Flávio Jorge Freire D Andrade Battistuzzo

A INFLUÊNCIA DO AMBIENTE INSTITUCIONAL NA EXECUÇÃO DE PROJETOS COMPLEXOS PARA ACESSO AOS MERCADOS DA BASE DA PIRÂMIDE: UM ESTUDO DE CASO DE ORGANIZAÇÕES BRASILEIRAS NO SETOR DE UTILIDADES PÚBLICAS

THE INFLUENCE OF INSTITUTIONAL ENVIRONMENT IN THE EXECUTION OF COMPLEX PROJECTS FOR ACCESSING THE BASE OF THE PYRAMID: A CASE STUDY OF BRAZILIAN UTILITIES SERVICES ORGANIZATIONS

Projeto de Dissertação apresentada ao Programa de Mestrado Profissional em Administração: Gestão de Projetos da Universidade Nove de Julho – UNINOVE, como requisito parcial para obtenção do grau de **Mestre em Administração**.

Orientador: Prof. Dr. Marcos Roberto Piscopo

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DEDICATÓRIA

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RESUMO

A população mundial está crescendo, devendo alcançar 9 bilhões de pessoas em 2050. A demanda por serviços básicos como energia, água e esgoto deve aumentar. Apesar de certas mudanças na forma pela qual o Estado participa nessas organizações, decorrentes do processo de privatização brasileiro, a influência governamental ainda é um fator crítico dentro do ambiente institucional. Os desafios para as organizações no setor de utilidades públicas no Brasil se concentram em como lidar com esse ambiente institucional em contínua alteração, atendendo seu objetivo social e tendo um nível de desempenho econômico adequado, especialmente no atendimento ao mercado da base da pirâmide. Estas organizações devem inovar em suas estratégias para servir esse mercado, considerando que essas são distintas do topo da pirâmide. Estas inovações serão implementadas através de projetos considerados complexos. Compreender os fatores de complexidades na execução desses projetos se torna fundamental para o sucesso dessas estratégias. Esta pesquisa responde a questão *"Como a participação do Estado nas organizações de serviços de utilidades impacta a execução de projetos complexos criados para servir o mercado da base da pirâmide?"*. Esta pesquisa está baseada em um estudo de caso múltiplo, com natureza qualitativa, exploratória e uma abordagem indutiva. Para a realização da pesquisa, duas organizações da área de utilidades públicas foram selecionadas com representatividade do setor. Dados foram coletados por meio de entrevistas semiestruturadas com pessoas envolvidas na execução de projetos na base da pirâmide. As entrevistas foram transcritas e um aplicativo para análise de conteúdo foi utilizado para auxiliar na análise dos objetivos da pesquisa. Como resultado, identificou-se os parâmetros de complexidade na execução dos projetos para a base da pirâmide, assim como a forma pela qual o Estado influencia estes projetos e as estratégias organizacionais. Esse estudo contribui de forma prática na compreensão dos elementos institucionais com impacto na definição das estratégias organizacionais. Revela a necessidade de uma melhor definição de modelos de negócio específicos para alavancar as oportunidades na base da pirâmide. Os resultados identificados podem ser usados pelas organizações para estabelecer estratégias específicas para a base da pirâmide considerando os impactos quantitativos destas estratégias nas dimensões econômica, social e ambiental. Limitações da pesquisa e sugestões para futuros trabalhos são estabelecidas ao final do estudo.

Palavras-chave: Estratégias Organizacionais; Projetos complexos; Base da Pirâmide; Ambiente Institucional; Gerenciamento de Projetos.

ABSTRACT

World population is increasing and shall reach 9 billion at the end of 2050. The demand for basic services like energy, water and sanitation will increase. In Brazil, these services used to be provided by State owned enterprises. Despite the changes occurred after the privatization, the influence of the State on how organizations are structured is still a major fact. The challenge for the utilities services organizations in Brazil is how to deal with this ever-changing institutional environment in order to fulfill its social objective in an operational and economic efficiency. The organizations will have to innovate in their strategies to access the base of the pyramid, as its peculiarities are different from the top of pyramid. These innovations will be implemented through projects, with all the characteristics of complexities like size, innovations and new technologies. Understand the complexities dimensions in the execution of these projects is fundamental for the effective implementation of these strategies. Based on a multiple qualitative case study, this research answers the question "*How does the participation of the State in utilities services organizations impact the execution of complex projects created to serve the base of pyramid markets?"* with a focus in the Brazilian utilities services organizations. This research is based on a multiple case study, with a qualitative and exploratory nature, using an inductive approach. In order to perform this research, two utilities service organizations were selected with a representativeness of the sector. Data were collect based on a semi-structured interviews with respondents involved in the project execution to access the base of pyramid. Those were transcribed and a software for content analysis used to support the analysis of the research objectives. As a result of the research, complexities dimensions for project execution were identified, as well as the State influence on these projects and the organizational strategies. This research contributes in practical terms to a better understanding of the variants of the institutional elements with an impact on the strategies of the utilities services organizations. It reveals the need for a better understanding and definition of specific business model to attack the huge market opportunities at the base of pyramid. The identified results may be used by organizations to establish specific strategies for the base of pyramid considering the quantitative impacts of these strategies in the economic, social and environmental dimensions. Limitations from this research are established and suggestions for future works are presented.

Keywords: Organizational Strategies; Complex Projects; Base of the Pyramid; Institutional Environment; Project Management.

LIST OF ABBREVIATIONS

ARSESP	Agência Reguladora de Saneamento e Energia do Estado de São *Paulo (Regulatory Agency for Energy and Sanitation of the São Paulo State)*
BNDES	Banco Nacional de Desenvolvimento Econômico e Social (*National Bank for the Social and Economic Development)*
BoP	Base of the Pyramid
BMF/BOVESPA	Bolsa de Valores de São Paulo *(Sao Paulo Stock Exchange Market)*
BRL	Brazilian Currency (Reais)
CNI	Confederação Nacional das Indústrias *(National Confederation of Industries)*
R&D	Research and Development
GDP	Gross Domestic Product
IBGE	Instituto Brasileiro de Geografia e Estatística *(Brazilian Institute for Geography and Statistics)*
IE	Institutional Environment
IPVS	Índice Paulista de Vulnerabilidade Social *(Social Vulnerability Sao Paulo Index)*
IWA	International Water Association
FSC	Forestry Steward Council
KPI	Key Performance Indicator
LPG	Liquefied Petroleum Gas
MNE	Multinational Enterprise
NGO	Non-Government Organizations
NRW	Non-Revenue Water
ONA	Organismo Nacional de Acreditação *(National Accreditation Body)*
PERT/CPM	Program Evaluation and Review Technique / Critical Path Method
PM	Project Management
PND	Programa Nacional de Desestatização *(National Program for Privatization)*
RA	Regulatory Agency
SOE	State Owned Enterprises

ToP	Top of Pyramid
USD	American Dollar
USO	Utilities Services Organizations

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1 INTRODUCTION

The world population is growing, totalizing 7.2 billion at the end of 2014. By the end of 2050, 9 billion will be living in our planet, a 25% increase. Most of this expected growth will occur in less developed countries. Around 50% of the current population lives in urban areas and this phenomenon shall be even more accentuated by 2050 with 6.3 billion living in large and small cities (UN DESA, 2014). Areas with the greatest population growth shall be Asia and Africa, although Latin America and Caribe shall add 160 million with a forecast of 1.11% average annual growth rate from 2015 to 2050. World life expectation at birth is also improving: it increased from 64.8 years from 1990 – 1995 to 70 years in 2010 – 2015. International migration has also increased not only in quantitative terms but also in terms of complexity. In 2013, international migration accounted for 232 million immigrants, the majority of them on working age (74% from 20 to 64 years old). Furthermore, most of immigrants will be living in urban areas (UN DESA, 2014).

As the population growth in some geographical areas, the ageing of the population will affect some countries, an inevitable process where the oldest people become a larger share of the total population. This phenomenon will have a greater impact in more developed countries like North America and Europe where 31% of the population in these areas is expected to be older than 60 years by 2050 (UN DESA, 2014). Furthermore, people at the base of pyramid (BoP) shall present higher demographic and market growth (Rivera-Santos & Rufín, 2010).

All these factors, population growth, international migration, urbanization, city growth, ageing of the population impose clear challenges for government and agencies as the complexities of these phenomena faces the difficulties of economic situation and institutional environment. Access to basic services, like energy, water and sanitation, transportation, healthcare systems, education, may be highlighted as an example of the current and future concerns of the society. As the population grow, developed countries need to renew their existent infrastructure and for the least developed countries, investments are required in order to expand the services to all population (Scott, Levitt, & Orr, 2011), including those at the (BoP).

Less developed countries face even more challenges as their level of services are not capable to reach all the population and are considered not adequate in terms of quality and reliability. Furthermore, an unstable social and political environment surrounds the required projects for the improvement of the infrastructure throughout its entire process of planning, design, execution and operation (Scott et al., 2011).

The importance of the infrastructure is not related only to the basic needs of the population. According to market analysts, the impact of a potential rationing of water and energy can produce a reduction in the gross domestic product (GDP) in Brazil of 1.8% in 2015 (O Estado de São Paulo, 2015). These two sectors, energy and water, are interconnected and their services are provided by Brazilian utilities services organizations (USO). These organizations used to be State owned enterprises (SOE), created under the Vargas presidency, back to 1943. The objective was to reduce the dependency of the imported raw material and products through the substitution of the imported goods. From 1940 to 1950, the Brazilian State created SOE companies like CSN: Companhia Siderúrgica Nacional, Companhia Vale do Rio Doce, Companhia Hidrelétrica de São Francisco, Petrobrás. The Brazilian State as an entrepreneur (owner and manager) has reached its peak in the 1970's during the military regime. Some of these SOEs were also concessions of public services (water, sewage treatment, energy and telecommunications) (Musacchio & Lazzarini, 2014).

The crisis in the 1980´s had a major impact in Brazilian SOEs. A series of concomitant facts generated the worst recession in the history of Brazil: the price increase of the barrel of oil, the rise of the interest rate made by the Federal Reserve Board in USA and Mexico debt default (Musacchio & Lazzarini, 2014). This crisis and the Brazil´s democratization process during the 1980´s, associated with the need to control the budget deficit, led to the privatization program of the SOEs. The privatization occurred in different stages, each one with a specific objective. First stage, from 1980 to 1989, 28 SOEs were privatized generating USD 723 million. In the second stage, from 1990 to 1994, through the Brazilian National Program for Privatization (PND: Programa Nacional de Desestatização), 36 SOEs were privatized generating USD 8.6 billion. Last, from 1994 to 2002, the Brazilian State sold or transferred its participation of public services like energy, telecommunications, sanitation, port operations, transportation (for instance, Light in 1996, an electricity organization in Rio de Janeiro). These were done through privatization or concessions (Musacchio & Lazzarini, 2014).

Brazilian Federal Law 9.491 (September 1997) regarding the PND: Programa Nacional de Desestatização (National Program for Privatization) defines privatization as the disposal of the rights of the public service on the social deliberations and the power to control the election of the majority of the managers of the society. It is also understood as the transfer to the private sector of the execution of public services as well as the transfer or bestowal of real state. Complementary to this definition, Federal Law 8.987 (February 1995) defines concessions as the delegation of the service provision through a bidding process to a competent organization,

by a predefined period. Permission has the same basic definition but is granted in a precarious way (the State can revoke the permission without any compensation).

From the end of 2003, the Brazilian State has altered the way they participate and influence the market. In opposition to the State as an entrepreneur where it owns and manages an organization with limited transparency and autonomy, different levels of State participation were established considering its participation as a major or minor investor. According to Musacchio and Lazzarini (2015), the full control and ownership of SOEs by the State can be named as the "leviathan as an entrepreneur". The second level would be the State as major investor. In this case, the organization would be partially privatized, publicly traded in the stock market. The last model of State participation is "leviathan as a minority investor", with a minority equity of the organization in the hands of the State, but receiving loans from State or development banks like those from BNDES: Banco Nacional de Desenvolvimento Econômico e Social (National Bank for Social and Economic Development).

The projects for infrastructure are one of the concerns of the Brazilian National Bank for Social and Economic Development (BNDES: Banco Nacional de Desenvolvimento Econômico e Social). According to an interview of the Director of the BNDES, "There is an increase in the number of infrastructure financing. The basic point is that in order to finance projects in infrastructure, it is necessary to have good projects; in general, these are complex projects" (Brasil Econômico, 2014).

Particularly in Brazil, projects seem to have difficulties in terms of execution when analyzed under basic aspects of time, cost and scope, the iron triangle from project management. There are plenty of examples of delays, cost overrun, changes of scope, from stadium to airports, water and energy. According to an evaluation made by CNI: Confederação Nacional das Indústrias (National Confederation of the Industries) on six large projects, the cost for delays until 2013 is estimated to account for USD 14 billion (CNI: Confederação Nacional das Indústrias, 2014). In the energy sector, another example, 40% of the planned energy did not meet the scheduling for 2013 (ABIAPE: Associação Brasileira dos Investidores em Autoprodução de Energia, 2014).

The challenges for the utilities services organizations in Brazil are clear. They have to deal with this ever-changing institutional environment in order to fulfill its social objective in an operational and economic efficiency. The need to comply with its social function is especially important when serving the BoP market.

1.1 RESEARCH PROBLEM

At least three major components have the potential to influence the strategies of the utilities services organizations: (i) the institutional environment, (ii) the access to the BoP, (iii) the complexities of projects. These major components are covered below.

The institutional environment is a major contributor to the organization structure and the establishment of the organization´s strategies. Despite some variants of institutional theory amongst authors, they do not diverge on its impacts on the characteristics of the organizational structure (Friedland & Alford, 1991; Hennart, 1994; Meyer & Rowan, 1977; North, 1990; Orr & Scott, 2008; Peng, Sunny, Brian, & Hao, 2009; Scott, 1987, 2005). In simple terms, institutions are the "rules of the game" in a society, giving meaning to the human interaction. They incentive or inhibited human exchange in general terms: social, economic, and political. These institutional can be formally established (compulsory laws) or be informal, such as conventions and codes of practice. They form the framework in which human society interact. In order to win the game (or be accepted in terms of social structure), one must adhere to the rules or, in an unethical behavior, violate them in which case, punishment (and the associate costs) must be imposed (North, 1990). Institutions are "…comprised of regulative, normative and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life" (Scott et al., 2011, p. 53).

The institutional environment, as mentioned, is and will be influenced by political aspects, caused by particular and different mechanisms that the State uses to influence these organizations as well as the extent of this influence. Particularly in Brazil, political parties easily change their views regarding different aspects of their function. For example, Controlar, a vehicle inspection organization which won a contract for vehicle inspection in São Paulo City in 1996, became operational in 2006 and dismantled in 2014 – three different political parties involved in the entire process.

In the context of institutional environment, the demographic changes for the next decades (population growth and stronger urbanization) are expected to affect the strategies of the organizations. These strategies will have to cope not only to the increase demand for services but also the improvement of the deteriorated existent infrastructure. In this sense, the market at the BoP is an important driver for these organizations to fulfill its social function.

The second aspect relates to how to access the BoP market. Despite the potential market size at the BoP, the challenges to serve this market are not simple. In order to develop successful strategies to reach the BoP, organizations have to understand that the environment and

conditions at the BoP are substantially different from the top of pyramid – ToP (Rivera-Santos & Rufín, 2010). For instance, one of the characteristics of the people at the BoP is that they cannot afford to stock products in opposition to the ToP. They have no money or the place to storage these products. Therefore, any strategy to reach them has to consider small quantities of products and the possibility of less loyalty to a specific brand.

This difference has implications to business strategy: new logistics and distribution processes, new production system, new sales strategy just to name a few (C. K. Prahalad & Hart, 2002). Organizations do not either need to find who the customers are or to develop new products. Rather, they have to adapt these same products (or services) to less resourceful consumers and different cultural background. Last, instead of establishing new business model, organizations have to focus on basic markets concepts as distribution processes and logistics (Anderson & Markides, 2007). Therefore, innovations are required from the organizations in order to properly serve the BoP market.

These innovations are implemented through projects (Shenhar & Dvir, 2007). Furthermore, projects have been used as a form of work organization, including the need to innovate (Newell, Goussevskaia, Swan, Bresnen, & Obembe, 2008). The internal and external environment in which these projects are developed have the basic characteristics of complex projects. Different aspects contribute to this complexity: these projects may have some of the dimensions defined by Frame (2002) like size, variety, change and difficulty. They may present one or more of the complex dimensions established by Shenhar and Dvir (2007): novelty, technology, complexity and pace (the diamond approach to the project management). These projects can also be classified in terms of structural, technical, directional and/or temporal complexities (Remington & Pollack, 2010). Understand this social and political context is an important aspect for a better definition on how to execute such projects.

On the other hand, the current literature regarding BoP is concentrated on the market characteristics, business networks, opportunities and solutions to access the BoP market segment (Anderson & Markides, 2007; Kacou, 2010; C.K. Prahalad & Hammond, 2002; Rivera-Santos & Rufín, 2010). The question on how these required innovations are deployed to the BoP market considering the institutional environment, however, have not received the attention of academics and practitioners.

This research intends to identify the fundamental aspects to be considered when executing complex projects at the BoP market considering the institutional environment. The research question is *"How does the participation of the State in utilities services organizations impact the execution of complex projects created to serve the BoP markets?"*. The utilities services

organizations were the focus of this research as they present all the characteristics of the context in which it was planned. First, they operate in an institutional environment with all the regulative, normative and cultural-cognitive elements, including explicit and implicit rules of the game established by the State. Second, they need to reach the BoP not only for regulative coercion but also to expand their business and avoid the illegal utilization of their services (mainly electricity and water). Last, any strategy to reach the BoP may be considered a complex project.

1.2 OBJECTIVES

In order to answer the research question, the main objective of this research is to analyze the participation of the State in utilities services organizations and its impact on the execution of complex projects to access BoP markets.

The specific objectives of this research are:

i. Identify the mechanisms the State uses to participate in utilities services organizations;
ii. Identify the main aspects of the execution of complex projects created to serve the BoP markets; and,
iii. Analyze the relationship between State level of participation in utilities services organizations and the execution of complex projects created to serve the BoP markets.

1.3 JUSTIFICATION

The base of the pyramid market (BoP) presents impressive numbers. It is the “biggest untapped business opportunity” (Kacou, 2010, p. 17). Around the world, the BoP citizens account for 4 billion with an income of less than USD 2,000 (C. K. Prahalad & Hart, 2002), with a purchasing power of USD 5 trillion consumer market. The citizens at the BoP market are dominated by the informal economy resulting an inefficient and uncompetitive market (Hammond, Kramer, Katz, Tran, & Walker, 2007). Rather than addressing this market as an aid program to eradicate poverty, the 4 billion citizens need to be seen as potential consumers by organizations.

In Brazil, 26,8% of population who live in house, have a per capita income of less than half of minimum wage per month considering the year 2012 (IBGE, 2013). This represents an average annual per capita income of USD 1,900 with 52 million potential consumers. If the average annual per capita income raises to USD 3,800, this population adds up to 107 million. In terms of value, it is a USD 99 billion market for the average income of USD 1,900 (IBGE, 2013).

Some assumptions about the BoP market made by organizations may be questioned. The poor are not the target of the organizations because organization cannot reach them in a cost effective way. They cannot afford the products and services sold in developed markets. Poor people are not entitled to use new technologies – these are examples of wrong assumptions made by organizations in general. The access to the BoP will "require radical innovations in technology and business models" (C. K. Prahalad & Hart, 2002, p. 3). These innovations will be deployed through projects where different complexities dimensions will be present. The improvement of live standards of the population in general, and particularly to those in the BoP depends on the success of these projects (Scott et al., 2011).

Another factor is the impact of the State on how services utilities organizations are structured. Regardless of the level of the State participations in SOEs, its capacity to influence the economy is strong. The control of gasoline prices in Brazil through Petrobras and its impact on the performance of the oil company (leviathan as a major investor), the change of the VALE's CEO in 2009 (leviathan as a minor investor) are recent examples of the power of the State to influence the way organizations establish their strategies (Musacchio & Lazzarini, 2014).

In utilities services organizations, where the function of the organizations is not only to reach an adequate level of economic efficiency but also to fulfill a social function, this influence is even stronger. Furthermore, the levels of State organization (Federal, State or Municipal) and its different responsibilities help to produce a continuous change of the institutional environment due to political aspects. The example of the drought in Sao Paulo, and the postponing of the water rationing due to the elections for governor in 2014 demonstrated the political influence of the State in organizations at the public utilities services organizations. Understand how this institutional environment and its correlation to the BoP are shaped considering the complexities of project execution is an important aspect of any successful business model.

1.4 DELIMITATION OF THIS STUDY

Project management is defined as the application of knowledge and techniques to meet the project requirement, as cost, schedule and scope. In order to comply with this objective, PMI (2013), the traditional body of knowledge in project management, establishes five processes groups: initiating, planning, executing, monitoring and controlling, and closing of the project. The primary concept is that the application of these process groups, its concepts and techniques would be capable of producing the expected results of the project. Figure 1 conceptualizes these processes groups.

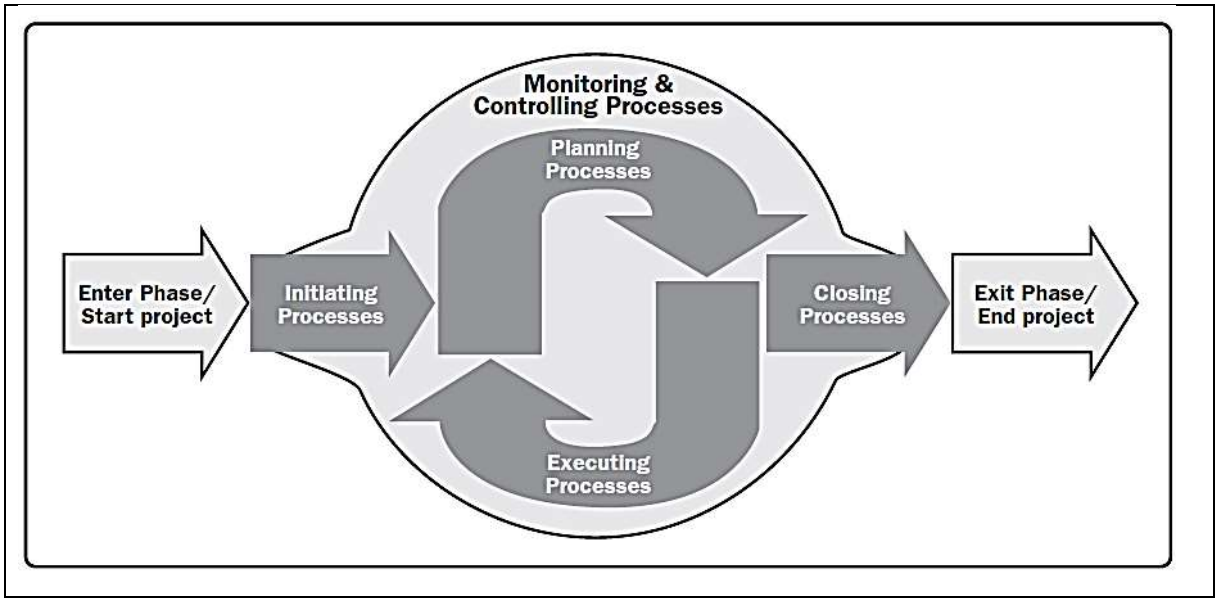

Figure 1: Project Management Process Group
Source: Extracted from PMI (2013)

This research is delimited to the "executing" process group. This particular process is composed of the required sub-processes to complete the project as initially planned, for instance, based on scope, quality, schedule and cost. In general terms, executing processes are the activities required to fulfill the project specifications. These sub-processes groups involve the coordination of people and the resources required to comply with project specifications. It also comprises of the management of stakeholder expectation. Finally, it covers the performing and integration of the activities of the project.

1.5 STRUCTURE OF THIS STUDY

This research is structured into six chapters. ***Chapter 1: Introduction*** provides a presentation of the research theme and the context in which the research was performed. The research question, objectives and the justification of the research are also discussed. The importance of the BoP market and its relation to the complexities of projects for accessing the BoP are introduced as well as its interfaces with the institutional environment.

Chapter 2: Literature Review presents the fundamental pillars of the study – institutional environment (IE), the base of the pyramid (BoP) concept and the management of complex projects. The fundamental aspects of the institutional environment are explored, including a revision of the theories related to IE and its evolution. Although the BoP market cannot be considered a theory, an analysis of the concepts underlying the BoP market is presented due to its relevance to this study. As projects for accessing the BoP market may be classified as complex projects, a discussion is made on the different dimensions of complexities in project management and execution. In this chapter, the propositions of the study are presented aligned to the pillars of the literature review.

Chapter 3: Methodology presents the design of the research, definition of the unit of analysis and the procedures for data collection and analysis. The methodology used on this research is presented and the basic research process discussed. In ***Chapter 4: Presentation and Analysis of the Results,*** the results of the research are presented and discussed. An initial introduction of the regulatory agency and organizations involved in the research are presented, including the context in which both organizations operate. After this initial introduction, an analysis of the propositions is made following three major aspects: (i) institutional elements and organizational characteristics, (ii) BoP specificities and strategies to access the BoP and (iii) the management of complex projects at the BoP.

In ***Chapter 5: Discussion and conclusions,*** the objectives of the research are evaluated based on the analysis of the results. Important findings of this research are evaluated and compared to the literature review, as appropriate.

Chapter 6: Contributions is related to the academic and practice contributions of this research. These contributions are described as well as the limitations of the research. Finally, suggestions for future work are described.

2 LITERATURE REVIEW

The theory foundation of this dissertation is based on three fundamental pillars: first, the institutional environment is discussed. Second, an analysis of the base of the pyramid (BoP) is performed as well as its implication to organizational management. Its definition, the current studies being carried out by academics and its relation to project management are considered. Although the concepts related to the base of the pyramid may not be considered a theory, a review of the main aspects of the BoP is performed in order to conduce to the propositions to this dissertation.

The complexities of projects are analyzed considering its implication to the management of the organizations. The context in which management practices are deployed by organizations and the reasoning for considering project as part of their core competencies are also explored. The most recent and more traditional theories were analyzed for an understanding of project management. The analysis also covered how project management aspects are being considered in the management of organizations. As the focus of this study is to analyze how the institutional environment, especially the State, influences the execution of complex projects for accessing the markets of the BoP in the USO, each of the pillars of the literature is reviewed considering this framework. Table 1 provides a summary of authors considered in this research.

Table 1: List of authors

Theory pillar	Authors
Institutional Environment	(Cantwell, Dunning, & Lundan, 2010; Hennart, 1994; Honig & Karlsson, 2004; A. Javernick-Will & Levitt, 2010; A. N. Javernick-Will & Scott, 2010; Mahalingam & Levitt, 2007; North, 1990; Orr & Scott, 2008; Peng et al., 2009); Scott (1987); (Scott et al., 2011; Suddaby, 2010)
Base of the Pyramid	(Anderson & Markides, 2007; Johnson & Gustafsson, 2003; Kacou, 2010; C. K. Prahalad & Hamel, 1990; C.K. Prahalad & Hammond, 2002; C. K. Prahalad & Hart, 2002; Rivera-Santos & Rufín, 2010)
Complex Projects	(Browning, 2014; Cooke-Davies, Crawford, & Lechler, 2009; Crawford, Turner, & Hobbs, 2006; Davies & Hobday, 2005; Frame, 2002; Geraldi, Maylor, & Williams, 2011; Hanisch & Wald, 2011; Hobday, 2000; Maylor, Vidgen, & Carver, 2008; Pich, Loch, & Meyer, 2002; Remington & Pollack, 2010; Sauser, Reilly, & Shenhar, 2009; Shenhar, 2004; Shenhar & Dvir, 2007; Söderlund, 2002; Thamhain, 2013a, 2013b; Whitty & Maylor, 2009)

Source: Prepared by the author

2.1 INSTITUTIONAL ENVIRONMENT

Organizations are the central core of the society. They are the means by which the society fulfills the needs of the persons. For the majority of people organizations are the source of income as a return of their work – people use these incomes to acquire services and products for their specific needs. Organizations play a major role in different aspects of the society – they provide products not only for basic needs like energy, water supply and telecommunications, but also in the entertainment business as well. Organizations can be defined as a system by which resources are used to accomplish their objectives. Despite this simple definition, organizations are complex, contradictory: they may not be efficient and effective in using the available resources. They produce a major impact in their surrounding environment, generating tons of greenhouse gases (Scott et al., 2011).

