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Master of Science in Management Engineering



THE RELATIONSHIP BETWEEN GOVERNANCE MECHANISMS AND SUCCESS IN PROJECT- BASED ORGANIZATIONS: DEVELOPING AND OPERATIONALIZING A CONTEXTUAL MODEL

Project

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Abstract

The aim of this research study is to analyze the effectiveness of project governance mechanisms in project-based organizations in different contexts.

Project governance dimension in this project is based on a study by Henisz, Levitt and Scott (2012) that investigated project governance through the lens of the three pillars of institutional theory (regulative, normative and cultural-cognitive) to address the social structures in-where governance is executed.

The literature of contingency theory in organizations is analyzed in order to be applied to project context. The context dimension comprises external factors which have an influence on the project but which cannot be controlled by project management. The context is represented by the organization in which the project is embedded in as well as by external factors and entities influencing those organizations. Those variables would affect not only the initial setup, but also the course of the project and the project performance.

Project success corresponds to a project's efficiency, effectiveness and impact. The analysis of project performance in this project research is made with a multi-dimensional perspective.

A conceptual model was designed in order to understand how contingency factors could moderate the relationship between project governance and project performance. This framework was operationalized with the objective of making a quantitative analysis that could prove the validity of the model.

Keywords: project governance, project success, contingency factors, project-based organizations

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1 Introduction

This first chapter introduces the project and provides background information to the reader for understanding the work. The first part presents general information about the theory of the research project. Then, the scope of the project is described, defining why this topic is important, its purpose and its boundaries. Finally, the research questions that this project aims to answer are defined.

1.1 General Information

Throughout the second half of the 20th century, there has been a shift in the management paradigm, from the functional, bureaucratic approach, to project and process-based approaches (J.Rodney Turner & Keegan, 1999).

A project can be defined as “an organizational processes of planning, organizing, directing, and controlling resources for a relatively short-term objective established to complete specific goals and objectives” (Kerzner, 1994). Projects have become one of the most common forms of temporary organizations today set to achieve a wide variety of organizational goals (Aaron J. Shenhar, 2001a). Given this short-term duration of projects and their embeddedness, it can be said that projects can be seen as "temporary organizations within organizations," and may exhibit variations in structure when compared to their mother organizations (Aaron J. Shenhar, 2001b).

The use of projects by organizations has evolved from simply being a tactical tool (e.g. to manufacture products and services) towards becoming a strategic vehicle to transform organizations (Biesenthal & Wilden, 2013).

Hence, more and more organizations are opting for using projects. But how do projects are managed within organizations?

Constantinescu (2008) considers four different ways of structuring organizations:

- Hierarchical
- Functional
- Hierarchical-functional
- Matrix structure

Functional hierarchical line management was the main paradigm of management for nearly two hundred years from the late 18th century until the mid- 20th century. However, since the 1950s it has been necessary to adopt project- and process-based approaches to management to respond to the almost constantly changing nature of work and management (J.Rodney Turner & Keegan, 1999).

In contrast to the functional and matrix organization, the project-based organization (PBO) has been put forward as a form ideally suited for managing increasing product complexity, fast changing markets, cross-functional business expertise, customer- focused innovation and market, and technological uncertainty (Hobday, 2000).

Gareis (2004) describes the PBO as an organization, which “defines project management as an organizational strategy, manages a project portfolio of different project types, has specific permanent project oriented structures, applies project management methodology, and perceives itself, as being project-oriented”.

This shift to project-based organizations has been in response to the changing nature of work from mass production, with essentially stable customer requirements and slowly changing technology, to the current situation where every product supplied may be against a bespoke design, and technology changes continuously and rapidly (J.Rodney Turner & Keegan, 1999).

But how does project-based organizations and specifically projects are influenced by the constantly changing market and all the uncertainties and complexities that context brings? Project management research has only recently started to consider context factors (Hanisch & Wald, 2012). Project context is the environment in which a project is developed. Project context is defined by the environment in which the organization exists, as well as the immediate environment of the project (i.e. the surrounding organization). Contextual issues are crucial in influencing the progress and outcomes of projects (Lynn Crawford et al., 2008).

Context factors would work as moderators in the relationship between project governance and the performance of the project.

A moderator variable has been defined as one which systematically modifies either the form or strength of the relationship between a predictor and a criterion variable. To address the effects of this moderation, structure must somehow fit with the context in order for projects to perform well. This assumption of “fit” is based on traditional arguments from classic organizational contingency theory.

The structure of a project is defined by its governance. A governance structure consists of mechanisms such as contractual incentives, hierarchical mechanisms based on authority, and relational or trust-based mechanisms (Ahola, Ruuska, Artto, & Kujala, 2014). Project governance provides the structure through which the objectives of the project are set, and the means of attaining those objectives are determined, and the means of monitoring performance are determined (J. R. Turner, 2006).

To define the mechanisms through which project governance is executed, we took a different perspective from the traditional literature. We used Scott’s perspective (2008) in which he proposes that human behavior in societies is regularized and made predictable by three kinds of ‘institutional pillars’:

- Regulative institutions
- Normative institutions
- Cognitive-cultural institutions

We suggest that project governance is enhanced if the three dimensions are taken into account.

Finally, to measure project performance, we have taken the perspective that projects are becoming strategic vehicles to transform organizations (Biesenthal & Wilden, 2013). We see project success as a multifaceted, multidimensional construct that includes both the short-term project management success efficiency and the longer-term achievement of desired results from the project (Joslin & Müller, 2015). This definition will drive project decision-

making and execution to better business results, and yield improved organizational effectiveness.

1.2 Scope of the work

An emerging stream of research in project governance literature is claiming that context can affect the effectiveness of governance mechanisms. However, the literature has been largely descriptive, focusing on specific structures or approaches or developing overarching frameworks. Hence, we know little about the underlying dimensions of project governance that underpin these structures. On the context side, the organizational part of context has been not separated from the external environment part. Besides, the context characteristics were mainly expressed by the industry, project type and project size.

This project aims to explore the relationship between project governance mechanisms, contextual factors and project success in project-based organizations. A framework would be developed in order to explain this relationship for its later operationalization. Finally, a questionnaire will be developed in order to prove the validity of the conceptual model.

The results of this research are important because they provide a framework that would help better understand the moderation effects that context factors have on the effectiveness of project governance. This conceptual model will help to design better structures of project governance that would fit their environment in order to achieve better performance in projects.

This study research analyzes projects belonging to project-based organizations. It does not include stand-alone projects given that this research studies the effect that parent organizations have on embedded projects.

1.3 Research Questions

This research aims to analyze the effectiveness of the different project governance mechanism and its relationship with the contextual factors of a project. To achieve the purpose of the research, the following questions need to be answered:

- I. What are the underlying project governance dimensions?
- II. What are the constructs behind project governance dimensions?
- III. How can be conceptualized project performance?
- IV. What are the contingencies factors that influence project performance?
- V. How can project governance, contingency factors and project success be operationalized?

1.4 Research Process

The research process started with a literature review in research papers, books and other resources from contingency theory, project governance and project success in order to develop the initial research questions and the first draft of the conceptual model. Once the framework was developed, a deeper research of each of the dimensions was made, in order to improve the model and define the sub-dimensions. The constructs and sub-constructs were defined in order to search for its variables in the literature of each of the topics. Then, questions were developed which will allow to measure, in a future research, the relationships between the dimensions of the conceptual model. Finally, research questions were answered and areas of further research was identified.

Based on the process mentioned above, this documented is organized in the following way: chapter 2 contains the literature review. This review consists on identification of the important aspects of the theory and its relation with the other topics. Chapter 3 contains the conceptual model. A deeper review of the literature is included, based on the subdimensions defined on the framework. Chapter 4 includes tables showing the constructs for each

dimension with their corresponding sub-constructs and variables. Finally, chapter 5 summarizes the findings and gives answer to the research questions. Future research is later proposed.

2 Literature Review

A review of prior, relevant literature is an essential feature of any academic project. It facilitates theory development, closes areas where a plethora of research exists, and uncovers areas where research is needed (Webster & Watson, 2002).

This chapter will introduce, through literature review, the theories behind the conceptual model. The definition of what is project governance will be presented. It will be described the contingency theory and why it concerns with projects. Finally, the different perspectives of what project success is, will be presented.

2.1 Project Governance

Whenever two actors are involved in an economic transaction, uncertainty may be an obstacle for a successful agreement. A way to reduce this adversity, is to carry out the transaction in the most efficient way. During the transaction, the actors may have different goals that may be in conflict with each other. To overcome this, there should be mechanisms to avoid problems like moral hazard and adverse selection. Governance gives a guidance of how to solve these problems by monitoring, safeguarding and supporting transactions (Ahola et al., 2014).

Governance has gained interest in recent years. But it is not a new concept. The term is derived from the Latin word *gubernare* meaning ‘to steer’. While originally describing the government of countries, it is nowadays synonymous with the good and transparent management of firms and institutions (R. Müller, 2009).

Governance provides a framework for ethical decision making and managerial action within an organization that is based on transparency, accountability and defined roles. It also provides a clear distinction between ownership and control of tasks. It sets the boundaries for management action, by defining the goals of the organization and the means by which they

should be attained, as well as the processes that managers should use to run their areas of responsibility. Without a governance structure, an organization runs the risk of conflicts and inconsistencies between the various means of achieving organizational goals, the processes and resources, thereby causing costly inefficiencies that impact negatively on both smooth running and bottom line profitability (R. Müller, 2009).

There are various definitions of governance which vary in scope and focus, for example: governance of society, public governance, corporate governance, governance of projects, governance of project management and project governance (Joslin & Müller, 2015).

Corporate governance involves a set of relationships between a company's management, its board, its shareholders and other stakeholders. Corporate governance also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined (OECD, 2015). It encompasses all work done in an organization, and thus governs the work in traditional line organizations, plus the work done in temporary organizations, such as projects (Joslin & Müller, 2015).

