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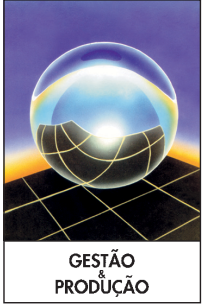

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Strategy, People and Operations as influencing agents of the Project Management Office performance: an analysis through Structural Equation Modeling

Estratégia, Pessoas e Operações como agentes influenciadores do desempenho do Escritório de Gerenciamento de Projetos: uma análise por meio da Modelagem de Equações Estruturais

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Abstract: The environment in which organizations operate is shown increasingly complex and competitive, leading companies to structure themselves in order to get quick, flexible and innovative responses. Projects are important instruments for promoting change and development. Since the 1990s, it's been intensified in organizations the creation of the Projects Managements Offices, accepted by executive, which is the central point of support within the organization, so that work oriented by projects will be completed within the constraints of the business. The international research indicates the Project Management Office as a focus of interest, since the results found have not yet reached the answers needed to help professionals to solve their problems. This paper aims to evaluate the performance of the Project Management Office, from the constructs: "implementation strategies", "capacitation and personnel training" and "control of the operations environment in projects". The approach was a quantitative research in a single cross-sectional study and the conceptual model was examined with Structural Equation Modeling. The results indicate the degree of influence of constructs on Project Management Office performance, and people, is the most significant predictor, followed by strategies and finally operations.

Keywords: Project Management Office; PMO; Performance; Conceptual Model; PLS-SEM.

Resumo: *O ambiente no qual operam as organizações se mostra cada vez mais complexo e competitivo, por isso, as empresas têm sido levadas a se estruturar para dar respostas rápidas, flexíveis e inovadoras. Projetos são importantes instrumentos para promover mudanças e desenvolvimento. Desde a década de 1990 intensificou-se nas organizações a criação de Escritórios de Gerenciamento de Projetos que, aceitos pelo executivo, são o ponto central de apoio dentro da organização para que o trabalho orientado por projetos seja concluído dentro das restrições do negócio. As pesquisas internacionais apontam o Escritório de Gerenciamento de Projetos como foco de interesse, pois os resultados encontrados ainda não chegaram às respostas necessárias para ajudar os profissionais a resolverem seus problemas. Este artigo tem por propósito avaliar o desempenho do Escritório de Gerenciamento de Projetos a partir dos construtos: "estratégias de implantação", "capacitação e treinamento de pessoal" e "controle do ambiente de operações em projetos". A abordagem foi a de pesquisa quantitativa em um estudo transversal único e o modelo conceitual foi examinado com a Modelagem de Equações Estruturais. Os resultados apontaram o grau de influência dos construtos no desempenho do Escritório de Gerenciamento de Projetos, sendo as pessoas o preditor mais significativo, seguido pelas estratégias e, finalmente, pelas operações.*

Palavras-chave: *Escritório de Gerenciamento de Projetos; EGP; Desempenho; Modelo Conceitual; MEE-PLS.*

1 Introduction

In recent years, the project management is increasingly present in organizations that are working oriented projects. So, as a competent alternative to facilitate change, organizations around the world are investing in training their employees in order to improve control over their projects. On the other hand, market competition pushes organizations to seek ways to overcome the difficulties and to ensure their survival. Therefore, increasingly being accepted by senior executives that the work oriented by projects have a central point of support within the organization. Thus, having a structure that applies the concepts of project management in an organization, can help generate planned and controlled results at

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the organizational level, not on the individual, since projects are a powerful tool to create economic value and competitive advantage (Meredith & Mantel, 1995; Hallows, 2002; Shenhar & Dvir, 2007; Patah & Carvalho, 2009; Patah, 2010; Martins et al., 2011).

As organizations begin to recognize the positive effect that the project management has on profitability, more emphasis shall be given to the professionalism in this area (Kerzner, 2006). Although, there is a controversial discussion about the results of applying these methods in relation to return on investment (Patah, 2010). Which leads to the consideration that the only way to get a sense of how projects are managed in organizations is to have a focal point on projects (Hallows, 2002; Dinsmore & Cabanis-Brewin, 2009): Project Management Office (PMO) or simply Project Office. The organizational phenomena PMO, therefore, is a field of interest for research in project management. A recent indicator of this situation lies in the production of research on the topic at international conferences and in specialized journals. Even so, there is still a knowledge gap and lack of common understanding about what drives their success (Müller et al., 2013; Spalek, 2013). What makes it crucial to learn more about its nature, the key factors that influence their operations and the challenges they face. With this focus, understanding and applying in practice would help managers to achieve the expected results of the projects executed by their organizations and improve organizational performance results.