Therefore, understanding organizations and being able to influence their capacity to become more efficient and effective has been the concern of many theorists, academics and professionals of distinct areas of studies. Different organizational theories have been established as a process for better understanding organizations. Organizations can be seen from different perspectives or lenses (Morgan, 2002). Organization theories are based on metaphors, symbols used to understand the world. As these metaphors are only a partial representation of the reality, to act on these representations as they were a complete representation of this reality is to prevent new forms of understanding the reality itself and, therefore, develop new approaches for the management of organization (Morgan, 1980).

According to Morgan (1980, p. 8), "To acknowledge that organization theory is metaphorical is to acknowledge that it is an essentially subjective enterprise concerned with the production of one-sided analyses of organizational life". The implications are clear: first, analyzing an organizational theory requires an awareness of the limitations of the perspective given by the metaphor and the theories generated based on a particular metaphor. Second, as academics or practitioners, we need to develop the ability to criticize and develop new ways of thinking how an organization theory can improve its capacity to fulfill its objective.

An ongoing concern of any organization is how to achieve and sustain a competitive advantage. In the last decades, two different arguments have centralized the discussion on how this competitive advantage may be achieved and a more recent one is receiving the attention of academics, researchers and practitioners. The first two theories are known as "industry-based school" and "resource-based school" and the emerging one is the institutional theory. The industry-based and resource-based are the leading perspectives in the strategic management of

organizations (Peng et al., 2009). The fundamentals concepts of the leading theories of industry based and resource-based view are summarized in Table 2.

Table 2: Characteristics of leading theories – strategic management

Theory	**Industry-based view**	**Resource-based view**
Leading author	**Porter (1980)**	**Barney (1991)**
Strategy formulation	- Strategy formulation is a consequence of external forces that give rises to opportunities and threats; - Dominant strategy based on the positioning of the organization considering the Five Forces; - "Outside-inside" strategies.	- Strategy formulation is a consequence of internal aspects or characteristics of an organization; - Dominant strategy based on leveraging internal resources that are valuable, rare, difficult to imitate and non-substitutable; - "Inside-outside" strategies.
Unit of analysis	- Industry or market segment.	- Individual organization.
Management function	- Management of the Five Forces to improve organization positioning at the industry or market segment.	- Management of internal resources (identify, develop and leverage internal resources).
Strategy sustainability	- Strategy to provide above average returns in long term.	- Strategy to create and maintain a competitive advantage inimitable by its competitor.

Source: Adapted by the author based on Barney (1991) and Porter (1980)

In contraposition to the "traditional" institutionalism, where the focus is to understand the rationale explanations of the dynamics of the organization, the new institutionalism provides a larger cultural and political context where organizations operate. Instead of explaining why organizations are so different, the new institutionalism tries to understand why they are so similar (Frumkin & Galaskiewicz, 2004).

Institutional theory focuses on the aspects of the social structure. Its arguments are based on the assumption that to create order and reduce uncertainty, human beings form and change institutions. According to North (1991, p. 97), "Institutions provide the incentive structure of an economy; as that structure evolves, it shapes the direction of economic change towards growth, stagnation, or decline". It considers the process that becomes an "authoritative" guideline for social behavior. These guidelines are formed by schemes, rules, norms that shape social behavior. Institutions are the rules of the game in a society; they are the constraints that shape the way human interact with each other. These institutions promote incentives for social behavior and its changes are responsible for the way social structures (political, social or economic) evolve through time. Organizations are not only influenced by these institutional

framework but they also are responsible for the establishment of the norms, schemes and rules that comprises the institutionalization (North, 1990).

Institutions and organizations are not the same. Rules are the defining process of how the game is to be played: how they are initially established and created, what forces evolves along the time, the consequences of the roles themselves, the interactions of different actors in modeling the rules. These are institutional arguments. A group of individuals with a common purpose or objectives composes the organizations. To influence organization is to analyze its structure, process, team skills, in order to make then "win the game", on the bases of the established "rules of the games" (North, 1990).

Organizations also provide a structure for social behavior and interaction. Institutionalization is related to the creation, evolution and consequences of the establishment of the rules. Institutional framework impacts the way organizations are established and evolves through time. These organizations are agents that use the set of constraints to accomplish their objectives and, in doing so, becomes a major source of the institutional change. Institutionalization is concerned with the analysis of the underlying rules whereas organizations are focused on the strategy necessary to achieve its purpose, considering the rules (North, 1990).

Institutions limit the set of choices of individuals; they compose guidelines for human interaction. Same transactions in different countries will be performed differently as consequence of the institutional rules. A simple exchange of business cards has different practices in Japan when compared to United States. These rules can be formally established (regulatory aspects, for instance) or have informal constraints as conventions or codes of behavior. As rules of the games, institutional constraints include what an individual is expected to perform and the penalties associated when these rules are infringed. Therefore, a part of the functioning of institutions is the definition of the penalties associated with the violation of its rules (North, 1990).

Concepts of institutions have been defined in different ways, without a unique approach amongst scholars, although an underlying similarity is present in all theories. According to Scott (1987), the sociological formulations of institutional theory can be grouped into four variants: (1) institutionalization as a process of instilling value, (2) institutionalization as a process of creating reality, (3) institutional system as a class of elements and (4) institution as distinct societal spheres.

In the first formulation, institution as a process for generating value, the institutionalization is an adaptive process to create value beyond technical requirements of the task. The organizational structure is shaped as a reaction to external environmental factors

(constraints) and internal factors (characteristics and commitments of the participants). Institutionalization infuses value, promotes stability and persistence of the structure overtime. Institutionalization "happens" to an organization over time and the extent of institutionalization varies across organizations (Scott, 1987).

The second variant, institutionalization as a process of creating reality, has its foundation in the sociology of knowledge. In order to answer the question on what the nature and origin of social order is, this variant proposes that social order is based on a shared social reality created in social interaction. Social order is a continuous human product, and institutionalization is a process by which actions are repeated over time and have similar meaning by all. This second variant states: "...institutionalization as the social process by which individuals come to accept a shared definition of social reality" (Scott, 1987, p. 496).

In the variant theory of institutional system as a class of elements, the emphasis is that institutionalized belief systems constitute a different class of aspects that conduce to existence or elaboration of an organizational structure. Its concept is based on the idea that cultural and cognitive elements play an important role on how the organizational structure is created and/or maintained. This view, in contrast with contingency theory and resource-based concepts which focuses in the technical capabilities, resources allocation and information flows, states that the institutional environment is established by the definition of rules to which organizations are to comply in order to sustain recognition and legitimacy (Scott, 1987).

This view also introduces the concept that organizations follow institutionalized rules not because they are perceived as a reality but because they are compensated and rewarded for doing so and, therefore, receive more resources and legitimacy, leading to a greater chance of survival. In doing so, through a process of conformance to the rules, organizations become isomorphic to an institutional pattern. As a means of being rewarded with resources (for instance, an investment made by a financial institution), legitimacy and survival, organizations try to conform to social patterns and become isomorphic to the same pattern. Organizations are structured based on the environment where their businesses are executed and tend to become isomorphic with them (Scott et al., 2011).

Meyer and Rowan (1977) gave two non-contradictory explanations to isomorphism. First, organizations correspond to the environment by technical and exchange of interdependencies. The structural elements are propagated to organizations because the environment creates demands to them, which by turn, are incorporated into the organizations as a mechanism to manage such interdependencies. This isomorphism would occur at the boundaries of the environment (the interfaces to and with the environment). The second explanation stated that

organizations reflect a constructed social reality and their institutional environment condition them. In this view, rather than simple being isomorphic at the boundaries, the organization incorporates to its structure the elements of the environment. Consequently, institutional isomorphism promotes not only the success of an organization but also its survival.

Another important view of the institutional system as a class of element relates to the recognition that, in modern society, symbolic systems are becoming more rationalized. Traditions give way to laws, regulations. In this theory, attention is placed on other types of actors, like professional associations, the State or regulatory agencies in opposition to the traditional emphasis on environmental aspects of the market, competition, allocation of resources and customers (Scott, 1987).

The last variant of institutionalization (institutions as distinct societal spheres) focuses on the existence of a set of institutional logics (cognitive and normative systems) and a model of human activities that involves different forms and contents in all types of societies. Institutional analysis, therefore, consists in describing these different social structures, or societal spheres. The aspects involved in this view are to determine which organizations adopt which beliefs and practices and the conditions under which new institutional forms are developed (Scott, 1987). Table 3 summarizes the variants of institutionalization.

Table 3: Variants of the institutional theory

Institutional formulation	Fundamental Scholars	Main aspects
Process of instilling value	Philip Selznick, 1957 (Philip, 1957)	1. Institutionalization as an adaptive process to create value; 2. Promotes stability and persistence overtime; 3. Informational conception rather than explanatory: its view explains that values are created but not how this process occurs.
Process of creating reality	Peter L. Berger, Thomas Luckmann, 1967 (Berger & Luckmann, 1967)	1. Social order based on a shared social reality created by human interaction; 2. Institutionalization is a process by which actions are repeated over time and have similar meaning; 3. Institutionalization as the social process by which individuals come to accept a shared definition of social reality.
Class of elements	John W. Meyer, Brian Rowan, 1977 (Meyer & Rowan, 1977)	1. Institutionalized belief systems conduce to the existence or elaboration of organizational structure; 2. Cultural and cognitive elements play an important role in how the organizational structure is created and/or maintained;

Institutional formulation	Fundamental Scholars	Main aspects
		3. Organizations try to conform to institutional pattern as a means to be rewarded (resources, legitimacy and survival) – in doing so, become isomorphic to the pattern.
Distinct societal spheres	Roger Friedland and Robert R. Alford, 1991 (Friedland & Alford, 1991)	1. Focuses on the existence of a set of institutional logics (cognitive and normative systems); 2. Determine which organizations adopt which beliefs and practices and the conditions under which new institutional forms are developed.

Source: Adapted by the author based on Scott (1987).

All these variants of institutional theory, despite some specificities, do not diverge on the impacts of the institutional environment on the characteristics of the organizational structure, although it is not clear on how, why and the extent of the impact in such structure (Scott, 1987). These institutional variants can account for an organizational structure in different ways according to Scott (1987). The organizational structure can be the result of an imposition, authorization, inducement, acquisition, imprinting, incorporation and the bypassing of organizational structure. The first institutional variant is characterized by imposition of an organizational structure. This influence is coercive, made by powerful agents capable of imposing a certain type of structure. It can be done by law or regulatory norms and because of mergers and acquisitions.

The second, authorization of organizational structure, is similar to the imposition argument, having as a basic difference a search for legitimation in a voluntary way. Professional associations, like Joint Commission of Accredited Hospitals in USA or ONA (Organismo Nacional de Acreditação – National Accreditation Body) in Brazil provide this legitimacy through a certification system designed for organizations in the health sector. These schemes, based on a set of fundamentals requirements published in norms or voluntary standards, impose specific routines to the organizations that voluntarily adopt these codes of practices.

The third, inducement of an organizational structure, is characterized by not so powerful agents but enough organized to induce the adoptions of practices. The inducement strategy provides incentive to organizations to comply with the agent conditions, like funding agents. Organizational structures based on this argument of institutional theory, does not promote strong or lasting effects on organizations. Its effects seem to be more superficial, organizations "complies" with agent requirements more by reporting and accounting system rather than by the incorporation of operational changes.

The acquisition of organization structure is the deliberate choice of an organizational structure or models. In this case, organizational actors choose a certain type of structure based on what seems to be more modern or professional. Organizational managers can adopt a certain structure because it seems to fit with the sector/market segment or for efficiency purpose (Scott, 1987).

Another form of institutional element with impact on organizations is based on the process of imprinting an organizational structure. In this case, new organizational forms have characteristics at the time of their foundation, reinforcing the nature of institutionalization as a creation of reality (Scott, 1987). Certain organizational characteristics are not a rational choice but instead, they are an adherence to what seems "the way things need to be done".

The incorporation of an organization structure has a different perspective. Organizations structures are not established based on external agents through power or authority or other factors like rational choice. It is a set of adaptive processes where organizations establish their structure by replicating the complexity of the environment to their own structure. This view of institutionalization process indicates that the organization structure evolves over time through an unplanned adaptive process.

The last view of the impact of institutionalization on organizations, the bypassing of organizational structure, is related to the alignment, in certain types of organizations, of beliefs, visions, and policies. Scott (1987) exemplifies this view in the American schools where there is a consensus on the extent of curricula grades, materials, etc., caused by a coherence of these beliefs, policies (institutionalization) rather than caused by the organizational structure itself.

Based on the institutionalization arguments, the structure of organizations is not only the result of their technologies, or the way they transact in the market, its internal resources, and technical systems. The institutionalization concept embeds a further step on the traditional view of organization system by establishing that an organization is also a result of the institutional environment that shapes, defines and delimits social reality. Moreover, this environment is complex and it changes over time. Institutional framework defines the means by which interests are pursued by the organizations (Scott, 1987).

In a posterior work, Scott et al. (2011) proposes three fundamental pillars that comprise the institutional environment: (1) regulative, (2) normative and (3) cultural-cognitive elements. These institutional elements are not stand-alone aspects; they interact with each other. The first one, regulative elements, can be understood as the more explicit rules, being the underlying compliance to them based on coercion. Actors, including organizations, are to comply with them in desire of compensation or to avoid penalties. The regulative institutional element has

formal rules and they are more easily identified. Generally, law and regulatory requirements, enforces this set of elements. However, institutions like funding organizations as the World Bank can also impose them. These elements are weaker in terms of shaping actor's behavior, as these actors can "play the game" not internalizing its components.

The normative elements have a nature of more prescriptive expected social behavior. It can arise from internalized conceptions made by groups and reinforced by them, or they can be more consciously constructed in order to provide guidelines. Professional associations, NGO: Non-Government Organizations are examples of these groups. The difference from the regulative element is that there is not a coercive force imposing the normative institutional element. The driving force to comply with this element comes from internalized concepts or a moral sense of obligation, or even a sense that these elements form a "good practice" or a scientifically recognized way of doing things (Scott et al., 2011). As example, it can be mentioned the certification scheme ruled by FSC: Forestry Steward Council to ensure that products from forests are originated from well-sustained environmental, social and economic practices.

The cultural-cognitive elements is related to the "shared nature of the beliefs (culture) as well as the role they play in individual cognition" (Scott et al., 2011, p. 59). Oxford dictionary defines cognition as the mental action of acquiring knowledge and understanding through experience and the senses. Cognition is the process of acquiring knowledge and it is related to the process of perception, memory, judgment and reasoning. The cultural-cognitive provides the most "slow-moving" and deep set of institutional elements. They are connected to assumptions "taken for granted" for their actors. They provide the foundation for the establishment of the regulative and normative institutional elements. As the cultural-cognitive elements are based on the process of providing meaning to social order based on cultural beliefs, they can construct social categories. Projects will have to face the different cultural-cognitive beliefs of the different stakeholders: they will not only differ between themselves but also they will be different depending on the market segment (public, private, accounting, finance, engineering) (Scott et al., 2011). Table 4 provides a summary of the fundamental aspects related to the institutional elements.

Table 4: Institutional fundamental elements

Aspect	Regulative	Normative	Cultural-cognitive
Fundamental basis	Relatively explicit rules "Rules of the game"	Expected behavior for social acceptance, internalized and mutually reinforced	Assumptions taken for granted
Compliance	Coercion	Social obligation	Not to be out of the step
Logic	Fear Satisfaction	Shame Honor	Confusion, disorientation Acceptance
Institutional change	Fast-moving institutions Easily modified	Slow-moving institutions	Most deep set of slow-moving institution Slowest change
Effects	Shallow, superficial	Deeper	Profound, deeper, "sticky"
Other aspects	Visible, clear	Rules scientifically or morally grounded	Not clearly stated
Impact on projects	Potential, varied and unexpected changes to the rules	Different responses to "work" Conflicts, as behavior are distinct Not easily managed	Need to have organizational systems as the "state of the art" Capacity to accommodate varying types of stakeholders with different cultural-cognitive beliefs

Source: Adapted from Scott et al. (2011)

Institutions operates in macro, meso and micro level (De Castro, Khavul, & Bruton, 2014). Macro level corresponds to the federal set of rules. The meso level relates to the local elements like practices of the communities. Last, micro level is related to the individual elements of the institutional environment. Organizations are affected by the macro level at the national or regulatory institutions. The meso level institutions are "a bridge built on community values that accrete over time into a coherent and predictable set of well-known rules and taken for granted norms" (De Castro et al., 2014, p. 77). At this level, institutions are closer to the expected social behavior that is supported by the normative and cognitive elements giving meaning to social order. Meso institutions may be found on local communities, and are informal or formal. These meso institutions are responsive to the macro level, capturing the changes in the macro institutional environment and triggering local communities to engage in the new sense making process. Therefore, meso institutions bridge the gap between macro institutions and the micro demands of the individual.

In Brazil, institutional environment has an important element applicable to the utilities services organizations. From 1996 to 2002, the State created the regulatory agencies (RA´s),

after the privatization process. Originally, these were public entities with an independence of the Executive Power. These new entities would be characterized by a autonomy and independence from the State based on a fixed mandate of their managers, a process for reaching decision involving the interested parties, the agility to process demands from society and, finally, the establishment of the required levels of performance of the services (Pacheco, 2006).

According to Araújo and Pires (2002), these RA´s are part of the Brazilian Regulatory Framework, established with the objective of defining the rights and obligations of the concessions and, at same time, providing the State with a mechanism to supervise and police the new regulations of the sectors. The RA´s are entitled to fulfil four general missions. First, to monitor the fulfillment of the concessions contracts. Second, define the tariff regime in order to assure competitiveness of the organizations. Third, regulate the actions of the organizations considering the competitive environmental in which the concession is to be promoted. Finally, to arbitrage conflicts between the different sectorial agents involved (Araújo & Pires, 2002). These set of characteristics of the RA´s are necessary to provide the market (private investors) the required stability for long terms investments (Pacheco, 2006).

Another important aspect is a distinction between RA´s responsibilities considering its area of influence. Regulations in the infrastructure services (for instance, electrical distribution) are concerned with the promotion of the universalization of the access to basic services, promote competition of natural monopolist markets in order to correct existing market failures. Regulations in the social services (for example, health services) are concerned with the user's rights and the quality of services. It has a "fiscalization" nature rather than the promotion of the competitiveness of the market (Pacheco, 2006). Regardless of its nature, the decisions made by the RA´s influence the utilities services organizations and affects its performance.

2.2 BASE OF THE PYRAMID

In 2002, a new perspective of the base of the pyramid was developed by C.K. Prahalad (C.K. Prahalad & Hammond, 2002; C. K. Prahalad & Hart, 2002). This new concept states that the eradication of poverty at the "base of the pyramid" (BoP) is not only a noble task but also a lucrative one. The baseline concept is an inclusive capitalism where the poor people are not seen as victims of the society but potential consumers. The problem is not how to transfer the resources from the rich to the poorest, but how to integrate these consumers at the world market economy. The numbers are outstanding: the market at the BoP is estimated to account for 4

billion people with an earning of less than USD 2,000 a year (C.K. Prahalad & Hammond, 2002).

When targeting these huge potential consumers, organizations would create jobs, opportunities, and therefore, bring new consumers to the market. The stimulation of the commerce at the BoP would improve the lives of thousands of millions of people not through charity but by this new inclusive capitalism. As a basic rule, organization needs to build and sustain competitive advantage. On the other hand, MNEs face some reluctance to invest in such market. These organizations assume that the poorest people do not have enough income to purchase other products and services rather than food and habitation. MNEs also face the difficulties regarding entry barriers in less developed countries, like institutional environment, politics, corruption, lack of stability, insecure property rights amongst other important factors (C.K. Prahalad & Hammond, 2002).

Understand poverty is important for the definition of strategies to access the BoP market. The World Bank (The World Bank, 2000) defines poverty as the pronounced deprivation of well-being. According to Haughton and Khandker (2009) the poor people are those part of the population who do not have enough income or consumption power to put them above some adequate minimum threshold. In order to define *who* the poor are, poverty is usually measured by comparing one´s income or consumption to a defined threshold – those below this level would be considered poor. Another approach to this monetary view of poverty is to evaluate if an individual is capable of having access to specific type of consumer goods like food, education and health care.

Despite other more multidimensional views of poverty, monetary seems to be the most common way to define and measure poverty. In this paper, two specific aspects of poverty are analyzed: (i) the identification of who the poor people are and (ii) the economic lives of the poor – challenges, choices and live constraints.

The identification of the poorest of the population is directly related to how to measure poverty. Its importance is clear: first, you need to make them visible to government, agencies – they cannot be statistically invisible. Second, measuring poverty allows proper intervention. If one cannot know who they are, any support or strategy cannot be deployed. Third reason is to monitor poverty: evaluate the effects of any intervention made in order to support the poorest. Last reason is the need to evaluate the effectiveness of institutions like government or agencies (i.e. The World Bank). Here, the focus is poverty comparison: if poverty has fallen and by how much (Haughton & Khandker, 2009).

Measurement of poverty starts at the definition of a welfare indicator – usually as an income or consumption per capita. Secondly, a minimum standard of living needs to be established to separate the poor from the non-poor (Haughton & Khandker, 2009). This is defined as "poverty line", being the poor those whose expenditure or income falls below it. It also can be defined as the threshold consumption required for a household to escape poverty. It is common to set the poverty line for the extremely poor (one dollar a day per person) and the poor (two dollars a day per person). The World Bank measures world poverty based on a poverty line of USD 1,25 per person per day (in 2005 American dollars) and converting it to local currencies using the concept of Purchasing Power Parity (PPP) exchange rates (Haughton & Khandker, 2009).

Understanding how the poor live is also an important aspect of any strategy to reach the BoP. In a study based on household surveys living with less than USD 2,16 per person per day (13 countries), Banerjee and Duflo (2007) identified some characteristics of the economic lives of the poor. Although a great variation on the collected data can be noted, the major aspects of the survey and its analysis are relevant. Table 5 summarizes the findings.

Table 5: Economic Lives of the Poor

Aspect	**Fundamental Dimension**
Living arrangements	- Size: usually large (6 to 12); - Age structure: adults: 2.5 to 5; ratio between young (below 18) and old (above 51): 2 to 11 in urban sample.
Spending money	- Food: 56% to 74% of consumption (urban sample); - Nonfood consumption: alcohol and tobacco are prominently; - Other spending: wedding, funeral or religious festival (10%); - Trend seems to spend less money on food; - Radio or television: considerable variation amongst the sample; - Ownership of land: great variation cross countries, but with large number on the extreme poor (less than USD 1 a day); - Education: little spend on education (less than 2%), 50% go to public school.
Earning money	- Entrepreneurs: substantial fraction of the poor's, small scale; - Multiple occupations; - Temporary migration to find work; - Lack of specialization.
Markets and environment of the poor	- Market environment constraints the economic choices of the poor as well as the lack of a shared infrastructure; - No loans from a formal source; as a consequence, credits are expensive; - No saving accounts; - Little access to formal insurance.
Infrastructure and environment of the poor	- Physical infrastructure to the poor (electricity, tap water and sanitation): strong variation amongst the countries; - Bad quality services, when available: health, schools.

Source: Prepared by author based on Banerjee and Duflo (2007)

Essentially, poor can be defined as someone without enough income to eat (Banerjee & Duflo, 2007). Considering this simple definition, one could imagine that the poor would save for spending in food. Based on a research in 13 countries, Banerjee and Duflo (2007) found out that food consumption represents 56 to 74 percent of consumption in urban areas. The remaining is spent on entertainment like televisions, wedding and festivals.

These facts contradict one of the assumptions made the MNEs: first, the poor have no interest in accessing other "goods" beyond food, like television and entertainment. Instead of saving money for purchasing a house, as it seems to be an impossible achievement for the poorest people, they prefer to have a television or mobile phone instead. As an example, in the North Region of Brazil, 87% of the houses had a refrigerator (IBGE, 2011b). Even in the State with the lowest Gross Domestic Product per capita (Piauí, with USD 4.500 in 2011), 88% of the housing had a refrigerator (IBGE, 2011a, 2011b).

Another misperception is that the prices of the good for the poorest are too cheap to obtain a relatively profitable margin. As noted by C.K. Prahalad and Hammond (2002), the poorest pay, for the same product, more than the middle and higher economic class. As an example given by the authors, the municipal water costs 37% more for the poorest, diarrhea medication, 10 times (comparison made in two cities from India, the poor city of Dharavi and the upper class city of Warden Road). In fact, instead of creating or reinforcing the negative aspects of the social justice, these "over-price" should be seen by MNEs as a huge opportunity for using their expertise in marketing, research and development, distribution, scale of scope and economy to reach this market.

In order to access the BoP market, organizations will have to innovate in terms of business models and technology. For instance, price policing, new level of capital efficiency as the scale of distribution has to move from large quantities to few ones and small quantities to large number of people (C. K. Prahalad & Hart, 2002). Strategic innovators are companies with a stronger capability of creating new markets as the result of the process of attacking the market leaders. They have the ability to break the rules of the game in their industry (Markides, 1997). Changing the rule of the game seems to be an appropriate underpinned concept to access the BoP. Markides (1997) exemplified the concept using Xerox strategy back to the 1960´s. At the time, Xerox followed a strategy to segment the market by volume size. Therefore, the potential consumers were large corporations, which determined the use of a direct sales force. Despite the success of this strategy, Canon, on the other hand, segmented the market by end user

targeting small and medium sized business. Attacking Xerox by changing the rules of the game made Canon the leader in unit sales.

Canon and others "ruler's breakers" (Apple, for instance) achieved their success by moving beyond the well-established strategy common sense to a business model innovation. Strategic innovation is achieved when an organization identifies gaps in the market, and answers three basic questions: (i) *who* the new customer is, (ii) *what* new products and services and value propositions have to be offered to these new customers, (iii) *how* these new products and services must be marketed: promotion, production, delivering and distribution aspects (Anderson & Markides, 2007).

Based on a two years research, Anderson and Markides (2007) proposed that strategic innovation at the BoP is different from developed markets. There is no need to find "who" the customers are. As already stated, 4 billion people have an estimated yearly per capita income less than USD 2.000. At the BoP, the important questions to be answered are "what" the products and services are and "how" to serve the market. In order to reach BoP markets organizations would have to develop strategies related to "what" (*"affordability"* and "*acceptability*") and "how" ("*availability*" and "*awareness"*) as summarized on Table 6.

Table 6: Strategic Innovation at BoP – who, what and how

Strategic Innovation Dimension	Developed Markets	BoP
Who the new customer is	Requires an identification of gaps in the market	No need to identify them; Consumers are easily identifiable.
What new products and services and value propositions have to be offered to these new customers	Focus on discovering new or different benefits to the customer	Offer or adapt existing products to significantly poorer and culturally different consumers; Change in pricing; Product modification – reduction in features, size, "cultural" changes, religious norms; Different functionality; Focus on "*affordability*" and "*acceptability*".
How these new products and services must be marketed	Different business model by doing differently from competitors	Development of new and different distribution channels; Create demand for new product and service; Focus on innovations on supply chain management and distribution; New driving media for pushing demand; Focus on "*availability*" and "*awareness*".

Source: Prepared by author based on Anderson and Markides (2007)

Affordability relates to the required change to products and services in order to make then available to the BoP. It is the affordable degree of the product or service to a consumer at the BoP market. It may be necessary to resize the product and/or change the price structure in terms of service. The acceptability is concerned with the changes to the products and services considering the cultural, socio and political reasons. It may be seen as the willing degree to consume a product or service at BoP. The challenge of distributing products to the BoP market is the focus of the availability dimension – the ability to readily consume a product or service. Finally, awareness is the need to overcome the non-access of the traditional media of the BoP potential consumers (knowledgeable degree) (Anderson & Markides, 2007).

Based mainly on the successful experience from Rwanda reforms beginning on 2001, Kacou (2010) proposed principles and practices for accessing the BoP markets, integrated to seven principles. The underline objective is to guide entrepreneurs and organizations to understand the challenges of the BoP market. The challenges reside in three gaps of doing business in the developing market. First, it is the need to meet demands for basic services while having to perform business in an unsuitable infrastructure. Second, named by the author as the "the survival trap". In simple terms, it is a cycle of actions in a prisoned mindset that leads to do the same set of actions repeatedly, expecting different results. Third, it is the underutilization of potentially productive persons in the society.

In order to succeed in the BoP market, stakeholders have to break "the survival trap", a condition that keeps them on pursuing the same strategies, overwhelmed by their operating reality. As these strategies do not produce the expected results, they try to perform the same actions with stronger efforts. Unfortunately, those at the BoP are the most affected by the survival trap – for instance, a small entrepreneur may have to decide upon investing in their business or feed the family (Kacou, 2010).

