [and provides] a consistent method of controlling the project and ensuring its success by defining and documenting and communicating reliable, repeatable project practices” (PMI, 2013b, p. 34). Whereas, project governance looks at the governance of individual projects, the governance of projects looks at a group of projects, such as a program or portfolio of projects and therefore has a broader perspective (Müller, Pemsel, & Shao, 2015).

Before going into more detail on project governance, it is important to understand the history and application of management theories in the corporate governance world, because many of them apply to and are used in project governance.

Before the 1980’s corporate governance was largely in the realm of lawyers until economists became interested in how organizations make decisions (Gilson, 1996). Gilson went on to say the economists perceived a connection between organizational governance and organizational performance. From this point, researchers started to apply management theories to help understand the factors that

influence corporate governance and organizational performance (Maher & Andersson, 2000). The most popular theories applied to corporate governance include agency theory, stewardship theory, transaction cost economics, stakeholder theory, shareholder theory and resource dependency theory (Yusoff & Alhaji, 2012). One of the motivations for using general management theories to ground theories in governance of corporations was to help frame, understand, and address the issues associated with poor corporate governance (Hirschey, Kose, & Anil, 2009). Since the late 1970's, the issues associated with poor corporate governance and the impact on shareholder value has been well researched across the major economies (Basu, Hwang, Mitsudome, & Weintrop, 2007; Hirschey et al., 2009). Resolving issues associated with corporate governance has shown to consistently increase shareholder gains (Gompers, Ishii, & Metrick, 2003).

Agency theory, which is based on Jensen and Meckling's (1976) work takes an economic view of the shareholder and manager relationship in companies by assuming rational and self-interested actors. Agency theory has been used by researchers in traditional finance and economics, for example, accounting (Demski & Feltham, 1978), economics (Spence & Zeckhauser, 1971), and finance (Fama, 1980), then applied to marketing (Basu, Lal, Srinivasan, & Staelin, 1985), political science (e.g., Mitnick, 1995), organizational behavior (Eisenhardt, 1985), sociology (Kaiser, 2006), corporate governance (John & Senbet, 1998), and project governance (Turner & Müller, 2003). It posits that corporate managers (agents) may use their control over the allocation of corporate resources opportunistically in order to pursue objectives not in line with the interests of the shareholders (principals) (Jensen & Meckling, 1976). This is exemplified in the principal – agent problem which occurs when both principal and agent act in a self-interested, utility maximizing manner (Mitnick, 1973). Davis, Schoorman and Donaldson (1997) relate this behavior to the lower levels of Maslow's (1970) hierarchy of needs. Principal agent problems arise from information asymmetry, because one party (e.g. the project manager as agent) has typically more or better information than the other (e.g. the project sponsor as principal) (Wiseman, Cuevas-Rodríguez, & Gomez-Mejia, 2012). This results in a moral hazard risk which, unless mitigated, is likely to increase the agency effect (Poblete & Spulber, 2012). Popular remedies to the problem include contracts and incentives that motivate

agents to act in accordance with their principals, controlled through related control structures. Corporate and project governance, when designed correctly within the context of the organization, should minimize the risks and issues associated with agency theory. Agency theory based on Jensen and Meckling's (1976) view of principle agent models have been criticized because they neglect to consider that the principle-agent transitions are socially embedded and therefore impacted by broader institutional contexts (Davis, Schoorman, & Donaldson, 1997a; Wiseman et al., 2012). In this study we use agency theory as a proxy to explain behavior in the shareholder oriented and behavior controlled governance structures.

Stewardship theory arose in response to the criticism regarding the generalizability of agency theory. It takes a psychological perspective towards governance and states that the actors (managers) are stewards whose motives are aligned with the higher level objectives of their principles rather than their own, short term utility maximizing objectives (Donaldson & Davis, 1991). Davis, Schoorman and Donaldson (1997) relate this behavior to the higher levels of Maslow's (1970) hierarchy of needs. The steward differs from the agent in that the steward is trustworthy and will make decisions in the best interests of the organization, whereas an agent needs to be incentivized and/or controlled to do this. (Davis, Schoorman, & Donaldson, 1997b). Stewardship theory has been criticized, because it views the organization in a static way and does not account for stewards resorting back to an agent position when their positions are threatened (Pastoriza & Ariño, 2008). In the present study we use stewardship theory as a proxy to explain behavior in the stakeholder oriented and outcome controlled governance structures.

Neither agency theory nor stewardship theory is more valid than the other, as each may be valid for different types of phenomena (Davis et al., 1997b). This study investigates some of these phenomena.

Both agency and stewardship theory define the relationship between actors, thus are task or project level theories. They are complemented by their organizational counterparts' shareholder and stakeholder theory respectively. These are described further on this paper.

Transaction cost economics (TCE), is an economic theory which suggests that organizations achieve the lowest transaction costs by adapting the governance structures to the nature of the transaction (Williamson, 1979). Resource dependency theory, suggests that managers are able to prioritize internal and external resources needed to achieve the corporate objectives (Pfeffer & Salancik, 1978). When applied, all of these theories have helped to improve corporate governance within organizations, underpinning ethical values and moral choices (Cameron, Post, Preston, & Stanford, 2004).

In the realm of projects, two of the three elements that constitute governance are project governance (governance of individual projects) and the governance of projects (governance of a group of projects such as a program or portfolio) (Müller et al., 2015). Both elements are aligned with the Project Management Institute (PMI) definitions and governance structures of projects, programs, and portfolios (PMI, 2013a; PMI, 2013b, 2013c,).