The implementation of the Project Management Office has been a modern management practice that has been gaining notoriety, from the recognition of its value – relative low investment and high return potential –, related to the gain of efficiency in delivering the organization's projects and consequent enhancement of the business results expected from them: effectiveness of initiatives. This is, the implementation of a PMO is not considered an organizational fad, but a consolidated administrative practice: well-defined, tested, successful and highly recommended (Soler, 2013). Then, viewed as a governance structure, the PMO standardizes the projects related to governance processes and facilitates the resources sharing, methodologies, tools and techniques (PMI, 2013a), and can operate continuously from the supply functions support to project management in the form of training, software, standardized policies and procedures to be responsible for the direct management and achievement of the objectives of one or more projects (Xavier et al., 2009).

In this context, in order to contribute to the discussion of the results of applying the methods in project management in relation to return on investment, the research was guided by the following question: What is the influence of institutionalization of combined methods involving operations environment control, capacity building efforts and training in the performance of the Project Management Office (PMO)? Therefore, the aim of this study was to evaluate the performance of the Project Management Office from the constructs "implementation strategies", "capacitation and personnel training" and "control of the operations environment in projects", a result that led to the conceptual model presented in this paper.

In research on the subject of project management, the Brazilian academic production was analyzed in the period between 1997 and 2006 (Serra et al., 2012). It was found that the number of researchers was reduced before the great and growing practical use of project management by organizations and there is a predominance of the PMBOK® Guide by Project Management Institute (PMI) as a reference in the works analyzed. Furthermore, the authors claim [the research] that "[...] seems to indicate that, also in Brazil, there is a disproportion between academic research and the focus in practice [...]" (Serra et al., 2012, p. 74). Thus, this paper contributes to the research activity in the area of project management in Brazil. In particular, to investigate, by quantitative analysis, the background of PMO performance. Also contributes to the theory with a conceptual model that can be used in future research, which is able to identify the relationships and impacts that permeate the PMO performance. It is also, contributing to the practice by introducing a new tool to support decision making, when considering the variables that require management action by adopting a project-oriented structure in organizations, since the results of the study can be used by managers to guide and change their business decisions when considering the organization direction perspective running their businesses about projects supported by a PMO.

The paper is organized in five parts, including this introduction. The second part, presents a literature review on the project management, the Project Management Office and the constructs that support the conceptual model. In the third part, classified the study as the methodology and research instrument construction process, application of the questionnaire, sample size and indicates the technique used for data processing. The fourth part, presents the main demographic data associated with the study and consideration of the verification of the validity and reliability of data, in addition to checks to confirm the statistical significance of the data on the structural model, such being analyzed according to the theory to present the conceptual model. Finally, in the five part, conclusions, are presented remarks about the study limitations and suggestions to future research.

2 Literature review

2.1 Project Management and the Project Management Office

To understand the concept of project management, we should start with the definition of the project, which is a "[...] temporary endeavor undertaken to create a product, service or result [...]" (PMI, 2013a, p. 3). Temporary nature indicates that it has a beginning and an end and that is designed through a life cycle characterized by five process groups, which overlap identified in the PMBOK® Guide as: initiating, planning, executing, monitoring and controlling, and closing (PMI, 2013a).

A project is a unique and exclusive activity with a set of desirable results in its termination, and complete enough to require a specific coordination capacity and detailed control of deadlines, relationships, costs and performance (Meredith & Mantel, 1995). So, it should be seen as a combination of organizational resources, put together to create or develop something that did not exist previously, in order to provide an improvement in performance capability in the planning and realization of organizational strategies (Cleland et al., 1997). Therefore, a project is a structured approach for organizations to make possible adjustments or changes necessary to meet the challenges and opportunities demanded by a dynamic and competitive environment (Martins et al., 2011). Thus, the project management considers the planning, organization, direction and control resources to execute a goal in the relatively short term, established to complete specific goals and objectives (Kerzner, 2011).