The business people and entrepreneurs have the characteristics to lead the way out of the "survival trap" through a new mindset and the ability to question the existing assumptions of the operating reality. Furthermore, they need to find new ways to escape from the challenges and the difficulties of those realities. According to Kacou (2010), an effective execution process requires a balance between strategies, operations and assets. Strategies must be chosen under difficult circumstances, as the environment is complex. Operations (including manufacturing, logistics, marketing, customer invoice) must be lean, efficient. Assets must be leveraged to maximize its value, including human capital. But, balancing these factors are not enough – organizations have to understand the operating reality, the institutional environment in which it

operates (political, financial, macroeconomics, infrastructure, human capital and financial markets) (Kacou, 2010).

In an exploratory 24 in-depth case studies, London and Hart (2004, p. 1) stated that "the transnational model of national responsiveness, global efficiency and worldwide learning may not be sufficient". The authors concluded that the success of the initiatives to access the BoP market has to focus on the enhancement of the existing strengths of the market rather than focusing on their weakness. In order to accomplish this goal, strategies have to include partnership to non-traditional partners, co-inventing solutions and building new local capacity. This requires MNEs to develop a new capability in social embeddedness and network building.

Rivera-Santos and Rufín (2010) stated that in order to reach the BoP market, organizations have to understand the specificities of this market and the institutional environment in which they intend to operate. In terms of specificities, BoP market has three distinctive aspects from the ToP: first, it is the low income (USD 2 a day); second, it is the irregularities of their income. The last, either they are geographically dispersed (rural areas) or live in very densely populated areas. These aspects altogether lead to a stronger local cultural and less contact with "normal" consumer habits.

The implications are clear: smaller product sizes and local adaptation (frequent purchases and difficult areas to reach) (Rivera-Santos & Rufín, 2010). The competitive environment is also different – the local firms can be very strong in terms of embeddedness to the informal environment. These competitors are small in number, offer low quality products and services in a usually higher cost for the BoP people. Entrants to the BoP market shall also have difficulties in finding local suppliers and distributors as well as a clear shortage in terms of infrastructure (such as electricity, water, information technology, distribution, financing) (Rivera-Santos & Rufín, 2010).

For low developed economies, the weak institutional environment is not capable of providing the necessary support to the businesses (Rivera-Santos & Rufín, 2010). Several implications of this weak institutional environment can be identified: as enforcement of laws is low, the dispute resolution is informal. Tax evasion, corruption seems to prevail, and property rights may not exist. The set of relationships and networks impose the transactions, not formal contracts. In this sense, intermediaries, such as local non-government agencies or influential members of the community, perform the contact between the "outside world" and local communities. Therefore, competitors tend to be competitively weak but stronger on the institutional environment (Rivera-Santos & Rufín, 2010).

Having in mind the need to embed its business to the institution environment in which they operate, organizations need to understand the networks at the BoP market. These networks are likely to be less centralized than the ones at the ToP. Networks tend to be direct and informal. The diversity of networks members is greater and more unstable (Rivera-Santos & Rufín, 2010). Table 7 summarizes the concepts of the BoP Network.

Table 7: BoP Network

<table>
<tr><th colspan="2">Environment</th><th>BoP Business Model</th></tr>
<tr><td colspan="2">Competitive Environment</td><td rowspan="5">Products
(1) Small sizes;
(2) Stronger local adaptation.

Distribution
(1) Frequent purchases;
(2) Inaccessible areas.

Transactions
(1) Little reliance on contracts;
(2) Strong reliance on informal ties;
(3) Need to achieve local legitimacy.</td></tr>
<tr><td>Customers:</td><td>Local income level;
Irregular income;
Geographic dispersed or concentrated.</td></tr>
<tr><td>Local competitors:</td><td>Weak (efficiency);
Strongly embedded in local environment.</td></tr>
<tr><td>Infrastructure:</td><td>Lack of suppliers, distributors;
Poor infrastructure.</td></tr>
<tr><td colspan="2">Institutional Environment</td></tr>
<tr><td>Formal IE:</td><td>Weak legal enforcement;
Corruption;
Tax evasion.</td><td></td></tr>
<tr><td>Informal IE:</td><td>Strong traditional ties within the communities.</td><td></td></tr>
<tr><td colspan="2">Network implications to firms accessing the BoP Market</td><td>(1) Less control over network as networks are more complex to manage (different actions);
(2) Need to develop local legitimacy;
(3) Need to internalize activities into the network;
(4) Need to develop alternative governance due to lack of contracts.</td></tr>
</table>

Source: Prepared by author based on Rivera-Santos and Rufín (2010)

The BoP market imposes clear challenges to organizations, but at the same time, offers opportunities for organizations to expand their business to untapped markets. In order to expand to these markets, organizations need to create new capabilities – a new mindset where social embeddedness to weaker institutional environments and the construction of relationships shape their strategies.

As already discussed, innovations are required to access the BoP market. These innovations are implemented through projects (Shenhar & Dvir, 2007). These projects present

the typical characteristics of complex projects like size, variety, difficulty and even social dynamic aspects.

2.3 COMPLEX PROJECTS

Projects, in simple terms, can be defined as a temporary organization established to complete specific goals (Cleland & King, 1983). In general, organization activities can be seen from two different perspectives (Shenhar & Dvir, 2007). The first, operational activities are necessary to maintain operations and assure that the required processes are developed in a repetitive and constant way. Within the organization, these processes are an important group of activities as a mechanism of transforming inputs to predictable outcomes and provide the desired and/or planned results. On the other hand, projects involve transformation, innovations, and changes to status quo. They are required to change a given situation. These projects are used for developing new products, changing organizations, implementing strategies, obtaining a competitive advantage (Shenhar & Dvir, 2007).

Projects are seen as a key part of any organizational operation: they are the underline process used to develop new products, establish and implement client projects or to implement organizational changes. Effective project management (PM) is also considered an important factor for business change and future business success. Project-based processes are required for changing existent process and to promote revenue earning (Geraldi et al., 2011; Maylor et al., 2008; Whitty & Maylor, 2009). PM is considered a central element when innovation is required. All constructions, product development, engineering programs use, to some extent, some kind of project management structure. New demands for sustainable growth and innovation require organizations to invest in new technologies and infrastructure through project management (Raz, Shenhar, & Dvir, 2002; Shenhar & Dvir, 1996, 2007).

Consequently, there is an increasing “projectification” of organizations due to its importance to the operational and organizational activities. This projectification has produced fundamental changes in the way organizations develop process and products. The management of these projects presents multiple challenges to organizations as factors like time-based competition and fast technological progress are increasingly affecting the projects themselves (Söderlund, 2002). This level of complexity requires a more comprehensive literature and empirical studies in order to understand the practical implications on how to effectively use the concepts of PM (Shenhar, 2001).

Complex and complicated projects are not the same. A distinction of these two commonly used terms are required as a baseline for the proper management of these different special kind of projects. Webster Dictionary defines *complex* as "composed of two or more parts; involving many parts". *Complicate* is something "difficult to analyze or understand". The fundamental distinction is the interrelation of the different parts that composes the projects. In this case, there is interdependency between the parts. A complex system is formed by components whose behavior are not predictable, the behavior is emergent. The interactions between parts does not produce neither linear nor foreseeable results (Maylor et al., 2008; Whitty & Maylor, 2009).

Complicated projects can be specified in advance; complex projects are unable to be fully specified in advance. Complex projects are different from complicated projects due to its nature of continuous required knowledge that need to be generated over the life cycle of the project (Ahern, Leavy, & Byrne, 2013). Therefore, the execution of complex projects requires the creation of new knowledge.

Another important difference between the terms complex and complicate is that the attributes that compose *complexity* does not depend on the observer. Complicate is a subjective characteristic of the system (Browning, 2014). For instance, a complicate project for a project manager may be a challenge in case he/she is not experienced in the particular scope of the project. Therefore, complicate is seen differently by different people. Complexity can be understood as an objective characteristic of the system (Browning, 2014). Complicatedness is an observer-dependent phenomenon; it can be reduced by observer's learning of the system. Complicated projects can be managed by expertise, training or experience of the project team as well as by a better understanding of the parts that constitute the system. On the other hand, "…complex system structure and behavior cannot be fully understand from a single perspective" (Browning, 2014, p. 4).

Regardless this difference, there is a convergence amongst authors that project complexity affects the way projects should be managed. They require a greater managerial effort during its execution. Complex aspects of the project help the definition of planning, coordination and control requirements of the projects, it influences the project organizational definition. It also affects the objectives of time, cost and quality (Baccarini, 1996). Different projects should be managed based on different approaches, as per the adaptive project management model from Shenhar and Dvir (2007), the diamond approach to project management.

As previously discussed, projects for accessing the BoP markets have all the characteristics related to the definition of complexity. They are performed in an ever-changing

institutional environment. BoP projects require innovations from companies as well as different business strategies. Therefore, understand the basic concepts of complexity and the different academics perspectives is a necessary baseline for the accomplishment of the general objective of this study. In the next subchapter, the complexity theory and its relation to the project management is discussed.

2.3.1 Complexity theory and projects

One of the dominating project management concept is grounded on theories developed to deal with the expansion of the twentieth century industrialization (Remington & Pollack, 2010). This view is based on the assumption that the outcomes of the project can (and should) be determined in the early phases of planning and then, delivered as planned. This would be a consequence of a mechanistic view of the organizations. The fundamental assumption is that a project methodology established on control system thinking would be sufficient for project success. As projects are subject to innumerous constraints, as an ambiguous and political environment (institutional environment) and a result of human unpredictable behavior (Remington & Pollack, 2010), this mechanic view of the system is not enough to cope with current challenges of project management.

Complexity Theory is a wide spread branch of science related to the natures of adaptive systems. Its originated "…out of the observation of emergent, nonlinear behavior and particular sensitivity to initial conditions in many natural systems" (Remington & Pollack, 2010, p. 2). Complexity is tied to the adaptive behavior of the systems. In order to adapt to a certain situation, systems become more flexible and adaptive, leading to its complexity (Frame, 2002).

Complex projects can be described as a complex adaptive system having the attributes of complex systems like interconnectedness, emergence, control and hierarchy. In this case, the control of aspects of the projects in order to predetermine the outcomes is unlikely to produce efficient results. A project management approach based on complexity theory can produce better results.

Table 8 summarizes the concepts of Complexity Theory and its relation to PM.

Table 8: Complexity theory and project management

Complexity Theory Attributes	Basic concept	Relation to Project Management
Hierarchy	Systems have subsystems and are sub-systems for larger systems.	Interactions between project teams and department; Different departments compose a Business Unit that contribute to an organization.
Communication	Information of the system is passed between elements of the system and across the boundaries of the system.	Formal and informal communication, which can support or undermine the formal communication.
Control	Systems are capable of maintaining the stability of the relationship between parts through "control".	Relates to the emotional and adherence to group norms – it can be seen as the "normative" element of the institutional environment.
Emergence	Different properties of the system emerge at different levels, which are not apparent at a level below; Emergency is a property of the stable relationship between parts.	A change in a subsystem can have a chain reaction to other parts of the systems.
Phase transition	Complex adaptive system can take new form in response to changing conditions.	An environmental change to a new regulative condition can impose significant changes to project management.
Non linearity	Positive feedback causes non-linearity and can promote changes.	An improvement in creativity within project team as positive feedback is promoted.
Adaptiveness	Capacity to accommodate to environment changes and maintain or improve itself.	A changing regulatory requirement (regulative element of the institutional environment).
Sensitive dependence on initial conditions	"Butterfly effect"; Insignificant differences in initial conditions can produce unanticipated and unexpected results.	Different institutional environment for the same project with same team can produce different levels of performance.

Source: Adapted by author based on Remington and Pollack (2010)

2.3.2 Complex project concepts

There are different views amongst authors in relation to how and the extent in which complexities affect projects, although there is no doubt that complexity affects the way projects should be managed (Baccarini, 1996; Browning, 2014; Frame, 2002; Remington & Pollack, 2010; Shenhar, 2001; Shenhar & Dvir, 2007).

Based on empirical study with project managers about their perception of what makes projects complex to manage, Maylor et al. (2008) classifies the elements of complexities into five dimensions: mission, organization, delivery, stakeholder, or team (MODeST model). The

authors classified the responses into dynamic, static or structural dimensions and observed that they are interrelated. For instance, requirements may not be clear (structural aspect of the mission dimension) but they can also change during the course of the project (dynamic aspect). The conclusion made by the authors confirms that the current practices established by the bodies are partially adequate to deal with complexity.

In a chaotic environmental, the mastering of project techniques like scheduling, cost control and scope are not enough to assure that these projects comply with their objectives (Frame, 2002). Instead of being implementer of projects, project managers have to deal with customer satisfaction, management of complexities surrounding their projects and more demanding tasks. Frame (2002) proposed a framework of complexities based on its *nature*. Despite a lack of definition of complexity, the author established complexity as having different dimensions: size, variety, difficulty and change.

Size dimension is related to the "volume" of the project. Larger projects have more components connecting with each other. As the number of components increase in a larger project, the number of connections also expands. The size of the project is another aspect itself: human brain cannot handle a large number of information at the same time (Frame, 2002).

The variety dimension is related to the proliferation of options. Complexity comes from the excessive choices in all and different stages of the project. Difficulty and complexity are associated: something harder to accomplish is more complex. As per Frame (2002, p. 30), complexity can be managed by mastering and, accordingly, "experienced and knowledge project managers learn to cut through the complexity and to focus on the essentials". It has to be addressed that this view is not in line with different authors regarding the differences between complex and complicated made by other authors (Browning, 2014; Whitty & Maylor, 2009). The "rapidity of change" is the last dimension of complexity. Changing factors come from technology, competitors, client's requirements, external factors (inflation rate, regulatory requirements), budgets, and so on. At some extent, changes contribute to other facets of complexity like the volume of information to be processed.

According to Frame (2002), organizations on different sectors manage complexity through more *discipline,* a set of procedures on how to perform all projects activities (acquisition, development, implementation, control and maintain systems). The author suggested different approaches to the management of complexities in projects. First, the definition and implementation of detailed procedures and methods for different stages of project. The successful implementation of these procedures depend on the experience (capability of people to report experience with a potential impact on its operation), learning

process (the ability to identify and analyze the extent of the reported issue), revise (act on for preventive actions measures and the changing process of the existing procedures) and promulgate (implement the new procedure).

The second management practice is to simplify, for instance, though heuristics (Pareto analysis, 20 x 80 rule). Another approach within simplification is to manage smaller manageable aspects of the project. Use of modularization and reusable components, modeling through PERT/CPM networks is another practice suggested to overcome the complexities of projects.

Another view of complexity is based on its source. According to Remington and Pollack (2010, p. 21), "complexity is a result of the interrelationships and feedback between increasing numbers of areas of uncertainty and ambiguity". If there are little interrelationships and few areas of ambiguity, complexity is not seen as present at the project. On the other hand, when there is interdependence of these areas, project may be considered complex. As the interconnection between these areas of uncertainty and/or ambiguity rises, it becomes impossible to control and monitor all these interrelations (Remington & Pollack, 2010). Similarly, the identification of which interactions must be controlled and which are not essential to project management becomes more difficult. An ambiguous aspect of a project has not a clear outcome – rather, it is composed of a range of possible outcomes, delimitated by a problem and solution space. This area of "problem and solution space" is the range in which a final definition of the problem and its solution exists (Remington & Pollack, 2010).

Based on complexity theory concepts, Remington and Pollack (2010) proposed four types of project complexity for analysis: (i) structural, (ii) technical, (iii) directional and (iv) temporal complexity. For each of these sources, the authors suggested basic approaches for its proper management.

Structural complexity relates to very large projects. Complexity arises from the difficulty in managing a great number of interrelated activities. Despite the authors do not make a clear distinction between *complex* and *complicated*, this dimension is referred as complicated rather than complex. These sources of complexities usually come from large-scale engineering, construction, defense and IT projects. It is characterized by a large number of interdependencies between parts of the projects like communication, tasks, costs, time frame, large number of risks and its potential chain reaction (Remington & Pollack, 2010). Therefore, non-linear behavior will emerge. Major challenges for this dimension are related to the organization of the project itself, scheduling, interdependencies and contract management. In this type of projects, complexity is originated from uncertainty regarding time, cost and resource requirements. Even

considering that a large complex is made out of sub-projects where each of them can be considered a simple project (for instance, with time frame well defined), its relation and interdependence to other sub-projects may cause an impact to other sub-projects in a chain reaction difficult to be predicted (Remington & Pollack, 2010).

Critical project phases are the early project phases (definition and feasibility) as this kind of project is dependent on initial conditions and its inertial for changing direction. Other important aspect to be considered is the risk analysis process during planning and implementation phase. Decision processes based on risk analysis have to be performed on robust information from scope definition, cost estimates and period planning. Finally, due attention has to be given to a detailed planning at the initial phases of the project whereas a big picture view is required at the implementation phase (Remington & Pollack, 2010).

According to Remington and Pollack (2010), the second source of complexity in project management is originated from the development of products never produced or designed before (**technical complexities**). Complexity is a result of the interconnection between interdependent options for the solution of the project. These projects are characterized by the dependence of the technical experts and the "moving" solution to a technical aspect of the project. In other words, the desired solution might be changing continuously as the project progress. The uncertainty and ambiguity in this type of project relate to how a final solution to a specific problem or issue will be reached and its implication to other interconnected issues. The problem space is narrower than the solution space, or in other words, there is more space for solutions. Major challenge to this type of project is supporting experimentation while maintaining a realistic schedule control. Critical phases of this project are the initiation and development phases (Remington & Pollack, 2010).

A clear definition of milestones, frequent meetings to formalize informal communications and a project manager who support communications and protect his/her technical team are important aspects to be considered during the management of these projects. The team has to have space for working properly. Traps to be avoided on these projects are the technical expert syndrome, where a dependence upon earlier experience can block alternative solution. Technical experts can also find solutions out of the satisficing space of the stakeholders. Another important aspect to be managed is the potential loss of the original objectives during development process (Remington & Pollack, 2010).

Directional complex projects are characterized by a lack of understanding of where project should go, unshared and/or unclear goals, different interpretations of project objectives and hidden agendas (Remington & Pollack, 2010). It is typical from projects established to

correct a situation, but no agreement exists on how to perform this change. It is a project where there are disagreements amongst stakeholders. Project decisions are more likely to be based on issues like interpersonal alignment and cultural issues. Challenge here is to reach a mutually agreed project objectives with stakeholders as the main ambiguity and uncertainty is derived from problem definition. In this case, problem space is larger than the solution space. It requires a much more flexible and interpretative approach for obtaining consensus rather than rigid methodology. Focus has to be on the management of relationships amongst projects stakeholders as well as organizational politics. Critical phase of this project is the initial phase (project definition). It is important to reach a committed solution rather than initiating the project as this may lead to rework and avoid the imposition of a certain project structure to the project (Remington & Pollack, 2010).

The last source of complexity, **temporal**, is originated from a significant changing environment and directions outside the control of the project team (Remington & Pollack, 2010). It is a common feature of projects from merger and acquisitions in the private sector. In public services, it may be originated from change in government and/or legislative regulations. Projects particularly subject to temporal complexities are larger and longer projects like infrastructure projects. Usually, for this kind of projects, structurally complexities also apply due to its large size. Complexity is based on the number of different elements involved, the interconnection and ambiguity between them. Differently from the other sources of complexities (structural, directional and technical), where the constraints are more stable once dully identified, in temporal complex projects, the constraints may change during its different phases.

According to Remington and Pollack (2010), challenges in these projects are related to the development of the ability to maintain as many options opened until the right time to deliver the project. Planning these projects is to anticipate possible outcomes and define potential solutions, establishing contingency plans and plan by the option. All phases in these projects are typically subject to dramatic change mainly due a change in the regulative element of the institutional environment. Due care has to be exercised in this projects to avoid the expectation that the situation will stabilize and the better option is to wait.

Remington and Pollack (2010) suggested fourteen tools and techniques to manage these complexities, ranging from process mapping, role definition, jazz (time-linked semi-structures), multi methodology in series, amongst others. The objective of these tools is to support project managers and practitioners in dealing with these complexities during the life cycle of the projects.

Shenhar and Dvir (2007) suggested an adaptive approach to the management of projects. The traditional approach to project management faces some paradigms that need to be addressed in order to enable the proper management of projects. The tradition view of "one size fits all" does not support the current demands of organizations. Different projects should be managed in different ways and the knowledge of the techniques and methodologies defined by the body of knowledge (PMI, 2013) are not enough to ensure project success. Current project management involves two different concerns: first one, it is the need to align business strategy with project management as a pre-requisite for the success of a project. The second aspect addresses the adaptive model (diamond approach) to project management in opposition to "one size fits all".

The Shenhar´s Strategic Project Leadership® approach intends to be the missing link between business strategy and project execution. It is a process to align business strategy and project management through the use of traditional tools (time completion, cost control and scope accomplishment) and business value creation, leadership and the diamond approach to innovation and uncertainty. Diamond approach is composed of four dimensions: NTCP: Novelty, Technology, Complexity and Pace (Shenhar & Dvir, 2007).

The **novelty** dimension refers to how new the product is to the market. It also represents the uncertainty in the goals of the project and the clear definition of client requirements or needs. It is composed of three sub dimensions: derivative, platform and breakthrough. The derivative refers to extensions of existing products; platform refers to new generation of existing products and breakthroughs are innovative products (new to the world). This dimension affects the reliability on market research, the period required to freeze the product specifications and the marketing strategies of the product (Shenhar & Dvir, 2007).

Technology relates to how much new technology is required to the product or service development. It has an impact on product tests, communication and number of planning cycles as well as the team member's qualification. It is further subdivided into low-tech, medium-tech, high-tech and super high-tech. Low-tech depends on existing technologies – on the other side, super high-tech requires non-existing new technologies in the beginning of project. The mission of the project may be clear, but not the solution (Shenhar & Dvir, 2007).

The **complexity** is associated with the scope of the system whereas project complexity is defined as a measure of the system scope, which reflects characteristics like the number and interdependency between tasks. It affects the formality in which project management is performed. Three levels of complexities are defined: assembly, as the collection of components combined in a single unit or entity responsible for the project. The system projects have a

collection of complex interchangeable and subsystems to create a more complex product. Last, matrix projects are a complex collection of systems and subsystems (Shenhar & Dvir, 2007).

Finally, Shenhar and Dvir (2007), defined **pace** as to how critical the period to deliver the project is. They differ in terms of urgency or time to completion. Its sub dimensions are regular, fast/competitive, time critical and blitz. It affects the team autonomy, bureaucracy and the required decision-making process in terms of speed as well as the engagement of the top management. These four dimensions form the diamond approach to project management. The concept is that the greater the diamond, the greater the benefits originating from the project as well as the risks associated.

Table 9 and Figure 2 indicate the basic concepts of the diamond approach.

Table 9: Characteristics of the dimensions – complexities of projects

Dimension	**Basic concept**	**Project characteristics –** highest level dimension	
		Opportunities	**Risks**
Novelty	How new the product is to the market.	Exploit new market opportunities; First to move; Acquire competitive advantage.	Difficulty to identify market needs (market may not be clear in terms of what they need/want).
Technology	How new the technology is at the beginning of the project.	Improve performance and functionality; Premium prices for the product.	Technological failure with associated costs to image.
Complexity	The extent of systems and subsystems and its interconnection.	Higher results and margins.	Integration and management of associated systems / subsystems.
Pace	Urgency and/or time frame for completion.	Faster introduction of product in the market; Longer exploitation of product innovation.	Delay in the projects; Blitz can cause dangerous mistakes.

Source: Adapted by author based on Shenhar and Dvir (2007)

The diamond approach can also support managers in the identification of the best managerial approach to the project as a function of the dimensions. Figure 2 gives additional managerial practices for dealing with each of the dimensions.

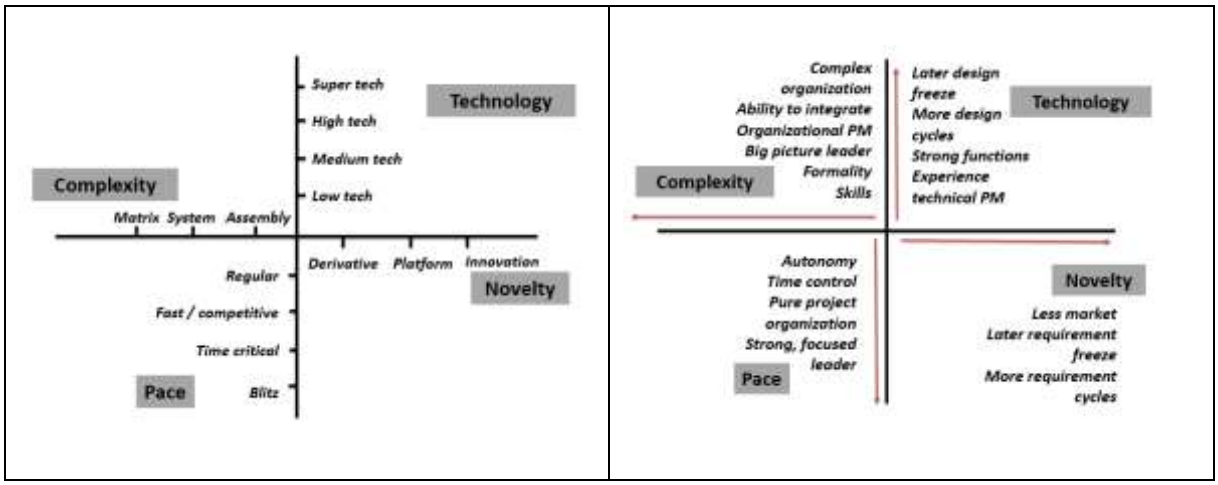

Figure 2: Managerial Practices Based on the Diamond Dimensions
Source: Adapted by author based on Shenhar and Dvir (2007)

A more conceptual framework for project management, considering the states of the world and the potential course of action based on an iterative approach, is suggested by Pich et al. (2002). Uncertainty and ambiguity, in the proposed model, are expressed in terms of information adequacy. The authors conceptualize project as "...payoff function that depended on states of the world and a chosen network of actions" (Pich et al., 2002, p. 1009). Uncertainty and ambiguity factors lead to different approaches to project management, *instructionism*, *learning*, and *selectionism*. Accordingly, the more appropriate approach is not pre-determined, it is contingent on the type of uncertainty present in the project as well as the complexity of the project payoff function.

Instructionism is based on task scheduling and risk management: it is a recommended approach when the level of information about the states of the world is adequate and the payoff of the action is acceptable. Signals trigger previously defined actions. There is a preset of flexible actions to accommodate the different states of the world based on identified signals (contingency plans) (Pich et al., 2002).

On the other hand, inadequacy of information caused by unknown events (ambiguity) or by the lack of ability to estimate the payoff of a specific action because the interaction of many variables (complexity) require an adaptive approach. It is necessary a combination of learning and selectionism. *Learning* is the capacity to perform new planning during the project. This requires a flexible project team in order to incorporate new information and develop a new model for to the project in terms of new activities. In opposition to instructionism, the necessary changes cannot be anticipated, involving a higher level of flexibility. Both approaches rely on the capacity of the team to recognize the signals and define an optimal solution (predetermined by contingency plans or by defining a new model) (Pich et al., 2002).

For projects where the identification and definition of an optimal solution is too complex, a learning approach is not feasible. The prediction of the project payoff is not possible due the natures of the "unknown's unknown´s" of the project. Therefore, for these projects, an optimal solution reasonably effective cannot be designed. The project team can neither predict a project payoff (instructionism approach) nor learn to predict it (learning approach). The project team has to implement a solution and observe the outcome. In this sense, *selectionism* is the search of potential solutions until the best is identified. Project team should identify a series of potential solution hoping one will work (Pich et al., 2002). Table 10 summarizes the concepts discussed.

Table 10: Strategies based on uncertainty and ambiguity

Aspect	Instructional Strategy	Learning Strategy	Selectionist Strategy
Concept	Project payoff know; Adequate level of information; Traditional project management techniques; Trigger actions based on signals – contingency plans.	Ambiguity from unknown events; Learn about the uncertainty; Identify optimal solution; Develop new model, re-plan.	Optimal solution not possible; Launch multiple project candidates; Observe the outcome; Choose the best payoff.
Planning System	Task scheduling; Buffers – cost, schedule; Risk list; Contingency plans.	Detailed plan only for next tasks; Hypotheses definition and application of logic for optimal solution; Develop ability to re-planning.	Plan multiple trial project.
Coordination	Hierarchy in coordination; Traditional work structure; Contingent contracts.	Long term relationship with stakeholders; Incentive for positive progress; No punishment for failure.	All projects contribute – "winners and loosers".
Monitoring	Progress targeting; Monitor of risks.	Scan for new events; Evaluate what has been learnt.	Share intermediate results amongst projects.

