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The Influence of IT Project Manager Competencies on Team Commitment

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A INFLUÊNCIA DAS COMPETÊNCIAS DO GERENTE DE PROJETOS DE TI NO COMPROMETIMENTO DA EQUIPE

THE INFLUENCE OF IT PROJECT MANAGER COMPETENCIES ON TEAM COMMITMENT

A thesis submitted on the Master's Degree Program in Administration with emphasis on Project Management of Nove de Julho University – UNINOVE, as a partial fulfillment for the degree of **Master of Arts in Administration**.

Advisor: Professor Cristiane Drebes Pedron, P. h. D.

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DEDICATION

This thesis is dedicated to my beloved Diva and Queen Mother, the one who stood by me my whole life… the most extraordinary and loving woman I've ever known.

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ABSTRACT

Information Technology (IT) project management is a research topic that has been discussed in many studies in the last years. In spite of all academic effort and increasing investments, from 2003 to 2012 only 6% were considered successful (The Standish Group, 2014). These numbers led us reflect on some of the fundamental components of IT project success. Even though the project manager cannot guarantee project success by himself/herself, in today's dynamic world, the project managers plays a fundamental role as he/she is responsible for accomplishing the organizational goals in project settings. Another fundamental success factor is team commitment. Committed teams are more prone to put in effort to achieve project goals. Given these points, this study addresses two questions: (1) which IT project manager competencies influence team commitment? and (2) how much these competencies impact team commitment? The main objective of this research is to propose and evaluate a measuring instrument to identify the IT project manager competencies that are necessary to build and sustain team commitment in IT projects. We adopted mixed methods as the research methodology and divided the study into two phases. Firstly, we conducted an exploratory and qualitative research. Then, we did an exploratory quantitative research approach. An important academic contribution is the new scale designed to identify competencies that are more relevant to develop team commitment. Besides that, the research offers a conceptual model that can be used in future studies. This research also presents pertinent implications to the practice of project management in IT settings. Project managers and organizations can use the new scale as a tool to recruit and evaluate professionals. The new scale can also be used to evaluate organizational climate or to structure trainings and refresh programs related to project management practice.

Key-words: team commitment; organizational commitment; IT project manager competencies; mixed methods; PLS.

RESUMO

O gerenciamento de projetos de tecnologia da informação (TI) é um tópico de pesquisa que tem sido discutido em muitos estudos nos últimos anos. Apesar de todo esforço acadêmico e dos crescentes investimentos, entre 2003 e 2012 apenas 6% dos projetos foram considerados bem sucedidos (The Standish Group, 2014). Estes números nos levaram a refletir sobre alguns dos componentes fundamentais em sucesso de projetos de TI. Apesar do gerente de projetos não poder garantir o sucesso do projeto por si só, no dinâmico mundo de hoje, ele é responsável tem um papel fundamental no cumprimento dos objetivos organizacionais em ambientes projetizados. Outro importante fator de sucesso é o comprometimento da equipe. Equipes comprometidas têm mais disposição em se esforçar em prol dos objetivos do projeto. Dado estes fatores, este estudo endereça duas questões de pesquisa: (1) quais as competências do gerente de projetos de TI influenciam o comprometimento da equipe? (2) o quanto estas competências impactam no comprometimento da equipe? O objetivo principal deste estudo é propor e avaliar um instrumento de medida para identificar as competências do gerente de projetos que são necessárias para desenvolver e sustentar o comprometimento de equipe em projetos de TI. Adotamos como metodologia de pesquisa os métodos mistos e dividimos o estudo em duas fases. Primeiramente, conduzimos uma pesquisa exploratória e qualitativa. Na sequência, realizamos uma pesquisa exploratória com abordagem quantitativa. Uma importante contribuição acadêmica é a nova escala para identificação das competências que são mais relevantes no desenvolvimento do comprometimento da equipe. Além disso, a pesquisa oferece um modelo conceitual que pode ser usado em estudos futuros. Esta pesquisa também apresenta implicações pertinentes para a prática de gerenciamento de projetos em TI. Gerentes de projetos e organizações podem utilizar a nova escala para recrutar e avaliar profissionais. A nova escala também pode ser usada para medir clima organizacional ou estruturar programas de treinamento e reciclagem para seus funcionários relacionados à prática de gestão de projetos.

Palavras-chave: comprometimento de equipe; comprometimento organizacional; competência do gerente de projetos de TI; métodos mistos; PLS.

SUMMARY

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1. Introduction

More and more organizations use Information Technology (IT) to sustain their operations, improve their performance, achieve strategic goals, gain competitive advantage, expand market share, increase profits (Assis, 2011), and to bring about business benefits to the organizations (Young & Jordan, 2008).

As many organizations have adopted projects in their structures, IT project management is a topic that has received a lot of attention from scholars (Delone & Mclean, 2003; Keil et al., 2013). Despite the increasing research on this theme and all financial investments from organizations, the failure of IT projects continues to disturb executives all over the world (The Standish Group, 2014). From 2003 to 2012, in the resolution of large software projects, 52% were over budget, late and/or had unsatisfactory implementation; 42% were either canceled prior to completion or not used after being implemented; and, only 6% were implemented and deemed successful (implemented on time, within budget and had satisfactory results) (The Standish Group, 2014).

These studies show that most of the causes of IT project failure relates to human aspects such as lack of end user involvement, miscommunication, weak leadership and unskillful resources (The Standish Group, 2013, 2014; Sumner, Bock, & Giamartino, 2006). That emphasizes how fundamental the human factor is in project success (Belzer, 2001; Kerzner, 2009; Shenhar & Dvir, 2007; Turner & Müller, 2005). As organizations have become more flexible and less hierarchical, the project teams have gained a leading role on the organizational structure and strategy (Thamhain, 2013a, 2014). As we analyze these facts, we can conclude that staffing projects with managers who have the "right competencies" and who know how to lead teams towards the project goals is crucial to ensure that the organization's projects will achieve the expected performance (Jha & Iyer, 2007; Kerzner, 2009; PMI, 2013; Thamhain, 2013a, 2014; Wateridge, 1997).

Unfortunately, project managers are usually promoted to this position due to their technical skills rather than their managerial skills (Kerzner, 2009; Wateridge, 1997). For this reason, many projects fail because project managers lack important skills such as communication and leadership (Kerzner, 2009; Müller & Turner, 2010; Sumner et al., 2006; Turner & Müller, 2005; Wateridge, 1997).

Altogether, IT project managers are required to develop competencies that will help them to lead their teams in stressful, challenging and dynamic environments such as in

many IT project settings (Sumner et al., 2006). In fact, effective IT project managers do not lean on "technical expertise alone" to be effective (Kerzner, 2009, p. 149). IT project managers need to know how to maximize team performance and how to get the team committed with the project goals (Thamhain, 2011; 2013a).

Commitment is, then, another important component in IT project success (Jha & Iyer, 2007; Thamhain, 2013a). However, it is known that building commitment is a very difficult task to accomplish. Only one in eight managers believes they are capable of building and sustaining commitment within project team members (Thamhain, 2013a).

The academia has significantly contributed to building our knowledge about commitment and its influence in human relationships in the organizations (Allen & Meyer, 1990; Meyer & Allen, 1991; Porter, Crampom, & Smith, 1972). Organizational commitment is defined as an individual's identification and involvement with a specific organization (Porter et al., 1972). Organizational commitment can be characterized by three factors: "(1) a strong belief in and acceptance of the organization's goals and values; (2) a willingness to exert considerable effort on behalf of the organization; and (3) a strong desire to maintain membership in the organization." (Mowday, Steers, & Porter, 1979, p. 226).

Some years later, Allen and Meyer (Allen & Meyer, 1990; Meyer & Allen, 1991) designed the three-component model of organizational commitment. They divided the construct of organizational commitment into three components: **affective commitment**, **continuance commitment** and **nominative commitment**. Some years later, scholars developed the concept of team management (Bishop & Scott, 1997; 2000). Organizational and team commitment have similar definition. The difference is that team commitment refers to the individual's involvement towards the team instead of the organization (Bishop & Scott, 1997; 2000).

Surely, managerial competencies solely are not sufficient to build team commitment in organizational settings (Jha & Iyer, 2007; Thamhain, 2013a). However, project managers play a fundamental role in achieving the goals and the strategy of organizations (PMI, 2013). Besides the fact that project managers are crucial to guarantee a good project performance, project managers are also responsible for getting team members committed to the project success (Thamhain, 2013a). In fact, project managers with developed competencies to increase and sustain team commitment (Leung, Chen, & Yu, 2008; Mahembe & Engelbrecht, 2013).

In spite of all evidences regarding the influence of project managers on team commitment, there have been few studies to analyze the relationship between project manager's competencies and team commitment (Jha & Iyer, 2007; Korzaan, 2009; Yang, Huang, & Wu, 2011).

Henceforth, our research has these two theoretical pillars: IT project manager competencies and team commitment. This work considers the relationship between these two constructs. To conduct the research, we adopted mixed methods. We divided the research into two phases.

In the first phase, we conducted an exploratory qualitative research in which twelve semi-structured in-depth interviews were conducted with IT project managers between November and December 2013. The content of these interviews provided insightful reports on how Brazilian IT professionals deal with and think about some traditional concepts in IT project management such as competence development, project success factors, organizational and team commitment.

The second phase aimed to design a new scale on IT project manager competencies as well as to evaluate the influence of these competencies on team management. In this stage, we conducted a quantitative research in which 484 IT professionals responded to an online survey in the period of September and October 2014.

1.1. Research questions and research objectives

This research project aims to answer the following questions: (1) which IT project manager competencies influence team commitment? and (2) how much these competencies impact team commitment? The main objective of this research is to find out which project manager competencies can influence team commitment in IT settings. To achieve this goal, we set the following specific objectives:

- to identify which competencies have direct relation with team commitment;
- to propose and evaluate an instrument for identifying project manager competencies that are necessary in order to build and sustain team commitment in IT projects;
- to evaluate the relationship between IT project manager competencies and team commitment.

1.2. Expected contributions

We intend to expand the knowledge regarding the role and influence of project managers on team commitment. We also intend to offer a new measuring instrument to identify and evaluate competencies that influence team commitment. After literature review, it was concluded the need for a scale that would measure the influence of project manager competencies on team commitment, as none could be found. Besides that, the research offers a conceptual model that can be used in future studies.

This research also presents pertinent implications to the practice of project management in IT settings. For instance, organizations can use the new measuring instrument to evaluate project managers, to assess organizational climate or to structure refresher programs for their employees.

Moreover, this study may help educational institutions to organize specific training programs for IT project managers. Many project managers are still employing knowledge they have acquired from their past superiors and mentors (Wateridge, 1997). These professionals need to recycle what they know so they can adapt to today's demands and become more effective and successful (Wateridge, 1997). Additionally, IT project managers can use the new scale for self-evaluation and to design a plan for self-development.

This dissertation is structured as follows: (1) introduction; (2) theoretical background – concepts on IT project manager competencies and team commitment; (3) research methodology; (4) analysis and discussion of the qualitative data; (5) analysis and discussion of the quantitative data and presentation of the scale development; and (7) final considerations.

2. Literature Review

This section presents the theoretical background of the two pillars of the research: IT project manager's competencies and team commitment. Information gathered from literature anchored our study and directed our exploratory work in the field.

2.1. IT Project manager competencies

This topic presents the concept of competence and its usage in a project management context. Afterwards, a detailed list of IT project manager competencies is presented. This list of competencies was prepared after a thorough analysis of literature.

2.1.1. Definition of competence

The concept of competence in social science has been built in the fields of psychology and education (Manfredi, 1998). To understand the concept of competence in psychology, it is necessary to present the definitions of ability, capacity and capability. Manfredi (1998) states that ability is the power to execute an activity consciously and responsibly. Capacity is a potential ability and capability, on the other hand, is an ability built through training. Based on these definitions, skills or competences express the level of efficiency in the execution of the capabilities gained through training (Manfredi, 1998).

In the education field, Goldberd (1974) defines professional competence as a strategic ability to produce desirable and previously approved changes in the environment. The individual produces these changes causing as few undesirables and unapproved changes as possible. In this definition, a professional is competent because he/she accomplishes predefined goals under certain conditions.

In the organizational research field, Fleury and Fleury (2001) define competence as acting responsibly in order to mobilize, integrate and transfer knowledge, resources and abilities to achieve value for the organization and for the individual himself/herself (see figure 1 on page 17).

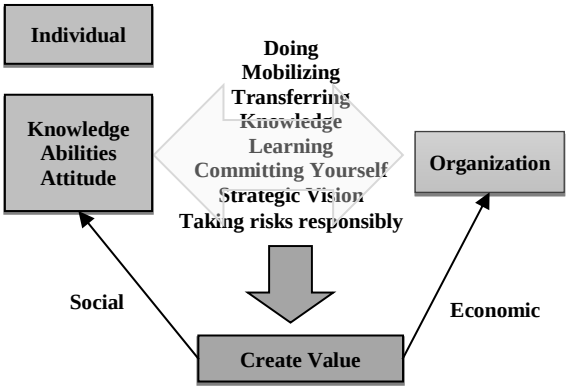

Figure 1: Competencies to create value for the individual and for the organization
Source: Adapted from Fleury & Fleury (2001, p. 188)

Competence, then, is not limited to someone's theoretical knowledge or to the task he/she performs. An individual becomes competent as he/she acts consciously and is recognized by others for his/her efficiency (Fleury & Fleury, 2001). Being competent also means that the individual mobilizes, integrates and uses his/her knowledge and abilities in a specific setting to conclude a specific task (Fleury & Fleury, 2001). The key in this definition is that competence should add economic and social value to the organization and to individuals. Table 1 presents the descriptions of the verbs contained in Fleury and Fleury's definition of competence.

Table 1: Meaning of the verbs presented on Fleury's and Fleury's definition of competence

Verb	Definition
Doing	Knowing what and why you do it. Knowing how to judge and to make decisions.
Mobilizing resources	Creating synergy and mobilizing resources and competences.
Transferring Knowledge	Understanding, working and transferring useful information.
Learning	Gaining knowledge and experience, self-development.
Committing yourself	Taking risks, engaging to accomplish a goal, being an achiever.
Taking risks responsibly	Acting on his/her own responsibility in order to achieve a goal.
Strategic Vision	Understanding the business to see new opportunities and alternatives.

Source: Adapted from Fleury and Fleury (2001, p. 188)

Ruas (2003) affirms that in the organizational setting the definition of competence has two approaches: collective and individual. Collective competencies relate to the activities and functions performed by/in the organization. Individual competencies relate to the abilities and knowledge that each individual has. In organizations, competence is presented at three levels: **organizational**, **functional** and **individual**, as illustrated in figure 2. In the organizational level, we have the collective competencies. In the functional level, we find individual and collective competencies. It is important to highlight that this research focuses on the individual competencies of IT project managers.

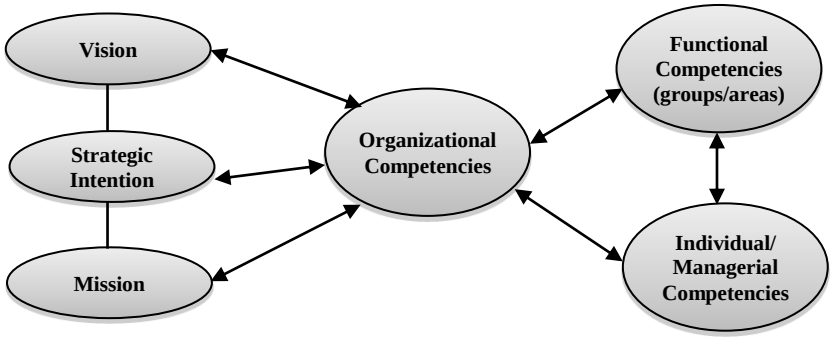

Figure 2: Definition of competence in an organizational setting
Source: Adapted from (Ruas, 2003, p. 4)

2.1.2. Competencies in a project management context

In a project management context, many studies have been done to determine which individual/managerial competencies are essential for efficient project management (Keil et al., 2013; Kerzner, 2009; PMI, 2007, 2013; Skulmoski & Hartman, 2009; Turner & Müller, 2005). Despite this effort, organizations have difficulties in selecting competent managers to lead their projects. In many firms, "personnel are generally promoted to management on the basis of their professional or technical competence rather than their managerial ability" (Kerzner, 2009, p. 172). This practice has many negative consequences later on as it tends to staff projects with managers insufficiently capable to perform their role.

PMI (2013) affirms that an effective project manager should have personal competencies such as leadership, team building, motivation, communication, decision-making, political and cultural awareness, negotiation, trust building, conflict management and coaching. Besides this, a project manager should acquire competences that enable him/her to accomplish the project goals. These are the performance competencies (PMI, 2007). Among them are project management skills – initiating, planning, executing, monitoring and controlling - business acquaintance, knowledge of project management process/cycles, ability to engage stakeholders, technical skills and resource management.

For Kerzner (2009), an effective project manager should have a heterogeneous set of competencies, from technical to interpersonal and business skills. A dynamic background is necessary since he/she is supposed to deal with "(1) the people to be managed, (2) the task to be done, (3) the tools available, (4) the organizational structure, and (5) the organization environment, including the customer community." (Kerzner, 2009, p. 148).

2.1.3. IT Project Manager Competencies

Regarding essential competencies for IT project managers, there is a variety of studies covering this theme (Keil et al., 2013; Skulmoski & Hartman, 2009; Stevenson & Starkweather, 2010; Sumner et al., 2006; Turner & Müller, 2005; Wateridge, 1997). Apparently, IT project managers are not well qualified to perform their tasks successfully. Studies indicate that IT professionals lack important skills such as communication and leadership, which jeopardizes their performance (Sumner et al., 2006). These attitudinal and interpersonal competences are known as soft skills (Rao, 2012). Due to their increasing relevance, Belzer (2001, p. 2) states that soft skills are the "missing link" in project management.

Keil et al. (2013) and Skulmoski and Hartman (2009) did a thorough research on IT project managers' competencies. They collected information among IT professionals to identify which competencies project managers should develop to be more effective in IT settings.

Based on their study and on other researches (Belzer, 2001; PMI, 2013; Stevenson & Starkweather, 2010), we designed a list of eighty-five project manager competencies. These competencies grouped into ten categories. The categories were defined according to the nature of the competencies. For instance, team management project category involves the competencies related to leading and organizing team members; business management competencies regards to abilities needed to relate with the project stakeholders, sponsors, executives and business partners.

Table 2 presents the ten competence categories and studies in which each of the eight-five competencies are mentioned. A detailed description of the eighty-five competencies is presented on Appendix A.

Table 2: Summary of competence categories for effective IT project management

Competence Category	Category Description		Skills	Skumoski and Hartman (2009)	Keil et al. (2013)	Stevenson & Starkweather (2010)	Belzer (2001)	Kerzner (2009)	PMI (2013)
Team Management	Includes competences required to manage and lead team members effectively. Not only should IT project managers lead their team but they also need to motivate and empower project team members.	1	Ability to motivate team members	X	X		X	X	X
		2	Ability to empower future leaders (mentoring / coaching)	X	X		X		X
		3	Celebrating accomplishments	X	X			X	X
		4	Collaboration	X	X		X	X	X
		5	Ability to bridge diverse teams	X	X			X	X
		6	Virtual team skills	X	X		X		X
		7	Leadership		X	X	X	X	X
		8	Create an effective environment	X		X		X	X
		9	Share-information and credit	X					
		10	Protect the team	X					
		11	Provide feedback	X				X	X
		12	Give autonomy to team members					X	X
Business domain knowledge	This category encompasses the competences needed to work effectively with business partners. A successful IT project manager understands the overall context of the project and oversees the impact of the project on the organization.	13	Ability to understand the business domain	X			X	X	X
		14	Ability to identify stakeholders	X	X		X	X	X
		15	Ability to involve end-users	X				X	X
		16	Business skills	X	X			X	X
		17	Knowledge of the end product		X			X	X
		18	Ability to document process		X			X	X
		19	Strategic thinking		X			X	X
		20	Vision-oriented/articulate the business problem	X	X		X	X	X
		21	Cultural fit			X	X	X	X
Communication	Communication involves all the skills necessary to communicate effectively with the team, stakeholders and all those affected directly or indirectly by the project.	22	Verbal communication	X	X	X		X	X
		23	Written communication	X	X	X		X	X
		24	Listening	X	X		X	X	X
		25	Ability to construct persuasive arguments	X	X		X	X	
		26	Effective questioning	X				X	
		27	Open communication	X			X	X	X
		28	Presentation skills	X				X	X
		29	Ability to communicate at multiple levels			X		X	X

Table 2 (cont.): Summary of competence categories for effective IT project management

Competence Category (cont.)	Category Description		Skills	Skumoski and Hartman (2009)	Keil et al. (2013)	Stevenson & Starkweather (2010)	Belzer (2001)	Kerzner (2009)	PMI (2013)
People skills	These skills are used to build and maintain good relationships with the individuals involved in the project. Building good relationships is crucial to avoid political and relational obstacles.	30	Conflict management	X	X			X	X
		31	Good people skills	X	X		X	X	X
		32	Negotiation	X	X		X	X	X
		33	Relationship building		X			X	X
		34	Understanding the psychology of people		X			X	
		35	Charisma	X				X	
		36	Political awareness/agility/tact	X			X	X	
		37	Compromise	X				X	
Technical	Generally, these skills are related to IT developers. They include knowledge on IT development methodologies, processes and techniques.	38	Technical skills	X	X	X		X	X
		39	Development methodology skills		X				
Project management	This category includes competencies necessary to ensure that the project is well managed, such as planning and motoring.	40	Scope management	X	X			X	X
		41	Project planning	X	X			X	X
		42	Time management	X	X			X	X
		43	Resource utilization	X	X			X	X
		44	Closing the project	X	X			X	X
		45	PM tool skills	X	X			X	X
		46	Project chartering	X	X			X	X
		47	Cost management	X	X			X	X
		48	Risk management	X	X			X	X
		49	Alignment	X				X	X

Table 2 (cont.): Summary of competence categories for effective IT project management

Competence Category (cont.)	**Category Description**		**Skills**	**Skumoski and Hartman (2009)**	**Keil et al. (2013)**	**Stevenson & Starkweather (2010)**	**Belzer (2001)**	**Kerzner (2009)**	**PMI (2013)**
Personal characteristics	There are personal characteristics that may help project managers to achieve positive results. This category includes innate and nurtured personal features.	50	Sense of humor	X					
		51	Consensus seeking	X				X	
		52	Attention to detail	X					X
		53	Patience		X				X
		54	Ability to handle stress		X			X	
		55	Persistence		X			X	
		56	Cooperation		X			X	X
		57	Decisiveness	X	X			X	X
		58	Objectivity	X	X			X	X
		59	Confident/realistic	X	X				
		60	High-level perspective	X	X			X	X
		61	Flexibility/manage ambiguity	X	X	X		X	X
		62	Judgment	X	X			X	X
		63	80/20 perspective / pareto principle	X	X				
		64	Mental capability	X					
		65	Ability to learn/self-evaluation	X					
		66	Self-organization/self-directed	X			X	X	
		67	Initiative/proactive	X				X	X
		68	Empathy	X			X	X	X
		69	Transparency/honesty						
Organizational	Organizational competences include abilities that enable the IT project manager to organize and coordinate the project activities and resources.	70	Organizational skills		X		X	X	X
		71	Multi-tasking		X				
Problem solving	Successful IT project managers are able to identify, analyze and solve problems that occur during the project.	72	Analytical skills	X	X		X	X	X
		73	Research skills	X	X		X		
		74	Creativity/innovation/resourcefulness	X			X	X	X
		75	Decision making ability				X	X	X
		76	Credibility	X	X		X	X	X

Table 2 (cont.): Summary of competence categories for effective IT project management

Competence Category (cont.)	**Category Description**		**Skills**	**Skumoski and Hartman (2010)**	**Keil et al. (2013)**	**Stevenson & Starkweather (2010)**	**Belzer (2001)**	**Kerzner (2009)**	**PMI (2013)**
Professionalism	Professionalism refers to the project manager's values and characteristics that express his/her commitment and integrity.	77	Commitment	X	X			X	X
		78	Focus on quality	X	X				X
		79	Professional skills		X			X	X
		80	Ownership of tasks	X					
		81	Not compromising on the facts	X					
		82	Participate and contribute fully	X					
		83	Results-oriented	X				X	X
		84	Lifelong learning	X					
		85	Experience			X			

Source: Adapted from (Keil et al., 2013, p. 402)

In the following section, we present concepts and factors regarding the second construct of the research: team commitment.

2.2. Team commitment

First of all, important definitions and details of Allen' and Meyer's three-component model of organization commitment (Allen & Meyer, 1990; Meyer & Allen, 1991) are presented. Then, we present the concepts of team commitment and a brief review of studies on the influence of team commitment on IT project success.

2.2.1. The Three-Component Model of Organizational Commitment

Organizational commitment is the individual's identification and involvement with a particular organization. Mowday et al. (1979) characterize organizational commitment as having three factors: (1) strong belief in and acceptance of the organization's goals and values; (2) willingness to put in effort and use abilities on behalf of the organization; and (3) strong desire to remain as an employee of the organization. Commitment goes beyond passive loyalty to an organization. It also involves an active relationship with the organization in which individuals are willing to give something of themselves to contribute to the organization's goals. "Commitment could be inferred not only from the expressions of an individual's beliefs and opinions but also from his or her actions." (Mowday et al., 1979, p. 226).