The literature on project governance shows the diversity of governance approaches (Müller et al., 2015), covering topics such as the optimization of the management of projects (Too & Weaver, 2014); interrelationship of governance, trust, and ethics in temporary organizations (Müller & Andersen et al., 2013); risk, uncertainty, and governance in megaprojects (Sanderson, 2012); governance in particular sectors such as information technology (Weill & Ross, 2004); and the normalization of deviance (Pinto, 2014). Papers on governance within the realm of projects have utilized to a large extent the same management theories used in corporate governance (Biesenthal & Wilden, 2014).

Quantitative studies on project governance and success were mainly done in the IT industry, where Wang and Chen (2006) used Structural Equation Modelling to show that an equilibrium of explicit contracts, implicit contracts, reputation, and trust as governance mechanisms mediates the relationship between project hazards and project success. A study by Müller and Martinsuo (2015) showed the moderating role of project governance in the relationship between relational norms between project buyers and suppliers and their joint project's success. Thus, the number of

quantitative studies is limited and industry specific. The cross sectional study by Joslin and Müller (2015) mentioned above identified governance as a quasi-moderator, thus holding an indeterminable role in the methodology – success relationship. Complementarily, the qualitative case studies by Bekker and Steyn (2008) indicate an antecedent relationship between governance and project success. Taken together, the results show lots of variation in the role of governance in project success. This knowledge gap calls for further research.

Few publications have provided some sort of categorization system for governance and its context, such as the four governance paradigms described by Müller (2009). This model builds on two dimensions. The first dimension addresses the corporate-wide governance orientation by using Clarke's (2004) continuum from shareholder to stakeholder orientation of a firm. The second dimension addresses the control behavior exercised by the parent organization over its project, by using Ouchi's (1980) and Brown and Eisenhardt's (1997) continuum from behavior control (i.e. following the process) to outcome control (i.e. meeting pre-established expectations). The operationalization of the paradigms was done by Müller and Lecoeuvre (2014) and allows a quantitative assessment of a project parent organization's governance position. We choose this model for the present study because of its applicability to a wide range of projects, in an attempt to understand organizations' project governance approaches and the role of the two dimensions for project success over a wide spectrum of possible project types, industries and geographies.

Literature on corporate governance and corporate performance shows a relationship between governance and organizational success, such that weaker governance mechanisms have greater agency problems resulting in lower corporate performance (Hart, 1995; Hirschey et al., 2009; John & Senbet, 1998; Ozkan, 2007); greater shareholder rights have a positive impact on corporate performance (Hirschey et al., 2009); and independent boards lead to higher corporate performance (Millstein & MacAvoy, 1998). We transfer this assumption that governance timely precedes organizational success from the general management literature to the realm of projects. This follows the notions of Biesenthal and Wilden (2014), as well as Turner and Simister (2000) who see project

governance as important in ensuring successful project delivery, and the particular quantitative findings by Wang and Chen (2006) for governance of IT projects, and the broader findings by Joslin and Müller (2015). Hence, we hypothesize:

Hypothesis 1: Project governance correlates with project success

The correlation between corporate governance orientation (i.e. preference for shareholder or stakeholder oriented governance) and project success has not been assessed in the past. A shareholder-orientation of the firm is indicated when an organization prioritizes the maximization of shareholder wealth higher than the requirements of other stakeholders (Clarke, 1998; Davis, Schoorman, & Donaldson, 1997). Hence, when organizations take a more internal view of their raison d'etre (Heblich, 2010). Definition of stakeholders vary. In this paper we adopt Freeman's (1984) view that stakeholders are those individuals or organizations that might affect the business objectives and anyone who might be effected by its realization. A stakeholder oriented organization is characterized by a more external view of their raison d'etre as an organization (Heblich, 2010), which takes into account the various stakeholder groups and balances their particular requirements for the accomplishment of organizational objectives (Ansoff, 1965, Clarke, 1998). This is exemplified by the project management literature which historically emphasized the importance of stakeholders in and for project success (e.g. Eskerod & Huemann, 2013 plus many others). Project managers view stakeholders as the ultimate receivers of project outcome and rank their satisfaction very high. Research showed that project managers in North America rank the importance of stakeholders highest among all success criteria, whereas project managers in other regions rank its importance consistently among the top 10 of the success criteria (Müller & Turner, 2007). Thus we hypothesize:

H1.1: Stakeholder oriented governance of projects correlates positively with project success.

Similarly, the nature of the link between control orientation (behavior versus outcome) and project success is unclear from the literature. While the literature on project management maturity models (e.g., Project Management Institute, OPM3®, (PMI, 2013c), and the literature on the governance of large-scale investment projects e.g., Klakkegg and Haavaldson,(2011), emphasize the importance of

following processes for successful project implementation, other research shows a more diversified picture, such as that by Crawford et al (2008) who showed the need for situational contingency of structures, or Turner and Müller (2004) showing that that control through methodology must find the balance between being too process-focused (i.e. behavior control) or too laissez-faire, because both lead to project failure. All of these studies imply a correlation between control structure and success.. Given the general notion of the process orientation of project management and its maturity (PMI, 2013c), and the recent popularity of process-based approaches to project management, such as Agile/Scrum (Schwaber, 2004), we hypothesize:

H1.2: Behavior control in project governance correlates positively with project success.

Figure 1 shows the related research model with the two governance dimensions as on the left hand side and project success on the right.