Governance of projects is the collective governance of a program or portfolio of projects, or the collective governance of all projects in an organization from the corporate or board level perspective. (R. Müller & Lecoivre, 2014). The governance of projects combined with project governance coexist within the corporate governance framework, and both cover portfolio, program, and project management governance (R. Müller & Lecoivre, 2014).

Governance of project management is in charge of developing enterprise project management capabilities to ensure projects, programs and portfolios can be successfully implemented, including the possible establishment of project management offices (L. Crawford & Turner, 2005). Governance of Project Management is that part of the organization where corporate governance and project governance overlap (Association for Project Management, 2004).

Effective governance of project management ensures that an organization's project portfolio is aligned to the organization's objectives, is delivered efficiently and is sustainable. Governance of project management also supports the means by which the board, and other

major project stakeholders, are provided with timely, relevant and reliable information (Association for Project Management, 2004).

While governance of projects comprises the extent to which the business is run through the use of projects, governance of project management addresses the capacity and capabilities of project and program managers needed to execute these projects (R. Müller, 2009).

As well, projects have their own governance in order to attain its objectives. A project is a temporary endeavor undertaken to create a unique product, service, or result (Too & Weaver, 2013). The temporary nature of projects indicates a definite beginning and end. Project governance is a subset of corporate governance where it focuses on areas of corporate governance that relate to program and project activities (Too & Weaver, 2013).

Project governance could be defined as *“an oversight function that is aligned with the organization's governance model and that encompasses the project life-cycle [by providing] a comprehensive, consistent method of controlling the project and ensuring its success by defining and documenting and communicating reliable, repeatable project practices”* (Ralf Müller, Pemsel, & Shao, 2014)

Every project need its own governance structure. A governance structure consists of mechanisms such as contractual incentives, hierarchical mechanisms based on authority, and relational or trust-based mechanisms (Ahola et al., 2014). Project governance provides the structure through which the objectives of the project are set, and the means of attaining those objectives are determined, and the means of monitoring performance are determined (J. R. Turner, 2006).

Project governance aims to ensure a consistent and predictable delivery of projects within the limitations set by corporate governance or the agreed-upon subsets of corporate governance in contracts with external partners (Ralf Müller et al., 2013).

2.2 Contingency theory in project management

For more than 50 years, organization and management theory have been influenced by contingency theory and the idea of organizational fit. The seminal works of Woodward (1958, 1965), Burns and Stalker (1961), and Lawrence and Lorsch (1967) were among the first to develop the concept that there is no single best way of managing and organizing (Hanisch & Wald, 2012).

Scholars have begun to apply contingency theory to project management, arguing that the “one size fits all” approach is suboptimal, given that not all projects are the same, and that a project’s structure and management practices should be tailored to suit its context (Hanisch & Wald, 2012) They argue that situational aspects should be taken into account, contrary to the notion of a universalistic theory of project management. The supporters of this perspective argue that no project can be studied comprehensively without considering its context: the congruence of a project to the external contingencies is considered to be a factor influencing the effectiveness of the temporary organization (Hanisch & Wald, 2012).

Gareth Morgan in his book “Images of Organizations” makes a metaphor presenting organizations as organisms. His approach builds on the principle that organizations, like organisms, are "open" to their environment and must achieve an appropriate relation with that environment if they are to survive (Morgan, 2006). The main ideas on his contingency approach to organizations are the following:

- "Organizations are open systems that need careful management to satisfy and balance internal needs and to adapt to environmental circumstances."
- "There is no one best way of organizing. The appropriate form depends on the kind of task or environment with which one is dealing."
- "Management must be concerned, above all else, with achieving alignments and 'good fits'."
- "Different approaches to management may be necessary to perform different tasks within the same organization."

- "Different types or 'species' of organizations are needed in different types of environments."

Some researchers have presented contingency frameworks to analyze the effects of contingencies in projects. Donaldson (2001) provides a major framework for organizational design. The basic idea of the structural contingency theory is that the effect of one variable on the effectiveness of an organization is moderated by a contingency. The dependency can only be described by the causal statement of the trivariate relationship, including the contingency. The dependent variable explains the organizational effectiveness in a rather broad sense. A change in contingencies should lead a rational manager to adapt the organization to those changes to maintain an optimal level of effectiveness (Donaldson, 2001; Williams, 2008).

2.3 Project success

The usual focus of success was to judge whether the project was done right. Doing something right may result in a project which was implemented on time, within cost and to some quality parameters requested, but which is not used by the customers, not liked by the sponsors and does not seem to provide either improved effectiveness or efficiency for the organization, is this successful project management? (Atkinson, 1999)

But success means different things to different people (Aaron J. Shenhar, Dvir, Levy, & Maltz, 2001). Baker, Murphy, and Fisher (1974) concluded that there is probably no such thing as "absolute success" in project management: there is only the "perceived success of a project" (Ika, 2009). Project and top managers may develop the need to identify specific success dimensions for each individual project according to its goals, technology, business model, strategy, and markets.

So, how exactly do we measure project success? The definition of project success has changed over the years. Early work assumed that the main criteria for success were the so-

called golden triangle of time, budget and required quality (Westerveld, 2003). Measuring project's success was limited to the efficient use of the resources in the implementation phase of the project life cycle. The success of project management has often been associated with the final outcome of the project. But empirical data has shown that project management and project success are not necessarily directly related.

De Wit (1988) and other writers distinguish between project success (measured against the overall objectives of the project) and project management success (measured against the widespread and traditional measures of performance against cost, time and quality). Baccarini (1999) and Cooke-Davies (2002) have adopted the Logical Framework Methodology and observed the need to differentiate two different concepts of success for a project:

- Project management success is concerned with the internal efficiency of the project, measured at the end of the project. The concept is process oriented and involves the satisfaction of the users and key stakeholders at the project completion (“Was the project carried out in scope, in time, and in budget?”).
- Project success is measured against the achievement of the project owner's strategic organizational objectives and goals, as well as the satisfaction of the users and key stakeholders' needs where they relate to the project's final product. Project success is accomplished through the use of the project's output (“Have the intended project goals been achieved?”).

Many times, the objectives of both project management and the project are different and the control of time, budget and quality, which are often the project management objectives, should not be confused with measuring project success. Moreover, many projects have shown that it is possible to achieve a successful project even when management has failed and vice versa. There are many examples of projects which were relatively successful despite not being completed on time, or being over budget. It can therefore be argued that the relationship between the two is less dependent (Munns & Bjeirmi, 1996).

Projects as strategic tools

The management of the projects can have strategic value when a clear connection is made between how efficiently and effectively a project is done and how the project's products and services provide business value. However, if project success is limited to the variables of time, cost, and scope then project management is perceived as providing tactical (operational) value and not strategic value (Aaron J. Shenhar et al., 2001). Shenhar, Poli, and Lechler (2000) suggested a distinction between two types of projects—operationally managed projects, and strategically managed projects.

Operationally managed projects are focused on getting the job done and meeting time and budget goals, while strategically managed projects are focused on achieving business results and winning in the market place. Management teams in strategically managed projects spend a great deal of their time and attention on activities and decisions aimed at improving business results in the long run. They are concerned with customer needs, competitive advantage, and future market success, and rather than sticking to the initial plan, they keep making adjustments that will create better business outcomes. Such projects, however, are quite rare: many projects are still managed with an operational mindset, focusing on short-term results and delivery (Aaron J. Shenhar et al., 2001).

This research analyzes projects as powerful strategic weapons. In essence, projects must be part of the strategic thinking and the assessment of their success must be aligned with such thinking (Aaron J. Shenhar et al., 2001). Shenhar suggested project managers need to 'see the big picture, be aware of the results expected, and look for long term benefits' (Atkinson, 1999). Consequently, project managers should act strategically, focusing on the benefits in the long term (Aaron J. Shenhar et al., 2001).

Furthermore, project success should relate both parts (internal performance during execution, as well as to benefits and success of the end result). In this study, it is not distinguished between project success and project management success; they will be part of the same dimension. This definition will drive project decision-making and execution to better business results, and yield improved organizational effectiveness.

So we can say that project success is a multifaceted, multidimensional construct that includes both the short-term project management success efficiency and the longer-term achievement of desired results from the project (Joslin & Müller, 2015).

3 Deriving the Research Framework

The project governance is designed to achieve the maximum effectiveness of the management activities, thus, the definition of the processes, standards and methods of the project is essential for reaching project’s goal.

But contextual factors could affect the relationship of project governance and project performance. Donaldson's (2001) model of contingency theory in organizations, states that the effect of one variable on another variable is dependent on a third variable. The best way to achieve a successful result from a project, is to fit the project governance to its surrounding environment.

The results of the literature review in contingency theory suggests that project’s structure and management practices should be tailored to suit its context (Howell, Windahl, & Seidel, 2010)

The framework depicted in Figure 1 exemplifies the interaction between these three dimensions. It shows the influence that project governance has on the success of a project and the moderation effect that contingency factors would have on this relationship. A deeper analysis of each of the dimensions of the conceptual model is later made.