Meyer and Allen (1991) affirm that commitment is a psychological state that characterizes the employee's relationship with the organization and directly impacts his/her decision to remain in the organization. They elaborated a three-component model to evaluate organizational commitment (Allen & Meyer, 1990; Meyer & Allen, 1991). The three components of commitment are affective, continuance and normative commitment. They also developed the affective, continuance and normative scales: ACS, CCS and NCS, respectively.

According to Allen and Meyer (1990), affective commitment refers to the individual's emotional attachment to, identification with and involvement in the organization. Individuals with strong affective commitment remain in the organization because they want to do so. Continuance commitment refers to an awareness of the costs associated with leaving the organization. Employees with this commitment component stay in the organization because they need to. Finally, normative commitment is related to the feeling of obligation to continue in the organization. Individuals with high level of

normative commitment continue in the company because they feel they ought to do so (Allen & Meyer, 1990).

An employee can experience commitment at different levels in each component. For instance, one employee might feel both a strong desire and a strong need to remain in the company, but little obligation to do so; another might feel little desire, a moderate need and a strong obligation to remain in the organization. The psychological state that reflects the three components of commitment is developed by the influence of certain antecedents and impacts different aspects of work-relevant behavior.

Meyer and Allen (1991) studied the antecedents of the three components of organizational commitment. The antecedents of affective commitment are divided into four categories: personal, structural characteristics, job-related characteristics and work experiences. Some examples of personal characteristics that relate to commitment are need for achievement, need for autonomy, personal work ethic, locus of control and central life interest in work. There is some evidence that affective commitment is related to decentralization of decision making and formalization of policy and procedure (Meyer & Allen, 1991). Commitment "develops as the result of experiences that satisfy employees' need and/or compatible with their values" (Meyer & Allen, 1991, p. 71).

Since continuance commitment reflects the awareness of costs associated with leaving the organization, anything that increases these costs can be considered an antecedent. Therefore, it is proposed that continuance commitment is developed based on two factors: the magnitude and/or the number of investments (or side-bets) employees make and the perceived lack of alternatives (Allen & Meyer, 1990). The concept of side bets is based on Becker's (1960) study on commitment. According to Becker (1960), individuals make choices based on previous decisions they have made. Doing so, individuals make "side bets" based on a main bet or activity. If he/she fails the main bet he/she loses the side bet. Side bets, then, increase individual's commitment to the main bet. A "committed person has acted in such a way as to involve other interests of his, originally extraneous to the action he is engaged in, directly in that action" (Becker, 1960, p. 35). Testing Becker's theory is a complex task because those costs (or side bets) tend to be completely different from person to person (Meyer & Allen, 1991).

According to Meyer and Allen (1991), the feeling of obligation is one of the roots of normative commitment. Wiener (as cited by Meyer & Allen, 1991) suggests that the feeling of obligation to stay in the organization may result from the internalization of

normative pressures wielded over an individual before his/her joining the organization (i.e., familial or cultural socialization) or after (i.e. organizational socialization). “Rewards in advance” (e.g., paying college tuition) and high investments in employees such as courses or training may also stimulate normative commitment. Employees may feel obliged to pay back to the organization what was invested on them, as if they have a debt with their employers.

Meyer, Stanley, Herscovitch, and Topolnytsky (2002) evaluated more deeply the interrelation within the three components of commitment and work-related factors. Their study demonstrates that the three components of commitment are negatively related to withdrawal cognition and turnover. Affective commitment has the strongest correlation with organization-relevant (attendance, performance, and organizational citizenship behavior) and employee-relevant (stress and work-family conflict) outcomes. Normative commitment relates to desirable outcomes, but not so strongly as affective commitment. Finally, continuance commitment has no relation with desirable reactions (for instance performance). Figure 3 illustrates the organizational commitment model designed by Meyer et al. (2002). The left side of figure 3 illustrates the variables involved in the development of the three components of commitment. The right side shows the consequences of commitment.

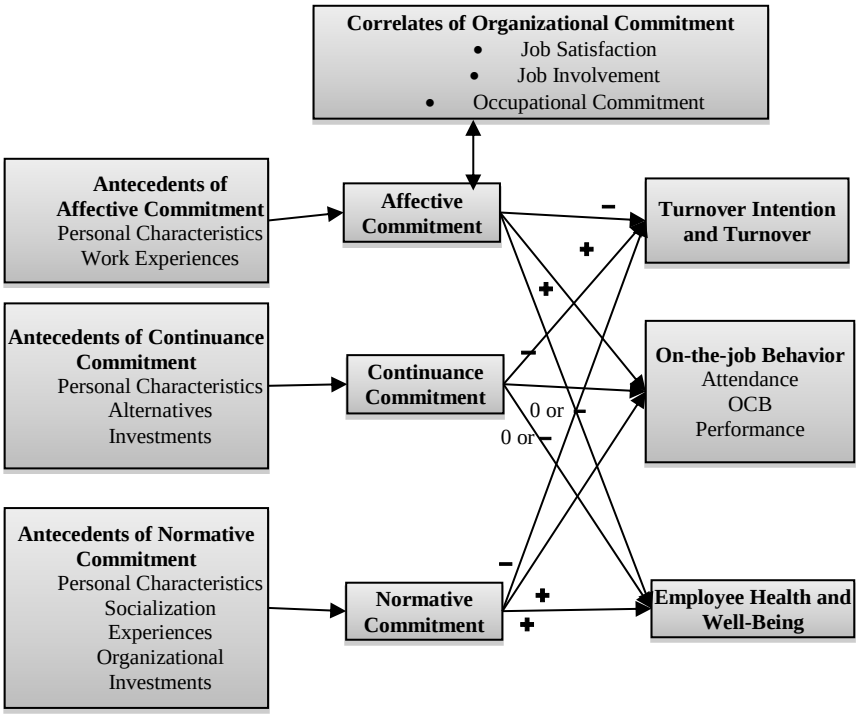

Figure 3: A Three-Component Model of Organizational Commitment
Source: (Meyer et al., 2002, p. 22)
Note: OCB is the abbreviation for Organizational Citizenship Behavior

Meyer et al. (2002) conclude that correlations between affective commitment and overall job satisfaction, job involvement and occupational commitment are remarkably stronger than the correlations with continuance and normative commitment. That is the reason why many other scholars focus their analysis on the relationship between affective commitment and work-related factors such as team performance, turnover, productivity and project success (Leung et al., 2008; Mahembe & Engelbrecht, 2013; Neininger, Lehmann-Willenbrock, Kauffeld, & Henschel, 2010). Meyer et al. (2002) also affirmed that the correlations within the three commitment components and turnover and withdrawal cognition are negative. Affective and normative commitments correlate positively with job performance. An important finding is that affective commitment correlates negatively with self-reported stress and work-family conflict.

2.2.2. Definition of Team Commitment

In the last decades, in order to adapt to the ever changing business world and to become more competitive, organizations have focused on work teams (Silva, 2009). Organizations have reported a number of benefits from the use of work teams: better quality, less absenteeism, reduced turnover and improvement in production cycle time (Bishop, Scott, & Burroughs, 2000). Cohen and Bailey (1997) define a team as a group of individuals that are interdependent in their tasks, share responsibility for results and see themselves (and are seen by others) as a social unity embedded in a larger social system (i.e. an organization, a corporation). Team members manage their relationships across the boundaries of an organization.

Team commitment is similar to organizational commitment since teams build goals and principles that members can accept or not (Bishop & Dow Scott, 2000; Bishop et al., 2000). Team members may choose to put different levels of effort on behalf of the teams and may have different levels of desire to remain in the team (Bishop et al., 2000). Apart from that, the Organizational Commitment Questionnaire (OCQ) has been used to measure the commitment of different organizational entities (Bishop & Dow Scott, 2000; Bishop et al., 2000). For this reason, Bishop and Scott (2000) adapted the definition of organizational commitment (Mowday et al., 1979) and stated that team commitment is an individual's (a) strong belief in the team's objectives and values; (b) willingness work on behalf of the team and (c) strong desire to stay in the team.

Bishop, Scott, Goldsby, and Cropanzano (2005) declare that it is important to separate an individual's commitment to the organization from the commitment he/she has towards his/her teammates. In fact, people can separate organizational commitment from their commitment to work teams (Bishop et al., 2005): an employee may be extremely committed to both the team and to the organization or he/she can be committed to the team and not to the organization and even to none of them (Bishop et al., 2005; Bishop & Scott, 1997).

Studies have evaluated the relationships between different team-related variables, organizational and team commitment. Figure 4 illustrates Bishop's and Scott's (1997) research model. On the left, we see the variables that affect team and organizational commitment; on the right, the variables that are affected by both types of commitment. It is interesting to note that team commitment is positively related to two desirable team outcomes: productivity and willingness to help others.

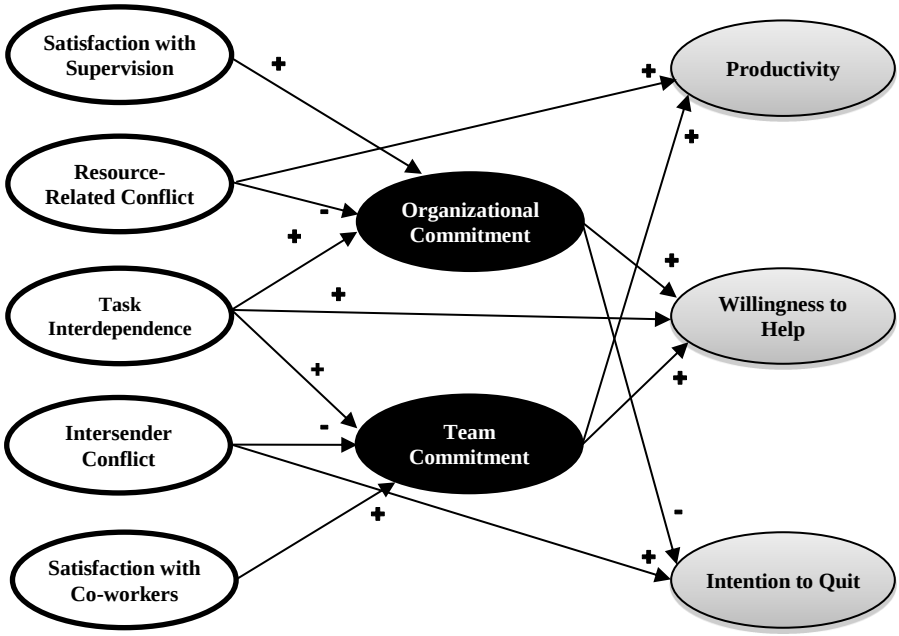

Figure 4: Synthetized model that shows the relations between variables, organizational and team commitment
Source: Adapted from (Bishop & Scott, 1997)

2.2.3. The Influence of Team Commitment on IT Project Performance

Many scholars have evaluated the effects of team commitment on IT projects performance (Akgün, Lynn, Keskin, & Dogan, 2014; Kappelman, McKeeman, & Zhang, 2006; Korzaan, 2009; Xu, Zhang, & Barkhi, 2010). It has been demonstrated that team commitment positively affects IT project success (Chang et al., 2010; Xu et al., 2010). In IT environments, committed team members are more willing to communicate and share important information. Also, committed members are more prone to participate in IT implementation activities and more flexible when unforeseen problems arise (Chang et al., 2010).

Literature confirms that project leaders can influence team commitment (Allen & Meyer, 1990; Shenhar & Dvir, 2007; Thamhain, 2013a). Thamhain (2011) affirms that due to the shift toward more self-directed teams and less hierarchical organizations, the role of project management in team commitment is critical. As cited above, effective project leaders spur and inspire their team members in order to promote motivation and team commitment (Shenhar & Dvir, 2007).

Project managers should also use techniques and leadership styles to encourage team members to become more involved in problem solving, goal setting and decision making (Zwikael & Unger-Aviram, 2008). "Building commitment requires a leadership style that relies, to a large degree, on shared power and earned authority" (Thamhain,

2013a, p. 326). In a study on multinational projects, Thamhain (2013a) concluded that to drive team commitment it is necessary to have an **experienced** project leader who is able to gain the team's **trust**, **respect** and **credibility**. Project managers who lead their team with motivation are more effective in building team commitment (Arnold, Barling, & Kelloway, 2001). One of the tactics to spur team commitment is scheduling regular meetings to review project objectives and to discuss problems encountered during project execution (Sabherwal & Elam, 1995; Thamhain, 2013a).

The next section presents the main concepts of mixed methods as well as details about the research model and the process of scale development.

3. Methodology

Next, we will introduce the main concepts of the research method adopted in this study. Besides that, this session presents the details on the study's research model.

3.1. Mixed methods

As we intended to evaluate the relationship between the two research constructs (IT project manager competencies and team commitment), we decided that mixed methods were the appropriate research method for this project.

The first phase of the research aimed to collect information regarding the two constructs and to define the scope of the research. The second phase aimed to identify which competencies have direct relationship with team commitment and to build the new scale instrument.

Mixed methods research is considerably new as an available research methodology for researchers and practitioners (Creswell & Plano-Clark, 2011). However, the number of researches that integrate qualitative and quantitative methods has increased considerably in the last years (Bryman, 2006; Creswell, 2011).

Mixed methods are defined as using qualitative and/or quantitative methods to collect or analyze research data in the same study. The data is collect simultaneously or sequentially and the researcher can give different priorities to the collected data. In the research process, the data is integrated in one or more phases (Borrego, Douglas, & Amelink, 2009). Researches that combines these two methods do so "for the purposes of breadth and depth of understanding and corroboration" (Johnson, Onwuegbuzie, & Turner, 2007, p. 123).

Mixed method studies include at least one qualitative strand and one quantitative strand. **Strand** is a research component that involves the process of conducting a qualitative or a quantitative research. For example, a research can start with a quantitative strand, continue with a qualitative strand and then, conclude with an overall interpretation of the data collected in the two strands. Bryman (2006) and Greene, Caracelli, and Graham (1989) grouped the possible reasons why researchers choose mixed methods designs in their studies. Table 3 presents the reasons why researchers choose to adopt mixed methods. It is relevant to note that the reason why we chose mixed methods was for the purpose of **instrument development**.

Table 3: Reasons to adopt mixed methods designs

Reason	Description	Author
Triangulation	Researchers intend to find convergence and to corroborate results using different methods.	Greene et al. (1989)
Complementary	In this purpose, scholars intend to elaborate, enhance and clarify research results from one method with the results of another.	
Development	Researchers intend to use the results of another method to develop another one. The development is designed to include samples, implementations and measurement decisions.	
Initiation	In this case, the objective is to discover paradoxes, contradictions, new perspectives by revising the results and questions from one method with the questions and results of another method.	
Expansion	The objective here is to extend the breadth and range of the research by using different methods to test different research components.	
Triangulation or greater validity	It refers to the traditional rationale in which quantitative and qualitative methods are combined to triangulate results so that both methods corroborate each other.	
Offset	Refers to the mindset that combining the two methods can offset their weaknesses and draw on their strengths.	
Completeness	Related to the notion that the researcher can do more thorough study as he/she combines the two methods.	
Process	"Quantitative research provides an account of structures in social life but quantitative research provides sense of process." (p. 106)	
Different research questions	In this justification, quantitative and qualitative methods are employed to answer different questions	
Explanation	One method is used to explain the findings generated by the other.	
Unexpected results	Researches integrate qualitative and quantitative because they believe than one method can bring about unexpected results that can only be explained by employing the other method.	
Instrument development	In this case, quantitative method is employed to develop questionnaire and scale items.	
Sampling	The combination of the two methods is employed to facilitate the creation of samples of respondents or cases.	
Credibility	When researches want to enhance the credibility of their study.	
Context	In this case, qualitative method is used to provide an overall understanding of the phenomenon and the quantitative method is used to generalize the results of the research or to find the relationship within the variables.	
Illustration	Qualitative method is used to illustrate quantitative findings. It is usually referred as putting 'meat on the bones of dry' quantitative findings.	Bryman (2006)
Utility or providing the usefulness of findings	When researchers believe that combining the two methods is more useful to others scholars.	
Confirm and discover	In this justification, qualitative data generates hypotheses that will be tested in a quantitative research within a single study.	
Diversity of views	When the purpose is to convey the different perspectives from the body researchers and participants by combining the two methods. The relationship within the different variables is uncovered using quantitative method; and the meanings among participants are uncovered using qualitative method.	
Enhancement or building upon quantitative/qualitative findings	When researchers want to augment either quantitative or qualitative finding by gathering more data by employing qualitative or quantitative methods	

Source: Adapted from (Bryman, 2006; Greene et al., 1989)

In mixed methods, researchers need to define the level of interaction between the qualitative and quantitative strands of their study. There can be two levels of interaction: independent and interactive (Creswell & Plano-Clark, 2011). Independent interaction means that the qualitative and quantitative strands are independent from each other. In this

case, the researcher only combines the results from both strands at the end of the study. In the interactive level, there is a direct connection between the qualitative and quantitative strands. The date provided by both strands are combined before the end of the research (Creswell & Plano-Clark, 2011). To fulfill the purposes of this research, the interaction level between the qualitative and quantitative strands is interactive, meaning that the qualitative strand provided the foundation for the quantitative strand.

Another important aspect that needs to be addressed is the importance or priority of the strands involved in the study (Creswell & Plano-Clark, 2011). In this research, both qualitative and quantitative strands of the study are equally important in addressing the research problem. It is also important to decide regarding the timing of qualitative and quantitative strands. The important issue on the timing factor is about the sequence in which researchers use the results generated by the quantitative and qualitative strands of the study (Creswell & Plano-Clark, 2011). The timing of the execution of the qualitative and quantitative strands is sequential. Each strand is executed in a specific phase.

Finally, researchers also have to determine the way they will mix the two approaches in their study. Mixing can occur in four different stages of the study: interpretation, data analysis, data collection and design research (Creswell & Plano-Clark, 2011). Besides defining the point of interface of both methods, researchers also adopt an specific strategy to implement the mixing of the two methods: "(1) merging the two data sets, (2) connection from the analysis of one set of data within a larger design or procedure, and (3) using a framework (theoretical or program) to bind together the data sets" (Creswell & Plano-Clark, 2011, p. 66). In this research, as the qualitative strand provided important details to the quantitative strand, both strands were mixed during data collection. Table 4 summarizes the aspects researches need to observe as they adopt mixed methods. It also presents the alternatives we adopted to conduct our study.

Table 4: Summary of the four main aspects regarding adopting mixed methods design

Aspect	Description	Alternatives	What was adopted in this research
Level of interaction	The level of interaction between the qualitative and quantitative strands of their study	Independent Interactive	Interactive
Priority	The importance or priority of the strands involved in their study	QUAL, QUAN QUAL, quan Qual, QUAN	QUAL, QUAN
Timing	Timing relates to the temporal relationship between the qualitative and quantitative strands	Concurrent timing Sequential timing Multiphase timing	Sequential timing
Procedures for mixing (point of interface)	The way the qualitative and quantitative strands will be mixed	Mixing during interpretation Mixing during data analysis Mixing during data collection Mixing during at the level of design	Mixing during interpretation

Source: Adapted from (Creswell & Plano-Clark, 2011)
Note: Abbreviations and notations from (Morse, 2003) - "qual" means qualitative, "quan" means quantitative. Capital letters denote high priority and lower case letters denote lower priority.

After presenting important concepts on mixed research methods, we will present the research model of this two-phase study as well as relevant details on each phase.

3.2. Research model

Figure 5 illustrates the research model adopted in this study.

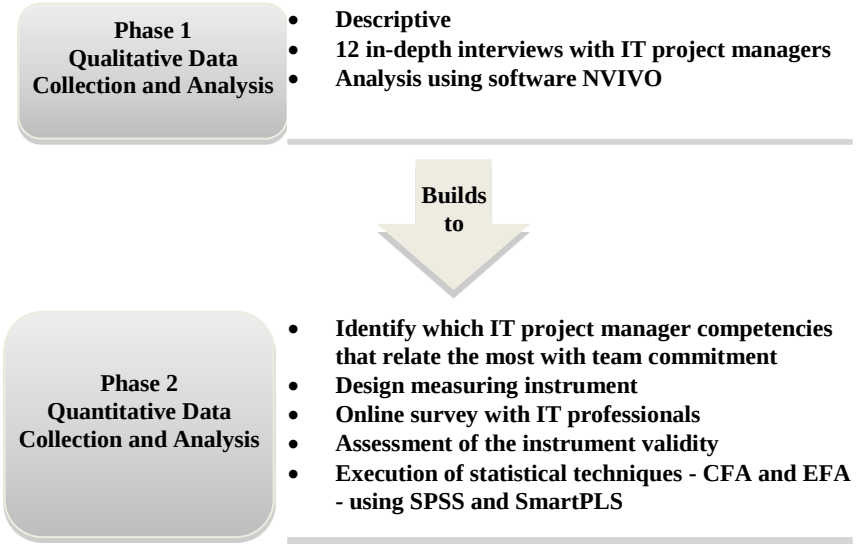

Figure 5: Research model

As illustrated in figure 5, the first phase of this study was exploratory and had a qualitative approach. As Gibbs (2009) affirms, qualitative method is appropriate when researchers aim find patterns and explanations to research problems. After the literature review, we conducted 12 (twelve) 40-50 minute in-depth interviews with IT project managers. "In-depth interview is a qualitative research technique that involves conducting intensive individual interviews with a small number of respondents in order to explore their perspectives" (Boyce & Neale, 2006, p. 3).

This first stage of the research helped us (1) to define the sample of participants for the online survey to be conducted on the quantitative stage; (2) to determine which competencies would be included or excluded from the new measuring instrument; (3) to define the boundaries of the research constructs; and (4) to obtain a better understanding of IT project management on Brazilian organizations.

NVIVO: http://www.qsrinternational.com/products_nvivo.aspx
SPSS: http://www-01.ibm.com/software/analytics/spss/
SmartPLS: http://www.smartpls.com/

We selected IT professionals from different business sectors so that we would understand the dynamism of the elements of the object of our research. Following, a brief description of the respondents:

- 1 project manager of a technology organization in the public sector;
- 1 manager of a big multinational fashion retail clothing store;
- 3 project managers of small technology consultancies;
- 2 project managers of a big multinational technology company;
- 4 project managers of a multinational in the telecommunication sector;
- 1 team coordinator of a multinational e-commerce company.

We conducted the interviews using a semi-structured questionnaire with open questions. In Appendix B, you find the questionnaire used to conduct the interviews. All interviews were recorded and transcribed them so that we could fulfill the requisites of qualitative research (Gibbs, 2009). Two interviews were face-to-face and recorded using Evernote. The others were conducted via Skype and recorded using the software Pamela for Skype. All interviews were transcribed using two software, Express Scribe and TranscriberAG.

After transcribing the interviews, we analyzed the collected data using the software NVIVO 10. We used codification to classify the collected data. As Gibbs (2009) affirms, codification is defining one or more excerpts of a text or parts of data as parts of broader picture. The codes or categories were generated based on literature review as recommended by (Gibbs, 2009). The code categories are described below:

- Success Criteria;
- IT Project Manager's Competencies: the sub-codes are presented in table 2;
- Organizational Commitment (Allen & Meyer, 1990; Meyer & Allen, 1991):
  - Affective Commitment;
  - Continuance Commitment;
  - Normative Commitment.
- Influence of organizational culture on IT project manager's role and team commitment - based on (Bannerman, 2013; Feger & Thomas, 2012; Zwikael & Unger-Aviram, 2008);
- Importance of defining project metrics and indicators – based on (PMI, 2013).

Evernote: http://www.evernote.com
Express Scribe: http://www.nch.com.au/scribe/
Pamela for Skype: http://www.pamela.biz/en/
TranscribeAG: http://transcriber.softonic.com.br/

In the second phase conducted a quantitative research that gave us the necessary data to design an instrument to measure the IT project manager competencies that influence team commitment. To design this new measuring instrument, we used the competencies list extracted from literature review (see table 2 on page 20). To avoid excess of scale items, we kept only the most relevant competencies according to the qualitative analysis. To structure the process scale development, we adopted Slavec's and Drnovesek's (2012) article as our guideline.