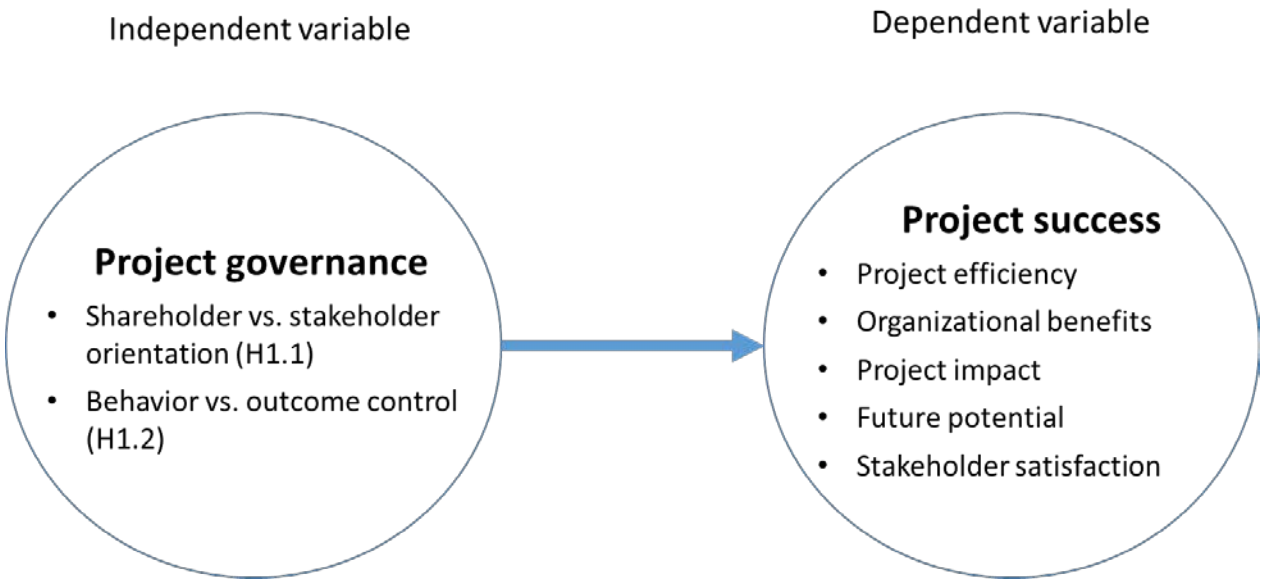

Figure 1: Research Model

Research Methodology

We followed Saunders, Lewis and Thornhills' (2011) process for research design, which comprises of seven steps: Post-positivism was used as epistemological stance, because it aims for objectivity

as an ideal, but is aware of the subjectivity stemming from the subjects targeted for data collection. Post-positivism identifies trends instead of generalizations (Biedenbach & Müller, 2011). A deductive approach was chosen for a robust design that includes both existing theory and new empirical evidence. A survey design was chosen to collect quantitative data in a cross-sectional manner from a wide variety of individuals, in order to gain the widest coverage of the resulting theory.

Questionnaire Development

Four sets of questions were included in the questionnaire. The first set included information about the last project; the next two sets covered governance paradigms and project success; and the last set collected the respondents' demographic information. The questionnaire followed the suggestions of Cooper & Schindler (2011) to ensure that the scales, criteria, and wording were consistent and clear. The project governance questions were taken from Müller and Lecoeuvre (2014). The governance paradigms were selected as they have been used successfully in several project governance related studies before and reflect the organization's governance positioning with regard to two continuums: (1) shareholder-stakeholder and (2) behavior-outcome. The project success dimensions were based on Khan and Turner (2013). Its five dimensions (project efficiency, organizational benefits, project impact, stakeholder satisfaction, and future potential), cover short- and long-term implications of project success. A five-point Likert scale was used with low values representing low levels of stakeholder orientation, outcome control, and success. A pilot test was done with ten respondents. Based on the feedback, minor wording changes were made for understandability. The pilot answers were not used in the analysis.

To avoid influences through Common Method Bias we followed the recommendations of Podsakoff and Organ (1986), including confirmed anonymity in the introductory text, different layouts and scales, randomizing of questions, as well as the conduction of Harman test for the constructs.

Data Collection

A worldwide, cross-sectional questionnaire was used to collect quantitative data for generalizable results, using snowball sampling. Respondents were contacted using email with a link to the web survey. In addition, the survey details were placed on project management LinkedIn forums. An email with the survey link was sent to PMI chapters in Switzerland, Germany, central USA and Pakistan, asking the Chapter Presidents to distribute the survey link to their members. Data were collected over 2 weeks in April 2014. We obtained 266 responses, of which 254 were usable for analysis. Responses came from 41 different countries: 38% from North America 24% from Europe, 22% from Australasia, and 16% from other countries. ANOVA analysis showed no difference between early and late respondents. The average respondents' work experience was 22 years and the average project-related work experience was 15 years. Sample demographics are shown in Table 1.

An ANOVA test between the demographic regions showed no statistical differences ($p = 0.249$).

Project information is shown in Table 2. Approximately 48% of the projects were less than €1 million in cost. 96% of the projects were of either medium or high urgency. 42% were executed in matrix organizations and 21% in functional organizations.