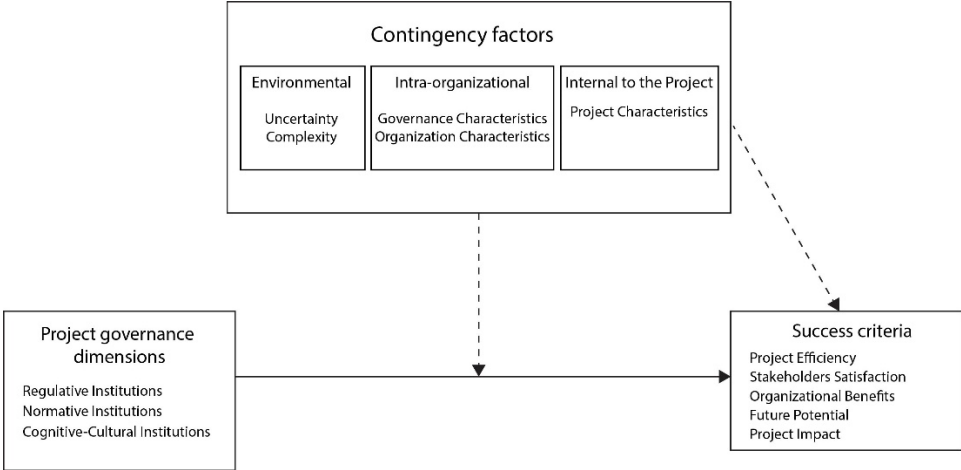


Figure 1 Dimensions of the research framework

3.1 Project governance dimensions

Contemporary governance is grounded in Foucault's philosophy of Neo-Liberalism, in which individuals are not directly 'steered' by their supervisors, but through subtle forces in the society within which they live. Lemke (2001) summarized Foucault's perspective:

The Neo-Liberal forms of government [...] characteristically develop indirect techniques for leading and controlling individuals without at the same time being responsible for them. The strategy of rendering individual subjects 'responsible' [...] entails shifting the responsibility for social risks [...] into the domain for which the individual is responsible and transforming it into a problem of 'self-care'.

Governance is thus about 'the conduct of conduct', shaped by self-regulating relationships among the forces within a society (R. Müller, 2009). This leads to the development of laws and contextual frameworks which shape, but do not necessarily determine every action of the members of a society (Clegg, Pitsis, Rura-Polley, & Marosszeky, 2002; Clegg, 1994).

Governance is ultimately concerned with creating the conditions for ordered rule and collective action (Stoker, 1998). Thus governance within organizations is a form of self-regulation where the regulator is part of the system under regulation (R. Müller, 2009).

Project governance is an organizational control mechanism, which uses formal and informal structures, to govern accountabilities and responsibilities across different organizational levels, both internally and externally (Biesenthal & Wilden, 2013). In settings where hazards are severe, the combination of these formal and informal safeguards may deliver greater exchange performance than either governance choice in isolation. The presence of clearly articulated contractual terms, remedies, processes of dispute resolution as well as relational norms of flexibility, solidarity, bilateralism, and continuance, may inspire confidence to cooperate in interorganizational exchanges (Poppo & Zenger, 2002). Reve and Levitt (1984) stated that governance structures correspond to different types of contracts ranging from classical contracting to relational contracting.

Relational governance may heighten the probability that trust and cooperation will safeguard against hazards poorly protected by the contract. Thus, relational governance becomes a necessary complement to the adaptive limits of contracts by fostering continuance and bilateralism when change and conflict arise. It enables the refinement of contracts and promotes stability in interorganizational exchanges (Poppo & Zenger, 2002). Relational governance and formal contracts complement each other. The complementary nature of governance mechanisms basically means that combinations of mechanisms are better than relying on single mechanisms (Olsen, Haugland, Karlsen, & Husøy, 2005).

Relational contracting extends beyond microeconomic notions of repeated contracting to include a variety of sociological, social psychological and cognitive psychological mechanisms that buttress contracts and their enforcement by legal means or extralegal third-party arbitrators (Henisz, Levitt, & Scott, 2012).

Sociological and psychological perspectives on governance focus on underlying patterns of human behavior that financial incentives and legal sanction can enhance or moderate, but can never fully subsume (Henisz et al., 2012).

All these governance mechanisms complement each other, and furthermore, there is a complex interplay between the specific uses of the different mechanisms; they affect each other. Proper use of one of them improves the use of other mechanisms, while inadequate use of one of them hampers the use of other mechanisms. The use of them play an important role, and their use affect work processes and the final outcomes (Olsen et al., 2005).

In order to analyze the multi-level and multi-dimensional concept of governance, we selected Institutional theory as our theoretical perspective. Institutional theory addresses the processes by which social structures, including both normative and behavioral systems, are established, become stable and undergo changes over time (W.R. Scott, 2012).

Institutional theory defines regulative, normative and cultural-cognitive elements as a means to understand stability and meaning of social life in organizations (W.R. Scott, 2004). Institutions are thereby made up of actors (individuals and organizations) and become real through actors social behavior (W.R. Scott, 2012).

Henisz, Levitt and Scott (2012) investigated project governance based on institutional concepts that integrate a range of strategies designed to enhance the efficacy of relational contracts. The project governance dimensions in our model are based on Scott's (2008) assertion that human behavior in societies is regularized and made predictable by three kinds of 'institutional pillars':

- 1) Regulative institutions—legally or economically sanction individuals who violate contracts or exceed an allowed range of managerial discretion.
- 2) Normative institutions—socially sanction individuals who violate values, beliefs and scripts for appropriate behavior in various social settings that are deemed to be appropriate by a collective body
- 3) Cognitive-cultural institutions— sanction individuals psychically (i.e. through cognitive dissonance) when their actions violate: internalized frames or schemas for naming, categorizing and understanding tangible and intangible concepts in the world; or a set of values, beliefs and scripts that define and guide appropriate behavior in different settings from the perspective of various groups (e.g. church, company, agency or family) to which an individual considers that he or she belongs.

These three kinds of institutions are carried and propagated in different ways but they all serve to enforce behavior that is appropriate, as judged by a formal organization, social groups and individuals, thereby making them more predictable and manageable most of the time (W Richard Scott, 2008).

It is worth noting the mutually reinforcing nature of regulative, normative and cognitive institutional supports for relational contracting (Henisz et al., 2012). The regulatory elements often provide for the returns for their managers, whereas the normative elements provide the basis for shared commitments among the parties and the identity construction of their members. The cultural–cognitive elements allow the institution's claims to be perceived as valid and self-evident within an institution's particular context (Scott, 2014).

3.1.1 Regulative Institution

Economic and legal perspectives on governance focus on financial incentives and formal legal structures that can impose sanctions to enforce financial contracts, and to constrain and motivate the behavior of counter-parties (Henisz et al., 2012). Regulative elements comprise formal regulations, laws and property rights (Henisz et al., 2012; W.R. Scott, 2004) often externally imposed on the organization.

The background of these mechanisms come from agency theory and transaction cost economics (TCE). Due to the prominent nature of projects as temporary organizations, which imply short-term and goal-oriented mindsets, these theories are perceived as the dominant governance streams across project management literature. These theories provide useful frameworks to explain and analyze project governance from the perspective of regulative institutions (Biesenthal & Wilden, 2013).

3.1.1.1 Agency Theory

Agency Theory relates to the shareholder theory of the organization. It addresses the potential for conflict of interest that arises between shareholders and managers of a firm through the definition of a principal–agent relationship between these parties. The potential for principal–agent problems arises when one party (the principal, that is, the shareholder) depends on another party (the agent, that is, the manager) to undertake some action on the principal’s behalf (Bergen, Dutta, & Walker, 1992; Jensen, 2000). The delegation of decision-making authority from principle to agent can cause problems because:

- the interests of principal and agent will typically diverge if both are trying to maximize their individual gains or utility in the relationship;
- the principal cannot perfectly and without cost monitor the actions of the agent;
- the principal cannot perfectly and without cost monitor and acquire the information available to or possessed by the agent (Barney & Hesterly, 1996; Jensen, 2000).

These problems are addressed in Agency Theory by attempting to realign the interests of the principal and agent through effective use of contracts (R. Müller, 2009). By defining either actual behavior of agents or the outcomes of agents' tasks, contracts ensure that actions regarded as most appropriate by the principal yield the highest payoff for the agent (Bergen et al., 1992)

Müller (2011) mentions that governance tools such as contracts and agreements (especially in cases of organizational networks) define the scope within which an environment of self-regulation is created. Contracts are mechanisms for resolving, by *ex-ante* stipulation, problems that arise from the imperfect alignment of interests. Hence, agency theorists speak of the modern corporation as a nexus of contracts (Jensen & Meckling, 1976).

One of the basic assumptions of the Agency Theory is that humans are utility maximizers, which means that they will look after their best interests before taking care of others' benefits. Because of this divergence in objectives and self-interest based mindset, it is highly unlikely that the agent will take care of the interests of the principal at its cost (Eisenhardt, 1989; Jensen & Meckling, 1976; R. Müller, 2011; J. Rodney Turner & Müller, 2004).

The delegation of work is associated with the delegation of decision-making authority and power to the agent. This delegation provides the agent an opportunity to abuse this authority and power and work toward self-interests (Lupia, 2001). Agency Theory tries to address the agent's opportunist behavior and provides solutions to resolve conflict of interest through creation and governance of effective contracts between the principal and agent (Eisenhardt, 1989). Moldoveanu and Martin (2001) summarize this by stating "Agency Theory is concerned with devising structural and behavioral measures that minimize inefficiencies in the contractual structure of the firm that arise from imperfect alignment of interests between principals and agents".

In order to ascertain that the agent keeps the principal updated of the information and acts in the principal's interests, the principal creates certain incentives and monitoring mechanisms. Moldoveanu and Martin (2001) calls them elements of agency model and defines that there are three elements namely: Decision rights, knowledge and incentives (rewards and punishments).

Agency theory deals with the ex-ante incentive alignment through contracts and agency problems that arise through information asymmetry (Jensen & Meckling, 1976). This is in alignment with the measurement branch of transaction cost economics, which states that all measurement problems are associated with information asymmetry between the buyer and the seller and the cost of apprising the arbitrator (Williamson, 1996). Eisenhardt (1989) states that the agency theory has its best contributions to organization when combined with complementary theoretical concepts.