Due to the importance that projects are acquiring within organizations, two issues have been present on the agenda of specialized publications in project management: The Projects Managements Offices and models of organizational maturity in project management (Rodrigues et al., 2006). The authors confirm that the PMO are presented as an element that has been helping organizations to better manage their businesses, through the implementation of a formal structure, either by helping to minimize the associated risks, by decreasing the inherent conflicts between projects and operations, or by providing appropriate methodologies.

From a structural point of view, the Project Management Office is a formal element of the organizational chart of an organization, usually, with some degree of support/advice (lateral) to a functional structure and executive responsibilities to support management (planning, monitoring and execution control) of projects of this organization (specific projects, programs and portfolios) (Soler, 2013). With this, the PMO may be classified into three levels: Project Support Office model, focusing on specific projects; Project Management Office model, focusing on multiple projects or programs; and Executive Project model, focused on managing the portfolio of projects (Rodrigues et al., 2006). The nomenclature is different, but the goals are identical and, Dinsmore & Cabanis-Brewin (2009) hold the rank of PMO in three levels: Project Office Control, dedicated to a single project; Project Office Business Units, to integrate multiple projects; and Strategic Projects Office, responsible for systems thinking throughout the organization.

2.2 Project Management Office performance

To measure the indicators of a PMO is necessary identifying its focus. The role of the PMO can be on the strategic, tactical or operational level. The strategic level refers to the results of the organization; therefore, it is a more appropriate assessment of business performance and corporate results. The tactical level refers to the processes and methodology of project implementation; therefore, it is proper to evaluate the implementation of the methodology and quality of services in support and project support. The operational level refers to the results of projects; therefore, measures should be focused on assessing compliance deadlines, the assessment of costs against the budgeted amounts and the performance issues of implementation procedures of the project and others (Ramos, 2013). The fact is that by establishing clear, measurable and realistic parameters in the form of metrics for monitoring the activities under their responsibility, the PMO assumes the ability to demonstrate its value and effectiveness for the organization, in turn, successfully operating can improve organizational performance (Ramos, 2013; Spalek, 2013).

For these reasons, the PMO performance is described as the quantitative and qualitative characteristics that show the existence of distinct dimensions in the Project Management Office. It is associated with perception of established value by the tradeoff between benefits and sacrifices, and it is observed by the leadership that has guidance for business (Dai & Wells, 2004; Carneiro et al., 2005; Borges & Carvalho, 2011; Kerzner, 2011; Ramos, 2013; Spalek, 2013), being influenced by the parsimonious subset that consists of the "implementation strategies" (Strategy), the "capacitation and personnel training" (People) and "control of the operations environment in projects" (Operations), which have different dimensions that function as dynamic elements for the composition to the Project Management Office (PMO) performance. The hypothetical model is introduced in Figure 1.

The proposed model is derived from hypotheses formulated from the literature review, namely: **H1**: There is a positive impact on the strategy adopted for project execution in the performance of the Project

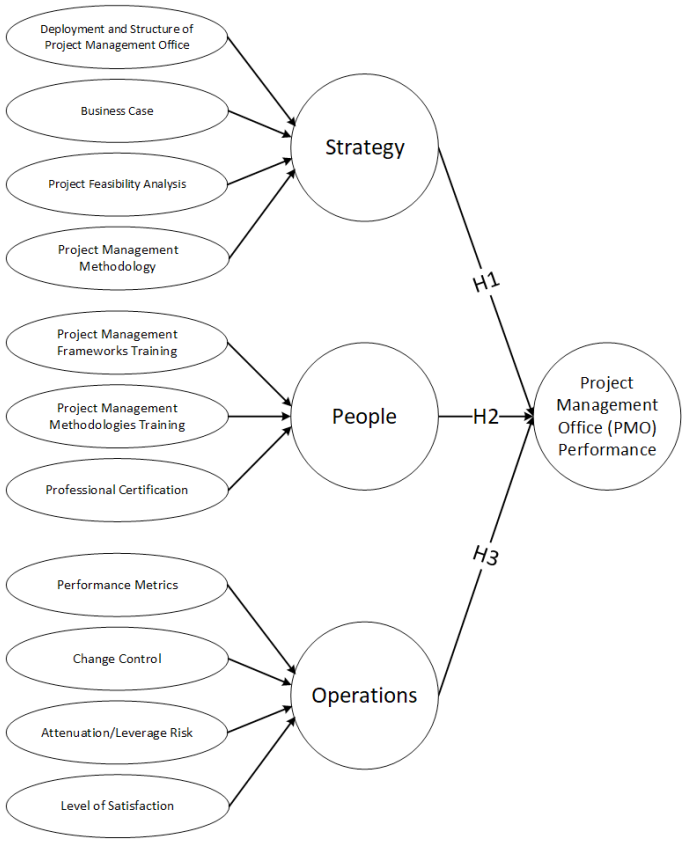

Figure 1. Hypothetical Model. Source: Elaborated by authors.