Characteristic	*N*	*%*	*Characteristic*	*N*	*%*
Sector			**Gender**		
Research & Development	31	12.2%	Male	194	76.4%
Engineering/construction	46	18.0%	Female	56	22.0%
Information technology/Telecom	120	47.1%	Other	1	0.4%
Media/Arts	9	3.5%	Total	251	98.8%
Relief aid	16	6.3%	Missing	3	1.2%
Other	29	11.4%			
Total	251	98.4%	**Geography - Working**		
Missing	4	1.6%	North America	96	37.8%
			Europe	61	24.0%
Position held			Australasia	56	22.0%
CIO	3	1.2%	Other	38	15.0%
CTO	2	0.8%	Total	251	98.8%
Project Portfolio manager	17	6.7%	Missing	3	1.2%
PMO	10	3.9%			
Program manager	65	25.6%	**Project related experience**		
Project manager	82	32.3%	1 to 5 years	36	14.6%
Team member	24	9.4%	6 to 10 years	63	25.6%
Architect/Advisor	6	2.4%	11 to 15 years	53	21.5%
QA/Audit function	3	1.2%	16 to 20 years	45	18.3%
Technical stakeholder	2	0.8%	20 years plus	46	18.7%
Business stakeholder	4	1.6%	Total	243	98.8%
Other	35	13.8%	Missing	3	1.2%
Total	253	99.6%			
Missing	1	0.4%	**Work experience**		
			1 to 5 years	36	14.6%
			6 to 10 years	60	24.4%
			11 to 15 years	46	18.7%
			16 to 20 years	49	19.9%
			20 years plus	52	21.1%
			Total	243	98.8%
			Missing	3	1.2%

Table 1: Demographics

Characteristic	*N*	*%*	*Characteristic*	*N*	*%*
Duration of last project			**Urgency of Last Project**		
Under six months	44	17.3%	Low	11	4.3%
6 months to less than 1 year	67	26.4%	Medium	107	42.1%
1 to 2 years	76	29.9%	High	135	53.1%
Over 2 years	66	26.0%	Total	253	99.6%
Total	253	99.6%	Missing	1	0.4%
Missing	1	0.4%			
			Last Project Executed in the following Organizational Structure		
Level of Last Project Complexity			Projectized Organization	81	31.9%
Low	24	9.4%	Functional Organization (Departmen	55	21.7%
Medium	117	46.1%	Matrix Organization	106	41.7%
High	111	43.7%	Other	11	4.3%
Total	252	99.2%	Total	253	99.6%
Missing	2	0.8%	Missing	1	0.4%
Value of Last Project					
Under 500,000 (Euro)	85	33.5%			
500,000 to 999,999	37	14.6%			
1,000,000 to 4,999,999	61	24.0%			
5,000,000 to 50,000,000	43	16.9%			
Over 50,000,000	27	10.6%			
Total	253	99.6%			

Table 2: Project information

Analysis methods

Analysis was carried out following the guidelines from (Hair, Black, Babin, & Anderson, 2010). Data were normally distributed (skewness and kurtosis between of ±2), thus eligible for the techniques used. Eight responses were removed as outliers and because *t*-tests showed that the answers from these respondents where significantly different from the rest of the sample.

Analysis was done in three steps:

1. Unrotated factor analysis on each of the three constructs (governance orientation, governance control, project success) as a Harman test for possible Common Methods Bias (Podsakoff & Organ, 1986)

2. Varimax rotated factor analysis (principal component analysis) with Eigenvalue of 1 was used to establish the factors representing each of the three constructs (Field, 2009)

3. Regression analysis to test the correlation between the independent constructs (governance orientation, governance control) and the dependent construct (project success) (Van de Ven & Poole, 2005)

Hence, in line with existing conventions, we tested a theoretically derived causality through correlation tests at the variable level, following Van de Ven (2007) using a variance method approach as outlined by Van de Ven & Poole (2005).

Validity and Reliability

Content validity was achieved by using literature-based measurement dimensions, and face validity was tested and ensured during the pilot. Construct validity was ensured through the use of published measurement dimensions (Khan et al., 2013; Müller & Lecoeuvre, 2014); pilot testing of the questionnaire; and, quantitatively, through unrotated factor analyses. Convergent and discriminant validity were tested and achieved through item-to-item and item-to-total correlations above 0.3 and 0.5, respectively. Reliability can be assumed with all constructs showing Cronbach Alpha values higher than 0.70 (Hair et al., 2010).

No indication for possible Common Method Bias was found, as a Harman test showed that all questionnaire items loaded on their respective factor (Podsakoff & Organ, 1986).

Data Analysis and Results

Varimax rotated factor analysis was used to establish the three constructs. Here a KMO of 0.8 ($p < 0.001$) indicated the data's appropriateness for this analysis (Hair et al., 2010). All questionnaire items loaded on their respective factor and were of acceptable reliability (Cronbach Alpha), see Table 3.

Measure	*N*	*Mean*	*Standard Deviation*	*Range*	*Original Number of Dimensions*	*Scale Reliability (Alpha)*	*Skewness*	*Kurtosis*
Governance								
Shareholder-stakeholder	246	2.87	4.05	4.46	2	0.741	0.419	-0.462
Behavior-outcome	246	2.98	4.75	4.51	2	0.802	-0.203	-0.617
Project success - dimensions (SA01 to SA05)	246	3.81	3.37	4.88	5	0.923	-0.72	0.552
SA01 Project efficiency	246	3.56	0.78	3.63	1	0.913	-0.471	-0.061
SA02 Organizational benefi	246	3.82	0.71	3.2	1	0.898	-0.563	0.062
SA03 Project Impact	246	3.95	0.79	3.75	1	0.899	-0.985	1.192
SA04 Future Potential	246	3.71	0.84	3.75	1	0.911	-0.743	0.372
SA05 Stakeholder Satisfacti	246	4.01	0.73	3.5	1	0.906	-0.774	0.649

Table 3: Scale descriptives

Project Success. The factor on project success comprises five sub-dimensions (project efficiency, organizational benefits, project impact, future potential, and stakeholder satisfaction). A second order factor analysis combined these sub-dimensions into a single factor for project success (KMO 0.930, $p < 0.001$) with high reliability (Cronbach's alpha 0.923).