Source: Prepared by author based on Pich et al. (2002)

In order to apply the strategies for managing uncertainty, ambiguity and complexity, one should first identify the current situation of the project. First, project team should clarify the adequacy of what is known about the state of the world and the effects of the actions in the project. Second, in case there is no adequacy of information and payoff, identify if this inadequacy is from lack of awareness (ambiguity – learning) or lack of understanding (complexity – selectionism) (Pich et al., 2002).

In line with the learning process as depicted by Pich et al. (2002), the management of complex projects can be understood as a complex problem solving (Ahern et al., 2013). The theories for complex problem solving can be applied to the management of complex projects facilitating the establishment of the required knowledge to deal with complexities. Complex problem solving is characterized by the unstructured, nonlinear, little inputs and outputs in terms of problem domain. In complex problems, the solution has to cope with different organizational objectives; there is a strong interdependence between the parts of the problem. The tasks to solve it are too complex to be understood by a group (Ahern et al., 2013).

An important consequence of the application of complex problem solving to manage complex projects is that these cannot be completely planned in advance. The total complexity of the system cannot be understood in its full extent. The management of complex project should be in fact, the management of knowledge uncertainty. The concept areas required to deal with complex projects would be planning, knowledge creation and coordination. The coordination mechanism proposed by Ahern et al. (2013, p. 8) relates to "a common will of mutual interest" to distribute complex project knowledge.

Based on a systematic review, Geraldi et al. (2011) identified five dimensions of complexity – structural, uncertainty, dynamics, pace and socio-political complexity. In this article, complex and complicatedness are considered the same. Despite recognizing the difference of two mainstream of research regarding complexity (complexity "of" projects and complexity "in" projects), authors based their findings in the more practical view of complexity of projects (complexity in projects refers to studies based on the various complexity theories whereas complexity of projects are of a more practical view). After the screening process, 25 articles were used for the conceptualization process. Table 11 summarizes the results of the systematic review.

Table 11: Complexity dimension – result of systematic review

Dimension	Basic concept	Attributes
Structural	Large number of distinct and interdependent elements.	Size, variety, interdependence.
Uncertainty	Gap between the amount of information and knowledge; Defined in terms of variety (the probability and chance of an event) or lack of information, lack of agreement over current and future situation or ambiguity.	Novelty (innovative technology); Previous experience; Availability of information.
Dynamics	Dynamics refers to changes in projects – "outside-in" and "inside-out".	Change in any of the other dimensions of complexity.

Dimension	Basic concept	Attributes
Pace	Urgency and criticality of time goals require different structures.	Rate at which projects are (or should be) delivered.
Socio-political	Human actors carry out projects, with potentially conflicting interests and difficult personalities; Complexity emerges as a combination of political and emotional aspects involved in projects.	Importance of project; Support to project from stakeholders; Fit/convergence with; Transparency of hidden agendas.

Source: Prepared by author based on Geraldi et al. (2011)

2.4 INSTITUTIONAL ENVIRONMENT, UTILITIES SERVICES ORGANIZATIONS AND PROJECTS AT THE BOP – PROPOSITIONS

The utilities services organizations have to face a continuous changing institutional environment. These USO are subject to the influences of the IE and its elements: regulative, normative and cultural-cognitive forces. Particularly, USO provide services to people at the BoP, requiring different approaches to access this market. On the other hand, the ToP have different characteristics from the BoP requiring innovations to their products and services. These will be implemented through projects, which present the typical dimensions of complex projects. Propositions of the study were made based on the literature review – as already mentioned the base of the pyramid is the context where the institutional environment and the complex projects are performed. In this context, the propositions are related to the institutional environmental.

Figure 3 indicates the base used for the establishment of the propositions.

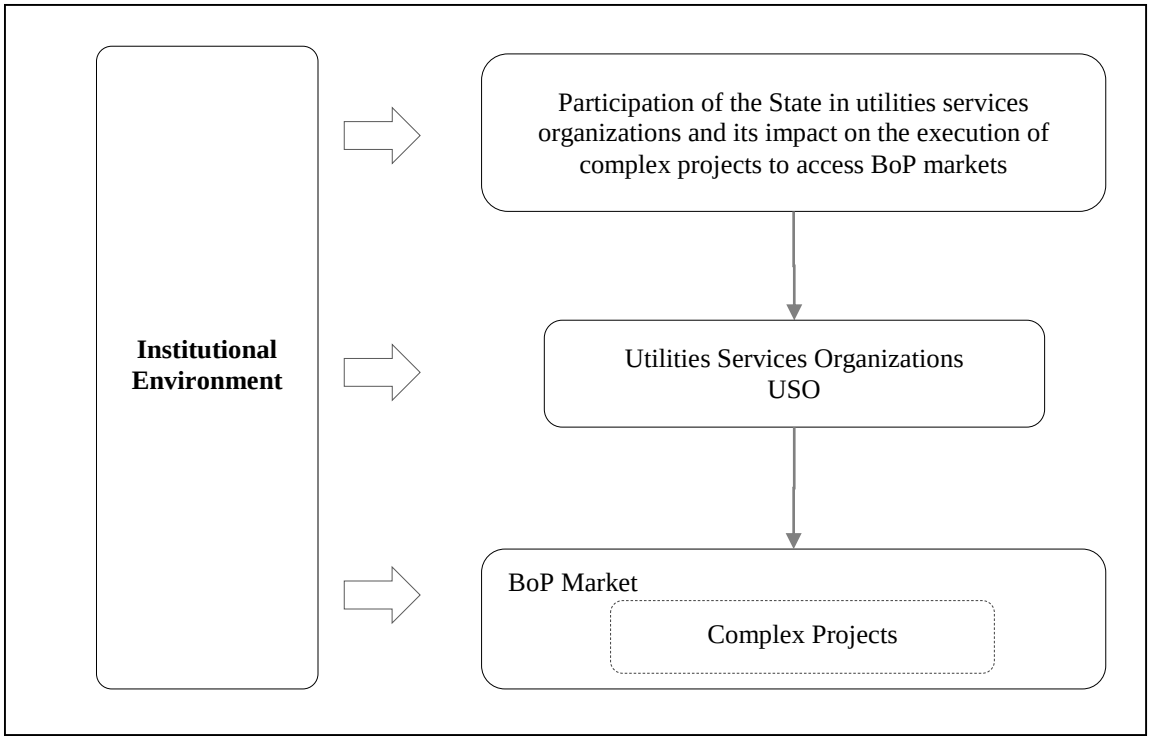

Figure 3: Research Pillars
Source: Prepared by author

The first proposition of this study relates to the institutional environment and the way it influences the structure of the organization and their strategies. Our **first proposition** is that IE influences the way utilities services organizations are structured. Our analysis was focused on how the State influences the organizational formal structure and explore the mechanisms used by the State to influence the organization structure of the USO. Second major variable relates to the regulative, normative and cultural-cognitive elements of the IE. **Second proposition** states that the regulative force has a major impact on USO. As USO operate under some kind of governmental concession, our expectation was that the regulative force is stronger.

BoP is considered, for this study, the context where projects are executed and where the institutional environment imposes its regulative, normative and cultural-cognitive elements. Not a theory *per se*, the variables and the propositions made in this topic have the objective to analyze the specificities of the BoP and the access to the BoP market with a focus on the projects performed to access the prospective clients of the USO. In order to analyze the context of the BoP market, it is proposed that strategies to access the BoP market by USO are different to the ones at the ToP and that differences between BoP and ToP require a different approach for project execution (**third and fourth propositions**). The analysis was made in order to identify how USO develop strategies for reaching the BoP market and the "what" characteristics of the products are and "how" this new product is planned to reach the BoP market.

The final propositions are related to the projects at the BoP. Based on the data collected regarding the context where projects are executed (BoP market), the **fifth proposition** is that projects at the BoP present characteristics of complex projects. The intention is to analyze the projects at the BoP market and their difference from other projects. The **sixth proposition** is that the management of projects to access the BoP market consider the complexity dimensions of structural, uncertainty, dynamics, pace and socio-political. The last proposition, **seventh**, is that the greater the participation of the State, the more difficult the project execution is.

Table 12 summarizes the propositions made.

Table 12: Research propositions and questions

Research Question: "How does the participation of the State in utilities services organizations impact the execution of complex projects created to serve the BoP markets?"			
Relevant aspects – variables	**Propositions**	**Questions**	**Theory reference**
IE and organization characteristics	I. IE influences the way the utilities services organizations (USO) are structured.	(1) How does the institutional environment impact on the organizational structure? (2) What are the mechanisms used by the State to influence on organizational structure? (3) How does the State influence the organizations strategies and its modus operandi? (4) What are the external interfaces with the regulatory agency? (5) How are these interfaces managed internally and externally in the USO?	North (1990) Scott (1987) Scott et al. (2011)
Regulative, normative and cultural-cognitive elements	II. For USO, the impact of the regulative forces in the way the USO conduct its business is stronger than the other elements.	(6) What are the main regulative elements that influence the management of the organization? (7) What are the main regulative elements that influence the execution of the projects? (8) Is the USO committed to serve the BoP market? (9) Which are the pressures or forces that influence projects at the BoP market?	Scott et al. (2011)
BoP specificities	III. Differences between BoP and ToP require a different approach for accessing the BoP market.	(10) Does the USO create new strategies to reach the BoP market? (11) Has the USO changed its business model to serve the BoP market?	Anderson and Markides (2007) Kacou (2010) London and Hart (2004) Rivera-Santos and Rufín (2010) C. K. Prahalad and Hart (2002) C.K. Prahalad and Hammond (2002)
Strategies to access the BoP market	IV. Strategies to access BoP market by USO are different to the ones at the ToP.	(12) How does the USO develop strategies for reaching the BoP market? (13) How these strategies consider the "what" and "how" new products and services have to be offered to the BoP customers? (14) What are the characteristics of the USO business model?	Anderson and Markides (2007) Rivera-Santos and Rufín (2010)
Projects at the BoP	V. Projects at the BoP present characteristics of complex projects.	(15) How do the projects to access the BoP markets are executed by the USO? (16) How BoP projects are different from others? (17) How the integration of activities is performed in these projects?	Frame (2002) Remington and Pollack (2010) Shenhar and Dvir (2007) Geraldi et al. (2011)
Management of complex projects at BoP	VI. The management of projects to access the BoP market consider the complexity dimensions.	(18) For the selected projects, is there any involvement or interface of the State in the execution phase of the project? (19) To what extent has it happened?	Frame (2002) Remington and Pollack (2010) Shenhar and Dvir (2007)

Research Question: "How does the participation of the State in utilities services organizations impact the execution of complex projects created to serve the BoP markets?"			
Relevant aspects – variables	**Propositions**	**Questions**	**Theory reference**
	VII. The greater the participation of the State, the more difficult the project execution is.	(20) How do you describe this influence or participation? (21) Is there any project phase where this influence is more accentuated? Planning, execution, etc.; (22) What are the mechanisms the State uses to influence the execution of projects at the BoP market? (23) How does the following dimensions affect the execution of projects at the BoP: a. Structural; b. Uncertainty; c. Dynamics; d. Pace; e. Socio-political.	Geraldi et al. (2011)

Source: Prepared by author

3 METHODOLOGY

Science is a coherent knowledge, resulting from a series of logical thinking, which refers to a specific set of observations, preceded by a theory review. The problem solving characteristic of science is another important driver for the researchers. This feature originates from observations and the analysis of situations. In order to induce the knowledge growth, self-questioning and the identification and completeness of possible gaps, science has to develop research programs and protocols. The construction of the science is a virtuous circle – science is developed having basic assumptions to explain the nature, and its validity is tested by research programs (Matallo Jr & Carvalho, 1989).

Within the social science, case studies are one of the proposed methods for performing research. It is the preferable research method when the research question has "how" or "why" questions, the researcher has little control over the events and the focus is to evaluate the phenomena in their real context. Case study is an empirical evaluation and it can be used to describe, explore, evaluate contemporary situations that are not under the researcher control (Yin, 2010).

Case studies are "… a research strategy which focuses on understanding the dynamics present within single settings" (Eisenhardt, 1989, p. 534). They can combine different methods for collecting information: analysis of documents, interviews, the realization of observations and have a qualitative or quantitative nature. They also can have different objectives: to provide a description of the phenomena, test and generate a theory.

Yin (2010) presents two groups of case studies – *single* and *multiple* case studies. Each of these can also be classified as *holistic* and *embedded*. Holistic case studies are used when the researcher designs his/hers study to one unity of analysis. It can be deployed, for instance, in a project in one organization (single case studies) or a project in more than one organization (multiple case study). The multiple case study is used when analyzing more than one unity of analysis in single case or multiple case study. Multiple case studies can be used when the researcher design his/her researcher to explore differences within and between unities of analysis being studied.

The research methodology used in this dissertation had a phenomenological focus with an exploratory objective (Yin, 2010). It was employed an inductive approach as there is no clear theory connecting the pillars used in this dissertation – institutional environment, base of the pyramid and complex projects. In order to answer the research question, *"How does the participation of the State in utilities services organizations impact the execution of complex projects created to serve the BoP*

markets?", a multiple case study approach, focusing on projects (unit of analysis) performed by selected utilities services organizations was used.

Qualitative research has the objective to formulate subjective and situation related statements, based on well-founded empirical observations (Flick, 2009). Qualitative studies are relevant to social sciences. (Flick, 2009). The fast change to social dynamics presents new perspectives of contexts to social scientists. The traditional methodologies with a deductive approach may fail due to the differentiation of this social context. Instead of starting from theories and testing them, new concepts are necessary to approach this social context requiring theories to be built from empirical observations (Flick, 2009).

Case studies can be used for single or multiple case studies, having different levels of analysis. In order to provide the required confidence in terms of quality, three critical conditions need to be considered: validation of the construct, external validation and reliability (Yin, 2010). These aspects are discussed along the description of the methodology. Summarizing, this study is defined as multiple case study, with a qualitative and exploratory nature, using an inductive approach (Yin, 2010).

3.1 RESEARCH DESIGN

Research design can be understood as the planning process to conduct a research – it is the set of plans and procedures for research, involving the decisions from broad assumptions to specific methods of data collection and its analysis (Creswell, 2009). The research design can be qualitative, quantitative and mixed methods.

A qualitative research is a process for exploring and understanding the meaning given by individuals to a social problem. It has an emerging nature as questions may arise from the research, data are collected in the participants' environment and its analysis is inductive, from a particular set to general terms. The researcher interprets the meaning of data (Yin, 2010). In quantitative, the focus is on testing theories by examining the relationship between one or more variables. Numbered data can be analyzed using statistical methods. The replication of the findings and a more ability to generalize are characteristics of this method (Creswell, 2009).

Social researches can be classified based on its objective and its approach (qualitative, quantitative or a combination). An usual approach is to classify them into three different groups: exploratory, descriptive and explanatory (Gil, 2008; Yin, 2010). The first group, *exploratory*, is intended to be used when there is a need to develop hypothesis and propositions for a subsequent

research. The focus is to raise ideas and concepts to acquire a greater knowledge of the phenomena. Second group, *descriptive*, is concerned with the data analysis in order to expose the population or phenomena being evaluated and, in some cases, establish relationships between variables. Last group, *explanatory*, tries to identify the contributing factors leading to a specific situation in order to explain the phenomena.

Considering the research question and the small number of papers exploring the participation of the State in utilities services organizations and its impact on the execution of complex projects to access BoP markets, the research strategy proposed in this study has an exploratory nature. As the general purpose of this study is to explain and describe a specific event or situation related to the research question, the qualitative approach is recommended. The general description of the research process is presented in Figure 4. It also summarizes the main aspects of the research design.

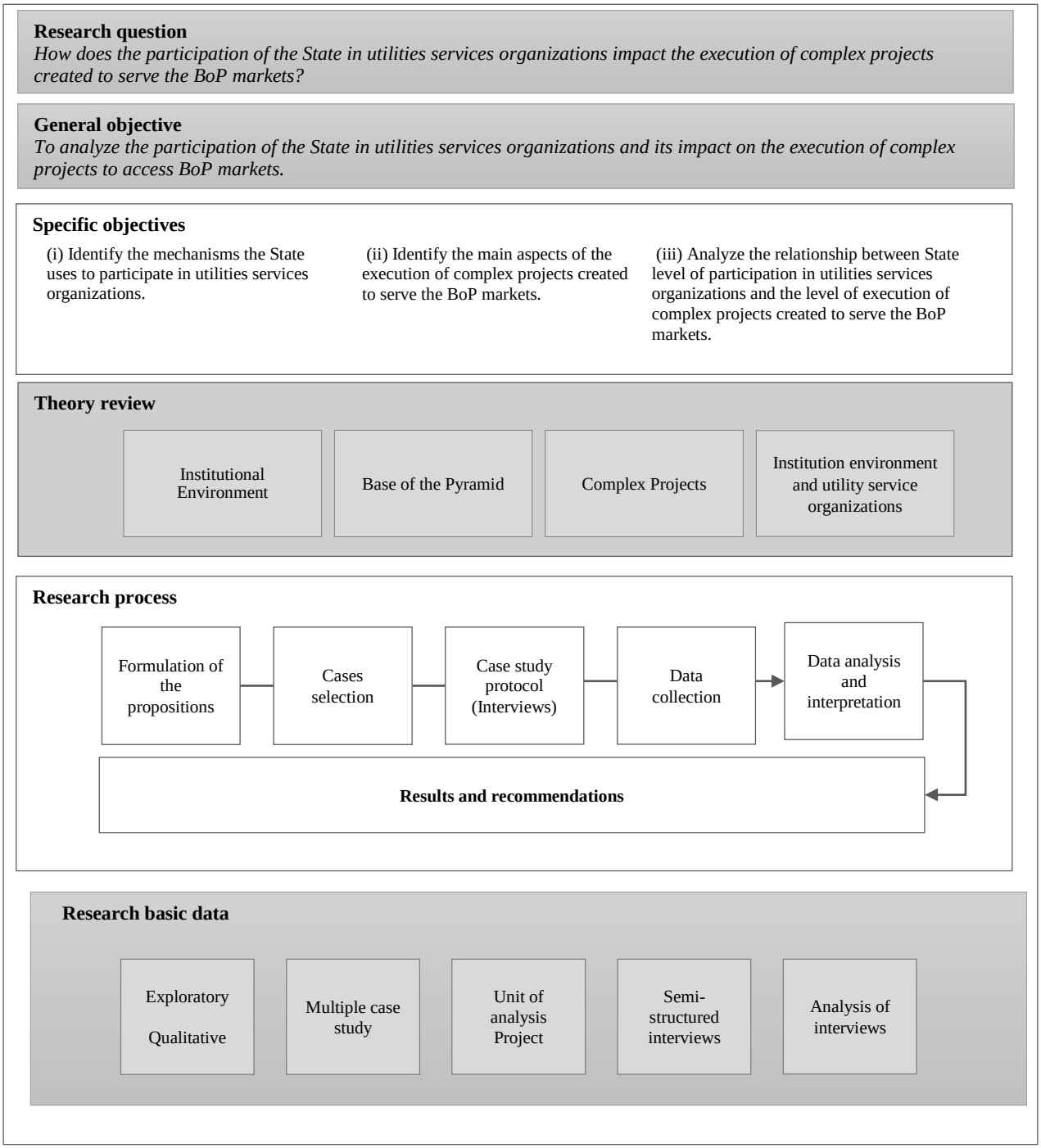

Figure 4: Summary of Research Design

Source: prepared by author

3.2 UNIT OF ANALYSIS AND CASE SELECTION

The unit of analysis is related to the focus of the case to be evaluated. It can refer to a group, an individual, or an organization. The important point is that the unit of analysis has to be related to the

research question in terms of the interested area of the study. As the general objective of this study is to analyze the participation of the State in utilities services organizations and its impact on the execution of complex projects to access BoP markets, these *projects* were considered the unit of analysis. The focus was the projects executed by the utilities services organizations. There was no limitation to "when" these projects were conducted, but they had to have a focus on the BoP market.

3.2.1 Case selection and criteria

The criteria used to select the cases of this research were two folded: first, related to the organizations and second, the projects. The organizations selected were utilities services organizations (USO). In this context, USO are defined as organizations which provide a basic service to the population, like public transport, water treatment and distribution, sewage treatment, energy generation and distribution. In general, these USO provide services with some kind of authorization from the State. As already mentioned, these organizations used to be State owned enterprises (SOE). The organizations selected were from two different market segments: energy distribution (gas and/or electricity), water distribution and sewage treatment. Details of the organizations selected are defined on Chapter 4.

The rationale of the selection of these segments is their importance to the economy – the figures of Sao Paulo exemplifies this significance. Investments in energy distribution in 2014 reached BRL 12.3 billion (ABRADEE, 2015). The Sao Paulo State company for water treatment and distribution (SABESP) intends to invest BRL 13,5 billion from 2014 to 2018 (SABESP, 2015a). Their revenue reached BRL 11,2 billion in 2014 (SABESP, 2015b). In terms of gas distribution, Comgás, a São Paulo State organization is responsible for the distribution of gas to 117 cities, reaching a revenue of BRL 7,8 billion in 2014 (Comgás, 2015).

This research performed a multiple case study in two different organizations named **Alpha** and **Beta**. For each of these organizations, at least one project for accessing the BoP was selected. The basic criteria for organizations and projects selected are defined below:

- Organizations have to belong to the service utility market, in the segments of energy distributions (electricity and/or gas) and water treatment (including water distribution);
- Organizations should be State Owned Organization, public or mixture;
- Projects selected were projects for the provision of services and/or products to the BoP.

3.3 DATA COLLECTION PROCEDURES

This subchapter outlines the process for collecting data required to support the answers to the propositions of this study. In this subchapter, the methods used to collect data are presented including the software used to support the analysis of the interviews.

Ethics in any research are a key and fundamental aspect of the research in order to provide confidence and reliability to the result and conclusions of the study (Yin, 2010). The data collection procedures outlined in this subchapter were performed based on ethic aspects. All consents from the interviewers were granted before the beginning of the works, including the recording of the interviewing section. All data collected were used only to the purpose of this study and were not disclosed to any other parts without respondent's prior authorization. As applicable and when considered necessary, functions of the respondents were named. A database with all the information was organized for traceability purpose.

Appendix A establishes the case study protocol. Case study protocol is an instrument used to provide reliability to a case study research and it is intended to support the researcher to carry out the data collection (Yin, 2010).

3.3.1 Data collection

Different methods of data collection were used in order to obtain the data necessary for the analysis section of this study. According to Yin (2010), for a proper process of data collection, some basic principles should be used by the researcher. First, multiple sources of evidence should be used in order to converge to the same set of findings. Second, the establishment of a data bank of the case study. Finally, the establishment and maintenance of a chain of custody of the evidences collected. Table 13 summarizes the data collection processes used in this study.

Table 13: Data collection summary

Basic principle	Sources	Observation
Sources of evidence	Interviews (primary source of information)	Semi-structured interviews; Focused interviews (short interviews); Respondents: – Project managers, Product managers, Sales personnel and other involved in the development and implementation of projects for accessing the BoP.
	Documents and records	Business Plan;

Basic principle	Sources	Observation
	(secondary data of information)	Project data (project charter, chronogram and any other associated documents); Annual financial, operational report; Records; Minutes of meetings; Evaluation studies, including feasibility for accessing BoP.
Data base for case study	Organizations and record of the data collect	A database for the case study was prepared and dully organized: – By organization name, interviews records, transcription and any other system to facilitate traceability of data.
Chain of custody of the evidences collected	The requirement to allow any external observer to follow conclusions to the research question and vice versa	Two strategies were used to trace all conclusions to research questions – formulation of the propositions and design of case study protocol.

Source: Prepared by author based on Yin (2010)

3.3.2 Interviews

Interviews were used as the primary source of information. Semi-structured interviews were used as there is an expectation that the respondents viewpoints are more likely to be expressed when comparing to a standard interview or the use of a questionnaire (Flick, 2009). Furthermore, interviews are considered an essential source for case studies as these types of studies are related to the human behavior and interactions. Respondents can support the identification of other sources of evidence (Yin, 2010).

Initially, a formal invitation for the organization was sent to the point of contact explaining the research questions, objectives of the research and confidentiality arrangements. Furthermore, the following criteria for the selection of the respondents were established: (i) experience of more than 5 years at the organization, (ii) involvement with projects at the BoP.

Interviews were based on a semi-structured questionnaire (Appendix A: Case Study Protocol) from September 2015 to November 2015. A total of 10 persons were interviewed (5 for each organization) with the profile as indicated on Table 14. In the selection process, there was a concern to include persons from different background and direct involvement with projects at the BoP. The idea was to have an overall vision of the phenomenon being studied considering that a research with a qualitative approach does not have a strong concern with representativeness when compared to a quantitative approach.

Table 14: Respondents profile

	Alpha	**Beta**
Total number of interviews	5	5
Function	Coordinators, Managers	Coordinators, Managers
Age	35 to 60	30 to 45
Time within organization	More than 10 years	More than 12 years
Experience in project management	3 to 15 years	5 to 15 years

Source: Prepared by author

As indicated above, interviews were conducted in a semi-structured approach. Before the beginning of the interview, the research questions and objectives were dully explained as well as the confidential use of all collected information. The interview was performed in different steps: initially, the interview experience with the deployment of organizational strategies and projects at the BoP was identified. The objective was to evaluate its background with the focus of this research. Second part of the interview explored the State influence in organizational strategies and structure. Finally, the projects executed by the organization at the BOP were evaluated. The reasons for conducting projects at the BoP were explored as well as the complexities factors of the projects.

Interviews were recorded (approximately 10 hours) and transcribed to word documents, with an exception for one of the respondents who asked for the interview not to be recorded. In this case, specific notes were taken during and right after the interview following the case study protocol. Both materials were transcribed to word documents. These word documents were then used as data source in the NVivo software.

Interviews were performed in Portuguese – as part of the content review and to support the analysis, statements of the respondents are cited in the Chapter 4: Presentation and Analysis of the Results. These responses were translated to English and, in order to maintain a proper correspondence, one person with proficiency in English was asked to translate to Portuguese to make sure the meaning was maintained. Some minor adjustments were made as necessary.

The number of respondents for each of the organization was considered enough for the purpose of this research, as the information provided was considered to be redundant at the fifth interviewed person.

3.3.3 Secondary sources of information

As per Yin (2010) definition, data collection procedures must follow three basic principles – data triangulation, the establishment of a data bank and the research reports. Evidences collected from

the interviews shall be related to the issues of the report and vice versa. Data triangulation was obtained by using multiple sources of evidences: primary and secondary sources of documentation and the results of the interviews (Flick, 2009; Yin, 2010).

The following secondary sources of information were used. First, documents available in the organizations websites. It has to be noted that both organizations operate in the stock market and, therefore, they have their finance numbers and relevant facts public available. In terms of public available information, the following documents were used:

- Organization website;
- Other websites with information about the organizations;
- Economic and financial reports;
- Social responsibility reports;
- Mission and Vision statements, Code of Ethics;
- Documents of the regulatory agency.

Further documents were presented during the interviews, but due to the confidential nature of them, they were used only to reinforce respondent's statements. Documents related to this source typically were project planning and financial figures, people affected by the project and its profile (social and ethnical class).

3.4 DATA ANALYSIS

Analysis of the evidences collected was performed according to content analysis. As already mentioned, interviews were recorded and transcribed for content analysis. According to Krippendorff (2012, p. 18), content analysis is "a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use". The basic steps of this process were based on recommendations by Moraes (1999): (1) prepare the information, (2) unitization of the information, (3) categorization or classification of the unities in categories, (4) description and (5) interpretation.

The fundamental strategy to guide the evaluation of the data collected was the theoretical propositions. According to Yin (2010), this should be the preferred strategy as the propositions made in this study guided the data collection plan. Triangulation of data sources and data types were used in order to converge the data and validate the findings.

In order to facilitate the process of analysis, a software for content analysis was used. NVivo is a Computer Assisted Qualitative Data Analysis Software. The use of a software to support the analysis had different motivations. First, it is designed to find patterns of the qualitative unstructured data (like interviews) and organize these data into groups or categories. Similar information (with the use of "coding") is easily traceable to all sources of data (like respondents). It also allows store and data retrieve and back up findings of the researcher with evidences.

NVivo software was used to assist the qualitative analysis. All the interviews were transcribed to word documents. The concept of *Nodes* was used to perform the analysis in a proper way. *Nodes* are a theme, a concept or idea about the data for which there is a research interest. In case of this study, nodes were related to the propositions made for the study. A hierarchy of the nodes was also used in order to allow a more precise data analysis. These nodes were planned in advance of the analysis, but they were also adjusted during the analysis to accommodate new perspectives arose from the analysis.