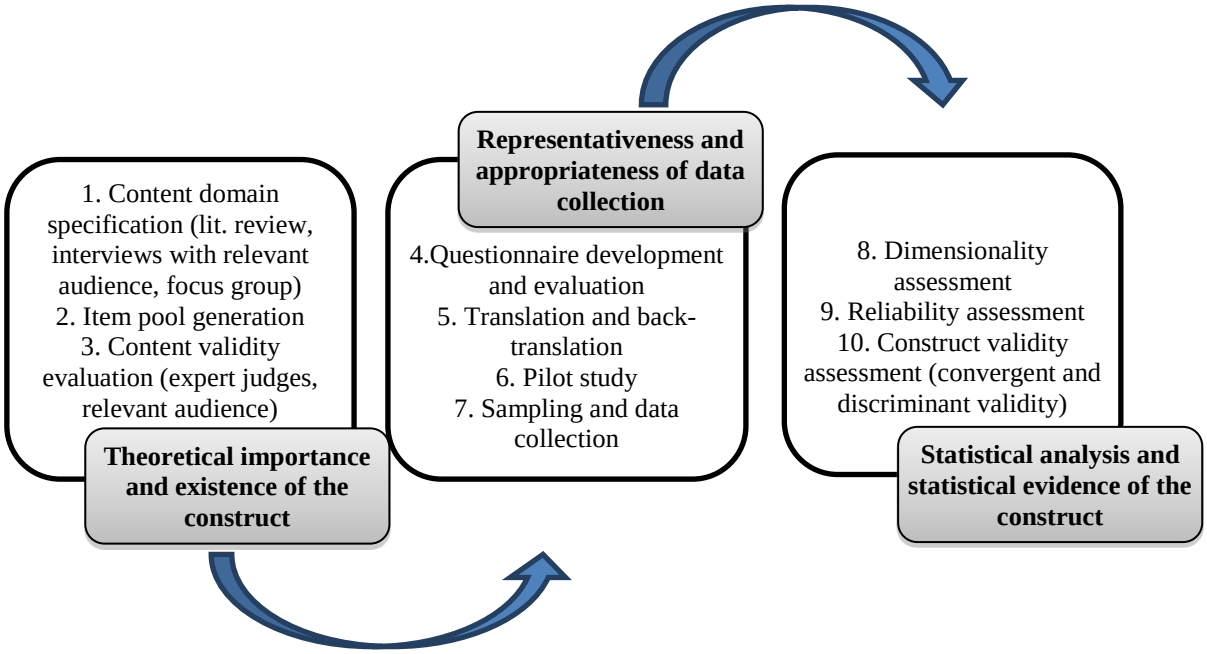

Figure 6: Ten steps and three stages for scale development
Source: Adapted from (Slavec & Drnovesek, 2012, p. 43)

Founded on the classical Churchill's (1979) article, Slavec and Drnovesek (2012) propose a ten-step procedure to develop a new scale. These then steps were grouped in three stages: "(1) theoretical importance and existence of the construct, (2) representativeness and appropriateness of data collection, and (3) statistical analysis and statistical evidence of the construct" (Slavec & Drnovesek, 2012, p. 53). We followed the tree-stage procedure to design the scale to measure which IT project manager competencies influence team commitment. Figure 6 illustrates the three-stage procedure for scale development.

In the stage of theoretical importance and existence of the construct, we focused on these three steps: content domain specification, item pool generation and content validity evaluation. In the content domain specification, we defined what we were going to measure (Devellis, 2003). We defined the content domain of the new scale based on the results of the qualitative phase of the research (see section 4). Based on the qualitative

analysis, we defined the constructs of our study - IT project manager competencies and team commitment – as well as the boundaries of these constructs. We also defined the IT project manager as our analisis unity. Figure 7 illustrates the conceptual model of our research.

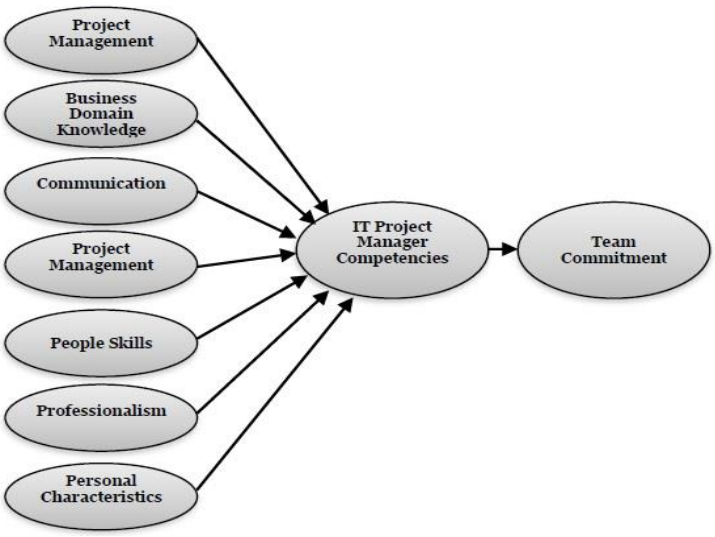

Figure 7: Conceptual Model of the Research Constructs

The second step of Slavec's and Drnovesek's (2012) procedure is the item pool generation. They recommend that researchers do an exploratory study to validate the new construct. To do so, we conducted twelve in-depth interviews during the qualitative phase of the study. As you can see in Appendix B, the interview questionnaire covered the main pillars of the study: team commitment and IT project manager competencies. The interviews were "taped, transcribed, and analyzed in order to get feedback on eventual inclusion of some aspects of construct domain that might have not been included" (Slavec & Drnovesek, 2012, p. 54). After this stage, we wrote the scale items, keeping in mind that items should be "clear, simple and short" (Slavec & Drnovesek, 2012, p. 55).

During the scale design, we included only the competencies categories that were relevant to our respondents (team management, business domain knowledge, communication, project management and people skills). The least relevant categories were excluded - technical skills, organizational skills and problem solving. After this process, the number of items reduced from eighty-five to sixty. Another important factor is that the number of items is high since "at this stage overinclusiveness is preferred to underinclusiveness" (Slavec & Drnovesek, 2012, p.55).

In the last step of this stage, we evaluated the content validity. As recommended by

Slavec and Drnovesek (2012), we had knowledge people reviewing the scale items. These experts included six renowned professors from the areas of administration, research method and project management. These experts reviewed the items and proposed changes. Table 5 summarizes the changes proposed by the six experts. After their revision, we analyzed their suggestions according to the purpose of the study and literature review. We accepted some suggestions and rejected others, since we were the creators of the new scale (DeVellis, 2003).

To provide a broader view of progressive betterment of the new scale, Appendix C shows the version of the scale as it was designed in item pool generation step. Appendix D shows the final version of the scale, i.e. after the execution of the steps of content validity, questionnaire development and evaluations, translation and back-translation and pilot study. Appendix E describes the version in Portuguese of the scale, which was used for the online survey.

Table 5: Summary of the results of the step of content validity (experts' revision)

Expert	Suggestion	Item Before Experts' Revision Appendix C	Final Version (after the experts' revision) – Appendix D
Expert 1	Inclusion of some explanations regarding the competencies listed on the scale	Explanations were added just below the item to help respondents. However, we were took great care so that the items were not biased.	
Expert 2	Change wording in item 7. The expression "without giving orders" was confusing.	Item 7: "Lead a project team without giving orders, empower team members and generate excitement amongst them."	Item 1: "Lead the team, without being authoritarian, so that the team accomplishes the project goals with enthusiasm."
Expert 3	In the item about risk management, the expert suggested that we included another item regarding management of opportunities and new endeavors.	Item 33: "Gather information pertaining to potential risks and develop a plan to reduce or eliminate those risks."	We added a new item: Item 32: "Identify potential risks and develop a plan to reduce or eliminate those risks." Item 33: "Identify and expand opportunities for improvement and growth."
Expert 4	It was recommended that we included the ability to manage critical path to estimate value and cost in IT projects	"Make a good time management by prioritizing multiple tasks within a dynamic environment."	We reworded the item regarding time management to include these two recommendations. Item 30: "Make a good time management to prevent bottlenecks, by using appropriate techniques such as critical path analysis."
	Under the business requirements, we were instructed to ask respondents about the ability to manage deadlines and the implications of missing these deadlines.	Item 28: "know how to decompose a high level project goal into measurable and tangible tasks."	We reworded the item regarding project planning to add the experts' suggestion. Item 29: ".Establish activities and deadlines precisely, based on the business requirements, foreseeing penalties for not accomplishing these activities and deadlines."
	The expert recommended that we included the aspect of calculating the value and cost of time.	We did not accept this suggesting because it had no relation to team commitment.	
	Regarding the ability to motivate team members, the expert recommended that we added the aspect of using techniques and rituals to stimulate motivation and team commitment.	We rejected this suggestion because we preferred to keep the sentence short and concise.	
	We were instructed to add the aspect of compensating team members for working excessive hours.	This suggestion was rejected because we wanted to avoid an excessive number of items	
	Suggested that the categories regarding technical skills to be excluded since this category had a low number of citations on the qualitative phase of the research.	Item 43 "Understand the technology being used in the project well enough to make effective decisions concerning this matter." Item 45: "Be familiar and experienced with various development methodologies and models."	We excluded these two items as recommended.

Table 5 (cont.): Summary of the results of the step of content validity (experts' revision)

Expert (cont.)	**Suggestion**	**Item Before Experts' Revision Appendix C**	**Final Version (after the experts' revision) – Appendix D**
Expert 5	We were instructed to add items regarding team commitment so that we would be able to measure the relationship between team management and the IT project manager competencies.		We added eight items regarding team management. We obtained the scale on team commitment from Bishop's and Scott's (2000) article. See items 1-8 in Appendix C.
	The expert recommended that the scale of the items about team commitment were change from 1-6 to 1-5.	Scale was 1 (strongly disagree) to 6 (strongly agree).	The scale change to 1 (strongly disagree) to 5 (strongly agree).
	We were instructed to change the introductory sentence of the questionnaire. The expert believed that this sentence would increase the tendency for social desirability among respondents.	"In order to develop team commitment in an IT project, a project manager should..."	"In general an IT project manager presents which characteristics/abilities?"
Expert 6	Suggestion not to create a separate item for leadership skills (see item 7 in Appendix C) since this competence is implied in the ability of motivating team members.	Item 1: "Motivate and drive people toward the project objectives." Item 7: "Lead a project team without giving orders, empower team members and generate excitement amongst them."	Item 1: "Lead the team, without being authoritarian, so that the team accomplishes the project goals with enthusiasm." We excluded item 7.
	This expert suggested that we consolidated similar items such as some items in the communication category.	Item 21: "Communicate the issues of the project to the stakeholders and manage their expectations accordingly." Item 22: "Write in a manner that is easily understood by people.	We consolidate the items of verbal and written communication into one single item. Item 23: "Write in a manner that is easily understood by people."

Source: Authors

As you can see in figure 6, the stage of representativeness and appropriateness of data collection consists of four stages (4) questionnaire development and evaluation, (5) translation and back-translation of the questionnaire, (6) pilot study performance, and (7) sampling and data collection (Slavec & Drnovesek, 2012). In the step of questionnaire development and evaluation, we wrote the questionnaire using the Google tool to design web-based survey. As recommended by Dillman, Smyth, and Christian (2009 cited by Slavec and Drnovesek, 2012), we gave special attention to some factors such as ensuring confidentiality, providing information about the survey, sending reminders and decreasing the costs of participation.

Another important fact is that, due to the recommendation of the one of the experts, we structured the scale item in a way to avoid social desirability. Social desirability is the tendency individuals have to distort their speech or their testimony in order to present culturally desirable attitudes or behaviors (Gouveia, Guerra, Farias, Santos, & Costa, 2009). Therefore, we chose to ask indirect questions "In general what are the attitudes and characteristics of the members of IT project teams?" instead of direct questions such as "What is your attitude and characteristics as a member of IT project teams?" As Czinkota and Ronkainen (2012) instruct, we took into consideration the level of sensitivity of our society and ensured that the questions were culturally acceptable.

In the fifth step, researchers need to attest that the questionnaire preserves its meaning in different languages. Initially, we wrote the items in English since the whole research was written in this language. After, as the survey would be sent only to Brazilians IT professionals, we translated it to Portuguese. Then, to attest that the meaning of the scale items was intact, we had a native speaker English translator performing the back translation. As we executed this process, we ensured that the scale items presented cross-cultural equivalence (Slavec & Drnovesek, 2012).

The sixth step consisted of engaging a preliminary research scale with a group of nineteen people. Despite the limited time, we conducted the pilot study with a sample of the target population as recommended by Slavec and Drnovesek (2012). To allow respondents to give suggestions, we added in the survey a text box in which they could write critics, suggestions and thoughts. As we executed this pilot study, we identified some potential problems on the questionnaire as well as conduct a semantic validation of the instrument. For example: one respondent pointed out that the structure of the survey could lead respondents to give high marks to **all** competencies. For this reason, we added the sentence "Answer based on what you have observed, and not on what you believe to be ideal." Another suggestion from respondents, led us to split the sentence "Share information and credit for project success with their team." into two items (see items thirteen and fourteen in Appendix D). Finally, we changed the title of the survey from "Research on the influence of IT project manager competencies on team commitment" to "Research on IT project manager competencies and team commitment". We implemented this change as we realized the former title could make respondents to think that IT project manager **competencies always influence team commitment.** This idea would probably mislead respondents and distort the survey results.

Afterwards, we added eight items which were related to team commitment. That was necessary in order to enable us to verify which competencies were more related to team commitment: in the exploratory and confirmatory factor analysis, we could evaluate the relationship between these two constructs (Henseler et al., 2009). These items were extracted from the scale used in an article of Bishop and Scott (2000).

The seventh step consists of sampling and collecting data. At this stage, researchers collect data to evaluate the structure of the instrument and its validity (Hinkin, 1998). Random sampling is the most common type of sampling self-administered surveys (Dillman et al. 2009 cited by Slavec and Drnovesek, 2012). Hinkin (1998) suggests administering the questionnaire to respondents of the target population. Our target population was IT professionals who work in project settings. There was no limitation regarding years of professional experience or business sector of the companies where respondents work at because we aimed to have a larger perspective of IT professionals regarding team commitment and project manager competencies. The only restriction was that the respondents had to work in IT projects settled in Brazil.

Slavec and Drnovesek (2012) say that there is no specific rule to determine the size of the sample. However, DeVellis (2003) suggests that the sample of respondents should be high and in direct proportion to the number of items. It means that, as the number of items increases, the numbers of respondents should increase as well (Hinkin, 1998). Schwab (1980) suggests an item-for-response ration of 1:10, meaning that a number of 100 respondents is needed for a 10-item scale. On the other hand, Rummel (1970) suggests an item-for-response ratio of 1:4. We decided to determine the number of responses based on researches that affirm that 200 responses are necessary for confirmatory factor analysis and other 200 responses for exploratory factor analysis (Guadagnoli & Velicer, 1988; Hinkin, 1998). Fortunately, the response rate of the survey was high. We collected 484 responses. To get responses, we emailed IT professionals, posted the survey on Facebook and LinkedIn and also, sent messages to IT professionals on Linkedin. Approximately, eighty hundred messages and emails were sent to invite professionals to participate the survey.

The stage of statistical analysis and statistical evidence of the construct contains four steps: (8) dimensionality assessment, (9) reliability assessment and (10) construct validity assessment. In this stage, we used the software SPSS and SmartPLS. SPSS Statistics is an IBM software package for statistical analysis. SmartPLS is a graphical software application to do path modeling with latent variables (LVs) using the PLS (Partial

Least Squares) method. The PLS method was designed to perform the analysis of high dimensional data and has been applied in an extensive range of scientific fields (Henseler et al., 1009).

Dimensionality indicates the homogeneity of the scale items (Clark & Watson, 1995). The number of scale dimensions varies according to the number of factors or constructs measured by that specific instrument (Slavec and Drnovesek, 2012). The items are considered homogeneous when they assess a specific factor or construct. When the items underlie one specific factor, the measure is unidimensional; when the items cover more than one factor or construct, the measure is multidimensional. Dimensionality can be assessed by using the exploratory factor analysis (EFA), confirmatory factor analysis (CFA) or both (Slavec and Drnovesek, 2012). We used both the EFA and the CFA to perform the dimensionality assessment. We split the sample in half, so we had 242 responses to perform the exploratory factor analysis and the other 242 to perform the confirmatory factor analysis. The slit was random.

The ninth step of scale development was the reliability assessment. Scale reliability is the proportion of variance assigned to the true score of the latent variable (DeVellis, 2003). According to MacCallum and Austin (2000), latent variables (LVs) can be defined as hypothetical constructs that we cannot measure directly, as opposed to the measured variables (MVs). The methods to assess scale reliability are temporal stability (or test-retest reliability), split-half reliability and internal consistency (DeVellis, 2003). Since we needed to verify if the scale items were interrelated, we used the internal consistency method. It was necessary to verify the interrelation of the items to test if the scale was indeed measuring the constructs of IT project manager competencies and team commitment. To assess the internal consistency of the scale, it was used the Cronbach's (1951) coefficient alpha. The Cronbach's alpha tests if all items are equally trustworthy (Henseler, Ringle, & Sinkovic, 2009). As many authors recommend (Clark & Watson, 1995; Slavec & Drnovesek, 2012), a Cronbach's alpha (α) above 0.8 shows that the measure is reliable. We also evaluated the item-to-total and inter-item correlations. The item-to-total correlation refers to the correlation of the item to the total score of the scale. Hair et al. (2010 cited by Slavec and Drnovesek, 2012) recommends that item with item-to-total correlation below 0.50 should be eliminated. The inter-item correlation refers to the correlation among items. According to Flynn, Schroederb, and Sakakibara (1994), items with inter-item correlation below 0.30 should be excluded.

The tenth and last step of development was the construct validity assessment. Construct validity refers to the extent to which the scale measures what it is intended to measure in the setting that it will be used (Slavec & Drnovesek, 2012). To assess the validity of the construct we used the CFA. As recommended by Slavec and Drnovesek (2012), factor loading should be statistically relevant and standardized loading should be above 0.50 (ideally, 0.70).

Next, we present the analysis of the first phase of the research. We analyzed the qualitative data under the light of literature. The following session is organized according to the two theoretical constructs of this research: IT project manager competencies and team commitment.

4. Qualitative Data: Analysis and Discussion

As cited in the introduction (see page 10), we realized that only few studies analyze the influence of project manager competencies on team commitment. Therefore, we decided to conduct a qualitative research that would provide arguments and valuable insights to support the premises of the study: (1) the importance of IT project managers on project success, (2) the role of IT project managers on building team commitment and (3) the importance of team commitment to achieve project success. Including a qualitative analysis in our research gave us the possibility to study these factors considering the reality of IT project management in Brazil.

Besides that, the first stage of the research provided information to define other aspects such as the research constructs and the boundaries of these constructs; the need to develop a new measuring instrument for IT project manager competencies; the competencies to be included and excluded from the new scale; and the appropriate sample of respondents for the online survey. It is important to highlight that the qualitative phase led us to focus on team commitment rather than organizational commitment. The results demonstrate that individuals do not see commitment as one element split into divided into different components. They are prone to see “commitment” as a single unit.

4.1. IT Project Manager Competencies

To analyze the perspective of IT project manager competencies, we used the ten categories described in the literature review (see table 2 in page 18). Each category contains a list of related competencies. Table 21 in Appendix A shows a detailed description of each competence.

To classify the categories in order of relevance, we added up the number of times that the twelve interviewees cited or referred to each competence. Figure 8 illustrates a bar graph showing the ranking of the ten competence categories ordered according to the number of references.

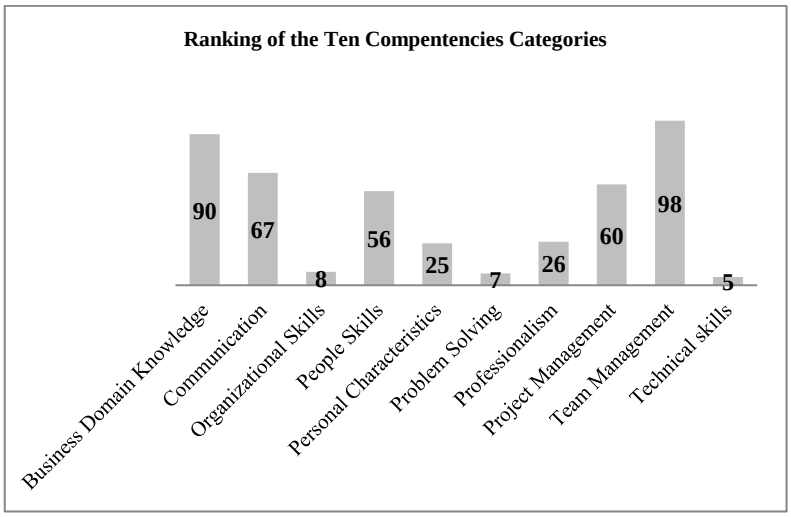

Figure 8: Ranking of the ten categories (according to the number of references)

The five most referenced competencies in our qualitative research were (in order of relevance): team management, business domain knowledge, communication, project management and people skills. In the study of Keil et al. (2013), the top five categories were communication, team management, project management, people skills and personal characteristics. Despite these differences, four categories appear in the top five of both studies: team management, project management, people skills and communication. This fact emphasizes the importance of these groups of competencies in IT project management. Another important factor is that, in our research, business knowledge is the second most relevant competence category. This result agrees with Kerzner's (2009) argument: business knowledge is one of the primary skills needed to be a successful project manager in the twenty-first century. As the projects become bigger and more complex, the role of the project manager has changed from a technical manager to a business manager (Kerzner, 2009).

It was unanimous among the interviewees that soft skills are more fundamental to IT project success than technical skills. The categories of team management, people skills and communication gathered 221 references; while technical skills got only five. This result agrees with many scholars who claim that soft skills are determinant in project success (Belzer, 2001; Stevenson & Starkweather, 2010; Sumner et al., 2006; Wateridge, 1997). In fact, some interviewees observed that project managers who are very skilled technically can underestimate important aspects of project management such as strategic and political skills and people management: "So, he was more technical, he lacked political knowledge, you know? He lacked the political power to make the project work."; "Sometimes, a project manager that has good technical skills doesn't focus on people." It is important to note that it does not mean that technical skills are no longer necessary. On the contrary, some participants pointed out that technical knowledge can facilitate communication with developers and programmers: "Exactly. (When you have technical skills) You can communicate with the person who's developing the system and pass down to the programmer what the client wants". Others also affirmed that technical skills can give IT project managers more autonomy and independence as they do not need "to have someone (with the technical knowledge) that he trusts by his side all the time."

Team management was the most important competence group according to our interviewees. This finding corroborates the fact that one of the responsibilities of the project manager is to help build the competences of his team, to motivate team members and to ensure they have an appropriate work environment in which to perform their tasks (Kerzner, 2009; PMI, 2013; Thamhain, 2011; Turner & Müller, 2005). Figure 9 presents bar a graph of the ranking of competencies in team management category.

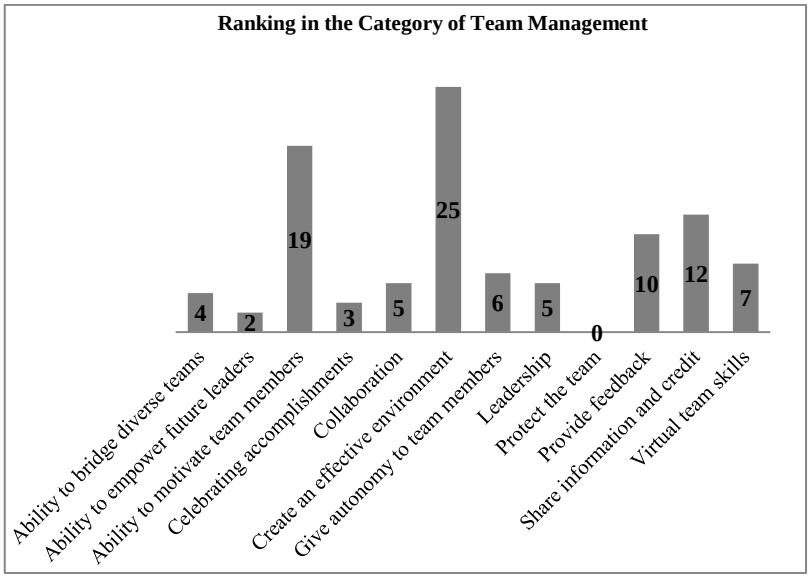

Figure 9: Ranking of the competencies in team management category (according to the number of references)

Appendix F shows some excerpts of the interviews regarding to each item of the competence category of team management.

It is important to note that even though leadership competence had five references, aspects related to leadership are implied in competences such as creating an effective environment, providing feedback, sharing information and credit, communication, motivation team members, etc. Many studies claim that team management skills, communication, some personal and professional characteristics are part of leadership competence (Dulewicz & Higgs, 2005; Geoghegan & Dulewicz, 2008; Müller & Turner, 2010). Therefore, we can conclude that in our interviewees' perspective, leadership is fundamental in the formation of effective IT project managers.

Another relevant insight is that for most respondents, motivation and commitment are interrelated. Many times respondents used motivation as a result of commitment and vice-versa. This finding corroborates the fact that commitment does affect team members' motivation (Jha & Iyer, 2007; Korzaan, 2009; Thamhain, 2011, 2013a). Jha and Iyer (2007, p. 537) claim that "commitment will keep the team motivated towards successful completion of the project on time."

Business domain knowledge was the second most relevant group of competencies according to our respondents. As mentioned above, this finding corroborates the fact that today's project management setting demands that project managers develop business skills in order to be more effective (Kerzner, 2009). Figure 10 presents a bar graph of the ranking

of the competencies in the business domain knowledge category.