Management Office; **H2**: There is a positive impact on the human resources training effort on technical project management in the performance of the Project Management Office; and **H3**: There is a positive impact of the use of methods and standardization projects in the performance of the Project Management Office. Therefore, aiming to analyze the performance of the Project Management Office (PMO), the following constructs: Strategy (implementation strategies), People (capacitation and personnel training) and Operations (control of the operations environment in projects), were analyzed.

2.3 Strategy – Implementation strategies in projects

The "implementation strategies", represented by the Strategy construct, is the perspective in project, direction and guides on what to do and how. Contributes to the success of the project in the internal or external environment to PMO, being influenced by the beliefs of leadership, that have orientation for the business and are subsidized by the artifacts that guide the activities implementation (Poli & Shenhar, 2003; Carvalho & Rabechini, 2006; Kerzner, 2006; 2011; Artto et al., 2008; OGC, 2011; ISACA, 2012). The Strategy construct consists of the variables: Deployment and Structure of Project Management Office, Business Case, Project Feasibility Analysis and Project Management Methodology.

The strategy is always associated with the need to get results and use an efficacious way to reach them. It is true that the strategic management consists of a set of management decisions that determine the organization's long-term performance and includes strategy formulation, implementation, evaluation and control. Because, the strategic planning involves determining where you want to be in the future and how you plan to get there (Kerzner, 2006). These strategies are implemented through programs, projects, budgets and procedures (Van Der Merwe, 2002).

In projects, strategy is the perspective of the project, direction and guides about what to do and how to achieve the competitive advantage and the best value of the results (Poli & Shenhar, 2003). Thus, it is understood that the project strategy is the direction in the project that contributes to the success in your environment (Artto et al., 2008). The recognition of the strategic importance of project management in the corporate world is accelerating. One of the reasons may be the strong belief of executives that aligning projects with business can significantly

increase the range of organizational objectives, strategy and performance (Srivannaboon, 2006). Therefore, adopting a Project Management Office structure is an organizational strategy targeted to strategy projects, since the presence of alignment with the direction and strategy of the organization's business, is related to competitive advantage for survival in the external environment, because the PMO integrates data and information from corporate projects and assesses how the strategic goals are being met, being the natural link in organizations between portfolios, programs, projects and measuring systems (PMI, 2013a).

Thus, in projects it is important to establish ways to govern and control. The mandatory requirements for the existence of a project are: having a justifiable reason to start it; a justification that remains valid throughout the life of the project; and have documented and approved justification (OGC, 2011). To achieve this, the goals implementation and benefits, must be clearly expressed in terms of business and documented in the form of a business case. This is a practical solution, by means of a plan recognized by the executive, which involves key stakeholders, which have the strategic perspective of the organization, defining the project justification and communicate to all levels of the organization to guide the processes of decision, making to ensure that the project remains aligned with the objectives and expected business' benefits (OGC, 2011; ISACA, 2012). Thus, one of the best ways for a PMO to support the function of strategic planning is becoming a specialist in the development of the business case (Kerzner, 2011).

There are several alternatives for financing the operating cycle: cash flow, deterministic models used in evaluating investment opportunities (Payback), Net Present Value (NPV), Internal Rate of Return (IRR) and Profitability Index (IL), leveraging operational and financial funding, leasing, risk analysis, adjustment projects, and cost-effective weighted scores are aspects that are considered in project selection stage, creating value for shareholders and maximizing the chances of success of the ploy (Gardiner & Stewart, 2000; Oliveira, 2013).