Project governance. The questions on governance loaded on the two respective sub-dimensions (KMO 0.812, $p<0.001$), which explained 53% of the variance in GOVorientation (shareholder-stakeholder) and GOVcontrol (behavior-outcome). Both were reliable with Cronbach's of 0.743 and 0.802, respectively. GOVorientation (shareholder-stakeholder) comprised of the upper five questions shown in Appendix 2 (i.e. the governance questionnaire). GOVcontrol (behavior-outcome) comprised of lower five questions in Appendix 2.

Correlation between Project Governance on Project Success

Table 4 shows the correlation matrix of the variables.

	ProjectSucess (5 combined dimensions) DV	SA01 Project Efficiency (Dimension 1) DV	SA02 Organizational Benefits (Dimension 2) DV	SA03 Project Impact (Dimension 3) DV	SA04 Future Potential (Dimension 4) DV	SA05 Stakeholder satisfaction (Dimension 5) DV	GOVControl Goverance 'Behavior-> Outcome Orientation' IV	GOVCorpGoV Corporate Goverance (Shareholder->Stakeholder) Orientation IV
ProjectSucess (5 combined dimensions - DV	1.000							
SA01 Project Efficiency (Dimension 1) - DV	**.845******	1.000						
SA02 Organizational Benefits (Dimension 2) - DV	**.902******	**.689******	1.000					
SA03 Project Impact (Dimension 3) - DV	**.899******	**.717******	**.763******	1.000				
SA04 Future Potential (Dimension 4) - DV	**.861******	**.627******	**.778******	**.696******	1.000			
SA05 Stakeholder satisfaction (Dimension 5) - DV	**.873******	**.680******	**.716******	**.755******	**.676******	1.000		
GOVControl Goverance 'Behavior-> Outcome Orientation' IV	.007	.006	.015	.015	-.011	-.003	1.000	
GOVCorpGoV Corporate Goverance (Shareholder->Stakeholder) Orientation IV	**.250******	**.237******	**.236******	**.204******	**.258******	**.162****	.000	1.000

*p≤0.05; **p≤0.01; ***p≤0.005; ****p≤0.001

Table 4: Correlation matrix

Multi-variate regression analysis was done with project success as the dependent variable and GOVorientation (shareholder-stakeholder) and GOVControl (behavior-outcome) as independent variables. Table 5 shows the coefficient table

Model	*Unstandardized Coefficients*		*Standardized Coefficients*	*t*	*Sig.*	*Correlations*			*Collinearity Statistics*	
	B	*Std. Error*	*Beta*			*Zero-order*	*Partial*	*Part*	*Tolerance*	*VIF*
(Constant)	5,115E-16	,062		,000	1,000					
GOVControl Governance 'Control -> Behavior' Orientation	,007	,062	,007	,111	,912	,007	,007	,007	1,000	1,000
GOVCorpGoV Corporate Governance (Share->Stakeholder) Orientation	,250	,062	,250	4,024	,000	,250	,250	,250	1,000	1,000

a. Dependent Variable: ProjectSucess REGR factor score 1 for analysis 1

Table 5: Coefficients table

A significant model (p<0.000) with an R-square of 0.063 and no issue with multicolinearity (VIF<2) was obtained. The correlation between GOVorientation (shareholder-stakeholder) and project success was positive and significant (p<0.001, beta=0.250), supporting H1.1. This constitutes a small,

but significant effect size, also known as practical significance (Cohen, 1988). However GOVControl (behavior-outcome) was not significantly correlated to project success at p=0.05, which rejects H1.2.

The hypothesized correlation between project governance and project success (H1.1) is supported through the significant correlation. Furthermore, tests with the various demographic variables as control variables indicated no presence of spurious variables. That fulfills the two other criteria that need to be met before commencing a discussion on possible causality (Van de Ven, 2007).

Subsequently an exploratory analysis was done to analyze the nature of the relationship between GOVorienation and project success. The five dimensions of project success (project efficiency, organizational benefits, project impact, future potential, and stakeholder satisfaction) were regressed as dependent variables against GOVorientation as independent variable. The results showed that GOVorientation (shareholder-stakeholder) was positively and significantly correlated with all five success dimensions. The details are shown in Figure 2.

The success dimension future potential has the strongest correlation with GOVorientation (Adjusted R^2 =0.063; Beta 0.258****), whereas stakeholder satisfaction has the weakest correlation of the five dimensions with an adjusted R^2 =0.022; Beta 0.162**.