3.1.1.2 Transaction Cost Economics

Transaction Cost Economics argues that managers in the position of residual claimant should pursue a cost minimizing alignment between the governance of an individual transaction and that transaction's contractual hazards (Henisz et al., 2012). Transaction Cost Economics implies that organizations adapt their governance structures to achieve the lowest possible transaction costs. Transaction costs are the economic equivalent to friction in physical systems, stemming from the complexity of the relationship between buyer and seller and the impossibility of developing and agreeing contracts comprehensive enough to cover all eventualities in the transaction. (R. Müller, 2009)

Transaction Cost Economics asserts that where these hazards are high, opportunistic behavior can be mitigated in unified governance structures where all of the lifecycle project costs and benefits of a project are borne by a single entity (i.e. the local government agency or private entity that will plan, finance, design, build, operate and maintain the facility over an extended period). Alternatively, coordination can be enhanced and opportunistic behavior mitigated through carefully specified contractual incentives with appeal to neoclassical contracting (i.e. trilateral governance) or through sharing ownership among stakeholders (i.e. network governance supported by ownership) or relying upon the shadow of the future (i.e. network governance supported by reputational capital) (Henisz et al., 2012).

Williamson defines transaction costs as the costs of running the economic system, and as such they are equivalent to 'friction' in the physical sciences. In more detail, ex ante

transaction costs are the costs of drafting, negotiating, and safeguarding an agreement. Ex post transaction costs include: the maladaptation costs incurred when transactions drift out of alignment with requirements, the haggling costs incurred if bilateral efforts are made to correct ex post misalignments, the set up and running costs associated with the governance structures to which the disputes are referred, and the bonding costs of effecting secure commitments.

Williamson argues that the existence of transaction costs depends on three factors: bounded rationality, opportunism, and asset specificity. Opportunism describes ‘self-interest seeking with guile’ (Williamson, 1985). Asset specificity refers to the degree to which durable human or physical assets are locked into a particular trading relationship, and hence the extent to which they have value in alternative activities. A high level of asset specificity implies the existence of a bilateral monopoly. In this regard an important distinction is made between before and after contract execution. Ex-ante, many potential buyers or sellers may exist, but ex post this need not be the case if idiosyncratic investments are required (Dietrich, 1994).

Given the existence of contracting problems (i.e. the existence of bounded rationality, opportunism, and asset specificity), transaction cost economics claims to be able to specify the governance structures that can efficiently manage economic activity in any situation (Dietrich, 1994).

While important and widely adopted, these legal and economic governance mechanisms are only a subset of the mechanisms that can be employed to generate cooperation among and limit the hazard of opportunistic behavior by counterparties, particularly those that are distant to the immediate transaction within a multi-party multi-phase network of interdependent transactions (Henisz et al., 2012).

3.1.2 Normative institution

A branch of project management literature has developed what it refers to as a partnership model for project development. Instead of using financial and legal incentives to avoid opportunistic defection and induce cooperation, they empathize using and/or manipulating social structures and psychological processes so as to alter behavior within an existing governance structure (Henisz et al., 2012).

Actors who perceive they have shared identity as members of a social group may avoid opportunistic behavior because they perceive the costs of defection in terms of ostracism from the peer group or loss of reputation among or sanction by actors within that peer group to outweigh the benefits (Henisz et al., 2012). Despite a lack of formal organizational linkage and a targeting of individuals, these strategies, by taking advantage of individuals' inherent desire for factional or group membership, construct a sense of connection that is sufficiently strong to mirror the patterns of behavior of group members (Henisz et al., 2012).

The presence of a common identity or dense network of relationships creates a 'social shadow of the future' as well as the potential for immediate social sanctions for opportunistic behavior. Individuals who violate normative institutions are punished by their fellow group members through social sanctions (Henisz et al., 2012). For such relationally-governed exchanges, the enforcement of obligations, promises, and expectations occurs through social processes that promote norms of flexibility, solidarity, and information exchange (Poppo & Zenger, 2002).

This reasoning is consistent with the work of sociologists such as Powell (1990) and Granovetter (1985), who develop the notion of embeddedness. Specifically, these scholars have argued for recognizing the role played by socially embedded personal relationships in economic exchange. Economic exchange relations thus depart from 'pure economic motives' and 'become overlaid with social content that carries strong expectations of trust and abstention from opportunism' (Granovetter, 1985).

Research has identified trust as one of the informal mechanisms present in governance (McEvily, Perrone, & Zaheer, 2003; Sydow, 2000). Trust plays an important role in the

governance of exchange relationships. Trust reduces contracting costs, lowers the need for monitoring, and facilitates contractual adaptation. Trust counteracts fears of opportunistic behavior and as a result, is likely to limit the transaction costs associated with an exchange (Poppo & Zenger, 2002).

The rationale for the key role of trust is straightforward: in the extreme case, it does away with formal contracts, which are costly to write, monitor and enforce (Bromiley & Cummings, 1991). Thus, trust acts to reduce transaction costs by reducing or eliminating both *ex ante* and *ex post* opportunism. Arguing from a pure transaction cost viewpoint, therefore, the presence of trust should be associated with a lower level of hierarchical governance since trust serves as a substitute for hierarchical control (Bromiley & Cummings, 1991).

Trust is defined by Mayer, Davis, and Schoorman (1995) as “the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party.” The same authors further define trust as a function of the trustworthiness of the trustee (i.e., the party being trusted). Furthermore, both economists and sociologists emphasize that reputations for trustworthy behavior are rewarded and reputations for untrustworthy behavior punished in the broader network of potential exchange partners (Poppo & Zenger, 2002).

Puranam and Vanneste (2009) approached trust from the governance perspective and showed different relationships between governance and trust, which may coexist:

1. Trust may enhance the impact of governance on performance
2. Governance may reduce the level of trust between exchange partners
3. Ex-ante trust in projects may influence the level of governance complexity

Together with its supplement, control, trust is seen as a major mechanism for governance in organizations. The two concepts are often seen as being parallel and supplementary to each other; however, the balance between control and trust must fit to the situation within which they are used as governance mechanisms (Ralf Müller et al., 2013). For example, too much

control can lead to an erosion of trust because it signals to an employee that he or she is not trusted and that opportunistic behavior is expected (Ralf Müller et al., 2013).

3.1.3 Cognitive institution

Cognitive-cultural institution is a set of values, beliefs and scripts that define and guide appropriate behavior in different settings from the perspective of various groups to which an individual considers that he or she belongs (Henisz et al., 2012).

Sometimes managers can neither tap into pre-existing social structures nor demonstrate adherence to pre-existing social norms. In these instances, managers may still strategically generate psychological contracts (Rousseau, 1995) or draw upon ‘social skills’ (Fligstein, 1997), to alter preferences of counterparties indirectly. Managers may enhance coordination and reduce the incidence of opportunistic behavior by counterparties by crafting the perception that counterparties’ individual or organizational identity is linked to that of the manager’s organization despite the lack of a formal social or contractual connection (Henisz et al., 2012).

Cultural-cognitive elements comprise “shared conceptions that constitute the nature of social reality and create the frames through which meaning is made” (W.R. Scott, 2014), as well as shared beliefs, symbols, identities and logics of action (Misangyi, Weaver, & Elms, 2008; Orr & Scott, 2008; W.R. Scott, 2012).

In contrast to collective norms which grow less efficient as the scope of counterparties expands, social skills that create a link between a desired behavior and an individual’s sense of identity are more readily scalable (S. G. Scott & Lane, 2000). Managers with strong social skills possess this ability to induce cooperation among others. Skilled social actors empathetically relate to the situations of other people and, in so doing, are able to provide those people with reasons to cooperate (Henisz et al., 2012). They frame inspiring shared high level goals and ‘stories that help induce cooperation from people in their group that

appeal to their identity and interests, while at the same time using those same stories to frame actions against various opponents' (Fligstein, 2001).

This reasoning is consistent with the assertion of Müller (2009) that sponsors of projects should be experienced, socially competent and flexible in order to foster collaboration. At the same time, he or she should be interested in project progress but skeptical and constantly challenging the project manager's interpretation of success. He states that communication between sponsors and project managers, showed a significant difference in project performance. Therefore, the sponsor should demand good project management work.

In response to framing efforts, counterparties to a transaction or set of transactions may alter their behavior because they perceive actions or goals of the network to be legitimate due to the congruence of these actions or goals with their own individual or organizational interests or beliefs or to the best possible behavior given the tension posed by their multiple identities (Henisz et al., 2012). Frames enable individuals to 'locate, perceive, identify and label' (Goffman, 1974) events and occurrences even if the targeted counterparty has limited or no direct exposure. Most importantly, they create a link between an individual's sense of self and a course of action amenable to the designer of the frame (Henisz et al., 2012). Employees may prefer to work for a company they perceive to be socially responsible, demand lower wages or benefits or exert greater effort (Henisz et al., 2012).

An important aspect of the cognitive-cultural institutions is the psychological contract. Lioliou, Zimmermann, Willcocks and Gao (2014) state that psychological contracts are part of relational contracts. They define it as a perceived mutual agreement between two parties on the obligations of both sides, which creates a strong sense of accountability and is therefore psychologically binding. Because of its binding nature, these contracts are particularly forceful substitutes to formal governance, while its associations with other relationship aspects make it a forceful complement (Lioliou et al., 2014). Robinson & Rousseau (1994), strongly emphasize the subjective nature of the psychological contract, by defining it as beliefs or perceptions of reciprocal and promised obligations. The partners who hold a psychological contract will believe that they share the same perceptions and expectations of their mutual obligations, even if their actual perceptions and expectations differ (Lioliou et al., 2014).

The psychological contract does therefore not control partners' behavior formally, like a contract. However, because of its mutual and psychologically binding nature, the psychological contract functions in a similar way to formal governance, namely in the manner of a contract (Lioliou et al., 2014). While formal contracts can be imposed on individuals, the psychological contract refers, per definition, to individuals' own beliefs about their mutual obligations (Lioliou et al., 2014). The psychological contract is therefore a 'self-regulating mechanism' that can motivate partners to perform to the conditions of their agreement (Rousseau, 2001).