A management methodology concerns processes, procedures, models, best practices, standardization, politics etc. The uses of all these components in project management become an integral part of the methodology of project management (Abe & Carvalho, 2006) and standardized methodology combined with managerial talent greatly increases the chances of success of any organization (Kerzner, 2006). A PMO stands out as a repository of best practices in planning, estimating, risk assessment, scope delineation, tracking skills, project deadlines report, standards maintenance and methods, and advice to the project manager. In fact, the reason for not providing models to guide staff on how to do their job but give the project manager and the project team a starting point for the processes of initiation, planning, execution, control and closure of their projects (Dinsmore & Cabanis-Brewin, 2009; Kerzner, 2011).

Thus, the construct Strategy is driven by Deployment and Structure of Project Management Office, persistency and continuity of the Business Case, Project Feasibility Analysis and existence of Project Management Methodology customized by the organization should be checked, because it is believed that there is a positive impact on the strategy adopted for project execution in the performance of the Project Management Office (hypothesis 1 of proposed model in Figure 1).

2.4 People – Capacitation and personnel training in projects

The "capacitation and personnel training", function represented by the People construct, is the achievement orientation training and obtaining professional certification in project management techniques. It is through ongoing training and recognition of professional qualification of the human resources that it will acquire a strong foundation to create and innovate in the design environment (Alexim & Lopes, 2003; Botelho & Oliveira, 2005; Torreão, 2005; Guelbert et al., 2008; Heldman, 2009; Almeida et al., 2011; Kerzner, 2011). The People construct consists of the variables: Project Management Frameworks Training, Project Management Methodologies Training and Professional Certification.

The literature shows that training is an essential and indispensable tool for the organization, as it always seeks to develop employees with higher levels of quality and productivity. Therefore, training is an educational process to generate growth. Enables continuous learning, developing skills, improving attitudes and composing motivation. In other words, the professional will have enough knowledge to fulfill the activities assigned to him (Guelbert et al., 2008; Almeida et al., 2011). There are several institutes and associations dedicated to the study of techniques for project management, major ones are: Association for Project Management (APM), International Project Management Association (IPMA), Office of Government Commerce (OGC) and Project Management Institute (PMI). Mostly are geared toward the professional aspect of the discipline, with concerns that include, among other things, the maintenance of best practice guides and the formulation of methodologies, some of these, even taking its portfolio to targeted journals for technical-scientific knowledge publication in project management. The available frameworks are the result of efforts in research and development, with direction applied in project management, through

systematic record of the experiences of success (and failure) perceived and recorded over time. Then, the collections of knowledge, such as the PMBOK® Guide (PMI), APM Body of Knowledge (APM) and ICB-IPMA Competence Baseline (IPMA), among others, are valuable instruments arranged in the form of processes and can be the starting point for conducting trainings in project management.

The PRojects IN Controlled Environments (PRINCE2)® is a non-proprietary method that is part of a set of guidelines developed by OGC, which is confirmed as universally recognized for successful project delivery pattern. Used in all regions of the world is considered to be the main method of the existing project management (OGC, 2011). Other options, public or private, arranged in the form of methodology and adhering to frameworks, can compose the training portfolio of an organization. They are often combined with specific software project management or any other solution with the features of Enterprise Project Management (EPM), which is the conscious integration of processes, technology, structure, organization and people, aligning strategy with execution of projects (Verzuh, 2005).

The training leads to capacitation, that in project management, is expressed by obtaining professional certification, which is the formal recognition of the knowledge and skills required by the worker's productive system and defined in terms of patterns or previously agreed standards, regardless of the form how they were acquired (Alexim & Lopes, 2003). Nowadays, contextualized in the discipline of project management, is the recognition of professional qualifications, to confirm and certify, through examinations supported by recognized and accepted by the market organizations, that professional have skills achieved in one or more aspects of academic or practical knowledge, often a requirement and combination of both (Oliveira, 2013).

Thus, the construct People is driven by the completion of Training (frameworks and methodologies) and obtaining Professional Certification and should be checked because it is believed that there is a positive impact on the human resources training effort on technical project management in the performance of the Project Management Office (hypothesis 2 of proposed model in Figure 1).

2.5 Operations – Control of the operations environment in projects

The "control of the operations environment in projects", represented by the construct Operations, is a structured and disciplined approach to project management. Includes the most relevant processes that drive efficiency in the implementation phases, monitoring and control of the project, to establish congenital dependency on the strategy and business goals (Bouer & Carvalho, 2005; Barcaui et al., 2006; Barbosa et al., 2009; Dinsmore, 2010; Bakker et al., 2010; Barclay & Osei-Bryson, 2010; Kerzner, 2011; Noro, 2012; Silva & Feitosa, 2012). The construct Operations consists of the variables: Performance Metrics, Change Control, Attenuation/Leverage Risk and Level of Satisfaction.