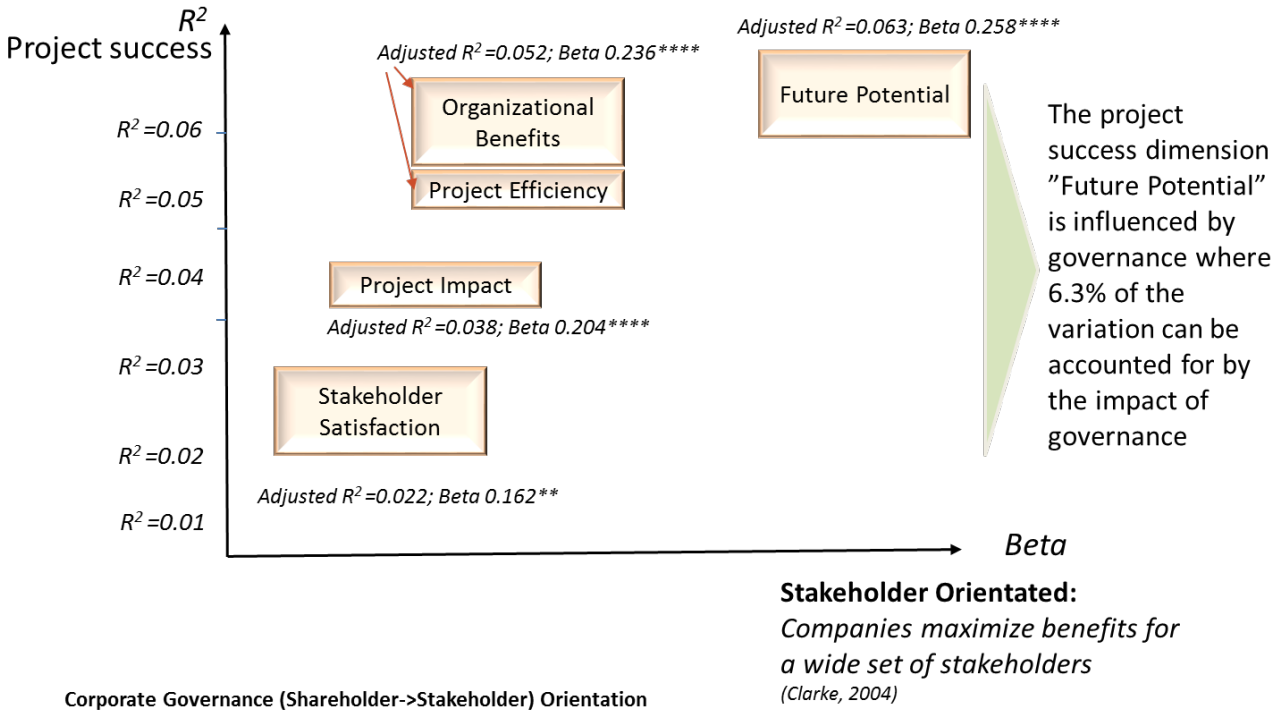

Figure 2: Independent variable (GOV orientation) impact on the five dimensions of project success

Discussion

The two independent constructs GOVorientation (shareholder-stakeholder) and GovControl (behavior-outcome) were tested on their relationship with project success. Only GOVorientation (shareholder-stakeholder) is significantly correlated to project success, where 6.3% of the variation in project success can be explained by the governance position along the shareholder-stakeholder continuum. With a beta of 0.25 (p<0.001) an increase in stakeholder orientation correlates with an increase in project success. The results are consistent with the findings of Joslin & Müller (2015) who showed that organizations that are more stakeholder-oriented have greater chances of success in applying the relevant methodology elements or parts in their projects. The results also support findings in IT projects, where governance takes a mediating role between project hazards and success, by directly influencing project success (Wang & Chen, 2006). Finally, the results give quantitative support to the qualitative study by Bekker and Steyn (2008), whose interviewees predicted such a relationship.

Surprisingly, the second independent construct, GovControl (behavior-outcome) orientation, does not correlate with project success. In line with the literature cited above, this is indicative of a situational contingency of control structures in that organizations where governance is more behavior-control oriented do not necessarily achieve higher rates of project success than organizations that are outcome-oriented.

The finding challenges the governance aspects of frameworks such as the Carnegie Mellon University's Capability Maturity Model Integration (CMMI), or the governance process/outcome orientation behind the Project Management Institute's Organizational Project Management Maturity Model (OPM3®) (PMI, 2013c) where the premise is that a stronger process control leads to better organizational results. Along this line, Yazici (2009) showed that maturity models have only helped to improve project success on a repeatable basis in certain organizational cultures. Using the competing values framework (Cameron & Quinn, 2006), Yazici demonstrated that the clan culture, which represents the importance of stakeholder participation, cohesion, shared values, and commitment is the model most linked to project success. This underpins stewardship theory, which proposes that the behavior of individuals in organizations is aligned and supportive to the organizational and collectivistic goals instead of individualistic and self-serving goals. Project managers (agents) are tasked with complex projects and need to get things done, therefore flexibility and trust is required from their principle (Turner & Müller, 2004).

Referring to Figure 2, the success dimension "future potential" that relate to enabling, motivating and improving an organization's capability to undertake future project work, is the dimension most strongly correlated with the governance orientation. This is supported by the notion that stakeholder orientation is underpinned by balancing the requirements of several stakeholder groups simultaneously, instead of shareholders only (such the shareholders of a project delivery organization), which is the basis for long lasting business relationships, as outlined in Donaldson and Preston's (1995, p.67) thesis that "corporations practicing stakeholder management will, other things being equal, be relatively successful in conventional performance terms (profitability, stability, growth, etc.)". This also applies

to the other four success dimensions, namely organizational benefits, project efficiency, project impact and stakeholder satisfaction, which are all part of conventional performance measures at both project and corporate level. In summary, all five project success dimensions are positively correlated in varying degrees by a stakeholder orientation in project governance.

Conclusions

This study empirically investigated the relationship of project governance and project success. A deductive approach tested a theoretically derived research model. Two theoretical lenses were used in the study: agency theory and stewardship theory. The data were collected through a web-based questionnaire with 246 respondents from 11 industries evenly distributed across North America, Europe, and Australasia. The research question can now be answered: Project governance has a small, but significant correlation with project success. Hypothesis 1is partly supported as one of the two governance dimensions correlates project success. H1.1 is supported because the stakeholder orientation in governance correlates positively with project success. Approximately 6.3% of the variation of project success correlates with the stakeholder-orientation of the governance structure. The section on theoretical implications below outlines some of the contingencies under which this correlation might be assumed to become causal in nature, that is, the underlying assumptions that need to be met and held constant for assuming that success is to some extent dependent on project governance. H1.2 is not supported, as the governance control orientation (behavior–outcome) does not correlate with project success.