We can therefore conclude that using excessive formal governance can result in unnecessary bureaucracies that reduce the flexibility of the partnership and make it less efficient. In a similar way, excessive formal governance can overcomplicate the way things are carried out and impose rules and procedures that are not possible for people to fully comprehend and implement. On this basis, overreliance on formal governance can be proven to be counterproductive (Lioliou et al., 2014).

3.2 Contingency factors

The context dimension comprises external factors which have an influence on the project but which cannot be controlled by project management. The context is represented by the organization in which the project is embedded in as well as by external factors and entities influencing those organizations. This leads to a supplementary pool of variables that act as moderating factors. These variables affect not only the initial setup, but also the course of the project and the project goal (Hanisch & Wald, 2011). Those external conditions which impact the organizational characteristic under consideration are known as contingency factors (Howell et al., 2010).

Performance measures are influenced by various contingency factors. The exogenous effects on projects can be differentiated into factors directly influencing projects (e.g., technology,

project goals) and factors indirectly influencing projects by affecting its environment (e.g., the economic, social or political system). The context dimension therefore influences not only the level of difficulty of project tasks, but also project risks and benefits (Hanisch & Wald, 2011).

The congruence of a project to the external contingencies is considered to be a factor influencing the effectiveness of the temporary organization (Hanisch & Wald, 2012). The external factors cannot be influenced directly but have to be integrated into the project management processes to successfully attain the project goals (Hanisch & Wald, 2011). Context and structure must somehow fit together if the organization is to perform well (Aaron J. Shenhar et al., 2001). The Project Management Institute (PMI) has recognized the need for identifying unique and project-specific project management principles for different project types (Sausser, Reilly, & Shenhar, 2009). There is not just good or bad management, but there is right management to the situation, the task and the environment. What works well in one situation may not work in another (Sausser et al., 2009).

The performance of the project is influenced by various contingency factors. We divided these factors into three different subdimensions, depending on the source of the factors:

- Environmental
- Intra-organizational
- Internal to the project

3.2.1 Environmental

An environment encompasses the immediate physical surroundings, social relationships, and cultural surroundings within which defined organizations function and interact (Barnett & Casper, 2001). No matter how much an organization try to isolate from the complexities and uncertainties of its environment, they will tend to influence the outputs and inputs of the organization.

All organizations are situated in an environment, be it business, governmental, educational or voluntary service. In this environment are other organizations and people with whom transactions have to take place. These will include suppliers, clients or customers, and competitors. In addition, there will be more general aspects of the environment which will have important effects, such as legal, technological and ethical developments.

Complex organizations can be seen as open systems, hence indeterminate and faced with uncertainty. Organizations continually strive to act rationally in the face of technological and environmental uncertainties. Their basic problem is how to cope with these uncertainties (Pugh & Hickson, 2007).

The appropriate organization structure will depend upon environmental demands. The assumption that one particular structural form is always best is not valid the majority of the times. Instead it is appropriateness which is the key (Pugh & Hickson, 2007).

The ability of the organizations to keep up with change depends upon the development of new forms of organization. If it contains many different forms of organization, there is a good chance that one or more of these may fit some new circumstances which arise, and these new circumstances can then be taken advantage of quickly. If there are comparatively few forms of organization, it has to adapt to change by modifying one or more of these or by creating a new form, and this takes longer (Pugh & Hickson, 2007).

3.2.1.1 Uncertainty

Uncertainty is the “lack of certainty” (Howell et al., 2010). In a broader sense, it can be seen as the lack of information considering performing certain task, lack of causality information, lack of goal or long time span of definitive feedback (Korhonen, Laine, & Martinsuo, 2014). It therefore encompasses not only probabilistic or undefined outcomes but also ambiguity and lack of clarity over situational parameters (Howell et al., 2010).

Uncertainty can be seen as a generality, but in this framework we associated it with the events that occur in the surrounding of the organization. Environmental uncertainty is experienced,

for instance, because of the dynamics in the political, economic, social and technological scenarios. We considered the rate of change of this factors, plus the dynamics of the market, as the principal responsible for the uncertainty in the organizations.

3.2.1.2 Complexity

Complexity means that many different actions and states of the world parameters interact, so the effect of actions is difficult to assess (Pich, Loch, & Meyer, 2002). This definition can be applied to any project dimension relevant to the project management process. So when referring to project complexity it is important to state clearly the type of complexity being dealt with (David Baccarini, 1996).

The complexity that is depicted in the framework, includes the diversity of stakeholders' motivations and objectives related to a project, the technology's novelty and the level of competition of the market. These factors were considered as being the source of complexity of the environment.

3.2.2 Intra-organizational

Projects can be seen as "temporary organizations within organizations," and may exhibit variations in structure when compared to their mother organizations (Aaron J. Shenhar, 2001b). In fact, projects have become one of the most common forms of temporary organizations today set to achieve a wide variety of organizational goals (Aaron J. Shenhar, 2001a).

The parent organization is frequently a dominant part of the project's environment, and it is reasonable to assume both that different projects will face different parent-imposed constraints, and that this might yield different optimal project characteristics (Howell et al., 2010). Factors such as authority levels, team size, membership, structure, management

support, and geographic distribution are frequently dictated by the parent organization, and the broader corporate culture is inherited from it (Howell et al., 2010).

In general, organizational contingency terms these could be seen as internal rather than external factors. However, although internal to the parent organization, they are often external to the project, and therefore can be considered as valid project contingency factors (Howell et al., 2010).

3.2.2.1 Governance characteristics

Corporate governance influences project governance as an oversight function which collectively encompasses the project lifecycle to ensure a consistent approach to controlling the project with the aim of ensuring its success (Joslin & Müller, 2015). All project's objectives must be aligned with that of the corporate governance and governance of projects so many of the processes and systems will be defined by the upper governance structure.

Project-based organizations are managed in different ways. Müller proposes a categorization, calling these categories governance paradigms, where an organization governing a particular project fits into one of four paradigms (R. Müller, 2009). It relates corporate governance orientation (shareholder–stakeholder orientation) and organizational approach to control (behavior versus outcome control). The corporate governance dimension builds on models from Clarke and Hernandez who claim that a corporation's governance orientation can be found on a continuum from shareholder to stakeholder orientation. The second dimension “control” represents the control exercised by the governing institution over the project and its manager. This distinguishes between organizational control, which focuses on goal accomplishment by controlling outcomes (e.g., reaching a set of objectives), versus compliance with a focus on employees' behavior (e.g., following a process). The four paradigms are depicted in the Figure 2.

		Governance orientation	
		<i>Shareholder</i>	<i>Stakeholder</i>
Control focus	Outcome	Flexible economist	Versatile artist
	Behavior	Conformist	Agile pragmatist

Figure 2 Four governance paradigms (Müller 2009)

Other important aspect of the management of projects, is the way that the different projects in the organization will be managed. The approaches used to manage the projects will influence them by altering the relationships and interdependencies between the available resources of the organization. As depicted in Figure 3, Blomquist and Müller showed that governance through project, program, and portfolio management is typically implemented in one of four possible ways (Blomquist & Müller, 2006), by:

- having projects isolated from each other in a multiproject organization, with no synergies across objectives or resources needed;
- grouping of projects by joint objectives, a mainly program-driven organization;
- grouping projects by the resources or skills needs, a mainly portfolio management-driven organization; and
- combining and balancing both program and portfolio approaches, a hybrid organization.

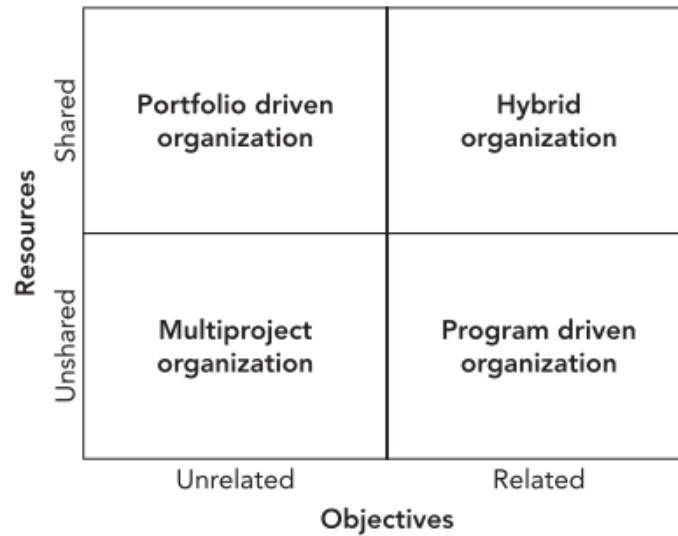


Figure 3 Four types of governance (Blomquist & Müller, 2006)

Both of these approaches try to categorize the way that projects are managed. This is important because it will determine the project governance and culture inherited or imposed by the parent organization. These governance characteristics although internal to the parent organization, they are exogenous to the project so they could be considered contingency factors.

3.2.2.2 Organizational characteristics

Because of the embeddedness nature of projects, the characteristics of the parent organization will play an important role in the definition of certain aspects of the project. These characteristics include age and size of the organization, industry where the projects are usually developed, and corporate culture. The impact of every of these aspects can affect variables like the type of management used, the flexibility of the organization for solving problems, power distance, individualism, and human treatment.

3.2.3 Internal to the project

3.2.3.1 Project characteristics

There are characteristics that are inherited and affect the progress of the projects. These characteristics are frequently dictated by the parent organization, and the broader corporate culture is inherited from it. These include factors such as criticality, project complexity, team empowerment, team composition, project culture, project budget and duration, and project risk. Project managers often report better results when they can tailor procedures to the type and size of the project they are working on or the type of resource used on the project (Joslin & Müller, 2015).