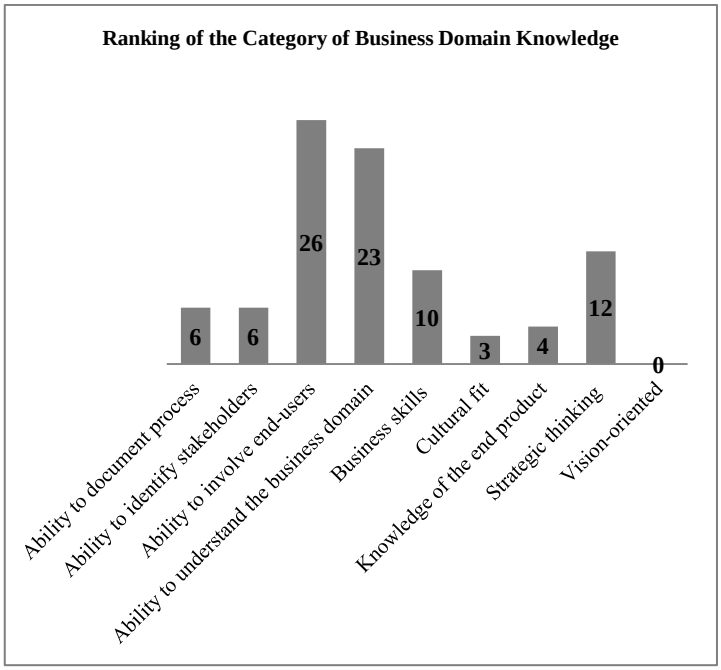

Figure 10: Ranking of the competencies in the business domain knowledge category (according to the number of references)

Appendix G presents relevant excerpts which relate to this competence category.

The fact that the most cited competence in this category was the ability to involve end-users cannot be overlooked. It shows that IT professionals are aware of two aspects: (1) end-users' satisfaction is very important in IT project success and (2) not involving end-users from the beginning of the project is a serious risk that can lead to project failure (Sumner et al., 2006). This insight is in tune with many studies which claim that miscommunication with end-users is one of the main causes of IT project failure (Sumner et al., 2006; The Standish Group, 2013, 2014; Wateridge, 1997, 1998). Researches of the Standish Group's (2013, 2014) on IT project performance show that "projects that lack user involvement perform poorly. User participation has a major effect on project resolution large or small" (The Standish Group, 2013, p. 3).

Communication was the third most cited competence group according to the research results. This result emphasizes the importance of communication in IT project management (Keil, Lee, & Deng, 2013; Skulmoski & Hartman, 2009; Stevenson & Starkweather, 2010; Sumner et al., 2006). The competence of communicating at multiple levels received a high number of references. Stevenson and Starkweather's (2010) research got a similar result. Figure 11 presents a bar graph of the ranking of the competencies in

the communication category.

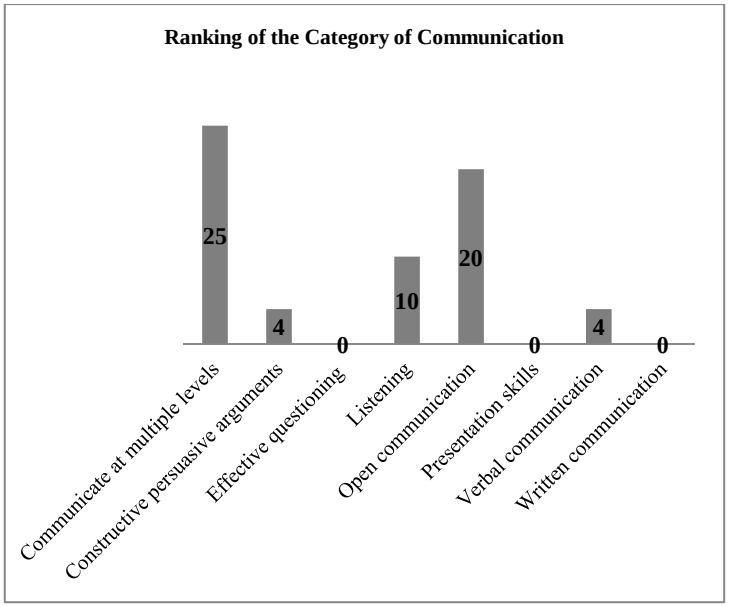

Figure 11: Ranking of the competencies in the communication category (according to the number of references)

Appendix H presents relevant excerpts of the interviews which relate to this competence category.

Project management was the fourth most relevant competence from the respondents' perspective. The article of Keil et al. (2013), used as the basis for the construction of the team categories, showed a similar result. In their research, project management category was ranked as the third most important competence. Figure 12 presents a graph of the ranking of the competencies in the project management category.

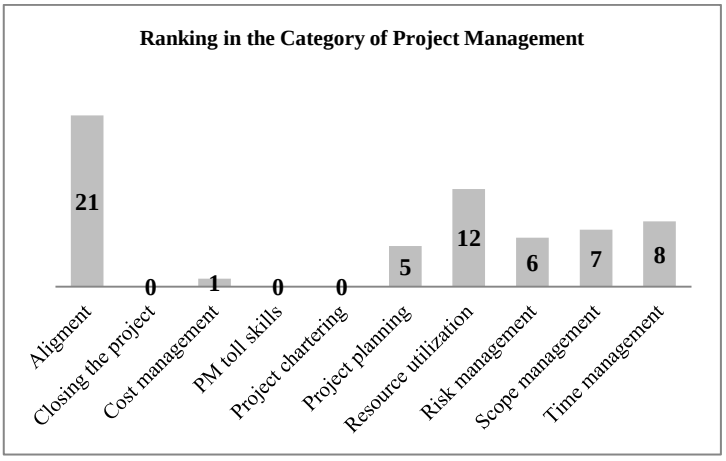

Figure 12: Ranking of the competencies in the project management category (according to the number of references)

Appendix I presents some citations extracted from the interviews.

People skills were the fifth category with the most significant amount of references. Having this in the top categories of the ranking was expected. Keil et al. (2013) presents people skills as the fourth most important competence in IT project management. A point often overlooked in an IT setting (Stevenson & Starkweather, 2010; Sumner et al., 2006; Wateridge, 1996), the psychological factor, was stressed by many respondents: "The manager is like a psychologist, right?!" For many, the IT project manager is supposed to develop skills to deal with the psychological aspect of team management in order to achieve project goals. Figure 13 presents a graph of the ranking of the competencies in the people skills category.

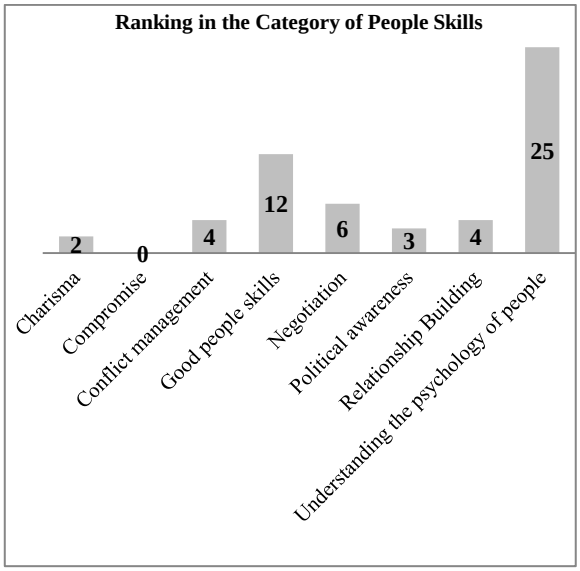

Figure 13: Ranking of the competencies in the people skills category (according to the number of references)

Appendix J shows interesting excerpts related to this competence category.

The influence of the organizational culture on a project manager's role and authority was cited a great deal in the interviews. There were sixty-four references regarding this subject. Most of respondents agreed that an IT project manager's role covers a complex range of responsibilities such as: team building, project management, proving feedback to project team members, etc. (Kerzner, 2009; PMI, 2013). However, many stressed that the project manager's work can be very limited by the organizational structure and culture: "...the stiffness of the organization… the organizational culture limits the role of the project manager…" This perspective meets findings recorded by many studies on project management (Bannerman, 2013; Feger & Thomas, 2012; Zwikael & Unger-Aviram, 2008). Zwikael and Unger-Aviram (2008) claim that organizational culture impacts the work of the project manager and affects his/her effectiveness on team management. Table 6 presents more excerpts of interviews that stress the impact of organizational culture on the IT project manager's work.

Table 6: Relevant excerpts related to the influence of organizational culture on the project manager's role

Excerpts of interviews
(regarding the influence of project manager on team commitment) "I believe it's possible. I just have doubts about the project manager's role. Everything depends on what the organization determines. Is it part of the project manager's role or not?"
"Is it possible? Yes, it is. But not the way things are in the organization I work for. (laughter) The quantity of demands that each PM (project manager) has is…We don't have time to do our work with quality, that's the truth! We do thing using the organization's methodology, the methodology we learn inside the organization, but quality is not a priority. They don't value quality at any moment! We have to deliver whatever it takes. If it (the project) has quality or not, it's something else..."
"So, sometimes, the heavy workload on the project manager can compromise the delivery of the project a lot."
"(Aligning the success criteria for the project) is part of the culture of the organization I work for, but it's not common in other organizations."

The following section presents the most relevant aspects on the result analysis regarding IT project success criteria.

4.2. Organizational and Team Commitment

Finally, we present the analysis of the interviewees' perspective on the three components of organizational commitment: affective, normative and continuance commitment (Allen & Meyer, 1990; Meyer & Allen, 1991). Continuance commitment was the most cited component. Figure 14 illustrates a bar graph of the number of references regarding the organizational commitment component.

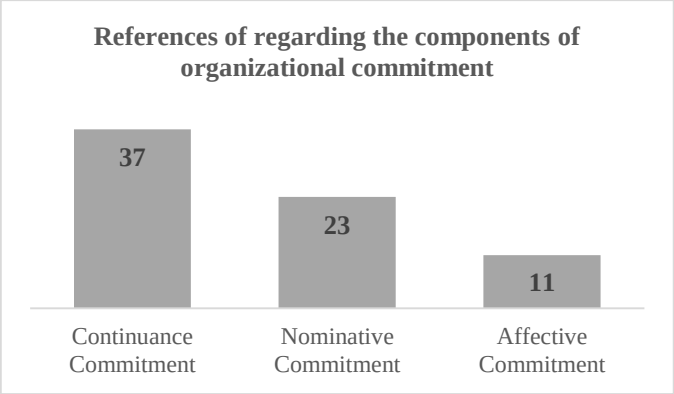

Figure 14: Number of references of the components of commitment

Most of the respondents stated that many IT professionals remain in the organization for two reasons: because they believe that leaving the organizational is not financially advantageous or because they have personal engagements (family, bills, health insurance costs, etc.) that prevent them from pursuing opportunities in other organizations. The following citation evidence this finding: "So, it ends up as we commented a while ago... the person is there because he/she doesn't see advantages on leaving the company either on going to another one."

Another interesting finding is that some interviewees associated an individual's commitment to the organization with his/her concept of personal convenience or with his/her tendency to avoid change:

> But, there's also the thing about convenience, the comfort zone. 'Oh, I'm fine already, I know the people I work with. I already know what I have to do, etc…. I already know what I have to do and how things work here…'

This perspective of commitment is in tune with theory that states that individuals with great level of continuance commitment do not see that they have employments alternatives (Allen & Meyer, 1990) or have great number of "side bets" associated to their engagement with the organization (Allen & Meyer, 1990; Becker, 1960).

Some respondents affirmed that professionals who work only "for the money" and "to pay the bills" do not perform well because they do not go beyond their job description to accomplish project objectives:

> I believe that, in order to have a high performance team, it doesn't work to have people who are there only for the money. It means that the dood is going to work overtime, but he won't add value to anything. Because it's not only a matter of working a lot, it's about working well.

In fact, a participant affirmed that he do not hire people who are focused only on the salary and benefits:

> Unless this person performs really well, way above the average, it's better not to have this kind of professional… those who are there only for the money. Today, there's no space for that. Because today people are demanded more and more, right? So, being there just because you have to, you won't put in effort. Organizations are looking for people and teams with high performance. High performance teams are made of motivated people, are made of those who are 100% committed. But, if people are there only for the money, they won't try to go beyond… they won't overcome obstacles...

On the other hand, other respondents affirmed that professionals with high level of continuance commitment are not prejudicial to project performance. As long as a professional delivers what he/she is supposed to, it does not matter the object of their commitment:

> However, having people who are like that (people who work for the money and presents continuance commitment) as long as they are committed, as long as they achieve their tasks, it's ok right?! It doesn't mean that people can work carelessly, but as long as they complete their tasks in time I don't see any problem with that.

> So, the leader needs to… the leader has to know how to deal with these people. He/she needs to understand the limits of each member of the team. Right? He/she has to… ah…I don't what that everyone… I don't expect all members of my team to have 'high performance'…

Even though theory has not yet concluded that age and continuance commitment are correlated (Meyer et al., 2002), our analysis pointed out that usually older people are more prone to present high level of continuance commitment:

> In the company I work at, more than 40% of the employees are already retired. They don't, they don't have any prospects outside… They are there to make little money in order to pay their children's university fees, to build their houses and then leave. It means, it means, they don't have expectations...

> People who are on their 30's and 40's search for a little bit of stability because, because they have family… they have bigger responsibilities that keep them from taking risks.

Another interesting point is that participants associated continuance commitment with lack of motivation. Many respondents affirmed that employees with high level of continuance commitments are not as motivated as those who are emotionally involved with the team and the project goals:

> Yet, sometimes we must…we cannot go to the other extreme in which other people in the team get unmotivated. Because one unmotivated person on the project can easily make three motivated become unmotivated too…

> It means... it is complicated because I think that people become demotivated, right? They are there not because they want to, but because they have to. Working like this is demotivating?

Normative commitment was the second most referenced component. It is important to note that a great deal of these citations were related to the fact that most participants believe that commitment **is not related a feeling of loyalty towards the organization**. On the contrary, people stay in an organization because they enjoy work environment and/or the relationships with their workmates:

> I also don't think that it's about being loyal (to the organization) because we are in a corporate setting. People work and are paid for that. For this reason, I believe that it's not a matter of loyalty.

> It's not like that; 'I'm loyal to my boss and to the company I work at.' But, I work there because I enjoy working there and I think that I work and they pay me for that… I don't owe them anything and they don't owe anything either. You understand?

However, some admitted that there are cases in which people feel they own fidelity towards the organization because the organization helps them to provide for their family. As Döckel, Basson, and Coetzee (2006) states individuals who are satisfied with their salary and benefits tend to have feel obliged to stay in the organization for social norms. This feeling of obligation creates a "psychological contract", established between employee and employer (Lumley, Coetzee, Tladinyane, & Ferreira, 2011, p. 113) as we can see in another excerpt of the interviews: "But, there are still a lot of people that think the organization is very nice and think 'oh, no. The company pays me and provides my children's food… so and so…' I still see this very much…"

It was clear in the interviews that older individuals are more prone to present continuance committed than youngsters. This is a relevant observation even though literature has not substantiated the correlation between age and continuance:

> But, on the last years the fact is that the younger the person is, the more common is this attitude: people work much more for the work and for the professional challenges than specifically for the organization. There's not this thing of moral commitment, loyalty…

> Among young people, on the other side, I don't see that as much. Among people who are in their 40's and 50's I see some who think 'Oh, no. This company and so… I work here. I work here for 20 years. They pay me; they always pay me on time...'

It is important to point out that some interviewees believe that professionals of the new generation direct their commitment to their teammates and/or to the project they work in instead of the organization itself. As some authors (Naqvi & Bashir, 2011; Paré & Tremblay, 2000) say, young IT professionals seek for advantageous career opportunities, training and innovative work environment. The text below illustrates the opinion of one of the respondents regarding this subject:

> Oh yes, I've seen that… people who do their best for the organization, right? Within the professional who have graduated in the last years the tendency is that this attitude decreases… I mean (the attitude) the loyalty towards the organization. I guess that what will exist is the loyalty towards that specific job, that specific project and not towards the company, do you understand?

Affective commitment was not many cited as expected. A possible reason for this result is that most respondents related emotional engagement to the project goals and team members as commitment itself. This occurrence is understandable since affective element presents the strongest correlations to on-the-job related variables such as job performance, attendance and turnover (Allen & Meyer, 2002, Meyer & Allen, 1991). Appendix K displays some of interviews excerpts related to the three components of organizational commitment.

Continuance component was the component that got the highest number of references. We can infer based is that interviewees could related more to this component since it related to influence of salary and monetary compensations on individuals' commitment. It was interesting to notice that interviewees hardly believe that in today's corporate world individuals are "faithful" to an organization. The only thing we can affirm based on the qualitative data is that the participants do not see commitment an element divided into different components. All interviewees saw "commitment" as a **single unit.** For this reason, **we decided to focus our study on team commitment instead of a specific component of organizational commitment**.

The largest amount of the consulted professionals affirmed that IT project managers can create initiatives to create and increase team commitment. Their statement corroborates many researches that affirm that project managers can develop competences and initiatives

to build and sustain team commitment (Arnold, Barling, & Kelloway, 2001; Leung, Chen, & Yu, 2008; Mahembe & Engelbrecht, 2013; Yang, Huang, & Hsu, 2013):

> (Regarding the influence of a project manager on team commitment) I believe it's possible. I just have doubts about the project manager's role. Everything depends on what the organization determines. Is it part of the project manager's role or not?
>
> Yes, yes! Of course it possible... it's part of a leader's role to motivate people... to help clarify the goals and to help people to commit themselves. You can find ways or factors to build commitment in your team.
>
> oh, yes, yes! I think so. It's one of the ideas I defend the most.

Whereas, some few believe that build team commit is not part of project manager's role:

> I think this is very hard. You need to have a lot of wisdom to do that. But, I think that the project manager can't inspire people. I think that the project manager's role is more tied to the figure of someone who's always checking up…the one who has to be tough sometimes."

It was clear that participants believe that IT project managers should develop certain soft skills to deal effectively with uncommitted team members. Some abilities can even make employees to become more committed and feel more emotionally involved:

> If this person is fundamental to the project, the PM has to… has to use a little bit of psychology and try to befriend this person.
>
> On the other hand, one of the things that a PM must try to do in these cases, a PM... is to find one… some small factors … that can motivate these people in some way.

Transparency and honesty were cited a great deal. For some interviewees, these personal characteristics are fundamental in dealing with people who are not emotionally committed with the project: "...you know what it means? It means: if should give… if should be honest with people and should give them responsibilities… and let them know (what there are supposed to do) since the beginning…"

Another meaningful finding on the analysis is that 100% of interviewees agree that team commitment affects IT project success. Team commitment was pointed out as a crucial factor to achieve project success: "I believe that commitment is totally related to results." "Yes, for sure. If the team is not committed, nobody is able to deliver anything!".

Their opinion is in accordance with many researches on project management (Hoegl & Gemuenden, 2001; Jha & Iyer, 2007; Leung et al., 2008; Thamhain, 2013a; Xu et al., 2010). Jha and Yver (2007, 537). Table 7 presents other relevant excerpts in which the respondents affirm that team commitment is imperative on project success.

Table 7: Relevant excerpts regarding the influence of team commitment on IT project success

Excerpts of interviews
"I think it does. A lot, a lot! If you feel that you own what you are doing (a task, activity in a project), you're going to want it (the project you are part of) to work well, right? You're going to want it to succeed, you want it to happen! I believe that when you feel this way you'll make everything to make the project work the best way possible."
"Organizations are changing the way they see the world. In the past, organization saw people as if they were machines, engines, numbers… Today, they are discovering that their employees are important, that organizations are living organisms. Employees are human beings with feelings.
"So, the key to success of an IT project or of projects of any sector is to have motivated people, to have people who are emotionally involved… to have people who want to make it happen."
"Oh, yes… Committed people work better. You have a healthy environment, a learning environment… you have a more creative environment, a place where you can overcome obstacles with creativity. Things get easier right?"

Finally, the results of the qualitative analysis demonstrate that despite the fact that the project manager is a crucial influencing factor on team members' commitment, it is not the only one. Many participants affirmed that organizations should consider other aspects such as work environment, career plan, meritocracy, monetary benefits and salary in order to build and sustain team commitment in IT project settings

> I guess that's what we're talking before… commitment is very related to work satisfaction. Sometimes, you're working in an environment focused only on delivery and on "at the end of the day you get your pay". On the other hand, I believe that what makes a huge difference (in an employee's commitment) is when you work in an environment in which you have to deliver, you get paid, but you also have a career plan or evaluation metrics that enable your manager and yourself to evaluate your performance. I guess people are more satisfied in work environments like that.
>
> To have a career plan, a good monetary compensation, it surely helps…
>
> I believe you give back what you've received. It's not only regarding salary, right? But if you work in a nice environment, in an a pleasant work place, then, your project manager can get the team engaged…Many times, if he (the project manager) uses motivational words like 'Let's go, let's go! Motivation! We're all together!'… this approach can work in the beginning, but afterwards, it gets to a point when the team says 'Come on! What I get in return?!'".

Next, we analyze and discuss the results of the quantitative phase of the research.

5. Quantitative Data: Analysis and Discussion

In this section, the results of the analysis of the quantitative data collected in the second phase of the research are presented. Firstly, it presents the descriptive statistics of the research sample. Secondly, we report the evidences of the statistical analysis. As described earlier, to validate the new scale, we performed the exploratory factor analysis (EFA) and then, the confirmatory factor analysis (CFA). Finally, we discuss the results of the quantitative analysis by comparing them with previous researches.

5.1. Sample Description

There were 484 responses to the online survey. Most of the respondents were men as they represented 76% while women were only 24% of the participants.

Regarding the respondents' job position, the range of participants contained all sort of IT related occupations: systems analysts, IT company owners, executives, consultants, programmers. To comply with a primary condition of the research, all respondents worked in IT project settings. Maybe due the research's subject, the position that slightly stood out above the others was the one of project manager: 18.01% of the respondents were IT project managers. The percentage distribution according to the respondents' occupations is presented on table 8.

Table 8: Percentage distribution of respondents according to their job position

Profession	Frequency	Percentage
BI Analyst	1	0.21%
Governance Analyst	1	0.21%
Infrastructure Analyst	26	5.18%
Marketing Analyst	1	0.21%
Business Analyst	36	7.45%
Systems Analyst	78	16.15%
Support Analyst	4	0.83%
Tests Analyst	4	0.83%
Functional Analyst	1	0.21%
Analyst Programmer	28	5.80%
IT Architect	6	1.24%
IT Assistant	1	0.21%
Blogger	1	0.21%
IT Consultant	69	14.29%
Coordinator/Supervisor	41	8.49%
DBA (Data Base Administrator)	6	1.24%
Director	22	4.55%
IT Trainee	1	0.21%
IT Account Manager	1	0.21%
Process Manager	1	0.21%
Project Manager	87	18.01%
Risk Manager	1	0.21%
IT Service Manager	1	0.21%
IT Manager	30	6.21%
IT Outsourcing Manager	1	0.21%
Team Leader	23	4.76%
PMO (Project Manager Office)	3	0.62%
IT Teacher	1	0.21%
Programmer	5	1.04%
IT Consultancy Owner	1	0.21%
Support Technician	2	0.41%
Total	**484**	**100.00%**

In regard to IT experience of the participants of the survey, the majority of the respondents had a very long career: 303 people (or 63%) had more than ten years of experience in information technology. Another good share of the participants had considerable experience, as they had been working in IT for at least five years (126 respondents). It is interesting to note that only 55 people could be considered "green": forty-six declared to have between 1 and 5 years of experience and nine had been working in IT settings for less than 12 months. Figure 15 shows a pie chart illustrating the percentage distribution of the respondents according to years of experience in information technology.

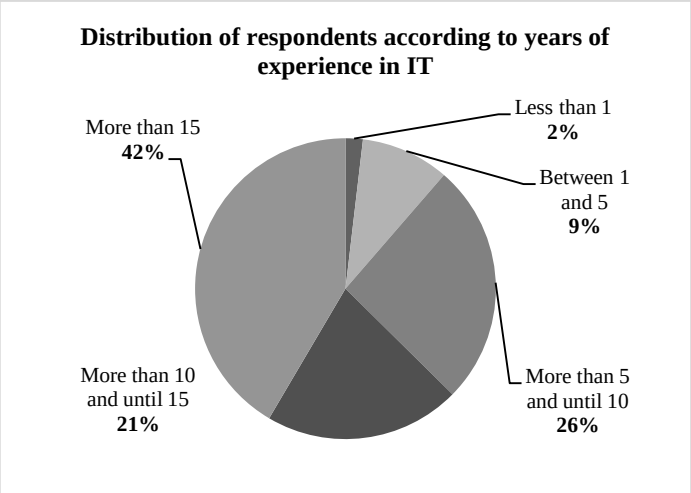

Figure 15: Percentage distribution of respondents according to years of experience in IT

On average, on a scale of 1 (one) to 5 (five), respondents rated the fifty items a 3 (three) - see more details on appendix F. It shows that for respondents, IT project teams are not highly committed; project team members are committed on an average level. Likewise, in general, IT project managers do not perform their role with excellence: they may achieve the project goals, but their competencies and skills are not seen as above the average.

On the other hand, IT project managers are not seen as "incompetent" professionals. Only five items received an average rate below 3, as you can see in table 9.