The project management process requires involvement, commitment and environmental and structural conditions for the realization of the activities (Cleland et al., 1997). Therefore, performance assessment is to establish and monitor the success criteria defined by project stakeholders in the dimensions of project performance. But indicator systems is a topic not yet addressed in the project literature. However, there are the indicators that measure the quality of the process to achieve the final results, and these should be assessed by consistent criteria (Kerzner, 2006; Barclay & Osei-Bryson, 2010; Borges & Carvalho, 2011). So, being accurate in assessing the progress of activities is crucial as the project progresses, since the indicators are input to performance analysis and decision making in projects. The project manager should analyze the past performance of the project to predict the future, in other words, make decisions in the present to direct the evolution of the project (Barcaui et al., 2006; Barboza al., 2009; OGC, 2011). For this reason, the PMO, to establish a record of indicators, among other restrictions that meets the variables of time and cost, is able to create meaningful performance measurement mechanisms for the organization.

Changes will occur in the project. It is common, in the execution phase to effect changes in relation to the planned scope, which are inevitable and can help the project, however, it requires a systematic approach to be identified, assessed and controlled (Sotille et al., 2007; Dinsmore & Cabanis-Brewin, 2009; Xavier, 2009; Kerzner, 2011; OGC, 2011). As a foundation for integration and being related to all project processes, change control should consist of a collection of formal procedures, recorded, defining the steps by which official project documents may be changed (Sotille et al., 2007; Dinsmore & Cabanis-Brewin, 2009). In this sense, the PMO should be represented in the Change Control Committee (Oliveira, 2013). The goal is to establish and control mechanisms that operate throughout the lifecycle of the project, to record and monitor the changes and assist the process of decision making, to provide assurance to stakeholders, in the quest by the goals in constant action of monitoring the business case.

Uncertainty factors may be related to lower or higher project performance. Looking to the future is dealing with uncertainty. Project risk is always future. Facing risks in projects is inevitable, because

the projects are change enablers. Changes introduce uncertainties and, therefore, risks. Thus, risk is an uncertain event or condition that if occurs, has a positive or negative effect on one or more design goals, such as scope, time, cost and quality (OGC, 2011; Oliveira, 2013; PMI, 2013a). The reactions to the risks will substantially impact the conditions of project development (Salles et al., 2006). So, the strategy adopted is to create conditions to make the best decisions about what to do with the uncertainties, as the planning stage of the answers is the ideal view to decide the focus of addressing the risks identified in the project time: attenuate (negative) or leverage (positive), as threats and opportunities are trends, not facts (Oliveira, 2013). Therefore, it is critical for businesses to work not only on threats that must be mitigated, because losses relate to the project, but, mainly, in the opportunities that, leveraged, resulting in financial gains.

Well managed projects reduce uncertainties and reach customer satisfaction, then seen as a variable, it is possible to assume that their impact on the results, takes on a measure of project success (Fonseca, 2006; Silva & Feitosa, 2012). In other words, customer satisfaction is the key for stakeholders, whose perception is critical to evaluating the success. What is expected, when considering these perceptions is to clearly specify how the results of the project will improve the lives and businesses, in addition to responding how the needs that will be met.

The quality covers a macro view of human existence, influencing the ways of thinking and acting (Marshall et al., 2008). Top management is responsible for quality in the organization (Kerzner, 2011; OGC, 2011). In the project, the quality level is directly committed to customer satisfaction (Sotille et al., 2007; OGC, 2011). Thus, any project must be connected to the business needs of the organization and conducted to meet the stated and implied needs of stakeholders.

Therefore, the PMO is an excellent starting point for building and maintaining alliances with stakeholders in the projects, that include all members of the project team, as well as all entities involved in the project's product, whether internal or external to the organization (PMI, 2013a). What is complemented with a systemic vision of quality, as it allows the relationship of this with the needs and desires of customers (Marshall et al., 2008; Oliveira, 2013). Then, applying the correct tools, helps improving the success of projects, as a way to meet the needs of stakeholders and to communicate with them, raising the levels of customer satisfaction.