The number of nodes selected was considered adequate for the purpose of the analysis: first, the idea was to explore the nature of the respondent's statements regarding the node. For instance, the objective was to have an understanding of the concepts and ideas regarding the node "project" in terms of complexity and differences between a regular project and a project at the BoP. In this sense, the number of nodes is justified based on a broader evaluation of the main node and its subdivision. As mentioned above, as considered appropriate, these nodes were slightly changed as the data were inputted in NVivo software.

Table 15 illustrates the nodes used.

Table 15: Propositions and nodes

Relevant aspects – variables	Nodes and hierarchy	
IE and organization characteristics Regulative, normative and cultural-cognitive elements BoP specificities Strategies to access the BoP market	BoP:	- BoP reasons for projects; - BoP Strategies to access.
	Institutional Elements:	- Cultural-cognitive; - Normative; - Regulative.
	Projects:	- Complex; - Complex dimensions; - Differences.

Relevant aspects – variables	Nodes and hierarchy	
Projects at the BoP Management of complex projects at the BoP	State influence	- High; - Interfaces; - Low; - Organizational Structure; - Project Execution.

Source: Prepared by author based on NVivo features

All the documents (transcribed interviews) were coded in order to classify the data presented in the documents.

3.5 QUALITY OF RESEARCH

The quality of an exploratory multiple case study can be evaluated according to three criteria: (i) construct validity, (ii) external validity and (iii) reliability (Yin, 2010). The construct validity is defined as the identification of the correct operational measures of the concepts involved in the research. Construct validity was accomplished by using multiple sources of evidence and the establishment of a chain of evidence. In this research, the construct validity was obtained by the evaluation of the different sources of evidences. The respondent's statements were compared to the documentation public available, as already mentioned. Specific documents made available during interviews were also evaluated in order to validate respondent´s statements.

External validity is the identification whether the finding of the study can be replicated beyond the case study under evaluation. In order to answer the research question, a multiple case study was used selecting two relevant organization operating as USO. The last quality measure, reliability, is concerned with the replication of the study by another researcher. This case study followed a case study protocol and the development of a case study data base (Yin, 2010).

4 PRESENTATION AND ANALYSIS OF THE RESULTS

First part of this chapter presents the context where Alpha and Beta organizations operate. As the operation of these USO are regulated by a specific regulatory agency (ARSESP), a brief explanation of the functions of the agency is explored. The objective is to provide an overall picture of the institutional environment where the USO perform their business.

Second part provides basic information of the organizations selected. This subchapter is an overview of the organization´s characteristics and their perception of the base of the pyramid. In the last part of this chapter, the propositions made are covered based on the objectives of this study. In order to answer the research question, the relevant aspects of the propositions were analyzed considering the statements made by the respondents complemented by the analysis of the secondary sources of information.

The propositions were grouped into three areas: (i) institutional elements and organizational characteristics, (ii) the specificities of the BoP market and the strategies used by Alpha and Beta to access it, (iii) the management of complex projects at the BoP. For each of these subchapters, it is made an analysis of each organization individually and then, a comparison is made between organizations.

Several secondary sources of information were used to complement and validate the statements made by the respondents. The documents were public available as Alpha and Beta operates in the stock market. A summary of the documents used is described below:

- Sustainability Reports from 2007 to 2014;
- Risk evaluation document dated 2015;
- Annual Reports from 2001 to 2014;
- Documents from the Sao Paulo Stock Exchange Market (BMF/BOVESPA) – Alpha and Beta organization minutes of assembly, financial reports, warnings to the shareholders;
- Documents from the regulatory agency – ARSESP: social contract, concession contracts with Alpha and Beta, ARSESP Annual Report 2013 and 2014.

Finally, the last subchapter makes a summary of the propositions and the results of the analysis.

4.1 REGULATORY AGENCY – ARSESP

Organizations nicknamed Alpha and Beta operate under the requirements of the same regulatory agency – ARSESP: Agência Reguladora de Saneamento e Energia do Estado de São Paulo *(Regulatory Agency for Energy and Sanitation of São Paulo State)*. ARSESP is an independent agency established by Sao Paulo State (Sao Paulo State Complementary Law 1.205/2007) with the objective to regulate, control and inspect the services provided by the USO in the areas of electricity, gas distribution (pipeline) and sanitation (sewer treatment, water treatment and distribution). It has an administrative, finance, budgetary and decisional independency from the Sao Paulo State as well as autonomy to deliberate in its area of competence. In sanitation, its area of operation includes State owned services and/or by delegation of the counties, as applicable.

Agency´s mission is to assure that adequate services are provided by the USO in the areas of electric energy, gas distribution by pipeline and basic sanitation in order to contribute to the sustainable development of the sectors, maintaining the equilibrium of the relationship between users, USO and the public power. Their specific objectives include the maintenance of the economic-financial balance of the concession contracts, the establishment of standards for the USO operation, the stimulation of the universalization of the services and to assure a proper utility rate for the services provided by USO.

In order to comply with its mission, the agency has an organizational structure with one division for each of the functional sector (basic sanitation, electric energy and gas). Furthermore, as support function, ARSESP has also an area for the economic-financial and market regulation and a division of institutional market relation, including end users.

According to ARSESP (2013), the **energy sector** has 24 USO being 14 concessions, 10 permissions and it involves both energy generation and distribution. The concession area covers 248.000 km^2 with more than 17 million users in December 2013. Besides fiscalization of the services and the energy stations controlled by these USO, ARSESP also monitors key performance indicators.

The **gas distribution through pipeline** is provided by three USO with almost 13.000 kilometers of pipes and 1 million users. It has to be noted the potential for expansion considering a total population of 42 million (Sao Paulo State). The expansion of the pipeline network has been strong: from 2005 to 2013, the increase was greater than 120% in terms of pipeline expansion.

In this sector, the agency inspects not only the services provided by the USO, their rates, but also the safety of the operation. They also establish the amount of resources to be used by the USO (based on a percentage of their income) in the annual program for research and development of

technologies for the rational use and conservation of natural gas. Another important characteristic of this sector is the price regulation: instead of defining a price (like energy), the agency establishes a distribution margin over the cost of the gas, as it is provided by the Union through Petrobras. Another important factor was the conclusion of the exclusivity period of concession, which expired on 2012. From this period on, the gas sector has two distinct market: a regulated one composed by commercial, residential and industrial consumers and a free market composed by industries with a consumption greater than 10.000 m^3 per day.

In **sanitation**, ARSESP covers 269 cities and three USO. Number of consumers or users are not made available by the Agency. The agency inspects and monitors key performance indicators (water distribution coverage, sewer distribution coverage, sewer treatment). Important to notice the lack of data regarding the performance of the USO. Data in ARSESP Annual Report is concerned mainly to the number of inspections, non-conformities raised and field inspections.

Although ARSESP has the same basic function, the regulation of the economic-financial balance between the involved parties is different for each of the sectors. For instance, in gas distribution, the price of the gas is defined by the Union (Petrobras) and the agency defines the profit margin of the service. The adjustment of the utility rate is based on the fluctuation of the regulated price of the gas (raw material) plus inflation. In sanitation (water distribution) the USO rate is defined by law issued by the Sao Paulo State.

4.2 USO – ALPHA

4.2.1 Description and context of operation

Utility Service Organization Alpha has more than 1.400.000 clients, with 12.000 kilometers of pipelines for gas distribution (Alpha Annual Report 2014). Its area of concession is highly populated, with a potential consumer market of almost 30 million people. Its market is segmented in residential, commercial, industrial and others. Residential represents more than 95% of their consumers. At the same time, this market represents only 5% in terms of volume and contributes 25% to their margin (data from Alpha Annual Report 2014). Its expansion has been predominantly in the commerce and industrial area (industrial more than 20% and residential less than 10%). Project investments (expansion of their services) reached BRL 1.6 million in 2014, with a planned growth for 2015 from 4% to 8%. A long-term commitment of Alpha´s organization is to double its product participation in terms of energetic matrix until 2035.

Alpha operates under an environmental and safety management system. Furthermore, safety is one of their core values. According to their Annual Performance Report (2014), one of their strategies is the universalization of their services. For the residential market, the objective is to identify and provide value for their service, rather than selling them alone. Alpha has a business model based in value chain concept – it is composed of business and support processes.

Besides projects for the expansion of their services to new clients (infrastructure projects), Alpha organization has a technological research and development program. According to their concession rules, Alpha has to invest a percentage of their income to develop projects as established and agreed with the regulatory agency. More than 100 projects have been established in the areas of research, conservation and energy efficiency. Within its vision, mission and values, no specific guideline exists for serving the BoP market. However, Alpha vision defines its intention to serve "all clients".

In terms of financial aspects, ARSESP regulation establishes a five-year review cycle with an annual adjustment for inflation losses and increases of the gas price. The price regulation has an incentive factor called "x factor" – the idea is to incentive the USO to obtain gains in efficiency above the "x factor". In this case, the actual gain above the "x factor" is internalized by the USO. Another important aspect of the operation of the USO is the purchasing of the gas. The contract between the USO and the gas supplier determine a fixed amount of gas to be purchased by the USO, regardless of their actual consumption (named *take-or-pay)*.

4.2.2 Alpha and BoP Market

Based on the contextualization above, Alpha organization started its operation (2000) with a focus on the increase of the volume sold. The rationale of this strategy was to rapidly increase their revenues using the fixed volume of natural gas contracted with Petrobras. As a consequence, the initial targeted clients were the high volume consumers represented by the industry market. As a natural subsequent step the target markets were the commercial and residential clients in the geographical area of concession.

In terms of vision and mission, there is not a specific commitment to serve the market at the BoP, although a statement to provide their services to all people can be identified within Alpha vision. As Alpha organization competes with substitute products (energy and gas in cylinder – LPG), their services have to add value to the customer beyond the commodity itself. Projects are performed to expand their services to residential areas and doing so, these projects reach the BoP market.

Projects for the BoP have been conducted by Alpha´s organization for the classes D and E, but without a clear identification of these classes. Typical projects include the access to their service by residential popular condominium where a package of services is provided: financing of the acquisition of the gas equipment (for instance, heaters) plus conversions kits and a specific and differentiate rate for their gas.

4.3 USO – BETA

4.3.1 Description and context of operation

Utility Service Organization Beta is much larger in general terms. It has more than 25 million clients for sanitation services (water distribution and sewage collection and treatment). Its concession area covers almost 370 counties in the Sao Paulo State. Their numbers include 520 sewer treatment stations, 230 water treatment stations, the distribution of water is made by 70.000 kilometers and the sewer collection reaches 48.000 kilometers. Organization offers other services besides its basic commodity (for instance, water re-use) and has partnerships with local and foreign organizations to provide related services. The societal composition of Beta includes a strong participation of the Sao Paulo State with more than 50% of the total capital.

During 2014 and 2015, the prolonged drought in south part of Brazil has affected the organization business. The drought is considered the most critical hydrological situation since 1953. Investments in infrastructure for improving water collection have been the focus of the organization since 2014. Pipeline connections between watersheds has been the priority of the organization – investments in infrastructure reached BRL 3,2 billion. Furthermore, a permanent program to reduce illegal connections and losses in the pipelines are being implemented (data obtained from data from Beta Annual Sustainability Report 2014).

Other actions have been implemented by Beta to face the critical situation of the water sources. One of these actions, concession of a discount bonus for a reduction in the consumption level of the consumers (2014) caused a reduction on water consumption of $13m^3$ per second. A contingency rate for an increase of the consumption had been recently approved by ARSESP in order to financially punish an increase in the water consumption. These overall actions are aimed to reduce the consumption in 30% when compared before the drought period.

The reduction of the revenues caused by the incentive program plus a general reduction of industrial activities observed in 2014 had a strong impact in Beta financial figures. The net profit

presented by Beta dropped more than 50% when comparing 2013 and 2014 while maintaining the revenues at the same numbers. The initial figures for 2015 do not show improvement – first semester of 2015 presented a drop of the net profit of 16% when compared to the same period of 2014.

Analysis of Beta´s performance indicators reveals a coverage of 99% of the water distribution (considering the concession area). The collection of sewage reaches 85% of the population with water distribution. Losses of water were estimated to reach 21,3% of the organization revenues and almost 30% of the volume.

Program for the reduction of the losses of water are distributed into two major areas: first, it is related to the physical losses caused by leakage in the pipeline. Second, the reduction of losses due to illegal connections (frauds and thefts). Organization Beta does not report the financial impact of these losses, they report that the program has been negatively impacted due to the budgetary restrictions (data from Beta Annual Sustainability Report 2014).

4.3.2 Beta and BoP Market

Beta´s vision and mission does not include specific commitments to serve the BoP market, although a vision to be recognized as a service provider that universalized their services can be identified. This aspect is reinforced in the organization bylaws: its objective it to "provide *its service* with a universalization nature". Recently, Beta organization has structured a new area for research and development (Innovation and Technological Research and Development Division) responsible for the analysis of potential innovations in their market segment, analysis of the concession regulation and its impact on innovation. Its function is to define innovation strategies for the organization. Similar to organization Alpha, Beta also sponsors research projects to improve their technology and process. The majority of projects (approximately ten) is related to technology and only one has an economic dimension (economies of scale) (Beta Annual Sustainability Report 2014).

Strategies of the organization are established based on a BSC: Balanced Scorecard concept. Analyzing the strategies of Beta, despite the presence of a general intention of universalization and quality, no specific strategy to serve the BoP market can be identified. Regardless of no specific strategy for BoP market, some BoP initiatives could be identified in the Beta´s sustainability report. As an example, there is a program to subsidize the costs for the connection of households to the sewer system. No specific program or project for the BoP market in terms of water distribution could be identified in the secondary sources of information, although, specific initiatives for projects at the BoP were identified during interviews.

4.4 INSTITUTIONAL ELEMENTS AND ORGANIZATIONAL CHARACTERISTICS

Organizations in general operate under a continuous changing environment. This institutional environment shapes social behavior in response to formal or informal norms, guidelines, rules and normative schemes. Organizations are influenced by these institutional environmental and respond to them because they are essentially rewarded or penalized for acting according to the "rules of the game".

As **first and second propositions** are both related, the analysis of the results of the interviews is performed in this subchapter. The first one is related to the evaluation of the main aspects of the institutional environment and its influence on the organization characteristics and their strategies. The second proposition states that the regulative force has a major impact on utilities services organizations when compared to the other elements.

The analysis was focused on how the State influences the formal organizational structure and explore the mechanisms the State uses to perform this influence. Although the *how*, *why* and the *extent* of the impact of the institutional environment is not clear, the fact is that they exert influence on the way organizations are structured. The argument of institutionalization is based on the assumption that organizations are not only the result of the forces of the market or the rational use of their valued resources; in fact, they respond to this environment to be rewarded and, as a consequence, survive in long term (Orr & Scott, 2008; Scott, 1987, 2001, 2005; Scott et al., 2011).

In order to better understand these institutionalization processes, Scott et al. (2011) proposed three fundamental pillars responsible for the elements of the institutional environmental: (1) regulative, (2) normative and (3) cultural-cognitive elements. Basically, regulative forces are the more explicit rules of the games. Normative elements are composed by more expected behavior for acceptance and finally, cultural-cognitive elements are related to a shared belief.

4.4.1 Alpha organization

Alpha organization operates in a regulatory market with some particularities. Although it is a monopoly market regulated by ARSESP, as already mentioned, it has substitute products. The gas delivered by pipeline (regulated by ARSESP) has at least two substitute products: the electricity and LPG: Liquefied Petrol Gas sold in cylinders. Furthermore, LPG price is regulated by the Union (Petrobras). Competition with these two substitute products is one of the challenges of Alpha organization.

For Alpha organization, the institutional environment has a strong impact on the organizational structure. This impact is identified first, by the regulations established by the regulatory agency. ARSESP has an influence through the concession contract. The influence is made by a series of aspects defined in the concession contract. First, the definition of a volume of gas to be paid even if Alpha does not sell the established volume to its market. Second, the financial aspect of the utility rate: within this context, two aspects are used by the regulatory agency – the definition of an incentive factor to promote gains in efficiency and the approval of investments made by the USO in the infrastructure. Third, the evaluation of operational key performance indicators.

The need to use the volume of gas made (model *take-or-pay*) guided the initial strategies of the USO – in order to use this volume, Alpha initially targeted the industrial market as they are clearly great consumers of gas (ceramic and glass industry, for instance). The idea was to use the available gas (fixed cost) in order to rapidly generate cash flows. For exemplification purpose, see respondents statement below:

> [...] When Alpha was privatized, we had to comply with the existing contracts. The State had contracts for the consumption of gas. Alpha does not have gas extraction wells. It distributes the gas. There were contracts with Petrobras (Respondent Alpha 01).

> [...] One of the obligations was to use that gas, you had to pay that volume. Therefore, in the first phase of the privatization process we did not reach class C, D and E, we targeted great volumes, great industries. The idea was not to be penalized (*by regulatory agency*). There was a pressure to sell great volumes of gas (Respondent Alpha 02).

The residential connection, as indicated in Alpha institutional presentation dated 2014, reports an increase of more than 10.000 connections whereas the industrial segment represented 15 new ones (2014 compared to 2013). These numbers indicate the importance of the residential market for company growth. The importance of the residential market to the future of the organization can be seen on document issued by Alpha (Scenarios of Opportunities 2014).

> "Natural gas in Brazil has a great potential for growth, considering the expected duplication of the domestic offer of gas…In Sao Paulo State, the USO shall invest BRL 6 billion for pipeline expansion in the next five years".

The change of focus to the residential market also introduced clear changes to the organizational structure. In the first phase of the concession, the organizational structure and processes were established to serve the industrial market segment. The organizational chart was based on process function and, as Alpha entered the residential market, it became regionalized.

> […] There were organizational changes as the focus of the organization changed. We were structured by functions and when the residential market was targeted, back to 2008, we were regionalized (Respondent Alpha 03).

Other aspect of the regulative force is related to the investments to be performed by the USO. These investments are defined by the USO but approved by the regulatory agency. These projects, basically related to the expansion of the pipelines, are aimed to expand the pipeline and increase the population served by the services provided by the USO. The agency does not control financial aspects of these projects. Rather, they control "the physical aspect" of the projects (for instance, kilometers of new pipelines).

> […] They (*ARSESP*) control the investments. In moment "zero", the rate is established and the agency says: "within this rate, there is an amount that I anticipate as an investment – I am giving you a rate for you to recover this investment. And I will control the physical quantity that you committed to me and I authorized you to do. For example, pipeline expansion, change of obsolete pipeline. If you perform less than the agreement, I will reduce the rate in the next revision" (Respondent Alpha 01).

ARSESP requires that a part of Alpha´s revenues to be invested in innovation projects. These projects, according to the concession contract, aim to improve the safety and the efficiency use of the gas, during construction, operation and maintenance of the distribution system. According to the annual report of the Alpha´s organization:

> "In the last 10 years of the Technological Research Program, Alpha has invested BRL 38 million in R&D. A total of 147 projects were executed, with 55 in research, 92 in conservation and rationalization – from these, 34 of energy efficiency. The invested value reflects the annual budget made by Alpha and it is equivalent to 0,25% of the distribution margin during the reference cycle. These values are defined by ARSESP".

The last influence on organization characteristics is the establishment of key performance indicators. These series of KPI´s covers aspects of quality (pressure, losses, quality of the gas), safety (odor of the gas, time to respond to an emergency call) and quality of commercial response, amongst others. This has a clear impact on organizational processes – for instance, Alpha has a specific area for emergency preparedness to be able to respond accordingly.

> [...] Besides, in Santos, if you have a problem and call, we say 1 hour, but in 20 minutes, we get there. We are a logistic organization; we are well located. Only in Santos, I used to have 20.000 clients, besides the industries (Respondent Alpha 04).

The normative aspect of the institutional elements used to have a greater impact on the organization. As they used to be part of a large corporation with clear regulations about operations and governance, Alpha was locally structured to respond to this set of requirements. For instance, the management of assets (in terms of safety) is an Alpha´s functional area established to comply with corporate guidelines. Their function was to assure the assets of the organization complied with the highest safety standards.

> […] in a first moment, Alpha was stimulated by the regulative forces. We used to have a controller that created norms and guidelines. I think there is also the regulatory force in any organization in the concession area. You have the agency models, they have the power to establish the regulations and this is part of the concession contract. This is as important as the social contract of the organization. In the case of gas distribution, there is also a series of Brazilian and international standards which has an impact on how to perform activities (Respondent Alpha 01).

The cultural-cognitive element relates to the safety of the operation. Alpha used to be part of a corporation that strongly valued the aspects of safety operation. When visiting Alpha headquarters and regional offices, visitors are oriented about safety procedures, like not to talk in mobile phone when walking on stairs. All respondents in Alpha organization pointed out the safety as a strong aspect of the culture of the organization. Nevertheless, despite the change of ownership (2012), this value remains a fundamental aspect of Alpha organization.

> [...] Then, you have a limited amount of resources, you commented about culture, and our culture is very strong in safety, we are recognized as an organization with a very strong culture in safety (Respondent Alpha 05).

> [...] The safety culture came from one of the shareholders. We use to have a shareholder from the area of oil and gas, where the safety is a very important value. Because, you have critical accidents and it may expose you to the media. Then, you have to protect the people related to your operations. This became a rooted value in our operation. Then, Alpha had a change in the shareholder ownership. But this value was not changed. We had everything to say "forget about this thing about safety" but on contrary. Safety values remained in our culture (Respondent Alpha 03).

Table 16 summarizes the elements of the institutional elements and its impact on Alpha organization.

Table 16: Alpha organization and the institutional elements

Institutional Element	Important Factor	Impact on Alpha organization
Regulative (ARSESP)	Volume of gas (*take-or-pay*)	– In order to use the gas, Alpha targeted the industrial market (volume); – Projects were conducted to reach this market (high volume, high pressure on the pipelines); – Secondly, commercial market was targeted; – Last, residential market was targeted – increase numbers of users, configuration of the pipeline is different, internal organization (organizational chart was changed).
	Incentive "x factor" Investments	– Impact on the selection of projects to be performed by USO; – Need to invest a part of their revenues in innovation projects.
	Operational Key Performance Indicators	– Definition of internal processes capable of reaching established KPI´s.
Normative	Rules and procedures	– Alpha organization operates under strict guidelines and procedures; – Need to comply with national and international standards; – Specific areas of Alpha were established to respond to corporate guidelines.
Cultural-cognitive	Safety	– Core value of Alpha; – Culture of safety influence major aspects of the operation.

Source: Prepared by author based on NVivo features and secondary sources of information

4.4.2 Beta organization

Beta organization is owned by the State. The sanitation service has a strong impact on the health of the population. According to United Nations Water (2013), one in nine people worldwide has no access to drinking water and one in three lacks improved sanitation. Approximately 3,5 million people die every year due to inadequate water supply, sanitation and hygiene. In Brazil, inadequate water is responsible for 0,6 deaths, children aged under 5 years, per 100.000 population (World Health Organization, 2014).

As an organization belonging to the State, there is no doubt that there is an influence of the State on organization strategies and projects. The results of the respondents are clear: State has a strong participation in the definition of the strategies.

> […] Absolutely, the State does influence (*strategies).* Basic sanitation is a public policy, and Beta, as a State company, where the State is the main shareholder, an interest party. The State´s role is

> decisive in the infrastructure projects of Beta. The State influences these projects through the definition of the rate; the rate is regulated by a decree; it is connected to a State decision (Respondent Beta 02).

> […] One of the State influences is the indication of the management. The president and the directors is a government decision, it is politics. Then you have, our greatest investment in sewer, for instance the project "ABC" is a Beta project, but it has a politic bias from the State (Respondent Beta 04).

> […] The State, most of the times has final decision and says: "This project, we will not perform, we assume the risk". Then, the major partner determines the pace of the projects. "We are going to do more sewage, less water – the population is connected to the sewage issue, water is solved". Then, this is a question of decision, of who makes the final decision. Then, the State influences the amount and the "speed" of investments (Respondent Beta 02).

The influence of the State is not only on strategies and on investments. It has also a strong impact on the financial result of the company. The model of the State as "leviathan as a major investor" establishes that the organization can become inefficient. Furthermore, controlled prices and in excess debt may require public financial resources in order to cover its debts (Musacchio & Lazzarini, 2015). The impact of the recent political decision of reducing the rate for a lower consumption in Beta´s financial performance is outstanding, at least. For the same revenue from 2013 and 2014 figures, there was a drop of 50% in the net margin.

Interesting to observe that ARSESP, the regulatory agency is cited by the respondents not as a strong component of the institutional elements. This may be explained by the strong participation of the State as the major shareholder. The influence of the State, therefore, is direct rather than indirect. This aspect is highlighted in a document issued by Beta organization within its corporate governance (Beta Risk Evaluation 2015). It clearly defines Beta´s situation:

> "As the State is the major shareholder, the São Paulo State determines the operational policies and strategies of the organization, elects the majority of the board members and nominates the management level of the organization. The State, in the past, has already directed the organization to participate in business and invest with political objectives, but not necessarily improving the organization result. Future changes in the politics by the State can promote changes in all or part of the board member which can cause and adverse effect on the business and its operational results".

The regulatory agency, according to its Annual Report (ARSESP, 2013), seems to have a primary function of fiscalization and definition of rules for providing services to the users. The report is, basically, a compilation of non-conformances issued by the agency and penalties established. Despite an indication that the agency has started the control of the specific indicators of contract performance (for instance, residences covered by water and sewage collection), the report does not give any number on the performance of Beta in relation to these indicators and/or any target

established by the agency. The key performance indicators are a replica of the numbers established by Beta´s on its Annual Sustainability Report. As a conclusion, the regulative forces seem to be exerted by the State rather than the regulatory agency.

The other institutional elements are considered important by the respondents but their impact on organizational structure seems to be more "philosophical" rather than practical.

> […] The cultural and social aspects are important. The legislation is recent, the ARSESP is recent. Then, the majority part of what is regulated, Beta had already fulfilled. It is an edge organization, it has all the procedures in place, and has, as a value, the respect to the society…It has the obligation to provide a quality service to the population, the universalization of the services (Respondent Beta 03).

Table 17 provides the most significant aspects of the institutional elements on Beta organization.

Table 17: Beta organization and the institutional elements

Institutional Element	Important Factor	Impact on Alpha organization
Regulative (State)	Political influence	– Indication of Board members; – President nomination can substantially change as a result of changes in the political situation; – State as "Leviathan as a major investor" – with impacts on price control and financial results of the organization.
Regulative (ARSESP)	Fiscalization	– Restricted impact on organization.
	Contract key performance indicators	– Key performances indicators controlled by agency are based on what Beta already performs.
Normative	Rules and procedures	– Aspect not identified in the respondents.
Cultural-cognitive	Universalization, quality of services	– The cultural component of the institutional elements seems not to have an impact on Beta.

Source: Prepared by author

4.4.3 Alpha and Beta comparison

A comparison between Alpha and Beta organization regarding the institutional elements reveals interesting aspects. The regulative force is the strongest component of the institutional elements, although the influence is exerted in different ways. For Alpha, the influence is made directly by ARSESP using financial incentives and/or penalties during the annual and five-year utility rate

revision. The targets for expansion have a clear impact on how organization defines its strategies. It can be stated that this influence is direct (because it forces Alpha to be efficient in infrastructure project selection) and, at the same time, it has indirect implications. For instance, organization had changed its structure from functional to regional in order to capture the residential market. Its sale forces used to be made by employees and now, there are indirect sales person. It seems that the agency uses a well-planned model to shape organizational efficiency.

On the other hand, for Beta, State directly influences the organizational structure and financial performance of the organization. The utility rate is defined by the State and the investments are approved by a majority board members nominated by the State.

The other forces of the institutional elements are more predominant in Alpha organization. The normative element is inherited from the previous organization as well as its culture on safety operation. For Beta, no impact on its strategies and operations could be identified. Figure 5 makes a comparison on both organizations.