Table 9: Items with average rate below 3

Item #	Item	Mean	Standard Deviation
21	Document organizational processes effectively.	2.69	1.184
30	With business requirements as a starting point, create activities and precise deadlines, avoiding penalties for not meeting these deadlines.	2.78	1.198
31	Make a good time management to prevent bottlenecks, by using appropriate techniques such as critical path analysis.	2.75	1.154
32	Have good control of project budget and its actual costs.	2.98	1.184
36	Know how to satisfy the motivations of the business and technical personnel.	2.92	1.104

It is interesting to note that these four of these items are related to the project management competencies. In fact, they refer to the three success criteria of the Iron Triangle in project management (Atkinson, 1999): scope (business requirements and documentation of organizational processes), time (preventing bottlenecks and critical path analysis) and cost (good control of project budget and costs). The percentage of **grade 2** on these items is very significant: documentation of organizational process (32.6%); scope management (32%); schedule control (29.8%); and budget control (26.2%).

Based on these results, we can assume that respondents believe that IT project managers have much to improve on their managerial skills. This perspective is in agreement with studies that affirm that IT project managers have difficulties in performing their role as they are more technical professionals than "managers" (Klein, 2002; Sumner et al., 2006). More details on distribution of the rate for each item are found on appendix G.

It is also important to highlight the low rate average for the item related to how IT project managers deal with the motivations of the business and technical areas. 24.8% believe project managers do it badly. This finding shows that there is a difficulty in dealing with the expectations and requirements of the business area as mentioned by Sumner et al. (2006) and the reports of the Standish Group on IT projects performance (2013; 2014).

To regard to standard deviation, we can note that responses did not present very significant deviations. Since there were not high values for standard deviations we can attest that the responses were not dispersed between in the scale (Fávero, Belfiore, Silva, & Chan, 2009). The item that got lowest standard deviation was item 1 - "think it is great working with team mates" (0.848). In this item, 48.3% participants believe IT professionals enjoy working with their team mates.

5.2. Statistical Analysis and Statistical Evidence of the Construct

This session presents the results of the exploratory and confirmatory factor analysis of the quantitative data collected in this study. As recommended by Slavec and Drnovesek (2012), we assessed the dimensionality of the new measuring instrument by using the exploratory factor analysis (EFA), confirmatory factor analysis (CFA). The data was split in half: we used 242 responses to perform the exploratory factor analysis and the other 242 to perform the confirmatory factor analysis.

5.2.1. Exploratory Factor Analysis (EFA)

The EFA is used to assess to which dimension the scale items (or indicators) should belong to (Zambaldi, Costa, & Ponchio, 2014). Even though there is no consensus about the minimum EFA loading in EFA for scale items, the minimum factorial loading adopted in this study is 0.50 as instructed by Slave and Drnovesek (2012) and Zambaldi et al. (2014). The EFA was also used to assess the reliability of the new measuring instrument.

Before executing the EFA analysis, the 242 responses were randomly sorted. The software we used to perform the EFA was the SPSS. We excluded the items according to three factors: (1) low communality rate, (2) cross factorial loading and (3) factorial loading below 0.5.). If the communality value is closer to 0 (zero), it indicates that a factor has low correlation with a specific variable. On the other hand, if the communality value is closer to 1, it shows that the factor has a strong correlation with the variable (Fávero et al., 2009). Ten items were excluded. To facilitate the reading, table 10 lists the scale items that were excluded and the criteria according to which these items were excluded. It is important to emphasize that we excluded the items one at a time. It means that every time one item was excluded, we executed the EFA again and then we would analyze the items according to the criteria cited above.

Table 10: List of the scale items that were excluded in the exploratory factor analysis (EFA)

#	Item description	Construct	Low communality loading	Factorial loading < 0.5
2	Accept doing almost any task to remain in the team they are working with.	Team Commitment	X	
14	Share credit for project success with their team.	Team Management		X
16	Delegate power and responsibilities to team members (empowerment).	Team Management		X
22	See the big picture and make tactical/strategic decisions that benefit the project.	Business Domain Knowledge		X
23	Understand the cultural differences within the organization and know how to deal with the "unwritten guidelines".	Business Domain Knowledge		X
25	Know how to persuade people to follow one direction rather than the other	Communication		X
28	Listen closely to his/her team members.	Communication		X
36	Know how to satisfy the motivations of the business and technical personnel.	People Skills		X
47	Take decisions based on real facts instead of feelings or personal beliefs.	Personal Characteristics		X

According to Hair et al. (1995) (as cited by Williams & Brown, 2010) in the humanities, the total explained variance should be at 50-60%. The cumulative percentage of variance in the statistical analysis was 66%. To assess the relationship between the factors we used the orthogonal VARIMAX rotation method (Beavers et al., 2013). Table 11 presents the rotation matrix that derived from the statistical analysis. Note that the components represent the constructs of the model; and the items in the first column represent the fifty scale items described in Appendix D.

Table 11: List of the scale items that were excluded in the exploratory factor analysis (EFA)

Item	Component					
	1	**2**	**3**	**4**	**5**	**6**
1		0.648				
3		0.658				
4		0.689				
5		0.705				
6		0.784				
7		0.755				
8		0.755				
9			0.639			
10			0.480			
11	0.439		0.524			
12			0.659			
13			0.567			
14	0.405		0.469			
15			0.583			
16			0.480			
17			0.447			0.502
18						0.646
19						0.732
20						0.518
21				0.617		
22						
23			0.423			
24					0.553	
25					0.462	0.443
26			0.417		0.503	
27					0.536	
28	0.405			0.415		
29	0.410			0.576		
30				0.731		
31				0.672		
32				0.687		
33				0.591	0.430	
34	0.544					
35					0.579	
36					0.449	
37					0.639	
38					0.688	
39	0.434				0.562	
40	0.607					
41	0.688					
42	0.696					
43	0.676					
44	0.634					
45	0.595					
46	0.469				0.435	
47	0.408					
48	0.562					
49	0.474					
50	0.550					

Note: Components: 1 = Professionalism + Personal Characteristics; 2 = Team Management; 3 = Team Management; 4 = Project Management; 5 = Communication + People Skills; 6 = Business Domain Knowledge. The items in the first column represent the scale items described in Appendix D.

5.2.2. Confirmatory Factor Analysis (CFA)

The validity of the construct assesses if the construct is aligned to theory in according to its proprieties and definition (Zambaldi et al., 2014). In this stage of our research, we analyzed the dimensional structure and the relationship between the constructs. As instructed by Slavec and Drnovesek (2012), the CFA was performed to assess the results of the EFA. To perform the CFA, we used the other 242 survey responses. As it was done before, these 242 responses were randomly sorted. The software used in this stage was the SmartPLS.

In the SmartPLS, we drew the conceptual model that we designed based on the theoretical review and qualitative research. The construct of IT project manager competencies was set as a construct of second order linking the competence categories with the construct of team commitment, as illustrated in figure 16.

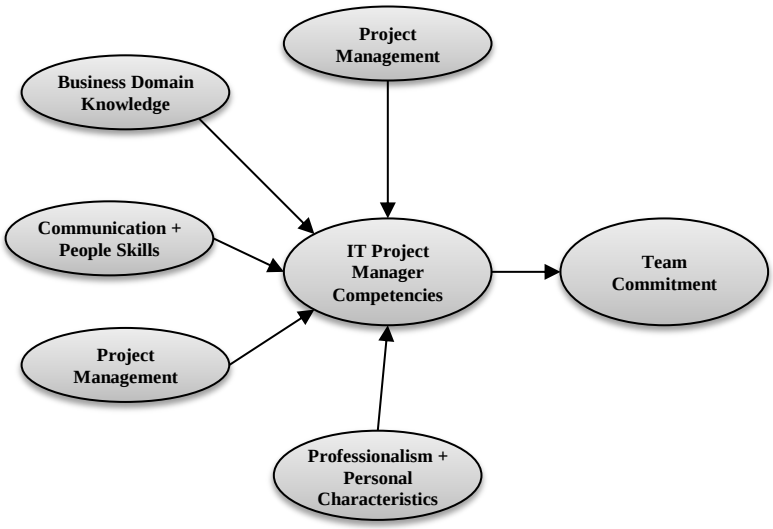

Figure 16: The conceptual model that was tested in CFA

We assessed two subtypes of the construct validity (Zambaldi et al., 2014): the convergent and the discriminant validity. The convergent validity tests if the measures of the construct are in fact related as they were expected to be. On the other hand, the discriminant validity assesses if the items of the scale that are supposed to be unrelated are, indeed, unrelated (Campbell & Fiske, 1959).

In the convergent validity, item 34 - “Identify and expand opportunities for improvement and growth” - was excluded because it had the lowest Wilk’s lambda (λ). The Wilk’s lambda varies between 0 and 1 and allows researchers to verify the existence of distinctions within groups of a given variable (Fávero et al., 2009). Wilk’s lambda with high value indicates the absence of differences within a group of variables. In other words, item 34, which had the lowest Wilk’s lambda, was excluded because it was **not strongly correlated with construct** as expected.

In total, ten items were excluded: nine in the exploratory factor analysis (EFA) and one in the confirmatory factor analysis (CFA). This “cleaning” addressed a recurrent comment of respondents. Many wrote that the survey was “too extensive”. Appendix E presents the version of the scale that resulted from the statistical analysis.

As you can see in figure 17, after the statistical analysis, the model was simplified. Instead of seven competence categories, the final version of the model presents five categories. That happened because the analysis grouped the categories of communication and people skills into one single group. The same happened with the categories of professionalism and personal characteristics.

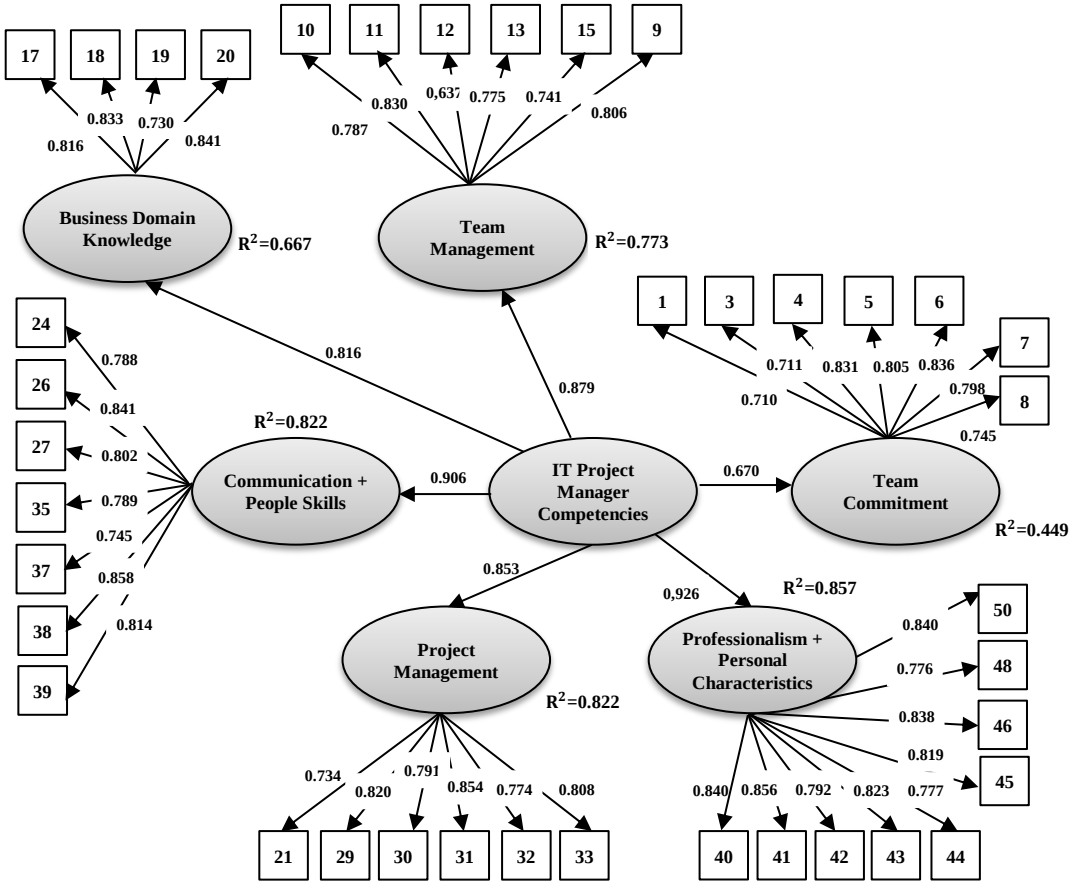

Figure 17: The model that resulted from CFA
Note: The numbers on the arrows represent the path coefficients (Henseler et al., 2009)

Table 12 displays the results of the confirmatory factor analysis (CFA). It shows the AVE (Average Variance Extracted), the composite reliability, the coefficient of determination (R^2), the Cronbach's alpha (α), the communality and redundancy of the constructs.

Table 12: Results of the CFA and how the competence categories were grouped in CFA

	AVE	Composite Reliability (ρ_c)	R^2	Cronbach's α	Communality	Redundancy
Business Domain Knowledge	0.64928	0.880715	0.666745	0.819762	0.64928	0.429798
Communication + People Skills	0.649807	0.928394	0.822306	0.909837	0.649807	0.531972
Team Commitment	0.60552	0.914534	0.445473	0.890326	0.60552	0.268237
Project Management	0.63671	0.912985	0.731135	0.885426	0.63671	0.461508
Professionalism + Personal Characteristics	0.669499	0.947945	0.855116	0.938087	0.669499	0.571586
Team Management	0.585907	0.893983	0.771295	0.856729	0.585907	0.450822

The AVE is used to verify if the construct represents what it is supposed to represent (convergent validity). According to Henseler et al., (2009), an AVE of minimum of 0.5 indicates that the factor or construct has enough convergent validity, meaning that, on average, it explains more than half of the variance of its indicator. As the Cronbach's alpha tends to underestimate the internal consistency reliability (Henseler et al., 2009), Henseler et al. (2009) instruct researchers to use another measure to assess the construct reliability: the composite reliability (ρ_c). Nunnally and Bernstein (1994) affirm that regardless the reliability coefficient that is used, an internal consistency reliability value between 0.8 and 0.9 in the late stage of the research is satisfactory. As it is showed in table 16, all sub-items of the construct of IT project manager competencies have a composite reliability above 0.8.

The coefficient of determination (R^2) is the fundamental criterion to assess structural models (Henseler et al., 2009). The R^2assesses the endogenous latent variables in a model. In our model the endogenous variable is **team commitment** while the exogenous variables are the constructs of **IT Project manager competencies**. Chin (1998) affirms that R^2 value of 0.67 is substantial. As the R^2 of the exougenous variables – except for the variable of business domain knowledge - are above 0.67, we can assume that the inner paths of the model are reliable and the exogenous variable have substantial effect on the endogenous variable of team commitment.

It is important to note that the variable of business domain knowledge was not discarded because the R^2 is extremely close to the desirable value of 0.67 (0.666745). In fact, the correlation of the construct is so high that R^2 indicates that the **team commitment depends on IT project manager competencies in more than 40%**. As already mentioned, the Cronbach's alpha is used to verify if the measure is reliable (Clark & Watson, 1995; Slavec & Drnovesek, 2012). As you can see on table 16, as all the Cronbach's alpha of all factors were above 0.8. Therefore, we can affirm that the measuring instrument is reliable.

As mentioned before, the common factor or communality indicates if a certain factor has correlation with a specific variable (Fávero et al., 2009). This test confirmed that the items contained in the six constructs of the model had a strong correlation with the constructs. The last column of table 16 presents the values of the correlation between the **exogenous** constructs (business domain knowledge, communication + people skills, project management, professionalism + people characteristics and team management) and the **endogenous** construct of team commitment.

According to Afthanorhan, Ahmad, and Mamat (2014), for a measure to have discriminant validity, the correlation between the exogenous construct and the endogenous constructs should be lower than 0.85. High correlations values indicate that the constructs are redundant (Afthanorhan et al., 2014). The values of the correlations are listed in the last column of table 16. All the correlation values are significantly lower than 0.85, indicating that they are not redundant in the model.

Fornell and Larcker (1981) propose a criterion to assess reflective measurement models. According to Fornell and Larcker (1981), the AVE of each latent variable should be higher than the square of their correlations with the other latent variables. "Thereby, each latent variable shares more variance with its own block of indicators than with another latent variable representing a different block of indicators." (Henseler et al., 2009, p. 300). The result of the Fornell-Larcker criterion is described in table 13.

Table 13: Results of the Fornell-Larcker criterion (Fornell & Larcker, 1981)

	Business Domain Knowledge	Communication + People Skills	Team Commitment	Project management	Professionalism + Personal Characteristics	Team Management
Business Domain Knowledge	**0.806**					
Communication + People Skills	0.748	**0.806**				
Team Commitment	0.415	0.507	**0.778**			
Project Management	0.693	0.713	0.483	**0.798**		
Professionalism + Personal Characteristics	0.697	0.804	0.545	0.745	**0.818**	
Team Management	0.698	0.771	0.539	0.701	0.767	**0.765**

Differently from the article Keil et al. (2013), the competence categories of communication and people skills were group into a single one and the same occurred with the professionalism and personal characteristics. To understand this result, we can look at some aspects of Brazilian culture. Individuals tend to take into the organization environment their cultural identity (Hilal, 2003; Hofstede, Hofstede, & Minkov, 2010).

Since our culture is strongly relational (Hilal, 2003) and Brazilian have a high tendency to take things personally (Damatta, 1997), it is understandable why our respondents do not separate the communication abilities from people oriented abilities neither professionalism from personal characteristics.

According to the statistical analysis, communicating well with superiors and peers (items 24, 26-27), creating trust within project team members and stakeholders (item 26), to build relationships, dealing with conflicts and political issues (items 35 and 37) and negotiating (item 36) are strongly **correlated**. It is very important to note that theses aspects were highly graded by the respondents. According to the survey results, more than 40% of respondents believe that Brazilian IT project managers are good or excellent on these competencies (see more details appendix G).

In the same reasoning, ethics, credibility, accountability, commitment, experience (items 40-44), cooperation, empathy, initiative, transparency and honesty (items 45, 46, 48, 50) are interrelated according to respondents. We can also infer the influence of our relational society (Damatta, 1997) on this result. It is imperative to mention that even though very a high percentage of respondents (approximately 46% to 72%) believe that IT project managers are indeed committed, transparent, honest, pro-active, cooperative,

accountable and experienced, only 37% believe that IT project managers are indeed empathetic. In fact, 35.5% of respondents think that IT project managers have little or any empathy. This paradox may reflect a cultural characteristic of Brazilian leaders. According to Hofstede et al. (2010), Brazilian business leaders are much more focused on their own interests than on other stakeholders, community or long-term goals. We can infer from these results that IT project managers are highly committed to project success but struggle with dealing with the expectations of their superiors, stakeholders and project team members. In other words, IT project managers are less focused on **"what the client needs"** or **"high performance teams"** than on **"delivery and on 'at the end of the day you get your pay'"**. That can also reflect the need for survival present in Latin American countries (Hilal, 2003).

Another important factor that can be inferred is that IT Brazilian professionals consider relational aspects very important to achieve project success. As mentioned in an interview, "communication is fundamental" and an IT project manager has "to work with people the best way possible. This interpretation is in accordance with Hilal's (2003) research that observed that for Brazilians a good relationship leader-subordinate is fundamental.

Last, it must be remembered that item 21 - "Document organizational processes effectively" - that initially was part of the business domain knowledge competence was moved into the competence of project management. This arrangement – which resulted from the CFA – is in tune with the qualitative data collected on the first phase of the research. Some interviewees linked documentation of organizational processes as part of scope management: "He (the project manager) has to gather the specification, to document what the client really wants". It is important to highlight that 49.4% of respondents think that IT project managers are not effective on documenting processes. This difficulty is a very relevant issue since documentation is a critical competence to achieve project success (Nahod & Radujković, 2013).

6. Contributions for practice

As discussed in the previous session, at the conclusion of this research a new scale was designed to measure the influence of IT project manager competencies on team commitment. As the scale was validated according to procedures substantiated by literature (Henseler et al., 2009; Slavec and Drnovesek, 2012; Zambaldi et al., 2014), we confirmed how critical IT project manager competencies are in the development and sustainment of team commitment: almost 45% of team commitment can be explained by IT project manager competencies.

This impressive result led us to verify which of the seven competence categories influenced team commitment the most. To do so, we performed the EFA and CFA once more, but this time with all 484 responses. We also took off the construct of IT project manager competencies as the construct of second order so we could evaluate the direct impact of each of competence category on team commitment. The result of this analysis is illustrated in figure 18.

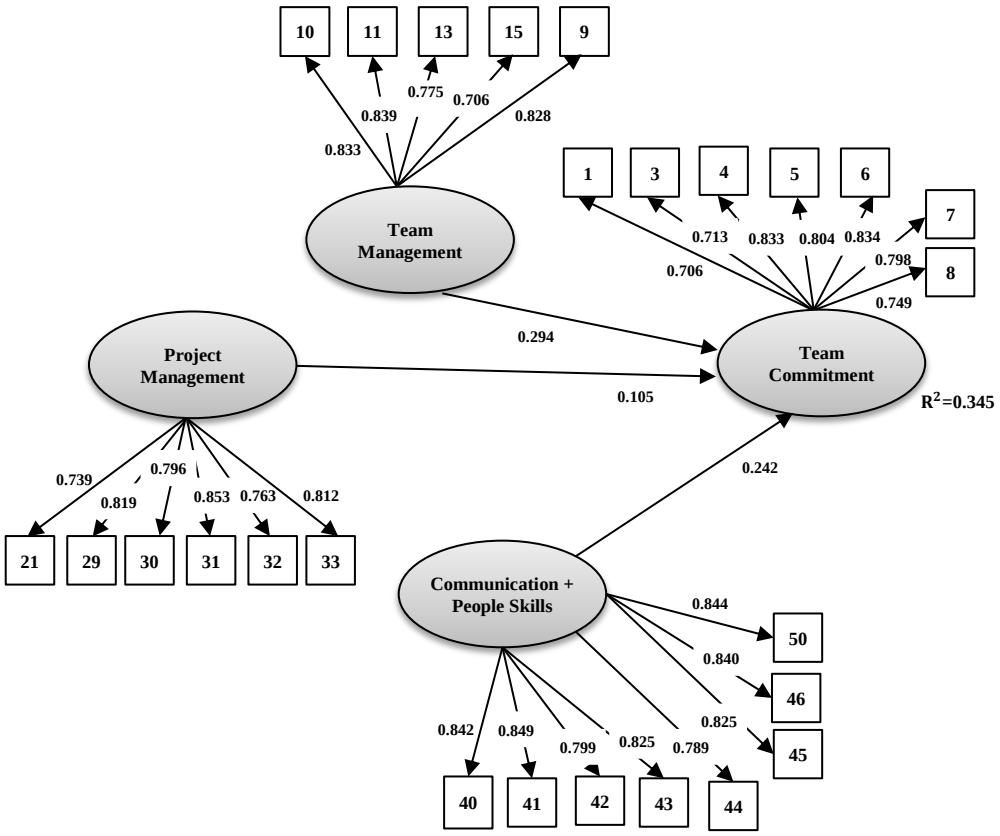

Figure 18: Result of CFA performed without the construct of IT Project Manager Competencies
Note: The numbers on the arrows represent the path coefficients (Henseler et al., 2009)

On this second round of CFA, only three competence categories remained: team management, project management and communication + people skills. According to the model, these three constructs can explain 34.5% (R^2 = 0.345) of team commitment.

Table 14 displays the results of the confirmatory factor analysis (CFA). It shows the AVE (Average Variance Extracted), the composite reliability, the coefficient of determination (R^2), the Cronbach's alpha (α), the communality and redundancy of the constructs.

Table 14: Results of the CFA and how the competence categories were grouped in CFA

	AVE	Composite Reliability (ρ_c)	R^2	Cronbach's α	Communality	Redundancy
Team Commitment	0.626962	0.921377	0.413448	0.899894	0.626962	0.089114
Project Management	0.660925	0.921115		0.897116	0.660925	
Communication + People skills	0.680122	0.94446		0.932781	0.680122	
Team Management	0.634115	0.89634		0.856004	0.634115	

As explained in the previous session, the AVE is used to verify convergent validity of the construct (Henseler et al, 2009). An AVE of minimum of 0.5 indicates explains more than half of the variance of its indicator (Henseler et al., 2009). Henseler et al. (2009) instruct researchers to use the composite reliability (ρ_c) to assess the construct reliability. Researchers claim that an internal composite reliability (ρ_c) value between 0.8 and 0.9 is satisfactory (Nunnally and Bernstein, 1994). As already mentioned, the Cronbach's alpha verifies if the measure is reliable (Clark & Watson, 1995; Slavec & Drnovesek, 2012). As all the Cronbach's alpha of all factors were above 0.8, we can affirm that the measuring instrument is reliable.

As already mentioned, the common factor or communality indicates if a certain factor has correlation with a specific variable (Fávero et al., 2009). This test confirmed that the items contained in the three remaining constructs (communication + people skills, project management, team management) had a strong correlation with the constructs. It is important to note items 12 (virtual team skills) and 48 (initiative/pro-activity) were excluded since they had weak correlation with the constructs of team management and communication/people skills, respectively. It is interesting that exclusion of virtual team skills can reflect the fact that not all participants work on global projects, and consequently, they might have not sufficient experience to evaluate this competence.

The result of the Fornell-Larcker criterion is described in table 15. The Fornell-Larcker criterion (Fornell & Larcker, 1981) assesses the validity reflective measurement models. According to Fornell and Larcker (1981), the AVE of each latent variable should be higher than the square of their correlations with the other latent variables.