Project complexity describes the diversity and interdependencies between tasks, operations and resources. Complex projects demand an exceptional level of management and that the application of conventional systems developed for ordinary projects have been found to be inappropriate for complex projects (David Baccarini, 1996).

The consequences of unexpected events depend heavily on the extent to which they are manageable. Team size, dispersal, and organizational boundaries all affect the team's ability to communicate, and communication, skill, experience, and authority dictate a team's ability to quickly comprehend and respond to the unexpected, improving the chances that an unexpected event will be dealt with without having a major impact on the project (Howell et al., 2010). The discretionary power formally assigned to the team, but also externally imposed factors which may limit their ability to use this power effectively (Howell et al., 2010).

3.3 Success criteria

Project success corresponds to a project's efficiency, effectiveness and impact. To achieve a common understanding of what project success is, it should be measurable and therefore defined in terms of success criteria (Ralf Müller & Turner, 2007b).

First, it is important to distinguish between success criteria and success factors. The Canadian Oxford Dictionary suggests that a criterion is “a principle or standard that a thing is judged by,” while a factor is “a circumstance, fact, or influence contributing to a result.” Project success criteria are those measures (both quantitative and qualitative) against which a project is judged to be successful and critical success factors refer more specifically to conditions, events, and circumstances that contribute to project results (Ika, 2009)

Success criteria will differ from project to project depending on a number of issues (Westerveld, 2003). This stems directly from the fact that success criteria and critical success factors can differ so much from one project to another due to variables such as project scope, uniqueness, and complexity (Ika, 2009).

Between the dimensions that have been mentioned lately in the research studies, we can find the impact that the project will generate on the customer, also called “customer satisfaction”. But customers are not the only actors benefited. The project can also bring benefits to other stakeholders involved. These can be the community, the sponsor, the steering group, among others. Another dimension, includes the benefits that the project can bring to the organization. This could be related to commercial success of the product or outcome of the project, consequently bringing revenues and possible increase in market share. As well, project teams can gain benefits from the completion of a project: experience, skill improvement, team building, learning. In other cases, some projects will help to develop new technologies or products that can open new markets in the future. Finally, we cannot leave out the classic “iron triangle”. In the Table 1, some of the success criteria used in the literature are shown.

Source	Success criteria
(D. Baccarini, 1999)	-Product Success (Client, End-user and Stakeholders Satisfaction)
(De Wit, 1988)	-Budget Performance -Schedule Performance -Client Satisfaction -Functionality -Contractor Satisfaction -Project Manager/Team Satisfaction
(D Dvir, Lipovetsky, Shenhar, & Tishler, 1998)	-Meeting design goals -Benefits to the customer
(J.K. Pinto & Slevin, 1988)	-Project -Time -Cost -Performance -Client -Use -Satisfaction -Effectiveness
(A.J. Shenhar, Levy, & Dvir, 1997)	-Project Efficiency -Impact on Customer -Business Success -Preparing for the Future
(Aaron J. Shenhar et al., 2001)	-Project Efficiency -Impact on the Customer -Direct Business & Organizational Success -Preparing for the Future
(Atkinson, 1999)	-Iron Triangle (Time, Cost & Quality) -Stakeholder Satisfaction -Organizational Benefits
(Lipovetsky, Tishler, Dvir, & Shenhar, 1997)	-Meeting Design Goals -Benefits to the Customer -Benefits to the Developing Organization -Benefits to the Defense and National Infrastructure
(Dov Dvir, Raz, & Shenhar, 2003)	-Meeting Planning Goals -End-user Benefits -Contractor Benefits
(Jeffrey K Pinto & Prescott, 1990)	-Budget and Schedule -Perceived Value -Client Satisfaction
(Ralf Müller & Turner, 2007a)	-Meeting Project's Overall Performance -Meeting User Requirements -Meeting the Project's Purpose -Client Satisfaction -Reoccurring Business with the Client -End-user Satisfaction -Supplier's Satisfaction -Project Team's Satisfaction -Other Stakeholder's Satisfaction

(Khan, Turner, & Maqsood, 2013)	-Project Efficiency -Organizational Benefits -Project Impact- -Future Potential -Stakeholder Satisfaction
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Table 1 Success criteria in the literature

From this research made, it was decided that the model that best described the success criteria was the one designed by Khan, Turner & Maqsood (2013). The following dimensions were included into the model:

- Project efficiency
- Organization benefits
- Project impact
- Stakeholder satisfaction
- Future potential

Different dimensions are more important at different times with respect to the moment of project completion. In the short-term and particularly during project execution, the most important dimension is project efficiency: in fact, it is the only one that can be assessed or measured at this time. Meeting resource constraints, measuring deviations from plans, and looking at various efficiency measures, may be the best way to monitor the project progress and control its course. Once the project is completed, however, the importance of this dimension starts to decline. As time goes by, it matters less and less whether the project met its original resources constraints, in most cases, after about one year, it is completely irrelevant.

In contrast, after project completion, project impact becomes more relevant. The next dimension, organizational benefits, can only be felt later. It takes usually a year or two until a new product starts to bring in profit or establish market share. And finally, future potential can only be recognized and assessed much later. The long-term benefits from projects will affect the organization only after three or even five years (Aaron J. Shenhar et al., 2001).

3.3.1 Project efficiency

As described by the famous American author Peter Drucker, efficiency is to “do things right,” or to maximize output for a given quantity of inputs or resources, and effectiveness is to “do the right things,” or to attain the project’s goals and objectives.

Project efficiency is a short-term dimension expressing the efficiency with which the project has been managed. It simply tells us how did the project meet its resources constraint, was it finished on time, and within the specified budget? (Aaron J. Shenhar et al., 2001). This is the immediate dimension with which a project can be assessed, even during execution. Is about the success of the delivery phase.

Shenhar & Dvir (2007) define efficiency in terms of the project’s meeting time, cost and performance targets, and this is now more commonly used in the project success literature. These criteria are also classified as micro-success and project management success.

In the practice, this dimension seems critical to project managers. Most project managers are convinced that this is their major job, that their performance is assessed by how well they met their project’s immediate goals, and above all, adhering to time-scales and budgets. As one project manager put it: “my job is to be there in time, and my reputation in the past was that I can finish projects in time. I am not going to diminish this reputation here.” However, while all see time and budget as important, the emphasis on meeting these goals varies according to the project type (Aaron J. Shenhar et al., 2001).

Although success in this dimension may indicate a well-managed, efficient project, it may not suggest that this project will be considered a success in the long run, and benefit the organization later. Many times projects that were perceived as failures at their launch would later become models of success, while others considered successes at their launch turned into catastrophes. A project team may therefore be wrongly congratulated or blamed, depending on when a project is considered a success or failure (Ika, 2009). However, with increased competition and shorter product life cycles, time to market, (time from initial concept to market introduction) becomes a critical competitive component. Thus success in this dimension will often help the company’s business, and so enhancing a project’s efficiency

and leading to early product introduction may be adding to product competitiveness (Aaron J. Shenhar et al., 2001).

3.3.2 Organization benefits

The benefits derived by the performing organization could be tangible, direct affecting the commercial and business success, and intangible, affecting the organizational success. Firms tend to measure business success with financial and economic indicators like increase in profits and market share, growth, excel in financial performance and increase in stock value. Organizational success is about the benefits that were brought to the organization itself, as learning/knowledge developed and accomplishment of strategic goals. This sub-dimension is usually measured after one or two years that the project has been delivered.

As mentioned before, the benefits of projects to the performing organization are focused on profits, market share, and other business related results. However, the nature and expectations vary with project type. Using the levels used by Shenhar, Dvir, Levy & Maltz (2001) to distinguish between project types and their technology uncertainty, the Table 2 shows the different benefits that the organization would get after project completion. Projects with higher value and complexity lead to products that bring higher benefits to the organization (Khan et al., 2013).

Technological uncertainty	Benefits to the organization
Low-tech	-Reasonable profit -Relatively low margins
Medium-tech	-Appropriate profits -Possibly product diversification
High-tech	-Additional profits in the longer run -Increasing market share -Additional product lines -Technological capabilities
Super-high-tech	-Create leapfrog advantages -High profits -Create entirely new products -Establish new product lines

	<ul style="list-style-type: none"> -Create new markets -Create new technological generations -Create core competencies
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Table 2 Benefits to the organization by technological uncertainty

This dimension addresses the impact the project may have on the organization. In the business context, did it provide sales, income, and profits as expected? Did it help increase business results and gain market share? This dimension may also apply to projects not aimed at building new products. Internal reengineering projects, or the development of new manufacturing processes, are examples of this sort, and this is the dimension in which such an assessment should be made. It will include measures of new process performing time, cycle time, yield, and quality, all of which assess the project's direct impact on the performing organization (Aaron J. Shenhar et al., 2001).

On the other hand, learning in project environment becomes so important for the organization that even the success of a project is determined according to project learning (Arthur, DeFillippi, & Jones, 2001). Studies have proven that most employees (85%) working on a project gather new knowledge, both explicitly, as well as implicitly, through experience (J.R. Turner, Keegan, & Crawford, 2000).

Other studies from the field of project management underline the importance of managing the project-based knowledge in order to create added value for clients (Reich, Gemino, & Sauer, 2012). Furthermore, without summarizing the lessons learned during the development of the project, an organization can even backslide to a lower level in project management (Williams, 2007).

Lessons learned from projects can lead to far-reaching changes in an organization's strategic focus (Brady & Davies, 2004). Learning from projects represents a unique opportunity for gathering new knowledge and exchanging experiences between teams in an organization (Sense, 2003). The mix of knowledge and expertise developed within project teams positively influences an organization's long-term success (Ordanini, Rubera, & Sala, 2008).

Gathering of information on project results can represent an excellent way for establishing a knowledge base that would be useful for managing future projects. Indeed, for Kerzner

(2000), continuous improvement represents the fifth and highest stage of project management maturity in an organization.