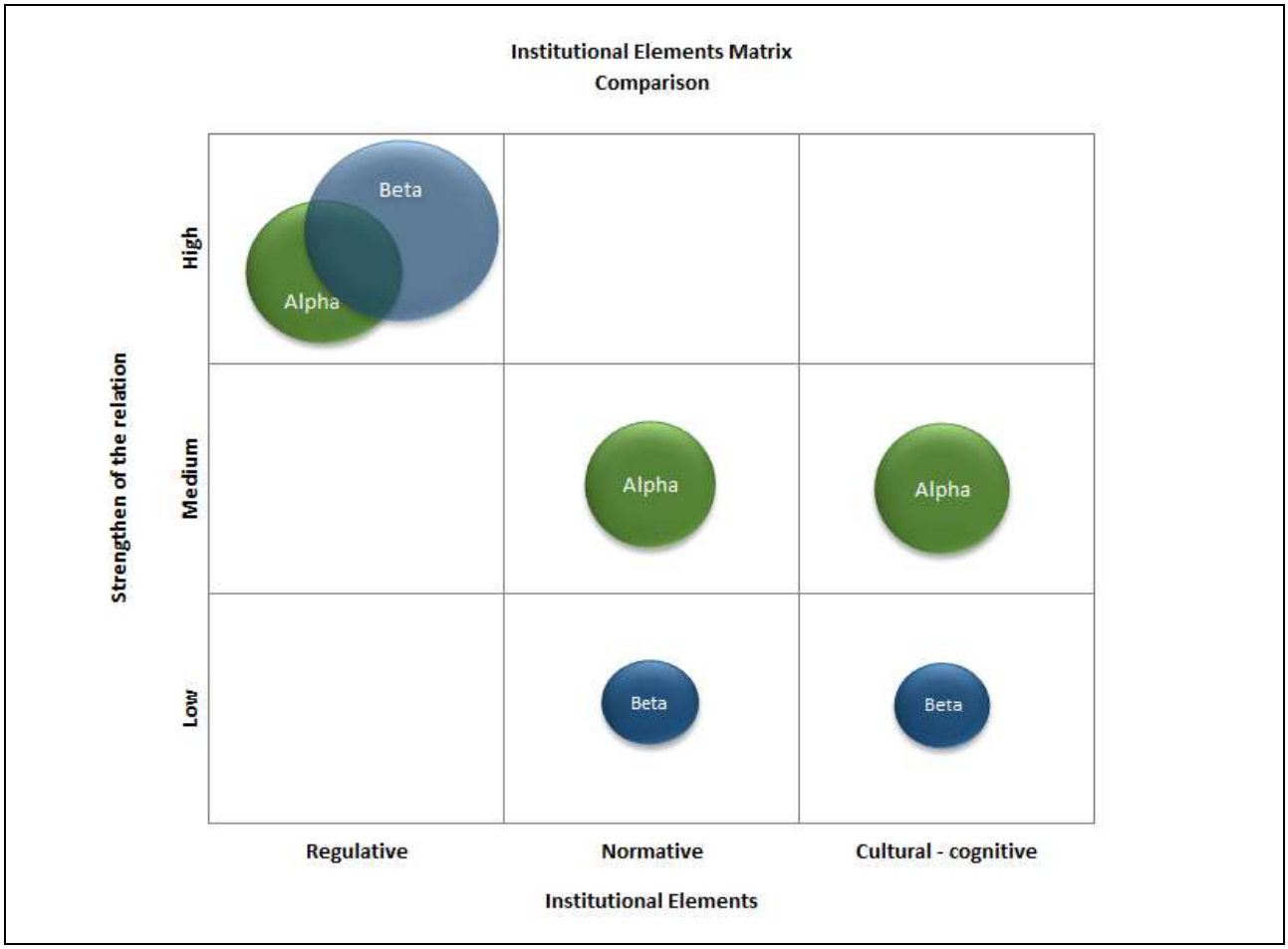

Figure 5: Institutional Elements – Alpha and Beta comparison

Source: Prepared by author

Regarding Figure 5, the sizes of the sphere are a qualitative evaluation of its relative influence on the organizational structure and strategies. In order to evaluate the "strength" of the relation, it was used the following definition:

- *High*: The Institutional Element has an observed impact on the organization, based on respondent's information and secondary sources of information. The impact influences organization strategy, *modus of operandi*, operational processes, as example;
- *Medium*: In this case, there is an influence, although not as strong as the one considered "high" as the criteria identified above. It could be observed some influence on particular aspect of organizational strategies and characteristics;
- *Low*: No influence of the Institutional Element.

Finally, Table 18 provides an evaluation of the differences between Alpha and Beta.

Table 18: Alpha and Beta – differences on institutional elements

Differences	Regulative	Normative	Cultural-cognitive
Alpha	- The regulatory agency as the most influential regulative element.	- Normative aspects from first owner; - Guidelines on "how to" in operations and management.	- Safety culture – strong and resilient to the change of owners; - New culture being introduced – focus on client and performance.
Beta	- State as the most influential regulative element; - High impact on financial performance due to political changes.	- Not a strong institutional element.	- Not a strong institutional element.

Source: Prepared by author

4.5 BOP SPECIFICITIES AND STRATEGIES TO ACCESS THE BOP MARKET

The BoP has specific characteristics, which differs then from the top of the pyramid. These differences require organizations to innovate in their strategies to adapt their services to this potential market. These organizations, when targeting this market, need to break the rules of the game, establish *what* new products are required (value proposition to meet the demands of the BoP market) and *how* to promote their services (Anderson & Markides, 2007). The differences relates to the low income, the irregularities of their income and geographical concentration or dispersion (Rivera-Santos & Rufín, 2010). These major differences between BoP and ToP require different approaches to market the BoP.

In this subchapter, the specificities of the BoP market for both Alpha and Beta organizations are explored. Propositions for this part of the study relates to the context of the BoP market. The **third proposition** establishes that strategies to access BoP market by USO are different from ones at the ToP. **Fourth proposition** states that the differences between BoP and ToP require a different approach for project execution.

Following the same approach as the previous subchapter, Alpha organization is presented followed by Beta. A comparison between Alpha and Beta is also provided. The analysis was made in order to identify "*who"* the clients targeted by USO (identification of clients) were and the characteristics of this market. Secondly, it was analyzed *"what"* products were developed by USO and, finally, the definition of *"how"* these products were planned to reach the BoP market.

4.5.1 Alpha organization

In Alpha organization, the regulatory agency establishes different mechanisms to incentive the service universalization, as already discussed. The most significant ones (see Table 16) are the volume of the gas to be purchased (the concept of *take-or-pay*) and the "x factor", a premium for the accomplishment of the expansion. There is no compulsory regulation made by ARSESP to serve the BoP market.

> […] No, we do not have the obligation to provide our services for the lower classes. There is this rule to stimulate the growth, to direct the organization to this. You exhaust the expansion to the biggest clients and then, by capillarity, you reach the lowest class. This is note explicit; it is like a poker game. This access was not in the concession contract (Respondent Alpha 01).

> […] It *(the regulatory agency)* does not establish social class to be served. Then, what the organization does is to define the market segment where it can grow (Respondent Alpha 5).

The privatization of the USO occurred on 1999 when Alpha won the privatization process. After privatization, there was the need to use the gas made available by the contract with Petrobras (*take-or-pay*). Naturally, the initial strategy of Alpha was to target the great gas consumers, i.e., industries. In 2003, according to its Annual Report, industries represented 79% of the volume negotiated by Alpha. The increased volume for the industrial market segment nearly doubled from 2000 to 2003 (95% increase). In the same period, revenues increased by 266%. This focus is even clearer when comparing 2005 and 2004. Industrial volume increased 9,3% whereas the residential and commercial market increased 1,5% only (data from Alpha Annual Report 2005). Respondent's statements clearly confirm these new focuses.

> […] We lived the privatization cycles: from 1999 to 2004, our focus was the great expansions for the industries to generate cash, volume. And, we had the take-or-pay, i.e., if you did not take the gas, you had to pay it anyway. After this initial period, the great expansion to the residential area started, from 2005 to 2008. And in 2008, we started to mobilize these projects, these great project for the *retail* (emphasis added) (Respondent Alpha 2).

> […] The cycle where I got the great industries ended. Increasingly, I enter in the consumer market because there are no greater consumers. In other words, as I have an expansion target, and I cannot expand as much as I would like in the industrial market, I started focusing in the consumer market. (Respondent Alpha 2).

In 2006 and 2007, the focus of the company started to be the residential market. For the first time, its Annual Report stated (2007):

> "Alpha has focused on growth in the residential and commercial segments. The residential and commercial segments comprise far more customers than the industrial segment but take considerably less gas per customer. Supply lines must therefore be properly laid out to avoid idle capacity and waste. Implementation of an Integrated Pavement Pipeline to give more efficient access to homes, shops and small businesses has been a key driver of the company's vigorous expansion in this market".

Results from this new strategy can be noticed on 2008 report, with a record of new connections to residential market (almost 82.000 new residential connections). As per 2008 Annual Report, the residential market was the main expansion strategy of the organization, with 12% increase in the number of residential customers. For Alpha organization, the strategy developed was to reach the residential market and, as a consequence, the BoP market. When argued about strategies to access the BoP market, the responses were usually directed to the strategies to reach the residential market. Respondents have a perception of the characteristics of the market at the residential area and the consumers at the BoP. Furthermore, for the extreme poor, according to the respondents, it is necessary to have a minimum infrastructure.

> […] …talking about our base of the pyramid, the poorest, we are not able to access, usually it is a region where there is not a stable street lay out or even a sidewalk where to install a pipeline (Respondent Alpha 3).

When analyzing the characteristics of the BoP market, some common aspects are retrieved from the respondents. For instance, the market seems to be more emotional and the approach for sale is different. It has to consider other factors rather than the utility service rate. The existent prejudice that the poor cannot afford other products or services can jeopardize sales. The BoP market has a

perception that the service provided by Alpha will bring a valorization of their house. On the other hand, due to the lack of information, there are concerns about the safety operation of the gas on pipes. The sales person has to speak their language, not in a condescending approach.

> […] They already have the capacity to acquire new products and services. They consume, but not any crap – do not come with second class Chinese products, Now, they talk to each other, you have to adapt your services to their pocket (Respondent Alpha 2).

> […] They value *(our services)*, which is a better infrastructure. "Damn it, now I have natural gas". This is a reason for them to believe that this *(his/her living area)* is becoming a better place, now I have NET *(cable TV)*, I have gas. (Respondent Alpha 2)

> […] The market *(BoP)* is more emotional, I see, the interpersonal relation is healthier at the BoP. Now, one point, I believe we have to be careful as the people think that they are much more retrograde than they really are. Some people from our organization visit these customers and see that, 3 years ago, the house had a LED television (Respondent Alpha 2).

> [...] ... first, I have to convince then that gas is safe, then I can sell (Respondent Alpha 2).

It has to be noted that there is no specific action made by Alpha to identify the BoP characteristics. Strategies established are developed to reach the residential market, which includes the BoP market. Actions are related to a greater view of what the residential market is. In this sense, strategies to reach the consumer market produced great changes to the way the organization was structured and the definition of strategies. For instance, a new division was structured to serve this market, "Consumer Expansion Division". Other institutional element, the existence of a subsided substitute product (LPG cylinder), also has impact on the strategies developed by Alpha organization. The actual challenge is to create value to the consumer. An even more important, the price of the LPG cylinder is subsided. As highlighted in Alpha Annual Report dated 2008:

> "In order to reach the residential consumer, Alpha started offering a proposal of value in our service, tailored to every client profile".

As an example of this strategy, it is the project named "better shower" – this project offers gas water heater, a specific showerhead developed with a partner and the hydraulic installation, with a financing of the investment in 24 times. However, these were not the only changes. A new system for distribution had to be developed, as they need to reach a great number of users. It also required a new approach to the subcontracting work – usually, for the same work at the street, Alpha used to

have more than two subcontractors (for example, one to open the street, another to install the tubes, another to close etc.). For this kind of installation, only one subcontractor was used.

> […] Obviously, there was a technological change. Why? Because in order to have this level of expansion *(residential)*, instead of working in cluster of residential apartments, you had to take great volumes of gas, a higher pressure and greater pipeline network. You had much more connections, this is a very important question. The design had to change. You were required to have a greater speed in the work at the streets. But to be faster, you had to start working in the sidewalks instead of the street, you did not have to interrupt the traffic of vehicles, there is no need to obtain traffic authority permit. Working in sidewalks brought the safety issue, and then you had to reduce the pressure and work with larger tube diameters. Then you had changes, these technological changes required a consultation process, it was explained and understood *(with regulatory agency)*. (Respondent Alpha 3).

Another aspect raised from the interviews was the use of people from the geographical area to sell the service and to work at the subcontractor. This was not identified as a clear strategy; it was a natural consequence of the selection process. As noted by one of the respondents:

> […] Then, our agent *(sales)* has to have this perception *(different approach for sale)*, the approach is completely different, for each *(market)* segment and for each public, the approach is different. Then, I realized that I have less headaches in the operational site, because the person that I subcontracted came from there. They speak the same language. (Respondent Alpha 2)

According to a systematic review of the articles about researches made at the BoP, Kolk, Rivera-Santos, and Rufín (2014), the authors identified some researches where the poor are positioned not only as a consumer but also as an entrepreneurs (and suppliers) of the services. In an analysis of a series of case studies, Filardi and Fischmann (2015) also identified the use of the poor as supplier of the organization service. The case of L´Oréal is an example of this entrepreneur model. In summary, L´Oréal supported a micro distribution system in the Favela do Alemao (a slum in Rio de Janeiro) where hair stylist (beauty salon) was trained for the correct use of their products.

Table 19 summarizes the characteristics of the BoP market and the strategies to access it.

Table 19: Alpha – BoP specificities and strategies

Specificities of the BoP market	Strategic Innovation Dimension	Strategies
- Do not accept bad quality services; - No differences on bad debts when compared to ToP;	***Who*** the new customers are	- Marketing complete restructuring – market research, identification of specific client needs and client profile, training of the sales force, indirect sales by partner organizations;

Specificities of the BoP market	Strategic Innovation Dimension	Strategies
- Valorization of the house with the service acquired; - Existing prejudice that the poor cannot afford other products and service can jeopardize the sales; - Fear of the safety of the gas installation.		- New management area "Consumer Expansion Division" reporting to the CEO and integrating the different process required to meet these market demands.
	What new products and services and value propositions have to be offered to these new customers	- New proposal of value and products for each client profile; - Examples, "better shower", financing the acquisition of complementary products.
	How these new products and services must be marketed	- Re-definition of internal process; - Development of new materials (pipeline) for the expansion to the residential market – pilot projects; - A new approach for subcontracting – one company performing all the services; - Design of a new working process – sidewalks instead of streets; - New training for future demands; - Regionalization of the organization (from previous functional areas); - New proposal of value and products for each client profile; - Financing of the acquisition of complementary products.

Source: Prepared by author based on Anderson and Markides (2007)

4.5.2 Beta organization

Beta Sustainability Report, dated 2014, indicates that the "water index service" is 99% or more. This is a clear indicator that the bylaws of the organization are fulfilled: the provision of basic sanitation services with the universalization purpose. On the other hand, indicators of sewage collection and treatment, 85% and 77% still need improvement although a better performance on these indicators could be identified (78% and 61% back to 2005). For sewage, the investments follow the logics of any business plan: definition of a master plan for the organization and the deployment of specific actions to Beta´s regional and functional areas. These are based on a series of internal and external factors, with the State influencing the decisions taken, as already discussed in previous subchapters. The main strategy and vision of the future of Beta´s organization are reinforced in their Annual Sustainability Report dated 2014: the universalization of services through a series of infrastructure projects.

> […] Let´s put this way: in our region, we have 100% of water supply. We do not have where to expand, now it is only demographical growth (Respondent Beta 3).

> […] Then, the "water master plan" contemplates a global analysis of the metropolitan area of São Paulo, or other regions where Beta is present. We have the master plan; they direct the structuring projects. These consider the water sources, the reservoirs, water mains. Public, goals. (Respondent Beta 2).

For water services, a continuous concern of the organization is related to the losses of water due to leaking and theft. This is measured by an index, which considers the total volume of water "produced" and compared to the volume of water "invoiced". In 2014, this index reached 21% (it was 26% in 2009). Beta has a program to reduce the losses, involving the renewal of existing installation, the adequate maintenance of the existing pipelines and the management of the pressures in the pipelines. In order to improve this index, in 2009, Beta has started a program (Corporate Program for the Reduction of Losses) to reduce the physical losses and apparent losses, a volume lost due to clandestine connections.

Another important factor is the requirement to connect only legalized areas. Beta organization is not allowed by law to provide their services in illegal or invaded areas. The exception occurs only upon judicial authorization.

> […] In our city, what we call the legal city, we supply 100% *(water services)*. That is, we cannot enter illegal areas, unless there is a court decision, in an invaded are. No one can. When there is a request for connection, the first thing we do is to ask for the property documentation. We ask for the person and confirm it. If any doubt arises, we make an analysis to make sure the area is legal. (Respondent Beta 5).

These factors altogether (the universalization of the services for water distribution and the requirement for the area to be legal), direct the projects to the BoP to reduce the losses and to legalize the connections of existing residential areas. These projects, selected at a regional basis, may also be demanded by the community themselves. In order to convince their potential customers to legalize their connections, Beta offers a partial forgiveness of their debt and a social rate. Table 20 is a summary of the characteristics of the BoP market and strategies used by Beta to reach this market.

Table 20: Beta – BoP specificities and strategies

Specificities of the BoP market	Strategic Innovation Dimension	Strategies
- A need to be social included – the access to a formal water bill allows the person to be considered a person, open a bank account, get credit; - Illegal connections, great debt with company due to inadequate connections; - Great involvement of local politicians; - Involvement of community leader to convince community to accept Beta offer for legalizations of services.	***Who*** the new customer is	- Identification is made by social classes; - Beta responds to direct demands of the community.
	What new products and services and value propositions have to be offered to these new customers	- No new product is offered – rather, local community is offered the opportunity to legalize their connections; - A social rate is established (50%) of the normal price; - Partial forgiveness of the existing debts.
	How these new products and services must be marketed	- The selection of the communities is based on the knowledge of the area by the responsible person plus the contacts made by community leaders; - Strong involvement with community leaders.

Source: Prepared by author based on Anderson and Markides (2007)

4.5.3 Alpha and Beta comparison

Both organizations have strategies to reach the BoP market but with distinctive characteristics. The characteristics of the BoP market they serve are different. First distinctive factor relates to the targeting process or driving mechanisms to reach the BoP market. Whereas for Beta, the strategies have a social component, for Alpha, strategies are pure business. Beta is concerned in providing its service to the BoP market to improve their life and, at the same time, reducing its losses. Alpha, on the other hand, aims to increase their revenues. In Beta, a social utility rate and a forgiveness of the debt is the major incentive to bring more clients. For Alpha, the driving force to bring more clients is to add value to their services.

In both organizations, there is a concern to finance somehow the installation of their service. Alpha provides their clients with the possibility of financing the complementary products (like heaters) for 24 months for instance. On the other hand, Beta is concerned to provide the clients at the BoP with a social rate.

Figure 6 represents the organizational strategies and the interface with the State.

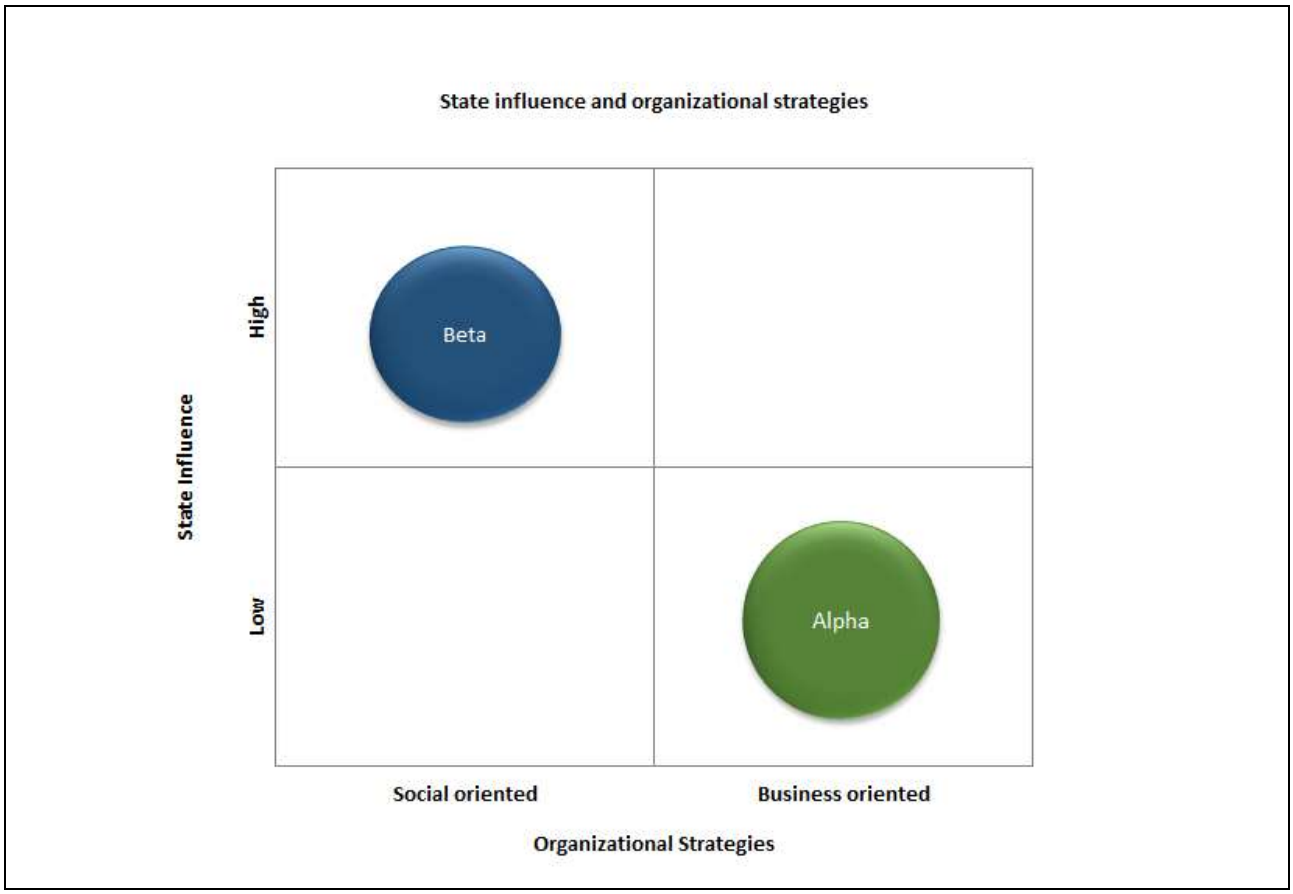

Figure 6: State influence and organizational strategies – Alpha and Beta comparison
Source: Prepared by author

Last important aspect to be noted is the lack of any direct influence of the regulatory agency on the strategies to reach the BoP market. As already discussed, ARSESP does not direct establish any requirement for reaching the BoP market and, as a consequence, strategies made by Alpha and Beta have different driving forces. Table 21 summarizes the findings of this evaluation.

Table 21: Alpha and Beta – differences strategic innovation dimensions

Organization	BoP main characteristics	BoP: Strategic Innovation Dimension		
		Who	**What**	**How**
Alpha	- No bad quality services; - House valorization.	- Business dimension; - Indirect target – residential areas and BoP market.	- Product financing; - Value proposition to compete with substitute products.	- Process restructuring; - New functional areas for market development; - New methodologies for product distribution.

Organization	BoP main characteristics	BoP: Strategic Innovation Dimension		
		Who	**What**	**How**
Beta	- Social inclusion; - Community leader's involvement.	- Social dimension; - Legalization of areas.	- Debt forgiveness; - Product financing.	- Community involvement; - Legal enforcement by law.

Source: Prepared by author

4.6 MANAGEMENT OF COMPLEX PROJECTS AT THE BOP

Project management is an important aspect of management in organizations. PM concepts are used to change the *"status quo"*. Despite a general theory of project management has not already been established yet, its concepts have evolved. The mechanistic view of "plan what you are going to do" and "do what you planned" seems not to be able to cope with the dynamics of project management. The idea of controlling all aspects of the project to assure predictable outcomes is not enough.

Complexities of the internal and external environment, the institutional environment where projects are developed, produce innumerous constraints making its management more complex. Particularly, the USO have to develop and implement these projects at an institutional environmental composed by regulative, normative and cultural-cognitive forces. Last, projects at the BoP have all characteristics of complex projects: BoP market has distinct characteristics of the ToP. The products have to have distinguished characteristics to be able to reach the BoP market and the distribution system has to be different, as example.

In this subchapter, the last three propositions are analyzed. The **fifth proposition** states that the projects at the BoP present characteristics of complex projects. **Sixth proposition** establishes that the management of projects to access the BoP market consider the complexity dimensions. Last, the **seventh proposition** relates to the participation of the State in the execution of project. The greater the participation of the State, the more difficult the project execution is. In order to provide a comprehensive analysis of the complexities of projects, the dimensions analyzed for each of the organizations were *structural, uncertainty, dynamics, pace* and *socio-political.*

4.6.1 Alpha organization

Alpha organization does not develop specific projects for the BoP market. Rather, their projects are developed to reach the residential market and, as consequence, the BoP market. The analysis of the project characteristics for the Alpha residential market, however, is performed as it was considered that its results can be used to better understand project´s characteristics.

The interference of the State in project execution is not direct, being a project for the BoP market or not. As already discussed, the State interference through ARSESP is made by the definition of expansion targets and the "x factor". The project selection to comply with these two incentive factors is an internal decision.

> […] No, there was no interference in project execution. This *(residential area)* was purely a business decision. This is a market where we can have success in the sales. From this moment on, we understand that the people of this market have income and we can extend the pipelines (Respondent Alpha 2).

> […] There was no influence in project execution itself. Most of the time, you have to technically consult *(ARSESP)* (Respondent Alpha 1).

> […] It (ARSESP) influences the expansion of the pipelines *(gas)*. Not where to expand. In fact, today what happens is the fact that I had exhausted my construction in areas B and A. You are forced to expand to other areas. That is the only place you can expand (Respondent Alpha 4).

The projects required for the expansion of Alpha´s gas pipelines can be classified into two distinctive groups. First, there are projects decided at corporate levels, with impacts on organization functions and these needs to be deployed throughout Alpha´s functions. The change of focus required Alpha to develop projects for Operational Excellence, Commercial Excellence and the Integrated Expansion Project, as noted in Alpha Annual Report 2009.

> "The strategy was maintained and the growth of the number of residential clients was possible even in a difficult year *(2008)* with huge challenges in the international economic scenario. The growing strategy, with the achievement of new consumers, was supported by the Operational Excellence, Commercial Excellence which provided the Integrated Expansion Project. The Organization strategy complies with the commitment to the regulatory agency to universalize the natural gas with attractive offers for different classes of clients".

As an example, an expansion to residential area implies a change in the methodology for gas distribution – from the pavement of the streets to the sidewalks. The Alpha Annual Report indicates:

> "Integrated Planning and Performance Management intensified the integration of business opportunities in 2006, in order to align the company with its new market goals and new focus on expansion in the residential segment (as opposed to the previous focus on industry), without overlooking the challenges of guaranteeing a gas supply sufficient for its needs. The Integrated Planning and Performance team held a meeting with other departments to begin a thorough review of all ongoing projects as well as those in the pipeline. The review covered targets, timetables and critical activities for each project, affording an integrated vision of responsibilities for everyone involved".

The results of these projects can be identified on Alpha Annual Report (2007). The expansion of the gas pipeline reached 500 kilometers, extending their operation to the eastern portion of Sao Paulo metropolitan area. Constructions to expand to Santos and Tabau cities as well as Campinas were under development. In 2008, Alpha achieved a record of residential installations with more than 80.000 new residential consumers. As noted by their president (Alpha 2008 Annual Report).

> "In 2008, Alpha invested BRL 403 million in the expansion of the distribution pipeline, mainly in the residential market, consolidating the companies' focus in the expansion of this market segment".

Once the expansion reached the residences, Alpha developed a series of projects to better identify "who" the customers were and their specific need. They also developed an analysis on how to add value to its service. As already discussed, the existence of substitute products required Alpha to identify specific projects to "sell" their new existent capacity to households.

> […] The project was named "best shower". It was developed for this class *(social class C and D)* to substitute the showerhead they had in the bathroom. It has the objective to provide an additional value. We say that the people at C and D class feel they are having a hotel shower, for instance. Then, they are purchasing a product that is going to value their environment and make them feel better. (Respondent Alpha 3).

> […] Yes, we have project for classes C, D and E. There is, for instance, the "only cooker" *(a project to install gas only for stoves/cookers)*. Before, the client had to connect heater and cooker. Then, most of the times, it was financially impracticable to connect the heater. Because the cost was higher, it was developed the project "only cooker" (Respondent Alpha 4).

In terms of ***structural complexities***, the existence of a large number of distinct and interdependent elements like size, variety and interdependence, different aspects are related to the Alpha's project. First, there was the need to change their pipeline network – for large consumers, you need great volume of gas at a low pressure. For residential, Alpha had to change its model of pipeline network: low volume but with a greater network of interconnections. This more interconnected network required that the pipeline was installed under sidewalks rather than the street pavement. The

construction in sidewalks causes problems for the person who lives at the street – therefore, the pace of the construction process had to be considered as a critical factor. Due to the required pace for the projects, it was necessary to change the profile of the suppliers to perform the contracts. Instead multiple contractors, each responsible for a step of the construction, Alpha had to develop one supplier for the entire construction.