Table 15: Results of the Fornell-Larcker criterion (Fornell & Larcker, 1981)

	Business Domain Knowledge	**Communication + People Skills**	**Team Commitment**	**Project management**	**Professionalism + Personal Characteristics**	**Team Management**
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Professionalism + Personal Characteristics	0.697	0.804	0.545	0.745	**0.818**	
Team Management	0.698	0.771	0.539	0.701	0.767	**0.765**

As we analyzed the result of the second round of CFA, we could identify which of competence categories influences team management the most. Knowing that, allow organizations and practitioners to design specific strategies and procedures to recruit IT project manager with more assertiveness. As affirmed by Müller and Turner (2007a), choosing a project manager according to the project type and complexity can enhance project performance increasing the chances of achieving the project goals. Researches have proved that "leadership competencies should be taken into account when assigning project managers to projects" (Müller & Turner, 2010, p. 446) so that organizations are more effective in accomplishing their strategic objectives.

In projects in which high commitment is needed or in periods of crisis, organizations can focus on these three competencies – team management, project management and communication/people skills – in order to ensure the commitment of their employees towards the project and organizational goals. Obviously, many factors may influence the commitment of project members such as monetary benefits, career development, organizational environment, job security and others (Thamhain, 2013a). However, if an IT project manager uses the right abilities and techniques, he/she can create the right team environment that will build a high performing team (Thamhain, 2013b).

It was clear on the interviews that an IT project manager should not be “a boss” or “technical”, but rather a “leader” to be able to drive team commitment. Unfortunately, very often organizations promote professionals into the position of IT project managers due to their technical skills rather than their leadership and managerial competencies (Wateridge, 1997). This approach goes on opposite direction to what has been attested in many studies. For instance, Thamhain (2004) affirms that a project manager is a “social architect” whose role is to lead the team members so they are committed to project goals. Müller and Turner (2010) also emphasize that project managers should focus not only on technical skills, but also on leadership competencies.

Again, we are not affirming that IT project managers should develop only leadership and managerial competencies. IT project managers need to develop technical expertise as well in order to become more effective in their jobs (Thamhain, 2013a; Wateridge, 1997) since technical expertise can gain credibility in “the eyes” of the technical area (Wateridge, 1997, p. 284). Nevertheless, the results are very clear about this: **technical expertise is not critical in building and sustaining team commitment**. That has been attested for other authors (Korzaan, 2009, Thamhain, 2013a, Wateridge, 1997).

Observing closely to each of the three competence categories, we have the following competencies:

- Team management:
  - Ability to motivate team members
  - Collaboration
  - Ability to bridge diverse teams
  - Sharing information
  - Providing feedback
- Project management:
  - Ability to document process
  - Scope management
  - Project planning
  - Time management
  - Cost management
  - Risk management

- Communication/People Skills
    - Verbal and Written Communication
    - Open communication
    - Ability to communicate at multiple levels
    - Conflict management
    - Discerning and dealing with political issues
    - Interaction with people involved in project
    - Negotiation

Surely, this list of competencies can be used by organizations, managers and recruiters so they know which competences they should verify when recruiting professionals. Not only the competences above, but also the competencies contained in the complete version of the model (see figure 18). The models and the measuring instrument can be used to develop evaluating instruments to perform feedback of IT project managers of their staff. In fact, surveys can be designed and distributed to project team members so they can evaluate their project managers. Afterwards, the result can be compared with other variables to assess team commitment, team morale or work organizational climate.

Based on the results we can infer that it is necessary to combine knowledge and techniques of different disciplines such as psychology, project management, leadership and others to design techniques and procedures to recruit and assess project managers in IT settings. Another implication is that executives, managers and recruiters should be prepared to assess these competences as well. A "technical" manager will probably not be highly effective on evaluating non-technical competencies.

Besides that, the results of this research point out the need for refreshment of IT project manager professionals. As Wateridge (1997, p. 287) says, "project managers must continuously develop their skills and competences throughout their career". In today's ever-changing business environment (Kerzer, 2009; Sumner et al., 2009), there is no room for settlement. Organizations and executives need to promote programs to ensure that their collaborators improve their competences (Müller & Turner, 2010; Wateridge, 1997).

However, sometimes competence development programs are not synonymous for project management certifications. Studies shows that certifications improve the performance of high-performing project managers, but does not make low performing project managers work better (Müller & Turner, 2007b). Before seeking a certification, they need to work on their existing limitations (Müller & Turner, 2007b). Given the survey results showing that project managers have yet not achieved excellence, addressing critical gaps on project management competences should come prior to certification programs.

To build these training and refresher programs, organizations can use any forms of organizational learning: traditional training, reading, access to knowledge data base, participation on practice communities, on the job training, mentoring or casual interactions (Jesus, Santos, Silva, & Castro, 2014). These types of organizational learning can be combined in different ways according to the needs and preferences of the organization. For example: new employees can learn *in-loco* as they participate on meetings as observers while more experienced professionals can participate on events such lunches or happy-hours in which they share knowledge more informally. There are also the Web 2.0 tools – for instance wikis, blogs or social networks - can be used that can be used to develop e-learning or lessons learned applications share and disseminate knowledge within project managers of a specific organization or community (Bughin & Manyika, 2007; Grace, 2009; Thomas & Sheth, 2011).

Finally, observing the remaining items of the construct of team commitment, we have a very concise and objective questionnaire. As this questionnaire is well substantiated on literature and statistically tested, it can be used in surveys to assess team morale or work organizational climate, as it follows:

- Do you think it is great working with your team mates?
- Do you believe that your personal values are aligned with the values of the team you are working with?
- Do you feel proud to be part of the team you are in?
- Do you feel motivated to give your best for the welfare of your team?
- Do you feel happy to be part of the team you are currently in?
- Do you indeed care about what happens to you team?
- Do you believe that the team you are in is the best place to work?

7. Final Considerations

In IT project management, there is a range of factors and aspects that contribute to positive results such as executive support, organizational culture, organizational maturity and portfolio management (Cooke-Davies, 2002). But surely, two factors are critical to achieve project success: competent project managers and committed teams (Korzaan, 2009; Thamhain, 2013a). Knowing that, we chose to analyze the relationship between IT project manager competencies and team commitment. We believe that doing so, we could provide consistent material for future studies and useful insights for practitioners .

As noted, this research project addressed the following questions: (1) which IT project manager competencies influence team commitment? and (2) how much these competencies impact team commitment? The main objective of this study was to find out which project manager competencies can influence team commitment on IT settings.

We conducted a research with mixed methods (Creswell & Plano-Clark, 2011). In the first phase of the research, we conducted an exploratory qualitative research to answer the first research question. In this phase, we performed twelve semi-structured in-depth interviews with IT project managers. The qualitative phase of the research allowed us to fulfill the first specific objective: to identify which competencies have direct relation with team commitment. Besides, the content of these interviews helped us delimiting the scope of the constructs and defining the primary version of the measuring instrument.

In the second research phase, we designed a new scale to identify which IT project manager competencies are needed to build and sustain team commitment. On this phase, an online survey was distributed. In total, 484 people working in IT related positions and in IT projects answered the survey. After, this data was submitted to statistical analysis: exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). As the resulted were analyzed, it was possible to evaluate the relationship between the constructs of IT project manager competencies and team commitment.

The scale design and validation was structured according to articles written specifically for this purpose (Henseler et al., 2009; Slavec and Drnovesek, 2012; Zambaldi et al., 2014). At the stage of literature review, there were **ten** competence categories and **eight-four** items. At the conclusion of the research, we presented a scale with **five** categories and **forty** items. The statistical analysis shows that the scale is very consistent and has a strong correlation with the constructs. On the top of that, a parsimonious model

was delivered, as needless complexity was cut away and the model was reduced as much possible without being false (Vandekerckhove, Matzke, & Wagenmakers, 2015).

The results of this research are useful for academia and project management practice. The statistical analysis demonstrates that almost 45% of team commitment can be explained by IT project manager competencies. This result corroborates previous studies regarding the influence of project managers on commitment (Rossy & Archibald, 1992). It is important to remember that this study also showed that technical expertise is not a critical competence in driving commitment within project team members towards project success (Wateridge, 1997).

As affirmed in other studies (Korzaan, 2009; Shenhar & Dvir, 2007; Thamhain, 2011; 2013a), we could infer that team commitment is a critical success factor in IT projects. Also, the results of the statistical analysis show a high correlation of the IT project managers with team commitment. The implications of this finding are very relevant for the practice of project management. IT project managers should develop competencies and create ways make their teams committed to the project objectives. Otherwise, team performance can be jeopardized (Kappelman et al., 2006) and potential risks can be overlooked, causing serious problems during project execution (Smith, Keil, & Depledge, 2001).

The main contributions of this study were:

- Proposing a new scale to measure the influence project managers competencies in team commitment;
- Proposing an instrument to be used by IT organizations in order to help project managers building and sustaining team members' commitment in order to project success; Contributing to organizations and educational institutions with detailed material on project management competencies which can be used to structure training and refresher programs for project management practitioners.

We are aware that one limitation of this study is the number of interviewees in the first phase. However, the thorough literature review offset this drawback. As mentioned above, the knowledge gathered from literature combined with data collected in the interviews provided adequate information to delimit the research scope and constructs.

This study also provides foundation for further studies. It offers consistent material for scholars to develop researches regarding the influence of team commitment and project manager competencies on IT project success. Academics can use the evidences showed in

this research to analyze the relationship between project manager competencies, team commitment, organizational culture and work environment, as well. Other contribution for futures studies is that researchers can evaluate the designed scale in other business sectors or even use the model derived from the statistical analysis in empirical studies.

Besides that, the results of this study can raise questions such as: how to measure cognitive and relational abilities such as negotiation, conflict management, ability to motivate people in professionals? How can recruiters evaluate that a candidate has the needed people skills to manage the project team effectively?

Finally, researchers can assess the new scale in other countries in order to analyze the scale reliability in in other cultures. Also, it would be relevant to conduct studies to compare the perspective of project managers with the perspective of their subordinates.

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Appendix A – Competencies Description

Competence	Description	Authors
Ability to bridge diverse teams	There may be quite a few teams/departments/groups involved in an IT project. The IT PM must have a good understanding of each team's responsibilities, where they overlap, and where they have gaps.	Keil et al., 2013, pp. 407–409
Ability to communicate at multiple levels	The ability to be able to communicate not only with team members but also with stakeholders and different levels of management is fundamental to IT project managers.	Stevenson & Starkweather, 2010
Ability to construct persuasive arguments	The PM will need to convince people who do not have a full understanding of the entire picture (both technical people without business understanding and business people without technical understanding) about why it's better to go in one direction rather than another.	Keil et al., 2013, pp. 407–409
Ability to document process	An effective IT PM is able to document organizational processes in order to ensure that the project accomplishes the business and process objectives.	Keil et al., 2013, pp. 407–409
Ability to empower future leaders	A successful PM always grooms the next leader in the ways of the project. Transitioning becomes easy if the PM needs to move away from the project for one reason or another.	Keil et al., 2013, pp. 407–409
Ability to handle stress	A PM must be able to handle periods of high stress. Projects do not always go as planned or as budgeted, and the ability to stay calm and collected under pressure is an important skill for a PM because their example sets the tone for the rest of the team.	Keil et al., 2013, pp. 407–409
Ability to identify stakeholders	A PM should have the ability to successfully identify who will be impacted by both the project execution and the end results.	Keil et al., 2013, pp. 407–409
Ability to involve end-users	Competent IT project managers develop abilities to sell the project to the end-users. Making the end-user community accept the system will minimize problems and conflict during project execution.	Skulmoski & Hartman, 2009
Ability to learn/self-evaluation	Project managers can improve their performance as they evaluate themselves and are capable to learn from experience. Effective professionals know that learning is a lifelong process.	Stevenson & Starkweather, 2010
Ability to motivate team members	Projects are completed by people; therefore, all PMs are human resource managers, who must be able to retain and motivate the people involved in the project. A PM must be able to drive the team members toward the project objectives.	Keil et al., 2013, pp. 407–409
Ability to understand the business domain	The chances of success increase when the IT project manager understands the business problem before working on the technical solution. An effective IT project manager knows that the main objective of IT projects is to solve business problems.	Keil et al., 2013, pp. 407–409
Alignment	It is necessary to get alignment with stakeholders, end-user and team member any time conflicts arise, scope changes happen, miscommunication occurs, etc.	Skulmoski & Hartman, 2009
Analytical skills	The ability to analyze problems and issues within different stages of a Project.	Keil et al., 2013, pp. 407–409
Attention to detail	When project managers have an eye for details, they have better chances to deliver a better product.	Skulmoski & Hartman, 2009
Business skills	A PM should have the ability to look at the business factors that affect the health of the project, such as stakeholder politics and changes, cost implications, changing business factors, etc., versus just focusing on the technical components.	Keil et al., 2013, pp. 407–409
Celebrating accomplishments	Praising desired behaviors and performance, and recognizing accomplishments and quality deliverables, motivates individuals and energizes project and program teams.	Keil et al., 2013, pp. 407–409
Charisma	"Charisma is the ability to charm, to lead, and build confidence" (Skulmoski & Hartman, 2009, p. 72) Very useful at the initiation of the project.	Skulmoski & Hartman, 2009
Closing the project	This skill should be used at the end of a warranty period to close out defects, project deliverables, and key lessons.	Keil et al., 2013, pp. 407–409

Competence (cont.)	**Description**	**Authors**
Collaboration	Willingly engaging jointly to define a solution or produce a product promotes team synergy, effective performance and increased productivity.	Keil et al., 2013, pp. 407–409
Commitment	Focused involvement in the project or program tasks enables the timely, accurate and proficient delivery of quality products and services.	Keil et al., 2013, pp. 407–409
Compromise	Sometimes to get consensus, the project manager has to be flexible and compromise. However, he/she should use this option as his/her last resource.	Skulmoski & Hartman, 2009
Confident-realistic	Many times, being realistic means to accept things as they are in and not basing decisions on unlikely hopes for the future. Being confident is to be certain of your abilities.	Procter, 1996
Conflict management	The people on a project have different goals, objectives, and perspectives, and this often leads to conflict. PMs should have the ability to manage conflicts constructively.	Keil et al., 2013, pp. 407–409
Consensus seeking	Seeking consensus and agreement to project or program procedures, towards a specific solution or an implementation strategy enhances the proficiency and productivity of the project and program team efforts.	Keil et al., 2013, pp. 407–409
Cooperation	Agreeably assisting others for the benefit of a common goal expedites the project or program work and facilitates knowledge transfer.	Keil et al., 2013, pp. 407–409
Cost management	The ability to forecast costs and be on top of the project budget. A PM must have a handle on the project budget and actual costs incurred in order to bring a project in on budget.	Keil et al., 2013, pp. 407–409
Create an effective environment	Effective IT project managers create an environment in which project team members feel motivated and committed to project goals. The project manager also needs to involve stakeholders and end-users in this environment.	Skulmoski & Hartman, 2009
Creativity/innovation/resourcefulness	The skill to produce and use original ideas can help the project manager to solve unexpected problems effectively.	Procter, 1996
Credibility	Without credibility, the PM's ability to motivate and make it through the project will be an impossible task. PMs need to keep their promises and demonstrate a high level of ethics; this will enable team members to focus on their work and to count on the PM to do what they need done; credibility should help with stakeholder management as well.	Keil et al., 2013, pp. 407–409
Cultural fit	Understanding the cultural differences within the organization is very beneficial to project managers. IT project manager should know how to deal with the organization's "unwritten guidelines" (Belzer, 2001, p. 4)	Skulmoski & Hartman, 2009
Decisiveness	An IT PM should have an important role on deciding during the life of the project.	Procter, 1996
Decision making ability	The ability to identify and analyze different solutions to a specific problem. Being able to see the "whole picture", analyze possible risks and impacts before choosing a direction,	PMI, 2013
Development methodology skills	A project manager needs to be familiar and experienced with various development methodologies and models, such as waterfall, agile methodologies, etc.	Keil et al., 2013, pp. 407–409
Effective questioning	Effective project managers know how to question the project stakeholders and end-users so they get a better understanding of the stakeholders' and end-users' expectations, avoiding future conflicts.	Skulmoski & Hartman, 2009
Empathy	To gain stakeholders' and team members' trust project managers should have the ability to share their feelings and experiences by imagining what it would be like to be in their situation.	Procter, 2006;
Experience	Good project managers learn from past experiences and from their interactions with others professionals (mentors, superiors, partners).	Stevenson & Starkweather, 2010

Competence (cont.)	**Description**	**Authors**
Flexibility/manage ambiguity	It is important to be flexible and know how to handle ambiguity in a project management environment.	Keil et al., 2013, pp. 407–409; Skulmoski & Hartman, 2009
Focus on quality	The ability to deliver quality in all phases of the project. The ability to set a quality standard and to make sure that the team delivers to that standard. Includes integration and user acceptance testing.	Keil et al., 2013, pp. 407–409
Give autonomy to team	Delegating and making team members have ownership of their tasks allow them to feel motivated and challenged.	Skulmoski & Hartman, 2009
Good people skills	The PM must be able to work with and interact with all types of people in all types of situations, including customers, vendors and internal management.	Keil et al., 2013, pp. 407–409
Initiative/ proactive	Today's challenging and dynamic scenario demands that IT project managers take action themselves rather than waiting for something to happen.	Procter, 2006
Judgment	An effective IT PM should have the ability to form valuable opinions and make good decisions.	Keil et al., 2013, pp. 407–409; Skulmoski & Hartman, 2009
Leadership	The ability to lead a project team without giving orders and the ability to empower project team members and generate excitement and accountability amongst them. An influential leader can retain a strong team.	Keil et al., 2013, pp. 407–409
Listening	Listening closely gives the PM the ability to spot trouble before it happens and to understand the true goals and objectives of the business owners.	Keil et al., 2013, pp. 407–409
Knowledge of the end product	A PM must understand what the end product is, how it works, what it must accomplish, and how it will be used by the customer.	Keil et al., 2013, pp. 407–409
Mental capability	The ability to comprehend, to understand and to profit from experience	Stevenson & Starkweather, 2010
Multi-tasking	This skill is important because many tasks run concurrently, and many steps need to take place in unison. Examples would be ordering hardware during software development cycles, pilots and multi-phased deployments. Projects seldom occur in isolation; the ability to manage different projects for different stakeholders at the same time is important.	Keil et al., 2013, pp. 407–409
Negotiation	Ability to negotiate with stakeholders, project team members and vendors to arrive at a mutually acceptable scope, schedule, cost and risk.	Keil et al., 2013, pp. 407–409
Objectivity	Sometimes, a PM cannot be influenced by feelings or beliefs and take decisions based on real facts.	Keil et al., 2013, pp. 407–409
Open communication	Open communication is essential for effective IT project management. End-users, stakeholders and team members need to have someone who communicates openly. This is an effective way to build trust and improve communication in all project phases.	Skulmoski & Hartman, 2009
Organizational skills	The ability to organize and coordinate the activities of project resources; this ability includes not only organizing information for supporting changes within the project, but also managing stakeholder needs to support the project team's effort.	Keil et al., 2013, pp. 407–409
Ownership of tasks	Effective IT project managers know that some specific tasks belong to them only, and therefore, they are accountable for these tasks.	Stevenson & Starkweather, 2010
Participate and contribute fully	An effective TI PM needs to participate and contribute fully in order to achieve the project goals.	Keil et al., 2013, pp. 407–409
Patience	Not every task is done immediately. Patience is a virtue.	Keil et al., 2013, pp. 407–409
Persistence	When the PM faces problems, s/he needs to have the ability to keep digging until s/he finds out what the problem is.	Keil et al., 2013, pp. 407–409

Competence (cont.)	**Description**	**Authors**
PM tool skills	The belief that dedicated project management tools are not important is nonsense. Know and use the PM tools that get the job done.	Keil et al., 2013, pp. 407–409
Political awareness/agility/tact	The ability to discern and deal with political issues may be necessary during the project. There are occasion when the project manager needs to justify the project or additional costs. In fact, many projects become "mired in political bogs" (Belzer, 2001, p. 4).	Skulmoski & Hartman, 2009
Presentation skills	Sometimes the project manager has to get approval from his/her superior to proceed. On these occasions, presentation skills are very useful.	Skulmoski & Hartman, 2009
Professional skills	The ability to manage professional images within the project. Maintaining professional attitudes, personal appearances and demeanor have a great impact on the success of the project.	Keil et al., 2013, pp. 407–409
Project chartering	This skill involves the gathering and consolidating of business requirements, constraints, assumptions, project measures, etc.	Keil et al., 2013, pp. 407–409
Project planning	The ability to break down a high-level goal and decompose it into logical measurable tasks, plan phases and activities, and create meaningful milestones.	Keil et al., 2013, pp. 407–409
Protect the team	Protecting the team is one of project manager's duties. He/she should ensure that the project environment is healthy and enjoyable so that team members feel motivated.	Skulmoski & Hartman, 2009
Provide feedback	An effective IT project leader gives their team members timely feedback on their performance and activities during the life of the project.	Kerzner, 2009
Relationship building	Sometimes PMs do not have direct management authority over their project teams. They need to be able to exert influence over matrixed groups with diverse personal objectives. The ability to build relationships is critical to project success.	Keil et al., 2013, pp. 407–409
Research skills	The ability to gather the most useful and empowering information to support the business case and decision making, and to provide guidance to team members on up-to-date techniques and technology.	Keil et al., 2013, pp. 407–409
Resource utilization	The project manager must garner adequate resources and must know how to manage the assigned resources to execute the work plan successfully.	Keil et al., 2013, pp. 407–409
Results-oriented	Project managers should be committed to deliver with quality and within time and money restrictions. They should focus their work efforts to accomplish the project goals.	Stevenson & Starkweather, 2010
Risk management	A successful manager gathers information pertaining to potential risks to project success and develops a plan to reduce or eliminate those risks.	Keil et al., 2013, pp. 407–409
Scope management	The project manager should work with stakeholders before the project is authorized to define the project scope as the basis for developing an accurate project plan. Scope management is ongoing; the PM can never give everybody everything what they want, so she/he needs should figure out what which requirements s/he can safely eliminate from the project scope.	Keil et al., 2013, pp. 407–409
Sense of humor	The ability to stay in good humor and to convey this feeling to others.	Keil et al., 2013, pp. 407–409
Self-organization/self-directed	The ability to organize his/her own activities.	Procter,2006
Share-information and credit	Leaders need to share information and credit for project success with their team who delivered the results. This will produce team commitment and motivation.	Skulmoski & Hartman, 2009
Strategic thinking	The ability to look at the overall context of the project and then, know why the project should be implemented. By seeing the big picture, the project manager can make tactical decisions and yield strategic benefits in the subsequent project phases.	Keil et al., 2013, pp. 407–409

Competence (cont.)	**Description**	**Authors**
Technical skills	A project manager needs to understand the technology being used well enough to make effective decisions concerning the use of the technology, which technology is appropriate, and how to take advantage of the technology to meet business objectives.	Keil et al., 2013, pp. 407–409
Time management	The ability to make effective use of time by quickly and effectively prioritizing multiple tasks within a quickly changing environment.	Keil et al., 2013, pp. 407–409
Transparency/ honesty	Being transparent and honest is essential to gain credibility among stakeholders, end-users and team members. If the project manager does not have credibility with the people involved in the project, it will be hard for him/her to get their commitment and support during the project.	Procter, 2006; Skulmoski & Hartman, 2009
Verbal communication	PMs must be able to communicate the status, risks and issues of their project with various stakeholders, and to manage their expectations accordingly.	Keil et al., 2013, pp. 407–409
Virtual team skills	In today's global economy, most team members are far-flung. A good PM must be sensitive to members in an expansive set of time zones with unfamiliar international customs, holidays, traditions and work ethics.	Keil et al., 2013, pp. 407–409
Vision-oriented/articulate the business problem	It is necessary for leaders to take the sponsor's vague idea and articulate it in such way so that it is possible to develop a project plan. Then, this vision must be continually communicated to the rest of the team, otherwise the PM runs the risk of scope shift.	Skulmoski & Hartman, 2009
Understanding the psychology of people	Both the business and the technical people associated with the project are motivated by various factors, many of which are not related to the success of the project. The PM needs to satisfy their motivations enough to keep them happy, while keeping the project on track.	Keil et al., 2013, pp. 407–409
Written communication	PMs should have the ability to write in a manner that is easily understood by people with different communication styles.	Keil et al., 2013, pp. 407–409

Source: Prepared based on Keil et al. (2013), Kerzner (2009), PMI (2013), Procter (1996), Skulmoski & Hartman (2009), Stevenson & Starkweather (2010)

Appendix B – Interview Questionnaire

Success Criteria for IT Projects (Atkinson, 1999; Delone & Mclean, 2002; Pinto & Slevin, 1988)

Think of the projects you worked on the last 3 years.
Focus on the projects that succeeded:

1. For you what were the main reasons for success?
2. Tell me about these successful projects. What kind of project were these? How big these projects were?
3. Were clients/users satisfied?
4. Did the project managers of these projects have anything in common? If so, what? What characteristics of this/these project manager(s) caught your attention?
5. Did the project manager's(s') leadership style have any impact on the project success?