This study's results indicate the importance of understanding the governance orientation of the organization governing projects and the potential enabling effect of a stakeholder-orientation in project governance for project success. Yazici (2009) found that culture impacts project success; organizations that are more stakeholder-participative, cohesive, and have shared values and commitment are most likely to achieve project success. Stakeholder-oriented organizations that have shared values suggest stewardship relationships are in place. However, this can only occur when the necessary situational factors and structures are present, including individuals with the appropriate

psychological profiles (Toivonen & Toivonen, 2014). When there is a change of culture in the organization due to external pressures, for example, a push for short-term benefits, where management trust turns into excessive control will lead to agency tendencies (Clases, Bachmann, & Wehner, 2003). Determining the appropriate governance structures should take into consideration the implications resulting from agency and stewardship perspectives towards governance and the implications stated below.

Practical Implications

Managers influencing the design of project governance should be aware of the importance of a stakeholder orientation for project success. This should be included in training programs for these managers, at industry as well as academic level. This includes courses in (project) governance, mid and higher level management trainings, organizational design courses etc.

Simultaneously managers should be aware that control structures that foster behavior or outcome control, do not correlate of impact project success on a global basis, but may do so in the particular circumstances of their projects.

Recruitment managers should understand the personality traits of project managers and their governors to ensure that their personalities are aligned to a stewardship role within the project governance environment.

Project managers should understand the organization's governance procedures and work with the authority that defines project governance procedures to tailor the procedures to the project environment and/or project type.

Theoretical Implications

In this section we discuss the conditions for assuming a causal relationship between project governance (as cause, i.e. independent variable) and project success (as effect, i.e. dependent variable). Throughout the paper we have listed the most often used "conditions researcher look for in

testing cause and effect relationships" (Hair et al., 2003, p. 64), as stated for example Hair et al (2003) and supported by Van de Ven (2005) and John Stuart Mills:

1. Time sequence – the cause must occur before the effect

2. Covariance - a change in the hypothesized independent variable is associated with a change in the dependent variable

3. Non-spurious associations – the relationship is not due to other variables that may affect cause and effect

4. Theoretical support – a logical explanation for the relationship.

The cross sectional design has supported testing conditions 2 and 3. Thus, we have shown that covariance exists (condition 2) in form of a significant correlation between the variables. We have also tested for non-spurious associations (condition 3) by controlling several variables in the regressions. However, the cross-sectional design of the research does not allow to test whether the cause (the existence of a governance structure) precedes the effect (project success). To assume causality, the governance structure must be established before a project is chosen. This may be the case in organizations that do not adjust their governance structures to the type and size of projects they take on. However, in many cases it is likely that governance structures are chosen based on the project type. The latter is supported, among others, by transaction costs economics (Williamson 1979), which claims that governance structures are established contingent on the specificity of the transaction's (i.e. the project's) outcome, its general risk, and its frequency. This view contrasts with, for example, Bekker and Steyn's (2008) qualitative (i.e. opinion-based) findings that project governance impacts project success. To that end we do not find clear evidence for condition 1.

In terms of testing for condition 4 we have shown in the literature review section that published research on governance often assumes and tests for a causal relationship between governance and

organizational success. The importance of stakeholder management in projects echoes the results that stakeholder orientation in governance correlates with better project results. However, in line with the paragraph above, we cannot rule out alternative explanations. These include the possibility that projects with higher risk levels are governed more rigorous than those with lower risk levels, that is, with more shareholder orientation and from agency theory perspective, in contrast to less rigorous and stewardship driven governance for lower risk projects. Support for this is indicated by Klakegg et al., (2008) and Müller & Lecoeuvre (2014), who showed that larger projects, such as public investment projects, are subject to stricter governance approaches than smaller projects. If lower risk projects fail less often than higher risk projects, then the correlation between stakeholder orientation and project success is impacted by the spurious variable project risk, which was not tested in this study.

Hence, we cannot claim causality. A limited causality may be assumed when the following conditions exist: (1) the governance structure exists before a project is chosen, (2) the governance structure is independent of the project type, size and risk, and (3) the governance structure does not change during the course of the project. This should be tested through future research.

Stewardship theory, which is operationalized in this study as the combination of stakeholder oriented governance and outcome-oriented control in project governance, was shown to be an appropriate lens for assessing project governance. The findings provide evidence for a generalization to a theory (in the sense of Yin, 2009) in respect of stewardship theory's applicability for project settings, and a generalization to the wider population of projects and their governance. Stewardship theory and stakeholder theory are recommended as theoretical lenses for the development and implementation of project governance structures.

Simultaneously, the study shows some of the limitations of existing agency theory approaches, especially shareholder theory driven approaches to governance. Agency theory was operationalized in this study as the combination of shareholder orientation and behavior control, which relies merely

on unilateral return on investment thinking and control as governance principle. The study's results show that these approaches are limited in their likelihood to predict project results.

The implications for developing a broader theory of project governance is that a shareholder or stakeholder orientation in project governance is required to be implemented in a way that allows it to flourish within a corporate governance structure which may or may not be supportive of it, without creating conflicts or friction points. To do that, further research is required to identify the interfaces between project and corporate governance, which can then be used to adapt the two levels of governance to each other.

Strengths and Limitations

The strength of the study include the use of tested and validated measurement constructs. Another strength lies in the well balanced sample covering the three main regions of the world, and respondents who are professionals engaged in professional organizations, which led to better responses, because these individuals are interested in their profession over and above their employer demands.