> […] Because, for you to have an expansion level, instead of working with a cluster of residential buildings where you had to have a greater pressure, a greater pipeline network, you start working with smaller networks, but very interconnected. It is a very important question. The pipeline network structure had to change. And then you need to speed up the construction. Then, instead of making it at the street pavement, we had to change to sidewalk, because at the sidewalk, you have a greater speed to work (Respondent Alpha 2).

> […] Then, you realize that you can expand here *(residential areas).* This generate a number of small projects. You had to connect houses in a cheaper way. What is the solution we have to have for connecting houses? Then, we went to Argentina to see how they were doing (Respondent Alpha 2).

> […] It has a greater complexity *(residential connections)* than to construct pipelines in a direct line. You have to have an engineering project considering these new loads, with adequate diameters, in order not to have problems. But, from the technological point of view, it is more sophisticated, because I have stations to control the pressures, I have valves to operate (Respondent Alpha 4).

> "The non-destructive method allows the installation of pipelines with minimum impacts on the construction site. It has been used for steel pipe, high density polyethylene and other materials. In case of urban constructions, there is a significant reduction in the impact caused to the pavement, a low impact on the local traffic and reduction on the generated sold wastes" *(Alpha statement on their site).*

The impact of the strategy to expand to new markets has had further impacts on organization business model. Recently (2014 and 2015), Alpha has started the gas distribution to Campos do Jordao (city of the State of Sao Paulo, distant 180 kilometers from the capital city). The city is located at an elevation of 1628 meters (São Paulo capital city ranges from 300 to 900 meters). For this particular case, Alpha is going to use a complete different "logistic". Instead of using pipelines, Alpha is going to distribute gas by trucks (liquefied natural gas): the project included a gas loading station in Sao Paulo and an unloading station in Campos do Jordao. Final distribution is going to be through pipelines network (project named as *structuring*). This project is under construction and it will require investments of BRL 85 million, according to Alpha.

Uncertainty complexities relate to the gap between the amount of information and knowledge. It may be defined in terms of variety (the probability and chance of an event), lack of information, or lack of agreement over current and future situation. Alpha is much more affected by uncertainty in

terms of the regulatory agency definitions than uncertainty from the execution of the projects. In other words, the selection of expansion projects is subject to the uncertainty from the regulatory agency, ARSESP.

As already discussed, ARSESP performs a five-year review cycle of the concession contract. Last review should have been done last 2014, it was delayed to 2015 and recently, a new postpone to 2016 has been defined. Once projects are decided at corporate level, the uncertainties during executions seem not to be relevant. The only aspect identified about uncertainty was related to the great number of interested parties. Even the uncertainty related to the new technology aspect of the expansion projects does not configure an important factor.

> […] It was last year *(revision on 2014),* the people from ARSESP postponed, it was going to be this year *(2015)* and now it was transferred to January. That is because an ARSESP´s lack of structure. This causes very high uncertainty as you do not know where to expand (Respondent Alpha 4).

> […] Next year *(revision).* We had significant changes on our strategies following the rate revision. In terms of change in our strategies due to rate revision, it is very strong (Respondent Alpha 1).

> […] We also have, in project uncertainty, we have a decision process, a very strong governance from the decision to the execution of a project. And, we have a dependence on other stakeholders, as city hall, that provide the permit to use the public area, which is different from one place to the other. Besides, the distribution of gas is more complex than electrical energy (Respondent Alpha 1).

The ***dynamics complexities*** refer to the changes in projects, *"outside-in"* or *"inside-in"*. The perception from the interviews and secondary source of information is that the dynamic, for Alpha, refers to the need to coordinate different projects to deploy the strategy, as commercial, operational processes, supply, marketing and technological aspects, as mentioned before. In terms of project execution, the dynamics refers to the interface with the houses in the surrounding of the construction site. The only aspect identified about uncertainty was related to the great number of interested parties.

> […] Then, we had a series of small projects, in different areas of expertise, from engineering to management. How do you coordinate this entire project? How do you coordinate a system that will sell, then install, and, at the same time, construct the pipeline network, connect? And, how do you communicate everything to everybody at the same time? (Respondent Alpha 1).

> […] The external interference, the community within these projects is great. It does not matter, a construction in front of your house, it interferes with the life of everybody in the surroundings (Respondent Alpha 2).

The ***pace complexities*** refer to the urgency and criticality of time goals. It can be defined as the rate at which projects are or should be delivered. For the projects executed by Alpha, the pace is an important factor. First, the faster an expansion is made, the faster potential clients are connected and revenues start to flow to Alpha. Furthermore, the required pace of the project has to be established to interfere as less as possible in the surrounding areas of the construction.

> […] Then, from the marketing point of view, it was revolutionary. From the engineering point of view, we started constructing pipelines in a faster pace, we need to have engineering processes that need to be faster, safety evaluations faster and so on. We constructed 20 kilometers in a month compared to 3 projects of 20 kilometers with a duration of one year. In Campinas, we constructed 162 kilometers in a year and half. Then, the pace of the execution of the construction is very high. And this requires the management of the interfaces, how we work with the city hall, how we control a tremendous amount of installation team works that make their job at our client. Then, you have a challenge to manage the micro, which is very difficult (Respondent Alpha 2)

> […] Then we had to work in such a way to speed up the construction (Respondent Alpha 4).

The last dimension of complex projects, ***social-political complexities***, relates to the potentially conflicting interests and difficult personalities. The interfaces are with the potential client who has a construction in front of his/her house. The objective is to deal with the dissatisfaction during construction. The other aspect in terms of social-political relates to the permit that has to be obtained from the city hall. Alpha has to pay for the use of the land, and, therefore, has to negotiate the values involved. Nevertheless, the aspect seems not to be relevant to the execution phase of Alpha´s projects. Table 22 is a summary of the findings.

Table 22: Alpha and the complexities of projects at BoP

Dimension	Relevance	Impacts on Alpha
Structural *Large number of distinct and interdependent elements*	High	- New pipeline system; - New construction system (from street pavement to sidewalks); - Faster pace of the construction; - New model of subcontracting; - Development of new model of gas distribution (from “pure” pipelines to “truck and pipeline network).
Uncertainty *Gap between the amount of information and knowledge*	Low (in project execution)	- Once project is defined, uncertainty is not relevant.
	High (in project selection at corporate level)	- Uncertainty from the five year reviewing cycle from ARSESP.

Dimension	Relevance	Impacts on Alpha
Dynamics *Changes in projects – "outside-in" and "inside-out"*	High	- Need to coordinate different projects and/or functionalities required to install their services in the residential segment.
Pace *Urgency and criticality of time goals*	High	- Reduce impact of the construction in the surrounding area; - Starting the selling process in order to generate cash flows.
Socio-political *Potentially conflicting interests and difficult personalities*	Low	- Interface with potential client (during the execution of the projects for residential area); - Payment for the use of the soil to city hall.

Source: Prepared by author

The conclusions for Alpha projects are that the influence of the State is low during project execution, being a project for the BoP market or other projects (industrial, for instance). On the other hand, the influence of the State (through the regulatory agency) is very strong on strategies definition. In this sense, the project selection is impacted by the State. Once projects have been defined, the execution of projects for residential (again, regardless of which residential social class segment) present complexities characteristics of high relevance in terms of *structural*, *dynamics* and *pace* dimensions.

4.6.2 Beta organization

Differently from Alpha organization, Beta does perform projects specifically for the BoP, according to the respondents. The main objective of these projects is not only to provide water services to the BoP market but also regularize the water connections, reduce the water losses due to the illegal and low quality connections services. Despite the hydric crises in the Sao Paulo Metropolitan Area, Beta´s Sustainability Report dated 2014 still describe actions to reduce the water losses. It´s clear Beta´s concern with investments to reduce the possibility of water rationing through investments in infrastructure – availability of water fountains, production capacity and water transportation. As mentioned, water losses reached 21,3% in 2014 (KPI Invoice Losses from Water) – actions to reduce are directed to maintenance, renewal of assets and inspection of illegal connections. Betas program related to these actions is named "Losses Reduction Corporative Program".

The International Water Association (IWA - International Water Association, 2015) establishes a terminology related to losses of water. Accordingly, Non-Revenue Water (NRW) has three

components: (i) unbilled authorized consumption, (ii) apparent losses (water theft and metering inaccuracies), (iii) real losses (from transmission mains, storage facilities, distribution mains or service connections). According to Pedersen and Klee (2013), best performances USO have a NRW index of 10%. For instance, urban water loss in Denmark is 7% on average. On the other hand, the same data reaches 36,8% for South Africa (South African Water Research Commission, 2013).

Based on these numbers, Beta clearly needs improvement. The NRW causes investments in additional water production and distribution system with a higher operational cost. The Beta Risk Evaluation document dated 2015 (referring to 2014 fiscal year) establishes a business plan to increase the operational efficiency and reduce the losses of water. Furthermore, Beta´s key performance indicator related to the losses of water (21,4%, 2014) does not include estimated losses associated to the water provided for slums. And, finally, data are not stratified as IWA definitions. Therefore, an estimated of the apparent losses is not possible. Nevertheless, the financial impact of these losses cannot be neglected.

As already discussed, the State participation in Beta´s organization is high. Sao Paulo State owns Beta organization and, therefore, has a great impact on Beta´s performance and strategies. When analyzing the influence on project execution in the context of the BoP, the respondent's interviews indicate a low influence on these projects. These projects are decided at regional level, not at corporate level. In fact, the projects performed at the BoP with the objective to reduce loss are locally decided, rather than a top down decision.

> […] From here *(regional level)*, it *(the project)* is sent to the Director, due to the approval process. But, it does not go to the president. It goes to the Regional Director. The regulatory agency does not approve the project; the approval is made internally (Respondent Beta 1).

> […] The State absolutely does not influence the project execution or even the definition of these projects *(projects at the BoP)*. This is ours, it's an internal issue (Respondent Beta 2).

> […] In fact, the projects to legalize connections from a slum should be to everyone, but we do not have the work force to conduct such projects. Therefore, we perform in the region with the approval from the Director of the regional area (Respondent Beta 5).

For these projects, Beta organization uses a system to classify the BoP market: IPVS – Índice Paulista de Vulnerabilidade Social *(Social Vulnerability Sao Paulo Index)*. IPVS is an index established by Sao Paulo State based on the concept that the income is not the only factor to measure poverty. The index intends to capture the lack of control of the resources that affect the well-being of the persons, like access to the educational system, health conditions and other factors. It is composed

of seven groups of people, being the sixth and seventh the most vulnerable (Assembleia Legislativa do Estado de São Paulo, 2010).

Basically, projects for the BoP can be divided into two major groups: the first group is developed in order to legalize greater areas, like slums or illegally occupied areas. In this case, there is a strong social component of the project. These projects can reach 600 families and are performed together with the city hall involved.

> […] We did this project, when I was in "Region A". There was a dispute, we had two major regularizations. There was an illegal housing development, the City Hall tried to legalize it. The judicial power authorized Beta to install the water and sanitation service (Respondent Beta 1).

The other group of projects is smaller and decided on a regional basis. The projects are selected based on the IPVS as indicated above. The identification of the area is also based on the demands of the community. Beta is sought by community leaders and, after an initial evaluation, a project is approved for implementation. Initial evaluation is based on simple factors: situation of the area – legal or illegal, number of family's involved, current debt of the residences.

> [...] In fact, this is for regularization purpose, because there is a lot of illegal connections. We perform not only the regularization but also the debt negotiation, which is high. We enter with a different rate, a social rate. And then we give a speech about rational use of the water. At the end, we monitor to check if the people is paying, if there is any leak (Respondent Beta 4).

> [...] This is an initiative of the regional function, it is ours. Because we have a very poor and needy region with a lot of debts. The lack of payments is very high, about 66% (Respondent Beta 1).

> [...] In fact, what is the Beta objective here? The losses, because in these places, there is a lot of leaking, there are low quality connections, made by professionals without knowledge and there is the leak. In fact, our gain is in reducing the losses (Respondent Beta 1).

Beta incentive for the regularization is the partial forgiveness of the debt, the financing of the installation service and a differential utility rate, a social rate of 50% of the normal rate. The partial forgiveness of the existing debts of the residences is substantial, as noted by the respondents. Another important factor is the social inclusion. Most of the families do not have a proof of address. The installation of water and sanitation services requires a definition of an address to send the bill. The families, therefore, feels included in the society having the right to a formal address. As respondent noted, this allows them to get financing of purchasing in stores.

> […] The compensation that we give to them is like this: we need your collaboration. This community *(180 families)* had a debt of BRL 187.000. We negotiated for a reduction of BRL 19.000 and split the remaining among the families (Respondent Beta 1).

> […] Certainly. You know what is the most important thing that we do for these people *(BoP)?* When we send the first bill, it has the name and the address of the people. Then, he can get credit, he can go the bank and open an account. Here, that is what they want. Some persons come to us and say: "Hey, can I change my address? I need to get a credit and it does not have the name of Beta". Then, this is a priceless gain (Respondent Beta 4).

The ***structural complexities*** of Beta´s project at the BoP relate to some specific differences from normal projects. First, it is not well defined in terms of sequence and it has not the formal structured processes and procedures as a normal project. Usually, the connection of water and sewage of these projects are performed in slum or illegally occupied areas. In this context, the areas are not occupied following a planned construction. Beta has an internal rule that pipelines (for water and sewage) cannot run under the houses. In terms of technical installation, this seems to be the only significant difference.

> […] The normal is structured. Technically, data of pressure and flow rate. It is a technical analysis, engineering. But, the difference from a connection to a real state, it is more structured, this last one has a sequence, a guideline, procedures, legal base. In an illegal occupied area, it is not structured, and we do not know very well what we are going to do. Then, even for these projects, we have to make an engineering evaluation, always. Processes are basically the same, but one is demanded from society (Respondent Beta 2).

> [...] Other complexities factors. When we perform these projects, we do enter the place and start constructing. First, we have to know whether the area is public or not, if it's a federal, state or municipal area, or even private. If it is private, we cannot enter. If the area is public and the city hall does not have a planned project or an intervention plan for the area, then we can proceed (Respondent Beta 4).

> [...] Beta does not construct pipelines under the houses. In some cases, we have pipeline under the houses because someone illegally build it. We do not evict these people because it is not our function (Respondent Beta 4).

> [...] Technically, it is the same, if you take the pipeline, the connection characteristic is the same. Then, the technical, the physical connection is the same (Respondent Beta 1).

In terms of ***uncertainty complexities*** of Beta´s projects at the BoP, the execution of the projects seems not to be affected by any kind of uncertainty. Based on secondary sources of information, it can be identified innumerous uncertainty factors for the business based on the State interference in the management of the organization, but not specifically for those projects. On the other hand, there

are some legal uncertainties before defining the execution of the project when considering an illegal occupied area. In this case, Beta only executes its project with the proper legal support and judicial authorization.

> […] There is no major risks in these projects, they are similar to any infrastructure construction. We are not affected by uncertainty after a decision is made to connect the pipelines (Respondent Beta 3).

The ***dynamics*** complexities of the projects refer to the need to involve the communities to be benefited from the connections. As already discussed, Beta projects at the BoP can reach 200 to 600 families and the convincement process is an important aspect of the execution phase of the project. For projects to legalize the connections (typically slums), Beta representatives performs meetings with community leaders to explain how the process is going to be, the counterpart required, the monitoring of the connections and other aspects of the project.

> […] Before starting the project, I go to the community, have a meeting with their leaders, explain the project and the counterpart (Respondent Beta 1).

> […] The project has the typical phases, planning execution and monitoring, but it has no end. We have to follow up, we had good experiences in the past where, after four, five months we came back and everything was ok. We have to check the bad debts. And here *(regional area)*, we have the people who is very connected to us, the presidents of the neighborhood associations. Without their support, nothing happens (Respondent Beta 3).

The ***pace*** of the projects at the BoP is not different from a normal project. This is neither an important factor for these projects nor a distinctive characteristic from the other Beta's projects. Respondents were clear on this aspect.

> […] No, normal. The differences regarding the pace are much more due to the subcontracted company, if it is an open ditch, if there is traffic, etc. What defines the pace of the construction, is the amount of money. There is no external pressure. It is not because it is a project for the base of the pyramid, it is a question related to the urgency or not of the work (Respondent Beta 2).

The ***social-political*** dimension of the complexities of the projects is reflected by the need to establish informal relations with the community, first to convince then regarding the benefits of the legalization of their connections and, second, to obtain community approval. Politicians seem to be involved in the projects but do not seem to be a major player on these projects.

> […] It is strong in this region *(the need for informal relationships).* We do not work without this support. We had some cases where two car companies were stolen (Respondent Beta 1).
>
> […] Totally connected *(politicians).* There is not one project that is not connected to a politician. And, at the election period, they come back there and say this is what we got for you (Respondent Beta 1).

Table 23 presents a summary of the evaluation made of the complexities of the projects.

Table 23: Beta and complexities of the projects at BoP

Dimension	Relevance	Impacts on Beta
Structural *Large number of distinct and interdependent elements*	Low	- BoP projects not well defined in terms of sequence; - BoP projects do not have the formal structured processes and procedures as a normal project; - No construction of pipelines under the houses.
Uncertainty *Gap between the amount of information and knowledge*	Low (in project execution)	- No impact on Beta.
Dynamics *Changes in projects – "outside-in" and "inside-out"*	High	- Involvement of the communities to be benefited from the connections.
Pace *Urgency and criticality of time goals*	Low	- No impact on Beta.
Socio-political *Potentially conflicting interests and difficult personalities*	Low	- Need to establish informal relations with the community; - Politicians involvement on project but with no major impact on project execution.

Source: Prepared by author

For Beta projects, the interference of the State is low during project execution. The same happens at the selection of the projects to be performed at the BoP. The selection of the projects is performed at the regional level. The execution of the projects at the BoP is not substantially different from other projects, being the *dynamics* of the projects, the most significant aspect to be considered.

4.6.3 Alpha and Beta comparison

Complexities of projects are relevant to both organizations, Alpha and Beta, but with clear differences on the impact on the execution of the project. Firstly, the interference of the State has different impact on both organizations. For Alpha, the interference is indirect, made by the regulations of expansion established by ARSESP. This impact, although indirect, is high. It shapes organization strategies at corporate level and it has clear implications on organizational characteristics, as already discussed. But, once decided the project, the influence of the State on project execution is low.

As Beta is a SOE: State Owned Enterprise, the influence of the State is direct, from the definition of the utility service rate to the governing board. It naturally influences any aspect of the organizational characteristics including strategies and financial performance. But, this influence does not seem to reach the projects at the BoP, in general terms, including the execution of projects. Respondents statements and the analysis of the secondary source of information does not provide any specific information to support a strong influence on project execution. And, most significantly, the impact is not even indirect on these projects. In other words, projects for the BoP seems not to be a concern of the State. Other interested parties, however, have an impact on project selection like community leaders and politicians. Nevertheless, the interference of these players is not strong during project execution. Figure 7 indicates the result of the analysis.

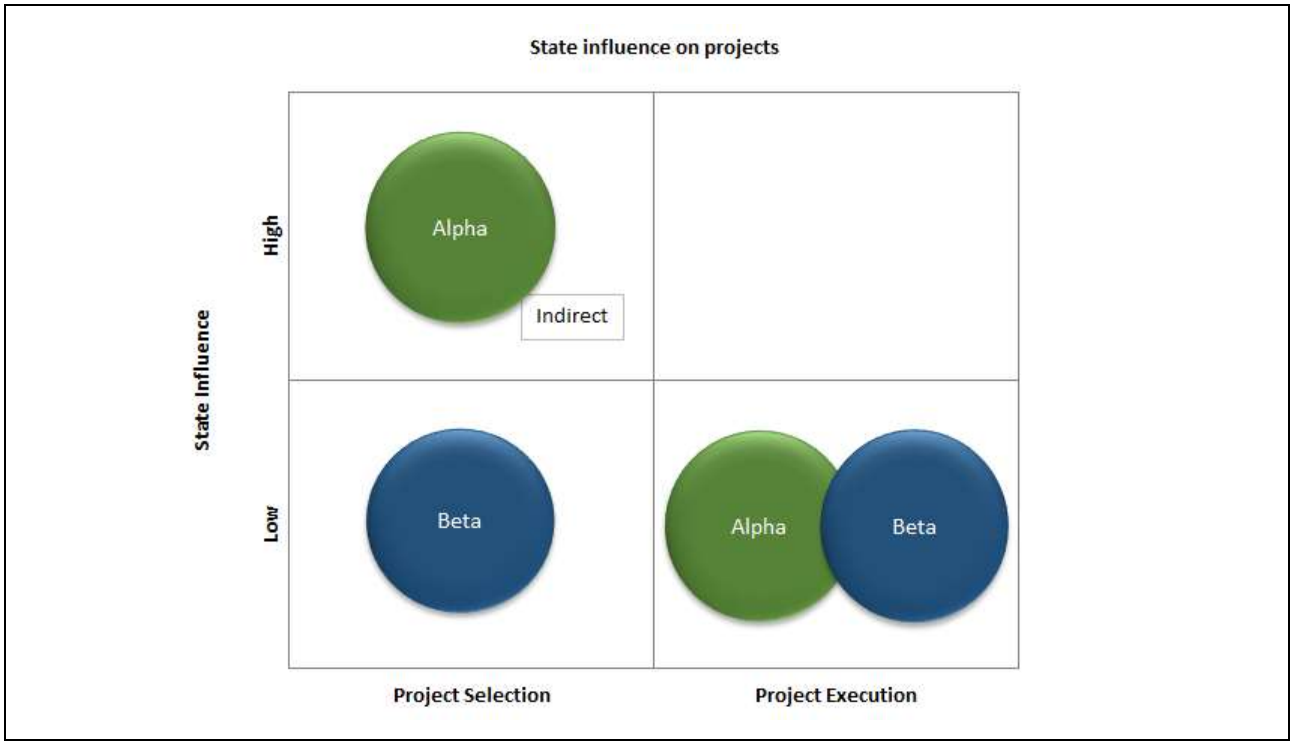

Figure 7: State influence on project selection and execution – Alpha and Beta Comparison

Source: Prepared by author

The analysis of the complexities of projects at the BoP also indicates different impact on both organizations. For Alpha, the complexities are related to structural, dynamics and pace dimensions. For Beta, the only dimension considered to affect the project execution relates to the dynamic dimension. Figure 8 summarizes the results of the findings.

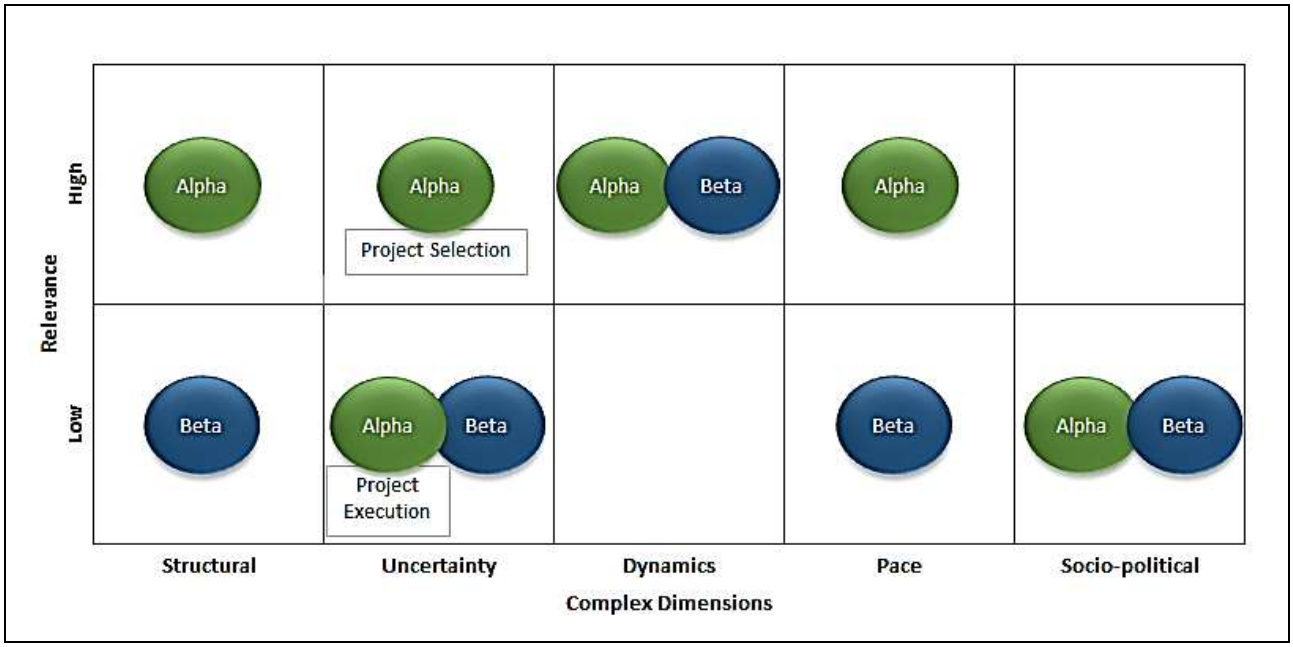

Figure 8: Complexities of projects – Alpha and Beta Comparison

Source: Prepared by author

4.7 SUMMARY

The objective of this subchapter is to summarize the findings of the study and its relation to the research question of the study. Table 24 is the result of the evaluation of the propositions of this study.

Table 24: Evaluation of the propositions of the study

Relevant aspects – variables	Propositions	Result of the analysis
IE and organization characteristics	I. IE influences the way the utilities services organizations (USO) are structured.	**Evidenced for both organizations.** The IE have an impact on both organizations in relation to strategies definition.
Regulative, normative and cultural-cognitive elements	II. For USO, the impact of the regulative forces in the way the USO conduct its business is stronger than the other elements.	**Evidenced for both organizations.** The impact of regulative is high for both. Normative and cultural-cognitive elements have a medium impact on Alpha. For Beta, normative and cultural-cognitive impact is considered low.

Relevant aspects – variables	Propositions	Result of the analysis
		For Alpha, regulative element is driven by the regulatory agency. For Beta, the State is the driven force.
BoP specificities	III. Differences between BoP and ToP require a different approach for accessing the BoP market.	**Evidenced for both organizations.** BoP market for both organizations presents specificities that differentiate than from the ToP market.
Strategies to access the BoP market	IV. Strategies to access BoP market by USO are different to the ones at the ToP.	**Evidenced for both organizations.** For Alpha, the *who*, *what* and *how* dimensions are strongly affected by the residential market characteristics (and the BoP market as an extension). For Beta, despite the fact that there is not a new "product" to be marketed, some specific differences on *what* to be offered were identified.
Projects at the BoP	V. Projects at the BoP present characteristics of complex projects.	**Partially evidenced for both organizations.** For Alpha, the *structural, uncertainty (in project selection), dynamics, pace* have a high relevance to the Alpha projects. The *socio-political* dimension has a low impact on Alpha projects. For Beta, the only complex dimension is the *dynamics complexities* of the projects.
Management of complex projects at BoP	VI. The management of projects to access the BoP market consider the complexity dimensions.	**Evidenced for both projects.** For Alpha and Beta, the projects are managed considering the specific complexities.
	VII. The greater the participation of the State, the more difficult the project execution is.	**Not evidenced for both organizations.** Participation of the State is not relevant during project execution.

Source: Prepared by author

5 DISCUSSION AND CONCLUSIONS

The objective of this research was to analyze the participation of the State in utilities services organizations and its impact on the execution of complex projects to access BoP markets. Based on a qualitative research made in two organizations providing utilities services, it was possible to answer the research question "*"How does the participation of the State in utilities services organizations impact the execution of complex projects created to serve the BoP markets?"*. In order to answer this question, it was established as the main objective the analysis of the participation of the State in utilities services organizations and its impact on the execution of complex projects to access BoP markets. Complementary specific objectives were defined as follow:

i. Identify the mechanisms the State uses to participate in utilities services organizations;
ii. Identify the main aspects of the execution of complex projects created to serve the BoP markets; and,
iii. Analyze the relationship between State level of participation in utilities services organizations and the execution of complex projects created to serve the BoP markets.

In this chapter, the discussions follow the literature review and the specific objectives outlined above.

5.1 INSTITUTIONAL ENVIROMENT AND THE STATE PARTICIPATION IN USO

The institutional environment is concerned with the social structure. It shapes how an economy changes overtime towards stagnation, growth or decline. The IE composes the rules of the games and organizations are not only influenced by these rules but also responsible for the establishment of these set of norms, schemes and rules (North, 1990). Scott et al. (2011) stated that organizations are structured based on the environment where their businesses are executed and tend to become isomorphic with them.