The impact on the performing organization can further be divided into two distinct dimensions, one relates to the shorter-term benefits, and the other to the preparation for the future.

3.3.3 Project impact

Projects impact refers to the results or effectiveness of the outcome from a project. This success dimension differs from organizational benefits in that it focuses on end users or beneficiaries who are external to the project organization. Thus, the effects from the project's outcome are medium to long term measures in which impact studies need to be carried out after the project has been completed (Planning Commission, 2008).

First of all, it should be assessed whether the project achieved its purpose, one of the four levels identified by Baccarini (1999) as project objectives (goal, purpose, output, and input). Project purpose is the intended near-term effect in the users of the project as a result of utilizing the project's outputs (D. Baccarini, 1999). The successful achievement of the project's purpose can be measured in terms of how well the project's product satisfies users' needs. If the project satisfied the end-user, it can be said that the project generated an impact.

As well, project's reputation is established when a project delivers the benefits for which it was created. The availability of funds especially in development projects is linked with the reputation of the previously completed projects or 'profile' as reported by Diallo & Thuillier (2004).

Organizational benefits and project impact are both measures that correspond to the project effectiveness measured from the view point of the Logical Framework Analysis approach used in the public sector (D. Baccarini, 1999).

3.3.4 Stakeholders satisfaction

Project success can be defined as: “The satisfaction of all stakeholders” (Westerveld, 2003). Some authors found that the realization of the strategic objectives of the client organization that initiated the project, the satisfaction of end users, and the satisfaction of other stakeholders should be included as measures of project success (D. Baccarini, 1999; Lim & Mohamed, 1999; A.J. Shenhar et al., 1997).

The satisfaction of a stakeholder can be done through benefits realization. A benefit is defined as the measurable improvement resulting from an outcome that is perceived as an advantage by a stakeholder (OGC, 2007). Benefits can be financial or nonfinancial, tangible or intangible (Shao, Müller, & Turner, 2012). Stakeholder satisfaction is a very important measure that gives an idea of the success achieved as perceived by a specific actor. Fulfilling needs and/or bringing benefits to stakeholders not only provide them satisfaction, but also generate other benefits such as loyalty and welfare.

But with every project it is difficult to know exactly to which stakeholders the project will have an impact, because the involvement of them will vary from project to project and from industry to industry but their consideration is always essential in order to satisfy them. Turner and Zolin (2012) found that the time of benefits received and definition of success are different for different stakeholder as depicted in Table 2.

Measures of Success	Stakeholder	Timescale
The project increases the shareholder value of the parent organization	Shareholders	End plus years
The project generates a profit	Board	End plus years
The project provides the desired performance improvement	Sponsor	End plus years
The new asset produced by the project works as expected	Owner	End plus months
The new asset produces a product or provides a service that consumers want to buy	Consumers	End plus months

The new asset is easy to operate	Operators	End plus months
The project is finished on time, to budget, and with the desired quality	All	End
The project team had a satisfactory experience working on the project and it met their needs	Project Team	End
The contractors made a profit	Contractors	End

Table 3 Different perceptions of success by different stakeholders over different timescales, after Turner & Zolin (2012).

3.3.5 Future potential

The definition of what a project is meant to accomplish, has been changing over time. Nowadays researchers and practitioners are starting to see projects as powerful strategic weapons initiated to create economic value and competitive advantage, to prepare the organizational and technological infrastructure for the future. In many cases organizations are also expecting to gain higher diversification, increased capabilities, exploiting revolutionary ideas, building not-yet-existing technologies and other long-term benefits. Successful projects in this category can create leapfrog advantages for the performing organization, typically in the long run (Aaron J. Shenhar et al., 2001).

This dimension is concerned with competitive advantage, and future market success, and rather than sticking to the initial plan, projects focused in this dimension keep making adjustments that will create better business outcomes (Aaron J. Shenhar et al., 2001).

These benefits are longer term, only to be realized in the future, sometimes long after the project has been completed, and often indirectly. Thus, they can be measurable after about two to five years. So the question is, how does the current project help prepare the organization for future challenges? (Aaron J. Shenhar et al., 2001)

4 Operationalizing the Framework

In order to explore the relationships that the different dimensions of the framework have, the conceptual model should be operationalized. Through this process, it would be possible to transform the theoretical concepts into observable and measurable elements (Forza, 2002).

Each of the dimensions of the conceptual model in Figure 1, include different constructs. Constructs are mental abstractions that we use to express the ideas, people, organizations, events and/or objects/things that we are interested in. Constructs are a way of bringing theory down to earth, helping to explain the different components of theories, as well as measure/observe their behavior. Constructs provide a common language and shared meaning that help us to communicate about things clearly and precisely. Broadly speaking, constructs are the building blocks of theories, helping to explain how and why certain phenomena behave the way that they do.

Constructs need to be translated from the abstract (i.e. mental ideas and mental abstractions) to the concrete (i.e. measureable/testable in the form of variables). In other words, we are re-stating constructs as variables, with variables also having their own attributes. The role of the operational definition is to precisely describe how to measure the characteristics of a construct. By characteristics, we mean the mental abstractions/ideas within constructs that ultimately are measureable in the form of variables and their attributes. It is these variables and their attributes that are measured.

While constructs are sometimes mistaken for variables, they are not variables. Instead, we use variables to operationalize (i.e. measure) the constructs we are interested in. Constructs can be mistaken for variables because some constructs may only be represented by one variable, such that the construct name and the variable name are the same (e.g. the construct and variable 'sex'). Constructs can be represented by a wide range of variables. Translating abstract concepts into concrete variables is not straightforward.

The translation from theoretical concepts to operational definitions can be very different from construct to construct. While some constructs lend themselves to objective and precise measurement, others are more nebulous and do not lend themselves to such precise

measurement, especially when people's feelings, attitudes and perceptions are involved (Forza, 2002).

This action of reducing abstract constructs so that they can be measured (i.e. construct operationalization) presents several problems: alignment between the theoretical concepts and the empirical measures, the choice between objective and perceptual questions, or the selection of one or more questions for the same construct. These problems can be overcome by using operational definitions that have already been developed, used and tested (Forza, 2002).

When constructs, have multiple facets or involve people's perceptions/feelings or are planned to be measured through people's perceptions it is highly recommended to use operational definitions which include multiple elements. When objective constructs are considered, a single direct question would be appropriate (Forza, 2002).

Once the constructs have been operationalized, the variables should be measured. For the variables of this model to be measured, we developed questions, also called items. The questionnaire can help to uncover or provide preliminary evidence of association among the concepts.

4.1 Operationalizing the Project Governance Dimension

The project governance dimension consists in three constructs:

- Regulative institutions
- Normative institutions
- Cognitive-cultural institutions

Because of the wide definition of these constructs, we decided to subdivide them in sub-constructs. Furthermore, as these sub-constructs are abstract as well, some of them were defined with more than one question. The following table shows each of the constructs with their corresponding items:

Construct	Sub-construct	Item (question)
Regulative institutions	Formalization	<ul style="list-style-type: none"> - The project activities were clearly stipulated by a project contract or set of contracts - The project activities were clearly bounded by laws and/or other external regulations - The project objectives were well-defined in the contract or another formal document - The project activities were followed strictly according to the contract
	Incentives	<ul style="list-style-type: none"> - There were clear pre-defined incentives to motivate for the fulfillment of the project objectives
	Sanctions	<ul style="list-style-type: none"> - There were well defined sanctions (for example, economic or legal) for the violation of contracts or other regulations
	Authority	<ul style="list-style-type: none"> - The regulations were enforced coercively using power of formal authority - There was an internal or external body that monitored the fulfillment of the contracts, rules or regulations
	Guidelines	<ul style="list-style-type: none"> - There were detailed formal rules and guidelines that defined actions of project participants - The project execution was highly regulated by internal or external guidelines
Normative institutions	Collective norms	<ul style="list-style-type: none"> - Project participants shared expectations of appropriate behavior during the project - Project participants tried to influence each other when they thought that certain behavior was inappropriate - Informal rules and agreements between the project participants played an important role - Project participants understood what others expected of them beyond the formal requirements
	Punishment	<ul style="list-style-type: none"> - Project participants that violated the informal rules were punished through social sanctions (such as ridicule, isolation or ostracism)
	Reputation	<ul style="list-style-type: none"> - Project participants cared about their reputation
	Membership	<ul style="list-style-type: none"> - Project participants wanted to maintain good relationships between them - Project participants created a sense of community
Cognitive-Cultural institutions	-Shared identities	<ul style="list-style-type: none"> - Identified themselves as part of the project
	-Shared beliefs	<ul style="list-style-type: none"> - Had a strong belief in the project's objectives
	-Shared frames	<ul style="list-style-type: none"> - Perceived the project as a path for achieving the objectives of the company - Showed much interest since the beginning of the project
	-Shared values	<ul style="list-style-type: none"> - Identified themselves with the project's values
	-Shared goals	<ul style="list-style-type: none"> - Had personal goals aligned with the goals of the project

Table 4 Operationalization of Project Governance Constructs

4.2 Operationalizing the Contingency Factors Dimension

The different contingency factors affecting projects were clustered into three different subdimensions. These were later divided into further constructs as depicted in Figure 1:

- Environmental
 - Uncertainty
 - Complexity
- Intra-organizational
 - Organization characteristics
 - Governance characteristics
- Internal to the project
 - Project characteristics

The items selected to measure the constructs concerned with environmental contingencies are included in Table 5.

Construct	Sub-construct	Item (question)
Uncertainty	Technology dynamics	-The technology used in the project is changing very frequently
	Political uncertainty	-There was high political uncertainty during your last project completed
	Economic uncertainty	-There was high economic uncertainty during your last project completed
	Social uncertainty	-There was high social uncertainty during your last project completed
	Market dynamics	-The market was highly dynamic during your last project completed
Complexity	Technology complexity	-The project's technology could be considered high-tech
	Market complexity	-The market has many competitors -The market is highly competitive
	Stakeholders complexity	-There were different actors involved in my last project (government, suppliers, community, customers, etc.)