Focus on the project that failed:

6. For you what were the main reasons for failure?
7. What kind of project were these? Big, small, medium size? Tell me a little about these unsuccessful projects.
8. Were clients/users satisfied?
9. Did the project managers have anything in common? What characteristic of this/these project manager(s) caught your attention?
10. Did the project manager's leadership style have any impact on the project failure?
11. For you, what are the main criteria for IT project success?
12. Is it common to see the project manager, the project team, stakeholders, clients and sponsors agreeing upon the success criteria at the start of the project? Why? If you answered "yes", give examples.

Team commitment (Allen & Meyer, 1990, Korzaan, 2009; Xu et al., 2010)

13. Is it possible for the project manager to build an environment in which the project team feel emotionally connected to each other and to the project, an environment in which individuals feel like a "family"? Is it worth creating this kind of environment? (A person stays in the organization because he/she ***wants*** to)
14. How does it feel for the project manager to have in his team people who are in the project (or in the organization) only to "pay the bills" or with poor prospects of alternatives "It's better for me to stay here because I cannot /I'm not qualified to have a good job in somewhere else"? What/How is the performance of people like these? (A person stays in the organization because he/she ***needs*** to)
15. Are there still people that work in an organization with a sense of loyalty and/or moral obligation? Is it possible to have individuals who work in a project with a sense of honor, loyalty and moral commitment to the project? If so, give examples. (A person stays in the organization because he/she ***ought to***)
16. Does team commitment affect project results?

Project Manager's Competencies (Keil et al., 2013; Kerzner, 2009; Stevenson & Starkweather, 2010)

17. In your opinion, which competencies, abilities or skills are essential for a project manager?
18. What competencies, abilities or skills should a project manager have in order to get the project team committed to project success?
19. Knowing that the project manager is not the "real" boss, does the project manager ***really*** have any impact on project success?

Appendix C – New Scale (First Version)

Before answering the questionnaire read the definition of commitment.

Commitment is:

(1) strong belief in and acceptance of a team/project goals and values;
(2) willingness to put in effort and use abilities on behalf of a team/project;
(3) strong desire to remain in a team and;
(4) willingness to give something of yourself to contribute to a team/project goals.

Now, answer the following items, considering the statement:

"In order to develop team commitment in an IT project, a project manager should..."
Choose from 1 (strongly disagree) to 5 (strongly agree)

Competence Category		Competence	Scale Item
Team management	1	Ability to motivate team members	...motivate and drive people toward the project objectives.
	2	Ability to empower future leaders	...empower future leaders.
	3	Celebrating accomplishments	...praise desirable behavior and recognize accomplishments.
	4	Collaboration	...engage himself/herself willingly to accomplish tasks.
	5	Ability to bridge diverse teams	...have a good understanding of each team's responsibilities, where they overlap, and where they have gaps.
	6	Virtual team skills	...know how to deal with cross-cultural factors such as different time zones, international customs, holidays, traditions and distinct work ethics.
	7	Leadership	...lead a project team without giving orders, empower team members and generate excitement amongst them.
	8	Create an effective environment	...create an environment in which team members feel motivated and committed to project objectives.
	9	Share-information and credit	...share information and credit for project success with their team.
	10	Protect the team	...protect the team and ensure that the project environment is healthy and enjoyable.
	11	Provide feedback	...give team members timely feedback on their performance during the life of the project.
	12	Give autonomy to team members	...delegate and make members have ownership of their tasks.
Business domain knowledge	13	Ability to understand the business domain	...understand business problems before working on the technical solution.
	14	Ability to identify stakeholders	...be able to successfully identify the individuals that will be impacted by both the project execution and the end results.
	15	Ability to involve end-users	...sell the project to end-users and make them accept the system.
	16	Business skills	...be able to analyze the business factors that affect the health of the project (such as stakeholder politics and changes, cost implications, changing business factors, etc.) instead of only focusing on the technical components.
	17	Knowledge of the end product	...understand what the end product is, how it works and what it must accomplish.
	18	Ability to document process	...document organizational processes effectively.
	19	Strategic thinking	...see the big picture and make tactical/strategic decisions that benefit the project.
	20	Cultural fit	...understand the cultural differences within the organization and know how to deal with the "unwritten guidelines".

continuation		Competence	Scale Item
Communication	21	Verbal communication	..communicate the issues of the project to the stakeholders and manage their expectations accordingly.
	22	Written communication	...write in a manner that is easily understood by people.
	23	Listening	...listen closely to his/her team members.
	24	Ability to construct persuasive arguments	...know how to convince people to go in one direction rather than another.
	25	Open communication	...communicate openly in order to build trust and improve communication in all project phases.
	26	Ability to communicate at multiple levels	...be able to communicate not only with his/her team members but also with stakeholders and people from different hierarchical levels.
Project management	27	Scope management	...manage the project scope well.
	28	Project planning	...know how to decompose a high level project goal into measurable and tangible tasks.
	29	Time management	...make a good time management by prioritizing multiple tasks within a dynamic environment.
	30	Resource utilization	...know how to manage the project resources in order to execute the work plan successfully.
	31	Project chartering	...gather and consolidate business requirements, constraints, premises and project indicators effectively.
	32	Cost management	...control the project budget and its actual costs well.
	33	Risk management	...gather information pertaining to potential risks and develop a plan to reduce or eliminate those risks.
	34	Alignment	...know how to get alignment with stakeholders, end-users and team members any time conflicts arise.
People skills	35	Conflict management	...manage conflicts constructively.
	36	Good people skills	...work with and interact with all types of people in all types of situations.
	37	Negotiation	...negotiate with stakeholders, team members and vendors to arrive at mutually acceptable decisions.
	38	Relationship building	...influence groups with diverse personal objectives and build relationships.
	39	Understanding the psychology of people	...know how to satisfy the motivations of the business and technical people enough to keep them happy.
	40	Charisma	...be able to charm, to lead, and build credibility.
	41	Political awareness/agility/tact	...discern and deal with political issues.
	42	Compromise	...be flexible and willing to compromise in order to get consensus.
Technical	43	Technical skills	...understand the technology being used in the project well enough to make effective decisions concerning this matter.
	44	Development methodology skills	...be familiar and experienced with various development methodologies and models.
Professionalism	45	Commitment	.. have focused involvement in the project.
	46	Credibility	...keep his/her promises and demonstrate a high level of ethics.
	47	Experience	...know how to learn from past experiences and from their interactions with others professionals.
	48	Participate and contribute fully	...participate and contribute fully.
	49	Ownership of tasks	...be accountable for his/her tasks.

continuation		**Competence**	**Scale Item**
Personal characteristics	50	Attention to detail	...have an eye for details.
	51	Confident-realistic	...be confident of his/her abilities and accept things as they are in fact.
	52	Cooperation	...assist others for the benefit of a common goal.
	53	Empathy	…have empathy.
	54	Decisiveness	...have an important role on the deciding process.
	55	Flexibility-manage ambiguity	...be flexible and k now how to deal with ambiguity.
	56	Initiative-proactive	...have initiative and pro-activity.
	57	Judgment	...have the ability to form valuable opinions and make good decisions.
	58	Objectivity	...take decisions based on real facts instead of personal feelings or beliefs.
	59	Self-organization/self-directed	...be able to organize his/her own activities.
	60	Transparency-honesty	...be transparent and honest.

Appendix D – New Scale (Version used in the online survey)

In general, how do members of an IT project team behave? **(Answer based on what you have observed, and not on what you believe to be ideal.)** **Choose from 1 (strongly disagree) to 5 (strongly agree)**	
	Scale Item
1	Think it is great working with team mates
2	Accept doing almost any task to remain in the team they are working with.
3	Believe that their personal values are aligned with the values of the team they are working with.
4	Feel proud to be part of the team they are in.
5	Feel motivated to give their best for the welfare of the team.
6	Feel happy to be part of the team they are currently in.
7	Indeed care about what happens to their team.
8	Believe that the team they are in is the best place to work.

In general, what are the characteristics and attitudes of IT project managers? **(Answer based on what you have observed, and not on what you believe to be ideal.)** **Choose from 1 (strongly disagree) to 5 (strongly agree)**			
Competence Category		**Competence**	**Scale Item**
Team management	9	Ability to motivate team members	Lead the team, without being authoritarian, so that the team accomplishes the project goals with enthusiasm.
	10	Collaboration	Engage themselves to accomplish tasks spontaneously.
	11	Ability to bridge diverse teams	Have a good understanding of each team's responsibilities and where they overlap.
	12	Virtual team skills	Know how to deal with cross-cultural factors such as different time zones, international customs, holidays, traditions and distinct work ethics.
	13	Share information	Share information about the project with all people involved.
	14	Share credit	Share credit for project success with their team.
	15	Provide feedback	Give team members timely positive or negative feedback.
	16	Give autonomy to team members	Delegate power and responsibilities to team members (empowerment).
Business domain knowledge	17	Ability to understand the business domain	Understand the business requirements as well as the factors that can affect the project's health, instead of only focusing on the technical solution.
	18	Ability to identify stakeholders	Identify the individuals (stakeholders) that will be impacted by the project.
	19	Ability to involve end-users	Sell the project to end-users and make them accept the system.
	20	Knowledge of the end product	Understand what the end product is, how it works and what it must accomplish.
	21	Ability to document process	Document organizational processes effectively.
	22	Strategic thinking	See the big picture and make tactical/strategic decisions that benefit the project.
	23	Cultural fit	Understand the cultural differences within the organization and know how to deal with the "unwritten guidelines".

Competence Category (cont.)		Competence	Scale Item
Communication	24	Communication	Have both verbal and written skills to communicate well with all those involved in the project.
	25	Ability to construct persuasive arguments	Know how to persuade people to follow one direction rather than the other
	26	Open communication	Communicate openly in order to build trust and improve communication in all project phases.
	27	Ability to communicate at multiple levels	Are able to communicate not only with his/her team members but also with stakeholders and people from different hierarchical levels.
	28	Listening	Listen closely to his/her team members.
Project management	29	Scope management	Manage the project scope well.
	30	Project planning	With business requirements as a starting point, create activities and precise deadlines, avoiding penalties for not meeting these deadlines.
	31	Time management	Make a good time management to prevent bottlenecks, by using appropriate techniques such as critical path analysis.
	32	Cost management	Have good control of project budget and its actual costs.
	33	Risk management	Identify potential risks and develop a plan to reduce or eliminate these risks.
	34	Identify/expand opportunities	Identify and expand opportunities for improvement and growth.
People skills	35	Conflict management	Manage conflicts constructively to obtain alignment within those involved in the project.
	36	Understanding the psychology of people	Know how to satisfy the motivations of the business and technical personnel.
	37	Political awareness/agility/tact	Discern and deal with political issues.
	38	Good people skills	Work with and interact with all types of people in all types of situations.
	39	Negotiation	Build relationships and are able to negotiate with the different people involved at distinct hierarchical levels (technical and business area).
Professionalism	40	Credibility	Keep their promises and demonstrate a high level of ethics.
	41	Participate and contribute fully	Participate and contribute fully.
	42	Ownership of tasks	Are accountable for their tasks.
	43	Commitment	Are committed to the project.
	44	Experience	Know how to learn from past experiences and interaction with others professionals.
Personal characteristics	45	Cooperation	Help others for the common benefit.
	46	Empathy	Know how to put themselves in the place of another to feel what another feels (empathy).
	47	Decisiveness	Take decisions based on real facts instead of feelings or personal beliefs.
	48	Initiative-proactive	Have initiative and pro-activity.
	49	Self-organization/self-directed	Are organized people.
	50	Transparency-honesty	Are transparent and honest.

Appendix E – New Scale (Portuguese Version)

Em geral, como se comportam os membros de uma equipe de projeto de TI?
(Responder baseado no que você tem observado, e não no que você acredita ser o ideal.)
**** Ao responder, considere sua visão "geral" sobre o tema questionado ****
Você poderá escolher entre 1 e 5, sendo que:
1 = discordo totalmente
2 = discordo em parte
3 = não concordo nem discordo (indiferente)
4 = concordo em parte
5 = concordo totalmente

	Itens da Escala
1	Acham ótimo trabalhar com seus companheiros de equipe.
2	Aceitam executar praticamente qualquer tarefa a fim de permanecer na equipe em que trabalham.
3	Acreditam que os seus valores pessoais estão alinhados com os valores da equipe em que trabalham.
4	Sentem orgulho de fazerem parte da equipe em que trabalham.
5	Se sentem motivados a dar o seu melhor pelo bem da equipe.
6	Se sentem felizes por integrarem a equipe em que trabalham atualmente.
7	Se importam verdadeiramente com o que acontece com a equipe em que trabalham.
8	Acreditam que a equipe em que trabalham é a melhor para se trabalhar.

Em geral, quais são as atitudes e características dos gerentes de projetos de TI?
(Responder baseado no que você tem observado e não no que você acredita ser o ideal.)
**** Ao responder, considere sua visão "geral" sobre o tema questionado ****
Você poderá escolher entre 1 e 5, sendo que:
1 = discordo totalmente
2 = discordo em parte
3 = não concordo nem discordo (indiferente)
4 = concordo em parte
5 = concordo totalmente

Competence Category		**Competence**	**Scale Item**
Team management	9	Habilidade de motivar membros da equipe	Lideram a equipe, sem serem autoritários(as), para que esta cumpra os objetivos do projeto com entusiasmo.
	10	Colaboração	Se engajam de forma espontânea para cumprir tarefas.
	11	Habilidade de integrar equipes	Entendem as funções de cada equipe e onde estas funções se intercalam.
	12	Habilidade de gerenciar equips virtuais	Sabem lidar com fatores interculturais como diferença de fusos horários, costumes internacionais, feriados, tradições e éticas de trabalho distintas.
	13	Compartilhar informação	Compartilham informações sobre o projeto com todos os envolvidos.
	14	Compartilhar méritos	Compartilham os créditos pelo sucesso do projeto com sua equipe.
	15	Dar feedback	Dão feedback positivo ou negativo aos membros da equipe em tempo oportuno.
	16	Dar autonomia para as membros da equipes	Delegam poderes e responsabilidades aos membros da equipe (empowerment).
Business domain knowledge	17	Habilidade de entender o negócio	Entendem os requisitos de negócio bem como os fatores que podem afetar a saúde do projeto, em vez de apenas focar na solução técnica.
	18	Habilidade para identificar os stakeholders do projeto	Identificam quais indivíduos (stakeholders) serão impactados pelo projeto.
	19	Habilidade de envolver o usuário final	Vendem o projeto para os usuários finais, fazendo com eles aceitem o sistema.
	20	Conhecimento do produto final	Entendem o que é o produto final, como o produto final funciona e que objetivo este produto deve cumprir.
	21	Habilidade de documentar processos	Documentam os processos organizacionais com efetividade.
	22	Pensamento estratégico	Vêem o panorama geral e tomam decisões táticas/estratégicas que beneficiam o projeto.
	23	Adaptar-se à cultura organizacional	Entendem as diferenças culturais na organização e sabem como lidar com as "regras não escritas".

Competence Category (cont.)		Competence	Scale Item
Communication	24	Comunicação	Comunicam-se bem tanto de forma verbal como escrita com todos os envolvidos no projeto.
	25	Habilidade de construir argumentos persuasivos	Sabem como convencer as pessoas a seguir uma direção em vez de outra.
	26	Manter comunicação aberta	Comunicam-se abertamente no intuito de aumentar a confiança e melhorar a comunicação em todas as fases do projeto.
	27	Habilidade para comunicar-se bem com todos os níveis hierárquicos	Comunicam-se não somente com os membros do seu time, mas também com stakeholders e com pessoas de diferentes níveis de hierarquia.
	28	Ouvir	Escutam atenciosamente os membros do seu time.
Project management	29	Gerenciamento do escopo do projeto	Gerenciam bem o escopo do projeto.
	30	Planejamento	A partir dos requisitos de negócio, criam atividades e prazos precisos, prevendo penalidades pelo não cumprimento destes.
	31	Gerenciamento do tempo	Gerenciam bem o tempo a fim de evitar gargalos, utilizando técnicas adequadas como por exemplo análise de caminho crítico.
	32	Gerenciamento de custo	Controlam bem o orçamento do projeto e seus custos reais.
	33	Gerenciamento de risco	Identificam potenciais riscos e desenvolvem planos para reduzir ou eliminar estes riscos.
	34	Identificar/expandir oportunidades	Identificam e expandem oportunidades de melhoria e de crescimento.
People skills	35	Gerenciar conflitos	Gerenciam conflitos construtivamente de modo a obter alinhamento entre os envolvidos no projeto.
	36	Entender o aspecto psicológico dos envolvidos	Sabem satisfazer as motivações do pessoal de negócios e da área técnica.
	37	Ter consciência do aspect politico/agilidade/tato	Sabem discernir e lidar com questões políticas.
	38	Habilidade de lidar com pessoas	Sabem trabalhar e interagir com todos os tipos de pessoas em todos os tipos de situações.
	39	Negociação	Constróem relacionamentos e sabem negociar com os diferentes envolvidos dos distintos níveis hierárquicos (área técnica e área de negócio).
Professionalism	40	Credibilidade	Cumprem suas promessas e demostram alto nível de ética.
	41	Participar e contribuir	Participam e contribuem plenamente.
	42	Controle das suas próprias tarefas	Executar suas tarefas com responsabilidade.
	43	Comprometimento	São comprometidos com o projeto.
	44	Experiência	Sabem como aprender a partir de experiências anteriores e de interações com outros profissionais.
Personal characteristics	45	Cooperação	Ajudam outras pessoas, a fim de alcançar um objetivo em comum.
	46	Empatia	Sabem se colocar no lugar do outro para saber como o outro se sente (empatia).
	47	Habilidade para tomar decições	Tomam decisões baseadas em fatos reais em vez de sentimentos ou crenças pessoais.
	48	Iniciativa e pró-atividade	Têm iniciativa e pró-atividade.
	49	Organização/ auto-gerenciável	São pessoas organizadas.
	50	Transparência/Honestidade	São transparentes e honestos.

Appendix E - New Scale (After statistical analysis)

		TEAM COMMITMENT	
1		Think it is great working with team mates	
3		Believe that their personal values are aligned with the values of the team they are working with.	
4		Feel proud to be part of the team they are in.	
5		Feel motivated to give their best for the welfare of the team.	
6		Feel happy to be part of the team they are currently in.	
7		Indeed care about what happens to their team.	
8		Believe that the team they are in is the best place to work.	
Competence Category		**Competence**	**Scale Item**
Team management	9	Ability to motivate team members	Lead the team, without being authoritarian, so that the team accomplishes the project goals with enthusiasm.
	10	Collaboration	Engage themselves to accomplish tasks spontaneously.
	11	Ability to bridge diverse teams	Have a good understanding of each team's responsibilities and where they overlap.
	12	Virtual team skills	Know how to deal with cross-cultural factors such as different time zones, international customs, holidays, traditions and distinct work ethics.
	13	Share information	Share information about the project with all people involved.
	15	Provide feedback	Give team members timely positive or negative feedback.
Business domain knowledge	17	Ability to understand the business domain	Understand the business requirements as well as the factors that can affect the project's health, instead of only focusing on the technical solution.
	18	Ability to identify stakeholders	Identify the individuals (stakeholders) that will be impacted by the project.
	19	Ability to involve end-users	Sell the project to end-users and make them accept the system.
	20	Knowledge of the end product	Understand what the end product is, how it works and what it must accomplish.
Communication + **People skills**	24	Communication	Have both verbal and written skills to communicate well with all those involved in the project.
	26	Open communication	Communicate openly in order to build trust and improve communication in all project phases.
	27	Ability to communicate at multiple levels	Are able to communicate not only with his/her team members but also with stakeholders and people from different hierarchical levels.
	35	Conflict management	Manage conflicts constructively to obtain alignment within those involved in the project.
	37	Political awareness/agility/tact	Discern and deal with political issues.
	38	Good people skills	Work with and interact with all types of people in all types of situations.
	39	Negotiation	Build relationships and are able to negotiate with the different people involved at distinct hierarchical levels (technical and business area).

Competence Category (cont.)		Competence	Scale Item
Project Management	**21**	Ability to document process	Document organizational processes effectively.
	29	Scope management	Manage the project scope well.
	30	Project planning	With business requirements as a starting point, create activities and precise deadlines, avoiding penalties for not meeting these deadlines.
	31	Time management	Make a good time management to prevent bottlenecks, by using appropriate techniques such as critical path analysis.
	32	Cost management	Have good control of project budget and its actual costs.
	33	Risk management	Identify potential risks and develop a plan to reduce or eliminate these risks.
Professionalism + Personal Characteristics	40	Credibility	Keep their promises and demonstrate a high level of ethics.
	41	Participate and contribute fully	Participate and contribute fully.
	42	Ownership of tasks	Are accountable for their tasks.
	43	Commitment	Are committed to the project.
	44	Experience	Know how to learn from past experiences and interaction with others professionals.
	45	Cooperation	Help others for the common benefit.
	46	Empathy	Know how to put themselves in the place of another to feel what another feels (empathy).
	47	Decisiveness	Take decisions based on real facts instead of feelings or personal beliefs.
	48	Initiative-proactive	Have initiative and pro-activity.
	50	Transparency-honesty	Are transparent and honest.

Appendix F - Relevant excerpts related to team management category

Competencies	Excerpts of interviews
Ability to bridge diverse teams	"To get people involved to the project and to make them feel that...to make the team members feel they are involved with the project and to get them to participate in every decision in the project!!"
Ability to empower future leaders	"The matter of empowerment. The individual need to have power to decide, right?! (the power to decide) is not designed only to one specific person."
Ability to motivate team members	"I think that one of the main factors that influence results is the team's motivation." "I think that the influence (on the team's motivation) comes more from being a leader, and not a boss... the boss doesn't know how to motivate people, right? But the leader does!" " "One unmotivated person on the project can easily make three motivated become unmotivated too…we need to be careful… this is one of the main difficulties in project management… to keep people motivated"
Celebrating accomplishments	"If he/she (the project manager) creates the condition that allows people to work well and acknowledge his/her team members for their good work … the person will feel they are appreciated. So, is he/she doesn't acknowledge an individual's good work, he/she can lose this person."
Collaboration	"I start it off, I write the planning at the macro level, and after, the planning is completed with the help of the whole team. Everybody says: 'now, this has to be like that, this task is not ok in the project chart… the planning lacks this or that…' Designing the project planning this way takes a little more to get done, but the results are much better and the project planning is more reliable." "Giving people responsibility, exchanging opinion with them, let them participating in decision making… I don't plan projects alone! I do the project planning with them (team members)."
Create an effective team environment	"The bottom line is that people have to interact with one another. Each person has their own personality. From the team's perspective, I believe this is the main factor." "It means asking their opinion, involving people, making them believe that it (the project) is part of them as well…showing them that they are directly responsible for what they are doing (in the project), showing them that what they do will affect the project result in the future." "You have to know the differences between people inside your team to be able to accompany them. In other words, in a 1-year project, for example, it is natural that people will have conflict with each other. I mean conflict in a good way. They are human… I am not saying that they are going to hit one another (laughs)" "Once a week I gather the project team and we have lunch together. It's a simple thing. I mean, it makes people get to know each other better." "The second thing is that you create an environment where people will work and have fun too… an environment where people are required to do their tasks, but they will have autonomy with responsibility…"

Competencies (cont.)	**Excerpts of interviews**
Give autonomy to team members	"I'm not the annoying guy that asks people how things are all the time, if they finished theirs tasks or not… (laughter) No!" "The 2nd thing is to create an environment in which people work and have fun at the fun at the same time… an environment in which team members are accountable for their tasks, but have autonomy with responsibility. So, this is very important."
Leadership	"I think that people are more influenced by a leader, than by a 'boss'! That's it: leading! Right?! It's that famous saying that we see on Facebook all the time (laughter)... A 'boss' doesn't know how to motivate people, right? But the a leader does!" "Because many times, the team looks up to that manager. They are inspired by that manager, that leader.
Share information and credit	"We need to be one team. You (the project manager) need to be with your team, to help your team; you need to communicate with your team always, when things are good or when they are not good." "In all phases, you need to be transparent, to play fair, you know? Don't hide information... I think that you need to be very open, it is... not playing games, you know?"
Project management	"It is... scope not well defined because people don't know how to ask."
Provide feedback	"Feedback! I think feedback is important in all phases. Because, I think that not receiving information discourages people. 'What am I doing? Is what I am doing not ok?' I think people need to have this feedback, you know..." "You need to recognize people's work...if he (project manager) doesn't give people (team members) this sense of value… to make them feel they are valued. If he (the project manager) doesn't make a team member feel valued, he will lose this member."
Virtual team skills	"I didn't have to go there. I understood how things worked from a distance. I worked with them using video conference, or by phone…I didn't have to go there." "In this project the team members were spread over four countries. The challenge was to manage a team with people that didn't know each other, with very, very distinct ways of being and working." "At one moment you're talking to the team in India, afterwards you're talking to team in London...then you have to work overnight to talk with the group in Australia, Manila... it's very cool!"