The use of professional associations such as IPMA and PMI for distribution of the questionnaire limited the pool of respondents to only their members. A further limitation of the study was the use of one particular governance model. Other governance models should be used for similar analyses to get a more holistic picture of the relationship between governance and success.

Further Research

In addition to the suggestions above, we suggest that future research should address the nature of the link between project success dimensions and project governance, and possible moderator or mediator effects that influence this relationship.

Further qualitative and quantitative research is needed to investigate whether project governance orientation structures optimized for project success can exist and thrive throughout an organization

and under what conditions, even though the main organization's governance orientation may be different.

Process studies such as those suggested by Langley, Smallman, Tsoukas and Van de Ven (2013) are recommended in order to understand the temporal nature of the elements of project governance, their relationships, and the variations across project life-cycle stages.

Moreover future research should investigate the impact of the governance paradigms on the governance of projects at the program and project portfolio level, and if different, provide insights as to which paradigm(s) are the most correlated to program and project portfolio success?

The study's contribution to knowledge lies in its clarification of a correlation between different project governance approaches and project success. To that end we have provided the ground for further studies on causality and its direction in order to investigate the role of governance as a success factor in projects.

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Appendix 1: Project Success Questions

The following success-related questions were asked regarding the last project.

Project Success Achieved					
My last project was successful in terms of:					
	Not successful	**Slightly successful**	**Moderately successful**	**Highly successful**	**Very Highly successful**
Completed according to the specification	☐	☐	☐	☐	☐
Supplier satisfied	☐	☐	☐	☐	☐
Enabling of other project work in future	☐	☐	☐	☐	☐
Project achieved a high national profile	☐	☐	☐	☐	☐
Yielded business and other benefits	☐	☐	☐	☐	☐
Met client's requirement	☐	☐	☐	☐	☐
Minimum disruption to organization	☐	☐	☐	☐	☐
Cost effectiveness of work	☐	☐	☐	☐	☐
Met planned quality standard	☐	☐	☐	☐	☐
Adhered to defined procedures	☐	☐	☐	☐	☐
Learned from project	☐	☐	☐	☐	☐
Smooth handover of project outputs	☐	☐	☐	☐	☐
Resources mobilized and used as planned	☐	☐	☐	☐	☐
Improvement in organizational capability	☐	☐	☐	☐	☐
Met safety standards	☐	☐	☐	☐	☐
Minimum number of agreed scope changes	☐	☐	☐	☐	☐
Motivated for future projects	☐	☐	☐	☐	☐
Project's impacts on beneficiaries are visible	☐	☐	☐	☐	☐
Project achieved its purpose	☐	☐	☐	☐	☐
Project has good reputation	☐	☐	☐	☐	☐
Finished on time	☐	☐	☐	☐	☐
New understanding/knowledge gained	☐	☐	☐	☐	☐
Steering group satisfaction	☐	☐	☐	☐	☐
Complied with environmental regulations	☐	☐	☐	☐	☐
End-user satisfaction	☐	☐	☐	☐	☐
Project team satisfaction	☐	☐	☐	☐	☐
Activities carried out as scheduled	☐	☐	☐	☐	☐
Finished within budget	☐	☐	☐	☐	☐
Sponsor satisfaction	☐	☐	☐	☐	☐
End product used as planned	☐	☐	☐	☐	☐
Personal financial rewards	☐	☐	☐	☐	☐
Met organizational objectives	☐	☐	☐	☐	☐
The project satisfies the needs of users	☐	☐	☐	☐	☐
Personal nonfinancial rewards	☐	☐	☐	☐	☐

Appendix 2: Governance Questions

Questionnaire for assessing corporate governance and organizational control orientation (Müller & Lecoeuvre, 2014)

In my organization....								
…decisions are made in the best interest of the shareholders and owners of the organization and their Return on Investment (RoI)	0	0	0	0	0	0	0	…decisions are made in the best interest of the wider stakeholder community (incl. shareholder, employees, local communities etc.)
…the remuneration system includes stock-options for employees and similar incentives that foster shareholder RoI thinking	0	0	0	0	0	0	0	…the remuneration system provides incentives for community, environmental, humanitarian or other non-profit activities outside and/or inside the organization
…prevails an image that profitability determines the legitimacy of actions (including projects)	0	0	0	0	0	0	0	…prevails an image that wider social and ethical interests determine the legitimacy of actions (including projects)
…I am sometimes asked to sacrifice stakeholder satisfaction for the achievement of financial objectives	0	0	0	0	0	0	0	…I am sometimes asked to sacrifice the achievement of financial objectives for improvement of stakeholder satisfaction
…the long term objective is to maximize value for the owners of the organization	0	0	0	0	0	0	0	…the long term objective is to maximize value for society
The management philosophy in my organization favors…								
…a strong emphasis on always getting personnel to follow the formally laid down procedures	0	0	0	0	0	0	0	…a strong emphasis on getting things done even if it means disregarding formal procedures
…tight formal control of most operations by means of sophisticated control and information systems	0	0	0	0	0	0	0	…loose, informal control; heavy dependence on informal relationships and the norm of cooperation for getting things done
…a strong emphasis on getting personnel to adhere closely to formal job descriptions	0	0	0	0	0	0	0	…a strong emphasis to let the requirements of the situation and the individual's personality define proper on-job behavior
…support institutions (like a PMO) should ensure compliance with the organization's project management methodology	0	0	0	0	0	0	0	…support institutions (like a PMO) should collect performance data in order to identify skills and knowledge gaps
…prioritization of methodology compliance over people's own experiences in doing their work	0	0	0	0	0	0	0	…prioritization of people's own experiences in doing their work over methodology compliance