Table 5 Operationalization of Environmental Contingency Factors

The governance characteristics are evaluated through two different frameworks: four governance paradigms by Müller (2009) and four types of governance by Blomquist & Müller (2006). In the case of the former framework, we used the items already operationalized by Müller and Lecoeuvre (2014). A Likert scale with 7 points is used in order to compare the two sides of the different orientations. In the case of the latter framework, we proposed questions to recognize the way in which the organization manages projects in project-based organizations. The resulting items with their corresponding options are depicted in the Tables 6 & 7.

Corporate governance orientation (construct)	
Item (question)	
Decisions are made in the best interest of the shareholders and owners of the organization and their Return on Investment (ROI)	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	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)	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	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	The long term objective is to maximize value for society
Organization approach to control (construct)	
Item (question)	
A strong emphasis on always getting personnel to follow the formally laid down procedures	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	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	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	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	Prioritization of people's own experiences in doing their work over methodology compliance
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Table 6 Operationalization of the Four Paradigms by Müller (2014)

Governance of Projects	
Item (question)	Options
Please choose which statement describes better the relationship between your last project completed and the company:	<ul style="list-style-type: none"> -The company rarely works with projects (functional organization) -The company works mainly by projects (project-based organization) -A new organization was created in order to achieve the project objectives (standalone project) -Other (please specify)
How is mainly the management of projects in the organization?	<ul style="list-style-type: none"> -Portfolio driven organization -Program driven organization -Hybrid organization (combined portfolio and program management) -Multiproject organization -Other (please specify)
Is there a Project Management Office in charge of the governance of projects?	<ul style="list-style-type: none"> -Yes -No
How much support gives the Project Management Office to the projects?	<ul style="list-style-type: none"> -Very high -High -Moderate -Low -Very Low
Governance definition (5 points Likert scale)	<ul style="list-style-type: none"> -There was a well-defined project governance in my last project completed -There is a well-defined governance of projects in my company -There is a well-defined corporate governance in my company

Table 7 Operationalization of the Four Types of Governance by Blomquist & Müller (2006)

Organizations characteristics are evaluated through typical questions addressed to know more information of the organization where the project belongs (i.e. industry, size, age). The questions proposed are depicted in the Table 8.

Construct	Item (question)	Options
Industry	Which industry is your company in?	-R&D -Engineering -Construction -Information Technology -Service -Government -Other (Please specify)
Size	How many employees has the company you worked for?	-Less than 50 -Between 51 and 250 -Between 251 and 1000 -More than 1001
Age	How old is the company where the project was developed?	-Less than 2 years -Between 2 and 5 years -Between 6 and 15 years -More than 16 years

Table 8 Operationalization of Organization Characteristics

To describe the characteristics of the project, questions from Joslin and Müller (2015) were used, as well as new questions regarding team members' characteristics and project's risk. The proposed questions are depicted in Table 9.

Construct	Item (question)	Options
Project's cost	The monetary value (budget) of my last project in US dollars was:	-Under \$500,000 -\$500,000 to \$999,999 -\$1,000,000 to \$4,999,999 -\$5,000,000 to \$49,999,999 -Over \$50,000,000 -Don't know/Not sure
Project's duration	The total duration of my last project was:	-Under 6 months -Between 6 months and 1 year -Between 1 year and 2 years -From 2 years to 5 years -Over 5 years
Project's urgency	How tight was the deadline for the project?	-Very tight -Tight -Neutral -Flexible -Very flexible
Project's location	Where was your last project developed?	-North America -Central and South America -Europe -Australasia -Africa

Project's risk	The project could be considered of high risk	-Strongly agree -Agree -Neutral -Disagree -Strongly disagree
Team member's experience	The expertise of the team members could be considered high	-Strongly agree -Agree -Neutral -Disagree -Strongly disagree
Team member's communication	The communication between team members was very good	-Strongly agree -Agree -Neutral -Disagree -Strongly disagree

Table 9 Operationalization of Project Characteristics

4.3 Operationalizing the Success Criteria Dimension

For the success criteria dimension, the questions used were taken from a paper by Khan, Turner & Maqsood (2015). In their paper, they divided the project success construct into five more constructs:

- Project Efficiency
- Organizational Benefits
- Project Impact
- Future Potential
- Stakeholder Satisfaction

At the same time, they used different items to measure each of these constructs. The final questions are depicted in Table 10.

Construct	Item (question)
Project Efficiency	-Finished on time -Finished within budget -Minimum number of agreed scope changes -Activities carried out as scheduled -Met planned quality standards -Complied with environmental regulations -Met safety standards -Cost effectiveness of work

Organizational Benefits	-Learned from project -Adhered to defined procedures -End product used as planned -The project satisfies the needs of users -New understanding/Knowledge gained
Project Impact	-Project's impacts on beneficiaries are visible -Project achieved its purpose -End-user satisfaction -Project has good reputation
Future Potential	-Enabling of other project work in the future -Motivated for future projects -Improvement in organizational capability -Resources mobilized and used as planned
Stakeholder Satisfaction	-Sponsor satisfaction -Steering group satisfaction -Met client's requirement -Met organizational objectives

Table 10 Operationalization of Success Criteria by Khan, Turner & Maqsood (2015)

4.4 Demographic Questions

To complement the data of the questionnaire, demographic data is also proposed to be included. The questions are based on a paper by Joslin and Müller (2015) and are depicted in Table 11.

Question	Options
Which was your position held during your last project completed?	-Project manager -Program manager -Team member -Project portfolio manager -PMO -Other (Please specify)
How many years do you have working as project manager or in the area of project management?	-1 to 5 years -6 to 10 years -11 to 15 years -16 to 20 years -More than 21 years
How many years do you have of work experience?	-1 to 5 years -6 to 10 years -11 to 15 years -16 to 20 years -More than 21 years
Gender	-Male -Female

Table 11 Demographic Questions by Joslin and Müller (2015)

5. Conclusions

5.1 Research findings

The initial objective of this research project was to analyze the effectiveness of project governance mechanisms in project-based organization in different contexts. The proposed outcome was to develop and operationalize a conceptual model that would help to better understand how contingency factors could alter the relationship between project governance and project success.

This research contributes to the contingency theory in project management, proposing a framework that would be helpful to design better project governance structures, adapted to their context.

5.2 Answers to research questions

I. What are the underlying project governance dimensions?

Project governance dimensions in this paper were analyzed from a different perspective of the traditional view. Usually, literature states that governance should define, monitor and control through formal processes. We used a multi-level and multi-dimensional perspective of project governance, based on the three institutional pillars defined by Scott (2008). Thus, the project dimensions studied in this project were:

- Regulative institutions
- Normative institutions
- Cognitive-cultural institutions

II. What are the constructs behind project governance dimensions?

Nowadays, it doesn't exist quantitative researches of the project governance dimensions. In order to make quantitative analysis of the effects that governance dimensions can have, constructs should be defined. In this study research, constructs were defined for every one of the dimensions of project governance as depicted in the following table:

Dimension	Construct
Regulative institutions	Formalization
	Incentives
	Sanctions
	Authority
	Guidelines
Normative institutions	Collective norms
	Punishment
	Reputation
	Membership
Cognitive-Cultural institutions	Shared identities
	Shared beliefs
	Shared frames
	Shared values
	Shared goals

III. How can be conceptualized project performance?

The success of a project can be measured in different ways. There isn't a universal definition of success; different stakeholders will have their own definition. But organizations should measure project performance in some way. This research proposes measuring performance of projects in a multi-dimensional perspective. Furthermore, it is proposed to view projects as strategic tools useful to achieve organization objectives. Thus, we propose 5 dimensions that will measure project performance:

- Project efficiency
- Project impact
- Stakeholders satisfaction
- Organizational benefits
- Future potential

IV. What are the contingency factors that influence projects performance?

External influences to projects come from different sources. As stated before, organizations could be considered open system, thus, its environment will influence them. But the source of these contingencies varies. In this research we clustered the contingency factors into three sub-dimensions:

- Environmental
 - Uncertainty
 - Complexity
- Intra-organizational
 - Governance characteristics
 - Organization characteristics
- Internal to the project
 - Project characteristics

V. How can project governance, contingency factors and project success be operationalized?

For operationalizing the constructs and sub-constructs of the three dimensions, different methods were used to found the correct questions that could explain each of the constructs. In the case of project governance, a research on the theory of governance and project governance was made in order to find the underpinnings variables that could measure social behavior. For the contingency factors, different approaches were used. In the case of organization and project characteristics, questions from previous researches were used, given that were questions usually asked in surveys. For governance characteristics, questions from a previous research regarding operationalization of governance was used. For uncertainty and complexity, questions were taken from the theory of papers who stated these constructs as environmental related contingencies. Finally, for the project success criteria, a questionnaire from a previous survey was used. As we can see, finding the variables that could measure constructs, needs different perspectives because not all the constructs are easy to evaluate and their definition can be more abstract.

5.3 Future research

Future research that could extend the comprehension of the topics treated in this research study are:

- As stated in the research, project governance mechanisms consist not only in formal processes and tools, but also in social and psychological processes. A future research could study the relationship between these dimensions and the effects that this relationship may have on project performance.
- It can be studied, how changes in contingency factors could modify initial structures (e.g. trust to managers, frames, values, motivations, etc.).
- A quantitative analysis should be made using the operationalization of the conceptual model to evaluate the impact that contingency factors could have on the relationship between project performance and project governance.
- As stated in the research study, governance compromises different levels in project-based organizations. It could be studied how the alignment or misalignment of the different governances would affect project performance.

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