Appendix G - Mean and standard deviation of the questionnaire items

Competencies	Excerpts of interviews
Ability to document process	"Oh, I got very positive feedbacks both from the branch directors and my direct manager at that time regarding the document we designed. They said it was very complex and complete. I mapped the DID (Direct Inward Dialing) process very well... I guess... because I knew the business a lot."
Ability to identify stakeholders	"It's (laughter) very important to identify who each one of the individuals is, and the groups that are important to our project, what they don't like and then, we set a strategy that allows… that transforms what they don't like in something they value."
Ability to involve end-users	"In the first phase... in the initial requirements gathering … it's (the initial requirements gathering) important to be well done, so that we can ensure that we know what the client really wants." "So, I think involving them (end-users) from the beginning also helped them to believe they were part of it (of the project), you know… to believe they're involved…" "Today, business is the business analysts! What difference does it make? They (business analysts) are not the ones who'll use the system. We don't develop systems for them (business analysts). We develop systems for those who are at the end (end-users)."
Knowledge at the end product	"So, for me it was difficult because I didn't know the product exactly, so it was complicated, I felt I was in a fog."
Understand the business domain	"I think that one of the most important factor we need to show the client is that we have knowledge. I mean… we don't have to know everything, but we have to show them that we have some knowledge." "The project manager has to be able to talk to the client, being aware of what they are talking about. He might not know the business deeply, but he has to know what they're (the clients) talking about."
Strategic thinking	"If the sponsor's business plan isn't good… if he (the project manager) can't defend the project, if he can't show that the project will bring gains to the organization the project eventually dies." "If he (the project manager) can't prove that the project is financially viable, the project dies!" "he was more focused on the scope, cost and about delivering the project than on the results of the project to the organization. So, he was more technical, he lacked political knowledge, you know? He lacked the political power to make the project work."
Business skills	"Look. The project manager has to know the business a lot, the client's business. It doesn't matter that you simply know the system. You must know what the system does, what it offers to the client, that it's important to the business. You need to understand the business very much!" "He (the project manager) needs to know exactly what he's going to do, how much money it (the project) is going to bring… once this is well defined, he (the project manager) can implement an IT project."
Cultural fit	"There are countries have more aversion to change than others…"

Appendix H - Mean and standard deviation of the questionnaire items

Competencies	Excerpts of interviews
Ability to communicate at multiple levels	"There's a joke about it (communication in IT setting)! A programmer's wife asks him: 'Honey, please, go to the bakery and buy milk, and, if they have bread, you buy 6'. He goes home with 6 bottles of milk! (laughter)" "Our clients were satisfied…because… in our communication process we showed them that they would have gains with the implementation of the system…"
Ability to construct persuasive arguments	"Obviously projects bring advantages in some aspects, but they also bring advantages. For this reason, if we (project managers) know how to sell the benefits of the project, the clients can accept it better." "It's important to know how to convince people on what is important in order to get the different areas involved with the project goals."
Verbal communication	The best thing is to be a negotiator! You gotta know how to negotiate with the clients and with our dear technical leaders! (laughter)" "Knowing how to communicate... I guess that communication it's also part (of a project manager's role)."
Open Communication	"you (a project manager) must explain to the ones, the ones involved in the project, what the project is going to implement, what determines the success or not." "Well, you have to use the same psychology to talk with him/her and to play fair, you know? It's… 'I understand what you're going through, but I need you to achieve so and so… I need to know if you are willing to achieve this result'…You need to put the cards on the table!" "And, to be transparent with the team, and say 'it's so and so.' To make things very clear… The guy (the project manager) needs to have good communication…" "Because there are studies which say that the project manager's work… is 90% communication: to interact with people, to help people, to verify the situation of things… this (communication) is fundamental."
Listening	"... listening to their input (team members)...sometimes their ideas are funny… sometimes it's funny. I mean, to listen to the programmer… knowing their idea on project success and to put it in project goals…" "Man, it's listening, listening... sometimes you can't see something that is under your nose, but then, a boy comes, a junior and says to you: 'Well, why don't you do it this way?' And, the guy is right, you understand? You didn't see it. I believe you need to listen to everybody. You know? You have to filter things, right? People can say garbage, or, they can say things that make sense." "Communicating well with them (people involved in the project) is not only talking, but it's listening as well, right? Listening and understanding what their interests are and to use this to the benefit of the project."

Appendix I - Mean and standard deviation of the questionnaire items

Competencies	Excerpts of interviews
Alignment	"After the team is formed, in the first project meeting… this information (the project criteria, goals) needs to be delivered. I mean, you must explain them, to those involved in the project what success in the project is …" "They can clarify doubts, clarify that the client asked is not exactly what he asked, it's a little different. So, my goodness, this will minimize (misunderstanding during the project execution)… because when the time comes to carry out tests, all this will reduce, problems will reduce, the re-work will reduce, and this is cost reduction."
Cost management	"Sometimes we need to know how we spent twice the budget, and the client hasn't paid us yet. We need to know how that happened!"
Resource utilization	"(The project manager) he/she needs to control his/her team's activities." "For me, a project manager's differential is to conduct the difficulty of managing resources within time constraints."
Time management	"The project manager needs to know what's not happening, to understand why (it is not happening) and to talk to the person responsible for this task, the one who's not delivering…and then, go to the cause of the problem..." "You have to know who's doing what, to monitor the deadlines of each one (team member)... 'Oops, it's late!', you have to understand the cause of the delay because it can cause other problems later. So, you solve it now…" "One of the most important characteristic of this role (project manager's role) is to monitor the schedule."
Project planning	"I believe that one of the most important things is to have a good project plan."
Scope management	"What were the reasons why the project failed? Well... scope poorly defined, right? Especially because the person who requests the project doesn't know how to ask…" "He (the project manager) has to gather the specification, to document what the client really wants, to understand that for real...he has to align with the client that the scope reflects what the client needs"
Risk management	"The project manager didn't point out, didn't point out that what was being implemented in the project didn't satisfy the client's expectations… and neither did I. I didn't notice that, and, later, the problem increased and the project ended up being canceled." "He was a good project manager. He was good with details. He was also able to anticipate possible problems in the project …he didn't wait for things to happen, go wrong, and to inform only then. He always tried to foresee possible problems in the project…so we could anticipate and address risks before they became problems."

Appendix J - Mean and standard deviation of the questionnaire items

Competencies	Excerpts of interviews
Charisma	"…to be able to manage a team of people that had no acquaintance, that had different ways to work and very different personalities. But I am, I guess very pleasant."
Conflict management	"In other words, it's necessary to deal with the differences within people in your team in order to manage them all. For example, in a 1-year-project it's likely that conflicts come up within them." "Sometimes 2 people in the same area don't talk and he (the project manager) needs to fix the situation as soon as possible."
Negotiation	"There comes my main role as a project manager, the role of building conciliation." "The most important thing is to be a negotiator."
Political awareness	"So, he was more technical. He lacked a little bit of political knowledge, you know?! He lacked political power to make the project work."
Relationship building	"He (a successful project manager on the interviewee's perspective) involved people on the personal perspective. He had… he used what American call 'small talk' - the informal chats in the cafeteria, in hallways – and discovered what people liked… he tried to find out things in common with people so he could connect with them."
Understanding the psychology of people	"To know the interests of each person... The manager is like a psychologist, right?! Or a psychiatrist." "…but if the project is long, it doesn't have to be anything special... in a project that lasts more than 6 months. (In a long project) you need to pay attention to the team's motivation. I mean, you need to know the differences that exist between the people of your team so that you're able to monitor them." "Women have PMS (Premenstrual Syndrome), people have problems at home, people get stuck in traffic, people have feelings…there are people who will get annoyed with anything…there are days we're going to overlook, there are days we'll need to ask for help. The project manager needs to have the 'feeling' to realize what that person needs. 'Oops, does she need help or not?'"
Good people skills	"The leader deals with each person… he tries to identify things that motivate that person. So, the leader has to know his followers… to talk with them, to be with them, to be next to each member of the team so he knows what motivates that person. So he can say: 'I'll assign specific tasks to you because I know your limits, up to what point you can go.'" "Knowing how to get the best from each one… you have to work with people the best way possible."

Appendix K - Mean and standard deviation of the questionnaire items

Commitment Component	Excerpts of interviews
Affective Commitment	"In fact, it's not the organization what people like. People like the people they work with, in the organization. People hardly like the organization because the organization itself doesn't mean anything, right? The organization is the walls and a little bit more. But people like the environment that has been built in that organization, well, … the people with whom they are used to work. I guess that is more because of that, in that sense, that's what keep people in the organization." "But, I really believe that people remain (in the organization) because they like that environment..." "Yes, there are a lot of people that are there (in the organization) because they enjoy working in that place, because they really do their best for the company. I know people that work that way, right? Some people I work with are like that: they do their best for the company, like are pleased to work there, the like the organization, they do not want to leave the company and so on. They give the most of themselves, really put in effort because they like working in, in the organization. There are many people who are like that…"
Normative Commitment	"The older crowd had this thing of 'doing the best for the organization'… The young crowd doesn't. They (young people) are more focused on growing, on develop themselves… it can be there or on the organization's competitor." "If you are not satisfied, you leave, you know that there're jobs available in the market. It's different from what you said…" "Honor, loyalty... I think this term is too strong. But, I think that… people work when they have, I think, interests, right? So, you give the organization your work and the organization gives you interesting professional possibilities." "I believe so. I believe that many people feel fulfilled in their jobs. People can work somewhere because they believe that their jobs brings benefits for they family… for the society. Organizations try to get this kind of response with some sustainability initiatives and social campaigns. Sometimes people work in an organization not for the financial benefits but because they like and because they feel that what they do make the difference. "Honor, loyalty towards the organization...I think that, I think that it doesn't… I think that this attitude is rare nowadays. It means… the new generation is… people are more focused on… growing, on having their lives, on having time with their family… Specially this new generation.. They're more concerned with themselves than with the organization." "People will put in effort until they feel they're getting benefits… But, as soon as they feel they're not getting benefits, they will look for another job, a job that will offer them the benefits they're looking for." "The older crowd had this thing of 'doing the best for the organization'… The young crowd doesn't. They (young people) are more focused on growing, on develop themselves… it can be there or on the organization's competitor." "If you are not satisfied, you leave, you know that there're jobs available in the market. It's different from what you said…" "Honor, loyalty... I think this term is too strong. But, I think that… people work when they have, I think, interests, right? So, you give the organization your work and the organization gives you interesting professional possibilities." "I believe so. I believe that many people feel fulfilled in their jobs. People can work somewhere because they believe that their jobs brings benefits for they family… for the society. Organizations try to get this kind of response with some sustainability initiatives and social campaigns. Sometimes people work in an organization not for the financial benefits but because they like and because they feel that what they do make the difference. "Honor, loyalty towards the organization...I think that, I think that it doesn't… I think that this attitude is rare nowadays. It means… the new generation is… people are more focused on… growing, on having their lives, on having time with their family… Specially this new generation.. They're more concerned with themselves than with the organization. People will put in effort until they feel they're getting benefits…

Commitment Component	Excerpts of interviews
Continuance Commitment	"Now, if this person really isn't interest to help, to collaborate with the project members and the project manager doesn't have authority to influence in this person's career, it's really complicated to change this person's attitude towards the project team. Not only in an IT environment, but in any business sector. If the individual isn't interested to work, and the PM doesn't have power to influence (this individual's career), the PM has to use the emotional aspect, the PM should try to find out the reason why this individual is working for. If this individual is in a place where he/she doesn't enjoy working at, if this person isn't interest to work, sometimes it's better to replace him/her." "For me, it doesn't mean…I can't understand why… because many people don't even like their jobs. But on the other hand… They're there for 20 years because the organization pays them their salary… so, they're there, do you understand?" "People who are on their 30's and 40's search for a little bit of stability because, because they have family. So, there's a financial need that prevents these people to take big risks, they can't risk that much. Some people on this situation take risks because they're not engaged to anyone. But when people have children, for example, people who have husbands, wives… they have bigger responsibilities that keep them from taking risks." "It's not only in an IT setting, but also in any other setting. If people are not interested in working and if they don't have influence and authority (in the project), the PM has to use the emotional skills… he/she has to find out why the person is there, if the person enjoys working in that organization. If someone is on a project on which he/she doesn't enjoy working, if he/she is not interested in working there, sometimes it's better to replace that person." (About employees whose only motivation is to make money to pay de bills) I believe that the individual becomes demotivated, tired, right? He/she works in a mechanical way. I do things not because I want to deliver or because it is a nice project to work in. I do things because I have to do. It means… there's no motivation, right?"

Appendix L - Mean and standard deviation of the questionnaire items

Item #	Item	Mean	Standard Deviation
1	Think it is great working with team mates	3.64	0.848
2	Accept doing almost any task to remain in the team they are working with.	3.02	1.055
3	Believe that their personal values are aligned with the values of the team they are working with.	3.10	1.019
4	Feel proud to be part of the team they are in.	3.55	0.988
5	Feel motivated to give their best for the welfare of the team.	3.44	1.097
6	Feel happy to be part of the team they are currently in.	3.49	1.042
7	Indeed care about what happens to their team.	3.32	1.128
8	Believe that the team they are in is the best place to work.	3.13	1.106
9	Lead the team, without being authoritarian, so that the team accomplishes the project goals with enthusiasm	3.31	1.134
10	Engage themselves to accomplish tasks spontaneously.	3.31	1.088
11	Have a good understanding of each team's responsibilities and where they overlap.	3.26	1.149
12	Know how to deal with cross-cultural factors such as different time zones, international customs, holidays, traditions and distinct work ethics.	3.30	1.178
13	Share information about the project with all people involved.	3.16	1.231
14	Share credit for project success with their team.	3.35	1.228
15	Give team members timely positive or negative feedback.	3.10	1.204
16	Delegate power and responsibilities to team members (empowerment).	3.38	1.111
17	Understand the business requirements as well as the factors that can affect the project's health, instead of only focusing on the technical solution.	3.26	1.158
18	Identify the individuals (stakeholders) that will be impacted by the project.	3.39	1.088
19	Sell the project to end-users and make them accept the system.	3.34	1.117
20	Understand what the end product is, how it works and what it must accomplish.	3.52	1.074
21	Document organizational processes effectively.	2.69	1.184
22	See the big picture and make tactical/strategic decisions that benefit the project.	3.24	1.116
23	Understand the cultural differences within the organization and know how to deal with the "unwritten guidelines".	3.15	1.071
24	Have both verbal and written skills to communicate well with all those involved in the project.	3.24	1.116
25	Know how to persuade people to follow one direction rather than the other.	3.17	1.076
26	Communicate openly in order to build trust and improve communication in all project phases.	3.19	1.114
27	Are able to communicate not only with his/her team members but also with stakeholders and people from different hierarchical levels.	3.43	1.096
28	Listen closely to his/her team members.	3.18	1.206
29	Manage the project scope well.	3.11	1.164
30	With business requirements as a starting point, create activities and precise deadlines, avoiding penalties for not meeting these deadlines.	2.78	1.198
31	Make a good time management to prevent bottlenecks, by using appropriate techniques such as critical path analysis.	2.75	1.154
32	Have good control of project budget and its actual costs.	2.98	1.184
33	Identify potential risks and develop a plan to reduce or eliminate these risks.	3.00	1.135
34	Identify and expand opportunities for improvement and growth.	3.10	1.118
35	Manage conflicts constructively to obtain alignment within those involved in the project.	3.16	1.117
36	Know how to satisfy the motivations of the business and technical personnel.	2.92	1.104
37	Discern and deal with political issues.	3.24	1.114
38	Work with and interact with all types of people in all types of situations.	3.12	1.106
39	Build relationships and are able to negotiate with the different people involved at distinct hierarchical levels (technical and business area).	3.35	1.060
40	Keep their promises and demonstrate a high level of ethics.	3.28	1.169
41	Participate and contribute fully.	3.32	1.115
42	Are accountable for their tasks.	3.74	0.957
43	Are committed to the project.	3.87	0.921

Item # (cont.)	Item	Mean	Standard Deviation
44	Know how to learn from past experiences and interaction with others professionals.	3.55	1.073
45	Help others for the common benefit.	3.54	1.046
46	Know how to put themselves in the place of another to feel what another feels (empathy).	3.00	1.180
47	Take decisions based on real facts instead of feelings or personal beliefs.	3.27	1.135
48	Have initiative and pro-activity.	3.47	1.056
49	Are organized people.	3.43	1.040
50	Are transparent and honest.	3.40	1.138

Appendix M - Rates of the questionnaire items and respective percentage

Item	Response	Frequency	Percentage
1. Think it is great working with team mates	1	1	0.2%
	2	51	10.5%
	3	134	27.7%
	4	234	48.3%
	5	64	13.2%
2. Accept doing almost any task to remain in the team they are working with.	1	36	7.4%
	2	127	26.2%
	3	138	28.5%
	4	155	32.0%
	5	28	5.8%
3. Believe that their personal values are aligned with the values of the team they are working with.	1	27	5.6%
	2	119	24.6%
	3	149	30.8%
	4	159	32.9%
	5	30	6.2%
4. Feel proud to be part of the team they are in.	1	15	3.1%
	2	64	13.2%
	3	113	23.3%
	4	225	46.5%
	5	67	13.8%
5. Feel motivated to give their best for the welfare of the team.	1	21	4.3%
	2	90	18.6%
	3	108	22.3%
	4	187	38.6%
	5	78	16.1%
6. Feel happy to be part of the team they are currently in.	1	17	3.5%
	2	73	15.1%
	3	129	26.7%
	4	187	38.6%
	5	78	16.1%
7. Indeed care about what happens to their team.	1	25	5.2%
	2	104	21.5%
	3	119	24.6%
	4	161	33.3%
	5	75	15.5%

Item (continuation)	**Response**	**Frequency**	**Percentage**
8. Believe that the team they are in is the best place to work.	1	39	8.1%
	2	103	21.3%
	3	149	30.8%
	4	144	29.8%
	5	49	10.1%
9. Lead the team, without being authoritarian, so that the team accomplishes the project goals with enthusiasm.	1	32	6.6%
	2	105	21.7%
	3	88	18.2%
	4	201	41.5%
	5	58	12.0%
10. Engage themselves to accomplish tasks spontaneously.	1	22	4.5%
	2	105	21.7%
	3	121	25.0%
	4	173	35.7%
	5	63	13.0%
11. Have a good understanding of each team's responsibilities and where they overlap.	1	37	7.6%
	2	101	20.9%
	3	105	21.7%
	4	181	37.4%
	5	60	12.4%
12. Know how to deal with cross-cultural factors such as different time zones, international customs, holidays, traditions and distinct work ethics.	1	30	6.2%
	2	113	23.3%
	3	103	21.3%
	4	157	32.4%
	5	81	16.7%
13. Share information about the project with all people involved.	1	50	10.3%
	2	115	23.8%
	3	94	19.4%
	4	157	32.4%
	5	68	14.0%
14. Share credit for project success with their team.	1	39	8.1%
	2	96	19.8%
	3	101	20.9%
	4	152	31.4%
	5	96	19.8%
15. Give team members timely positive or negative feedback.	1	48	9.9%
	2	121	25.0%
	3	112	23.1%
	4	140	28.9%
	5	63	13.0%
16. Delegate power and responsibilities to team members (empowerment).	1	27	5.6%
	2	93	19.2%
	3	98	20.2%
	4	199	41.1%
	5	67	13.8%
17. Understand the business requirements as well as the factors that can affect the project's health, instead of only focusing on the technical solution.	1	37	7.6%
	2	102	21.1%
	3	106	21.9%
	4	175	36.2%
	5	64	13.2%
18. Identify the individuals (stakeholders) that will be impacted by the project.	1	24	5.0%
	2	86	17.8%
	3	119	24.6%
	4	185	38.2%
	5	70	14.5%

Item (continuation)	**Response**	**Frequency**	**Percentage**
19. Sell the project to end-users and make them accept the system.	1	36	7.4%
	2	77	15.9%
	3	121	25.0%
	4	188	38.8%
	5	62	12.8%
20. Understand what the end product is, how it works and what it must accomplish.	1	19	3.9%
	2	75	15.5%
	3	113	23.3%
	4	191	39.5%
	5	86	17.8%
21. Document organizational processes effectively.	1	81	16.7%
	2	158	32.6%
	3	109	22.5%
	4	101	20.9%
	5	35	7.2%
22. See the big picture and make tactical/strategic decisions that benefit the project.	1	35	7.2%
	2	95	19.6%
	3	131	27.1%
	4	166	34.3%
	5	57	11.8%
23. Understand the cultural differences within the organization and know how to deal with the “unwritten guidelines".	1	28	5.8%
	2	117	24.2%
	3	138	28.5%
	4	156	32.2%
	5	45	9.3%
24. Have both verbal and written skills to communicate well with all those involved in the project.	1	33	6.8%
	2	97	20.0%
	3	137	28.3%
	4	156	32.2%
	5	61	12.6%
25. Know how to persuade people to follow one direction rather than the other.	1	29	6.0%
	2	110	22.7%
	3	141	29.1%
	4	156	32.2%
	5	48	9.9%
26. Communicate openly in order to build trust and improve communication in all project phases.	1	37	7.6%
	2	96	19.8%
	3	143	29.5%
	4	153	31.6%
	5	55	11.4%
27. Are able to communicate not only with his/her team members but also with stakeholders and people from different hierarchical levels.	1	30	6.2%
	2	73	15.1%
	3	109	22.5%
	4	204	42.1%
	5	68	14.0%
28. Listen closely to his/her team members.	1	42	8.7%
	2	114	23.6%
	3	117	24.2%
	4	136	28.1%
	5	75	15.5%
29. Manage the project scope well.	1	44	9.1%
	2	120	24.8%
	3	109	22.5%
	4	160	33.1%
	5	51	10.5%

Item (continuation)	**Response**	**Frequency**	**Percentage**
30. With business requirements as a starting point, create activities and precise deadlines, avoiding penalties for not meeting these deadlines.	1	82	16.9%
	2	129	26.7%
	3	122	25.2%
	4	115	23.8%
	5	36	7.4%
31. Make a good time management to prevent bottlenecks, by using appropriate techniques such as critical path analysis.	1	73	15.1%
	2	144	29.8%
	3	129	26.7%
	4	105	21.7%
	5	33	6.8%
32. Have good control of project budget and its actual costs.	1	57	11.8%
	2	127	26.2%
	3	113	23.3%
	4	142	29.3%
	5	45	9.3%
33. Identify potential risks and develop a plan to reduce or eliminate these risks.	1	43	8.9%
	2	140	28.9%
	3	114	23.6%
	4	146	30.2%
	5	41	8.5%
34. Identify and expand opportunities for improvement and growth.	1	41	8.5%
	2	112	23.1%
	3	133	27.5%
	4	153	31.6%
	5	45	9.3%
35. Manage conflicts constructively to obtain alignment within those involved in the project.	1	38	7.9%
	2	102	21.1%
	3	139	28.7%
	4	153	31.6%
	5	52	10.7%
36. Know how to satisfy the motivations of the business and technical personnel.	1	55	11.4%
	2	120	24.8%
	3	147	30.4%
	4	132	27.3%
	5	30	6.2%
37. Discern and deal with political issues.	1	34	7.0%
	2	91	18.8%
	3	149	30.8%
	4	147	30.4%
	5	63	13.0%
38. Work with and interact with all types of people in all types of situations.	1	33	6.8%
	2	120	24.8%
	3	135	27.9%
	4	146	30.2%
	5	50	10.3%
39. Build relationships and are able to negotiate with the different people involved at distinct hierarchical levels (technical and business area).	1	23	4.8%
	2	84	17.4%
	3	139	28.7%
	4	175	36.2%
	5	63	13.0%
40. Keep their promises and demonstrate a high level of ethics.	1	46	9.5%
	2	72	14.9%
	3	137	28.3%
	4	158	32.6%
	5	71	14.7%

Item (continuation)	**Response**	**Frequency**	**Percentage**
41. Participate and contribute fully.	1	34	7.0%
	2	80	16.5%
	3	135	27.9%
	4	169	34.9%
	5	66	13.6%
42. Are accountable for their tasks.	1	13	2.7%
	2	39	8.1%
	3	104	21.5%
	4	231	47.7%
	5	97	20.0%
43. Are committed to the project.	1	6	1.2%
	2	37	7.6%
	3	94	19.4%
	4	225	46.5%
	5	122	25.2%
44. Know how to learn from past experiences and interaction with others professionals.	1	18	3.7%
	2	70	14.5%
	3	117	24.2%
	4	185	38.2%
	5	94	19.4%
45. Help others for the common benefit.	1	17	3.5%
	2	71	14.7%
	3	112	23.1%
	4	202	41.7%
	5	82	16.9%
46. Know how to put themselves in the place of another to feel what another feels (empathy).	1	58	12.0%
	2	114	23.6%
	3	133	27.5%
	4	130	26.9%
	5	49	10.1%
47. Take decisions based on real facts instead of feelings or personal beliefs.	1	40	8.3%
	2	80	16.5%
	3	135	27.9%
	4	166	34.3%
	5	63	13.0%
48. Have initiative and pro-activity.	1	19	3.9%
	2	71	14.7%
	3	140	28.9%
	4	173	35.7%
	5	81	16.7%
49. Are organized people.	1	18	3.7%
	2	79	16.3%
	3	135	27.9%
	4	183	37.8%
	5	69	14.3%
50. Are transparent and honest.	1	30	6.2%
	2	84	17.4%
	3	115	23.8%
	4	174	36.0%
	5	81	16.7%