The institutional elements defined by Scott et al. (2011) were used as the basis for the identification of **the mechanisms used by the State to participate in USO**. Each of these elements (regulative, normative and cultural-cognitive) have the capability of influencing the organizational structure and strategies, although the extent of the impact is not clear These elements are not stand alone aspects of the institutional environment, they interact with each other.

As Alpha and Beta operate in a regulated market, it was expected that the regulative force was the highest force influencing the organizational strategies and structure. This was confirmed as a result of this research. In this context, the regulative force was the institutional element with a highest impact on the USO, but with different driving forces. The State uses two different mechanisms to influence these organizations: first, through the regulatory agency and second, being a major investor with a participation in the governing board of the organization.

For Alpha, where there is no participation of the State as an entrepreneur or major investor, the regulatory agency does perform its function. The assumption made by Scott et al. (2011) that organizations follows rules because they are compensated and rewarded for doing so, is valid. The use of incentives and penalties by the regulatory agencies has an influence not only on the establishment of the organizations strategies but also in the definition of the operational processes within the organization, changes in the technological and marketing practices. The regulative force, as established by Scott et al. (2011) has as fundamental basis the explicit rules of the games. It has a coercion component and its logic is based on fear for not complying with the rules, or, on the other side, satisfaction for complying with them.

Alpha seems to manage quite efficiently the rules of the games defined by the regulatory agency for their advantage. Despite the fact that Scott et al. (2011) considered the effect of this element as shallow and superficial, this aspect seems to be used by Alpha as a leverage point for agility. Instead of being shallow, the superficial aspect of the regulative force produced a fast adaptation to the rules. For instance, when the industrial market was not capable of fulfilling the volume defined by the regulatory agency, Alpha was capable of targeting the consumer market, changing entirely their business model to achieve an adequate operational and economic performance. It has to be addressed that Scott et al. (2011) considered the effect of this element as shallow having in mind that organization may not be internalizing its components. As observed above, the impact of this element is strong in Alpha strategies.

Specifically, for Alpha organization, it could also be noted how deep the cultural-cognitive force of the institutional element is engraved at the organization processes. This confirms the statement made by Scott et al. (2011) that the cultural-cognitive force is the most deep and slow moving element. Cultural-cognitive aspect related to safety is deeper, profound and sticker. This element is profound as they provide meaning to social order, they are a common shared belief of the Alpha members. This element is so strong that, despite a change on the organizational shareholders on 2012, the cultural-cognitive element of safety operation is still a strong value of the organization.

It was interesting to observe that an imprinting of a new cultural-cognitive value. The recent incorporation of Alpha by a new organization (2012) is imprinting a new value for *costumer focus*. As observed during the literature review, Scott (1987) noted that the organizational structure can be the result of an imposition, authorization, inducement, acquisition, imprinting, incorporation and the bypassing of organizational structure. It seems that the imprinting of this new value is a consequence of the perceptions of the member of the organization of "what seems to be right" to be done.

Last, the normative element is still a major component of the institutional environment for Alpha operation. According to Scott et al. (2011), the adherence to this element is based on the social acceptance mutually reinforced. Alpha used to comply with rules and guidelines defined by the former owner. The current major shareholder has not imposed new rules in terms of operation. Alpha still follows the previous modus operandi, confirming the slow-moving aspect of this element as stated by Scott et al. (2011).

For the organization where the State acts as a major investor (Beta), the influence of the regulatory agency is not relevant as identified by the analysis of the secondary documents and the respondent's statements. In this case, the regulatory agency acts much more as a fiscalization agency rather than regulatory. In the context of organizational management, the influence of the State is naturally strong. The participation of the State as major investor *(leviathan as a major investor)* produces the impacts identified by Musacchio and Lazzarini (2015). These influences are clear: first, the profit maximization for the shareholders is susceptible to political interference. The net profit dropped more than 50% when comparing 2013 and 2014 figures. For political reasons, the president of the company was changed, with a new governing board elected on the beginning of 2015. The reason for the change was a supposedly statement made by the former president that the need to save water was not released to the public in 2014 due to the election period.

For Beta, the regulative force is naturally the stronger element to influence the organizational strategies and characteristics. The normative and cultural-cognitive elements seem to have a low impact on Beta. Although this research did not identify a clear aspect relating to the cultural-cognitive element in Beta based on the respondent's statement, it could be observed a view of Beta as an organization having a social function. This evaluation can also be perceived based on the strategies used by Beta to access the BoP market – as discussed, the strategies to access the BoP have a social orientation in opposition to a pure business orientation of Alpha.

In conclusion, the regulative element of the institutional element has a stronger impact for the USO, being the State a major investor or not. The identified difference was the mechanism used to influence the organizations. Finally, the isomorphism between both organizations was not observed.

Alpha and Beta are completely different organization, with different strategies and processes despite being regulated by the same regulatory agency.

5.2 BASE OF PYRAMID AND EXECUTION OF PROJECTS

According to C. K. Prahalad and Hart (2002), the market at the BoP is an untapped business opportunities. Organizations in general and multinational enterprises (MNEs), in particular, should target this market not as a charity action but considering the potential profit presented by strategies developed to access those at the BoP. In doing so, organizations would create jobs offering products and services in a more efficient way and, as a consequence, improving the lives of billions of people. But, in order to access this market, organizations have a twofold task: first, eliminate some of the misperception regarding like the poor have no interest in acquiring other products rather than food or that products at the BoP have to be cheap and profit margins are low (C. K. Prahalad & Hart, 2002).

Considering the differences between the BoP and ToP market, organizations would have to consider these differences to innovate their products which would be implemented through new strategies and deployed by projects. In order to identify the **main aspects of the execution of complex projects created to serve the BoP market**, it was performed a two stage evaluation on this research. First, the specificities of the BoP market and the strategies to serve this particular market were identified. Secondly, the complexities dimensions related to the execution of projects were evaluated.

The analysis of the specificities of the BoP market was performed based on the work of Anderson and Markides (2007) related to innovations at the BoP market. The authors stated that strategies to access the BoP market have to answer questions related to *what* the products and services are (affordability and acceptability) and *how* this market should be served (availability and awareness). According to the authors, the *who* the customers are should not be a concern of the organizations as consumers at the BoP are easily identified.

In terms of *who* the customers are this research showed that Alpha does not have a specific process to identify the consumers at the BoP. Alpha, however, had to establish a series of processes to identify the consumers at the residential market, as already discussed. The existence of substitute products for gas forced Alpha to add value to their products/services. In this case, the organization established internal processes to better identify the market. Although these were not specifically targeted for the BoP market, the observations made can be extended to the BoP market. A series of planned actions was performed in order to capture and enter this market segment. Furthermore, as

there is a substitute product for Alpha product/service, the USO Alpha had to better identify what the client values in their product/service in order to convince the potential customer to purchase their services. The impact on how to market these new products were high for the USO. New methodologies for purchasing were established, new material developed, new processes to expand the pipeline defined and new organizational structure can be cited as examples of these profound changes. Clearly, these changes came from top down decisions and shaped the functionality of all areas involved.

Interesting to observe that the identification of *who* these consumers were seems not be as simple as indicated by Anderson and Markides (2007). A clear evaluation of *who* the potential customers are in a broader sense seems to be fundamental for any strategy to be developed by organizations. For Alpha, the access to this market had to involve not only *who* they were, but what they valued and considered about their services before defining *what* products to develop and *how* to deliver them. In this case, the driver to enter the residential market was business oriented.

For the organization where the State is the major investor (Beta), the driving force to reach the BoP market is a social function component rather than business oriented. As already discussed, the idea was not to improve the financial result of the organization but to reduce the losses. It is interesting to note that, despite the losses from water of 21,3% in 2014 (KPI Invoice Losses from Water), it could not be identified specific top down strategies to reduce the losses through the legalization of the connections. It seems that the actions to perform this reduction are related to inspections or maintenance and renewal of the existent pipelines rather specific projects to the BoP market.

Beta did not to have to identify *who* the customers were in the same sense as Alpha. For Beta, the identification of the BoP (based on the so called IPVS) is important as it is a criterion for offering their services rather than a strategy for reaching then. In other words, the projects made for those at the BoP have to be performed for those at the BoP. It is not a question of understanding what they think about their products, or how to develop specific products or services to reach then. Rather, it is a simpler evaluation of who they really are. This aspect reinforces the social dimension of the projects executed by Beta to access the Bop market.

It was also evaluated the complexities dimensions related to the execution of these projects to serve the BoP market. For this purpose, it was used the dimensions defined by Geraldi et al. (2011): structural, uncertainty, dynamics, pace and socio-political. The first important aspect noticed is that the complexities vary amongst Alpha and Beta projects. Second, the academics contribution for project management (including execution) seem not to be considered by both organizations. It was not observed a defined approach for project management following the concepts established by the

body of knowledge – initiate, plan, execute, monitoring / controlling and the closing the project (PMI, 2013). Furthermore, the complexities dimension identified on Alpha and Beta projects are also not considered by both organizations in order to specifically manage their project or the development of any different approach to manage these projects.

The observed results indicate that the complexities vary amongst the organizations studied. Nevertheless, at least one complex dimension was considered relevant for these projects in both organizations, the *dynamics complexities*. For both organizations, it is necessary to coordinate different projects and/or community demands in order to properly execute the projects. Alpha presents more complex dimensions than Beta. One of the reasons that can explain this difference is the need for Alpha to develop specific products to compete with the substitute products. As already discussed, the driving force for Alpha to enter the residential market is a business decision. Beta, differently from Alpha, seems to make a concession for the BoP to use their services, complying with their social function. The need to establish a new product and service seems to be the reason for the complexities dimensions in project management.

The statement above confirms the concept that innovations are required to serve the BoP market as stated by C. K. Prahalad and Hart (2002) and (Anderson & Markides, 2007). These innovations require adaptation to existing products and business model. Particularly for Alpha, these adaptations were observed whereas for Beta, the innovation was considered minimum. Therefore, as a conclusion, it can be stated that in order to access the BoP market considering a business orientation, the complexities dimensions of project management will be present.

5.3 COMPLEX PROJECT AND STATE LEVEL PARTICIPATION IN PROJECT EXECUTION

The relationship between **State level of participation in utilities services organizations and the execution of complex projects** created to serve the BoP markets was evaluated. The State clearly has an impact on the strategies of the organizations evaluated, as already discussed using different mechanisms to exert their influence. In this sense, at the managerial level, this influence was considered high regardless of the mechanism used (regulatory agency for Alpha, and major investor for Beta).

On the other hand, when considering the influence on project execution, the impact was considered minimum on both organizations. The only influence observed was in project selection for the USO without State participation as entrepreneur (Alpha), the influence was considered high and

indirect, made by the regulations defined by the regulatory agency. This influence is limited to the selection of projects as a consequence of the organizational strategies defined at the corporate level.

For the specific projects to serve the BoP market (residential market), there is no influence of the State for both project selection and project execution. For the SOE: State Owned Enterprise (Beta), the influence of project selection and project execution is minimum.

6 CONTRIBUTIONS

This chapter presents the contributions, limitations and suggested future works.

6.1 ACADEMIC CONTRIBUTION

As a result of this research, an analysis of the elements of the institutional environment and its relation to the BoP market and the mechanisms that influence the complexity of the project was performed. Although the focus of this study were the utilities services organizations, the results of this research can incentive other academics to explore the theories supporting the execution of projects at the base of the pyramid and how to deal with the continuous change of the institutional environment. This research contributes to the academia as few studies were identified connecting the complexities of projects considering State participation in the context of the base of pyramid market.

As stated by Scott (1987), institutional environment influences organizations characteristics and strategies although it not clear how and extent of the impact on such structure and strategies. This research contributes to the academia as it explores the influence of the elements of the institutional environment (regulative, normative and cultural cognitive) and its impact on organizations operating in the utilities services market. It was possible to observe that these elements have different impact on both organizations, operating under the same regulatory agency. Therefore, a generalization of the impact of these elements should be done carefully. For instance, Scott et al. (2011) stated that the effects of the regulative element may be shallow and superficial. This research reveals that in fact, the impact of the regulative force established by the regulatory agency was strong and deep in Alpha organization.

The results of this research contributes to the evaluation of the specificities of the market at the BoP by the identification of the strategies used by Alpha and Beta organizations to serve the BoP market. Interesting to observe that both organizations have different driving forces for the establishment of these strategies (business and social).

The analysis of the specificities of the BoP market for both organizations pointed out also that knowing *who* the customer are seems not be enough for the development of strategies to the BoP. In an article about innovations at the base of pyramid, Anderson and Markides (2007) explored the differences of the strategic innovation in the developed world and the BoP. Accordingly, the authors stated that "…strategic innovation in the developing world is not so much concerned about

discovering new Whos – there's plenty of under – and non-consuming customers to go around" (Anderson & Markides, 2007, p. 2). The identification of *who* the customers are may be not so difficult in terms of poverty, but it is not enough for the development of specific strategies to serve this market. It is necessary to identify who they are in terms of value proposition, client expectations and needs, amongst other factors.

This exploratory case study supports the academia in understanding the factors influencing the execution of projects by USO to access the BoP market. The theory of project management is under construction and therefore needs further development. The analysis on how the institutional environment affects the execution of projects may support the construction of the grounded theory on project management, particularly considering the complexities involving the access to the base of the pyramid. Considering the intersection of complex projects, institutional environment and the BoP, this study can contribute to further expand theoretical aspects of project management.

The influence of the State is covered in depth by the studies of Professor Lazzarini (Inoue, Lazzarini, & Musacchio, 2013; Musacchio & Lazzarini, 2012; Musacchio & Lazzarini, 2014). The complexities of project also have been the attention of many academics (Ahern et al., 2013; Baccarini, 1996; Browning, 2014; Davies & Hobday, 2005; Frame, 2002; Geraldi et al., 2011; Hobday, 2000; Li & Guo, 2011; Maylor et al., 2008; Owens, Ahn, Shane, Strong, & Gransberg, 2011; Pich et al., 2002; Remington & Pollack, 2010; Söderlund, 2002; Thamhain, 2013a, 2013b; Whitty & Maylor, 2009). On the other hand, the BoP market is still a development area for study. Despite a dramatically improvement of the concepts related to the BoP market, a systematic review of a decade of articles published related to the BoP indicates a wide variation in terms of BoP context, BoP initiatives and impacts of these initiatives (Kolk et al., 2014).

This research also unveils the need for the development of specific business model for organizations intending to explore the market at the base of pyramid. Despite the fact that Anderson and Markides (2007) stated that organizations would need to focus only on basic market concepts, the reality seems to be more complex than an adaptation of the existing products and services. As indicated by Kolk et al. (2014), it is necessary to develop new business models to reach the BoP market. The strategies for the BoP should also consider the position of the poor not only as a mere recipient of the products but also as coinventors and entrepreneur of these initiatives. This study confirms the perception of the authors Kolk et al. (2014), as the strategies developed by Alpha and Beta consider the poor as recipient of their products.

6.2 PRACTICE CONTRIBUTION

Although strategies are developed by both organizations in order to access the BoP market, it can be noted that these do not consider the academic contribution of the studies conducted from 1999 to 2009, summarized by Kolk et al. (2014) in a framework adapted in Figure 9. In this figure, the aspects related to the different business model are not considered by the practitioners of both organizations. Strategies developed consider, at same extent, the specificities of the BoP market and there is not a well-defined business model in which the dimensions of the complexities of projects are considered.

The first contribution of this study is to provide a better understanding of the variants of the institutional elements with an impact on the strategies of the utilities services organizations. It was possible to observe which of the institutional elements had a stronger influence. Utilities services organizations and regulatory agencies can use the findings of these research to define their policies and maximize their returns. Furthermore, the knowledge of how these institutional elements and their influence on organizations are an important aspect of business management.

One practical contribution of this study is to reveal the need for a better understanding and definition of specific business model to attack the huge market opportunities at the BoP. The view of the poor as a mere consumer and recipient of existing products and services does not reflect the dynamics of the institutional environment where multinational enterprises and other organization operate. There is a clear need to expand the concepts of poverty beyond an economic point of view and include a broader view of other aspects as material deprivation, lack of education, vulnerability and more complex aspects. Organizations operating in the BoP market could better evaluate the impact of their strategies when expanding their view of the poor.

Figure 9 represents a schematic view of the identified business model as revealed by this research. It can be noted that consumer (or potential customer) are perceived only as consumers of the products and services offered by both organizations, Alpha and Beta.

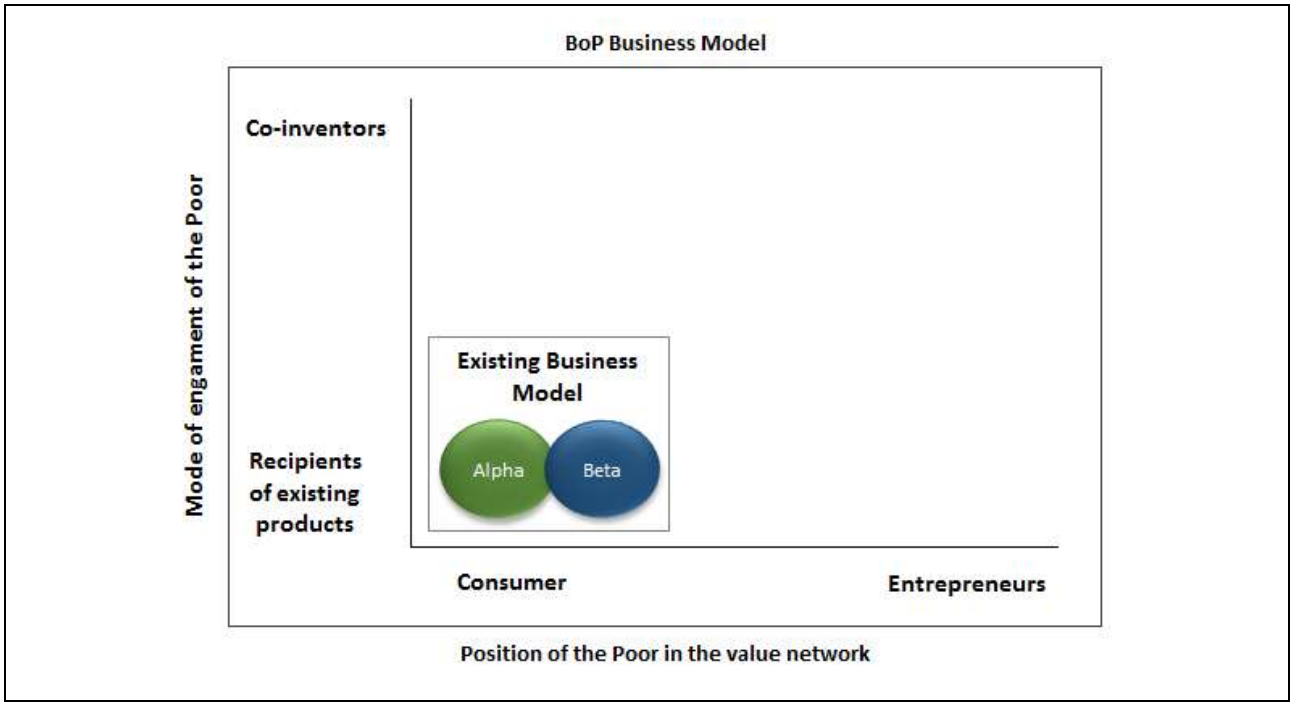

Figure 9: BoP framework

Source: Prepared by author based on Kolk et al. (2014)

Organizations intending to explore the BoP market may use the findings of this research to establish specific strategies to clearly define *who* the poor are using other dimensions beyond an economic view. This research also unveils the need to evaluate the actual impact of organizations strategies at the BoP considering economic, social and environmental dimension. Organizations may be encouraged to evaluate these impacts in order to better measure the benefits and difficulties of the BoP strategies.

This study also identified the aspects of complexities in project execution for accessing the BoP, based on the complexities dimension of *structural, uncertainty, dynamics, pace* and *socio-political.* These aspects can be used for further development of project management practices, particularly the ones for accessing the BoP market. The success of these projects may be the result of the proper evaluation on how these dimensions should be considered in project management in general and particularly in the project execution and planning.

In practical terms, this study contributed to a better understanding of the aspects to be considered when organizations plan to access the BoP. By understanding these aspects, organizations may

improve their strategies to access it as well as developing successful projects to deal with the growing demand of the population at the BoP. In doing so, these organizations will be able to develop new business model and, at the same time, improve the lives of those at the BoP.

6.3 LIMITATIONS

This research presents several limitations. First limitation is the scope of the study. Contributions of this study are related to the participation of the State in utilities services organizations and its impact in the execution of complex projects to access BoP markets. Although a multiple case study approach was used, nevertheless, the results are limited in terms of organizations evaluated and extrapolations of the results to other areas have to be carefully performed. Furthermore, the context where the case studies were analyzed (base of the pyramid) is a wide field for further exploration, both in academic terms and practical aspects. The interfaces of BoP market, complex projects and the institutional environmental compose, all together, a multiple scenario of theories and practices, which could not be evaluated in its full extent.

Other limitation relates to the selected projects of organization Alpha considered in this research. As they are not specifically oriented for the BoP market, the analysis performed may have some biases towards more general market than those eventually developed to the BoP market. In the context of this market, other limitations are present in this research. The impact of the projects to access the BoP market was not identified. The financial impact for the organization itself and to the people at the BoP marked was not evaluated as these were not the focus of this study. Furthermore, the social and environmental impact of these projects on the community where these projects were executed was not evaluated as well.

6.4 SUGGESTIONS FOR FUTURE DEVELOPMENT

The suggestions for future works are related to the limitations of this research. First, it is the development of specific business models to leverage the existing opportunities of the BoP market. For example, Alpha organization could use the community around the targeted residential areas to further increase their sales power. The underline concept is to use persons with knowledge of the area, with a deep understanding of the community needs and expectations to adapt or create value in their existing products and services and, at the same time, sell their services (co-inventing processes).

Beta could also promote incentives for the establishment of small organizations to be the constructors of the infrastructure through, for instance, the neighborhood association. Alternatively, Beta could incentive the hiring of local work force to be the employed by their subcontractors. These actions would have a stronger potential benefit for the organization and to the communities. Figure 10 represents some of the possibilities offered in terms of business model. Other business model could also be defined, for instance, the engagement of the poor as co-inventor of the products and entrepreneur

Once the business model has been established, the identified factors of complexities for project execution (and selection) could be used to define a specific guideline on how to better manage those projects. Last, the impact of these projects need to be established. The financial, social and environmental impact of these projects need to be clearly established in order to proper evaluate the returns from these projects.

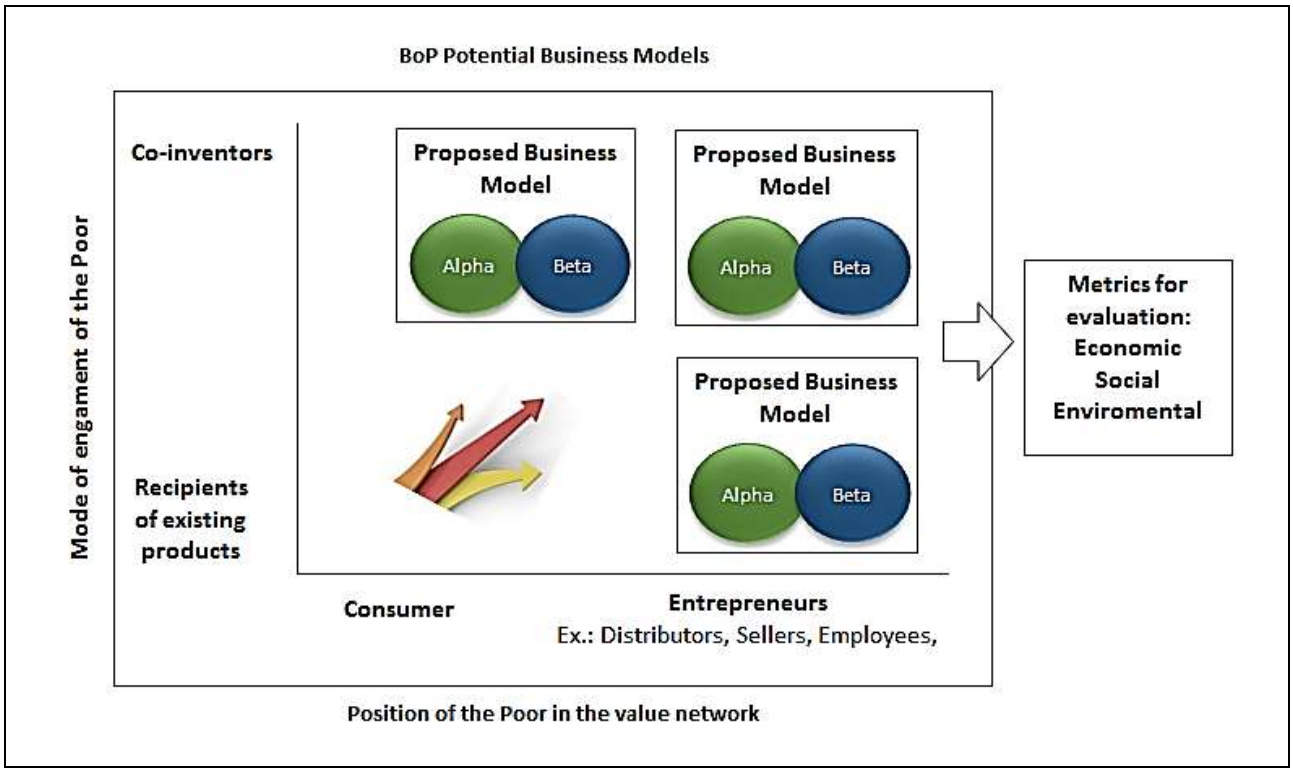

Figure 10: BoP framework – suggestions for future work

Source: Prepared by author based on Kolk et al. (2014)

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APPENDIX A – CASE STUDY PROTOCOL

Case study protocol has the objective to guide the realization of the data collection. It has also been prepared to allow the reproduction of the study for other researchers. It is intended to further increase the reliability of the study. The main objective of this research is to analyze the participation of the State in utilities services organizations and its impact on the execution of complex projects to access BoP markets.

The specific objectives of this research are:

i. Identify the mechanisms the State uses to participate in utilities services organizations;
ii. Identify the main aspects of the execution of complex projects created to serve the BoP markets; and,
iii. Analyze the relationship between State level of participation in utilities services organizations and the execution of complex projects created to serve the BoP markets.

The guide for the interviews is divided into two parts: first, it has the objective of properly identifying the interviewee. Second, the semi-structured questions (open questions) are defined based on the propositions.

Part I: Respondents identification
Objective: Identify the interviews and its background experience
Name Function Area of expertise / background experience Age Time within the organization Experience in project management

Part II: Semi structure interview		
Objective: Support the conclusions of the propositions of this study		
Pillar	**Propositions**	**Questions**
Institutional environment	I. IE influences the way the utilities services organizations (USO) are structured.	(1) How does the institutional environment impact on the organizational structure? (2) What are the mechanisms used by the State to influence on organizational structure? (3) How does the State influence the organizations strategies and its modus operandi? (4) What are the external interfaces with the regulatory agency?

Part II: Semi structure interview		
Objective: Support the conclusions of the propositions of this study		
		(5) How are these interfaces managed internally and externally in the USO?
	II. For USO, the impact of the regulative forces in the way the USO conduct its business is stronger than the other elements.	(6) What are the main regulative elements that influence the management of the organization? (7) What are the main regulative elements that influence the execution of the projects? (8) Is the USO committed to serve the BoP market? (1) Which are the pressures or forces that influence projects at the BoP market?
	III. Differences between BoP and ToP require a different approach for accessing the BoP market.	(9) Does the USO create new strategies to reach the BoP market? (10) Has the USO changed its business model to serve the BoP market?
Base of the Pyramid	IV. Strategies to access BoP market by USO are different to the ones at the ToP.	(11) How does the USO develop strategies for reaching the BoP market? (12) How these strategies consider the "what" and "how" new products and services have to be offered to the BoP customers? (13) What are the characteristics of the USO business model?
	V. Projects at the BoP present characteristics of complex projects.	(14) How do the projects to access the BoP markets are executed by the USO? (15) How BoP projects are different from others? (16) How the integration of activities is performed in these projects?
Complex Projects	VI. The management of projects to access the BoP market consider the complexity dimensions. VII. The greater the participation of the State, the more difficult the project execution is.	(17) For the selected projects, is there any involvement or interface of the State in the execution phase of the project? (18) To what extent has it happened? (19) How do you describe this influence or participation? (20) Is there any project phase where this influence is more accentuated? Planning, execution, etc.; (21) What are the mechanisms the State uses to influence the execution of projects at the BoP market? (22) How does the following dimensions affect the execution of projects at the BoP: a. Structural; b. Uncertainty; c. Dynamics; d. Pace; **e.** Socio-political.