Thus, the construct Operations is driven by Performance Metrics, Control Change, the Attenuation/Leverage Risk and Level of Satisfaction and should be checked because it is believed that there is a positive impact of the use of methods and standardization projects in the performance of the Project Management Office (hypothesis 3 of proposed model in Figure 1).

3 Methodology

The chosen approach was a quantitative analysis, descriptive, in a single cross-sectional study using the procedure of survey research with questionnaire exclusively developed for this assessment. This had the propositions of questions validated by experts in project management, three Brazilian nationals, a Portuguese national, all with broad sense university degree in Project Management and owners of certifications related professionals to project management and information technology governance, in addition to specific certifications of certain technologies related to products and information technology software.

The survey research (see Appendix A) was developed in four stages by means of a qualitative approach. The first stage, involved the generation and validation of these items by specialists using the variation of the Delphi method known as electronic. In the second stage, it was structured instrument in Likert format not comparative in balanced scale with the existence of neutral point. The third stage, was the completion of the pre-test in a non-probabilistic sample for convenience with people within the target population in terms of fundamental characteristics, familiarity with the subject and behaviors of interest. The fourth and final stage, was carried out the analysis of the first sampling data with verification of the proposed scale and refinement of the instrument (Oliveira et al., 2014).

Later, using the survey instrument developed, the data were obtained through interception of online panel with display of the questionnaire on the internet for the population of the project manager or professionals with compatible roles with the function of coordinating the activities of project management, considering the answers coming from professionals that have formal training in project management. After the field research with active projects professionals in Brazil, the initial sample was not probabilistic by judgment it was composed of 276 reported records from the respondents.

Aiming to identify data errors and remove them from the analysis, the records collected in the field research were examined to identify: non-responses (missing values), suspicious answer patterns (linear fill or inconsistent responses) and atypical values or extremes (outliers). Performed the checks, the valid sample composed only of complete data was reduced to 178 respondents informed by records (≈ 64% of the original sample). *Sine qua non*, the valid sample, we used the G*Power software version 3.1.7 (Faul et al., 2007), according to the values suggested by Cohen (1992), implementing the *t* test (Correlation: Point biserial model) post hoc analysis and *f* test (multiple

linear regression: Fixed model, R^2 Increase) post-hoc analysis, which, confirmed the statistical power of ≈ 98% and ≈ 99%, respectively, to evaluate the goal of research.

The Structural Equation Modeling (SEM) is one of the most useful and advanced statistical analysis techniques that have emerged in the Social Sciences in recent decades. The Structural Equation Modeling with estimation by Partial Least Squares (PLS-SEM) is, in itself, a technique that allows the combination of a measurement model to a structural model, evaluated simultaneously (Zwicker et al., 2008). The analysis of the measurement model must precede the analysis of the relationships between constructs, which is done in two steps. This is, proceeding with separate assessments on the measurement model and the structural model (Hair et al., 2011). The technique used for data analysis was to multivariate statistical analysis. The SEM was adopted with Partial Least Squares (PLS) estimation Path Modeling, with the aid of SmartPLS software version 2.0 (Ringle et al., 2005), depending on the following reasons: the existence of multiple relationships between dependent and independent variables, non-normal data, sample size and contrast prediction after the research problem (Oliveira, 2013).

4 Results and analysis

Regarding demographics data, 77% of respondents are male, the age group, remains a non-normal distribution of data, being the predominant age between 31 and 35 years (≈ 28%). In terms of education, professional training of informants is Postgraduate, 64% Graduate Courses and 27% Master or Doctor Courses, and 97% of respondents reported receiving formal training in project management, including, 43% that are certified by PMI as a Project Management Professional (PMP)®, these, simultaneously, 30% are beyond the PMP certification, further certification in project management. The only holders of another certification in project management represent 7% of the sample. The majority of active respondents were in project management for a period from 2 to 5 years (≈ 31%). However, the distribution of the data reported extensive professional experience, measured in periods of activity for a maximum of 33 years. Segmented by function, 68% work in project leadership (Manager, Coordinator or Analyst) and 10% in strategy making in organizations (Director, Executive or President). Finally, the Project Management Office is presented in Brazilian organizations from various sectors and segments, where the 109 respondents work.

In the dimensions of the PLS-SEM, construct validity is carried out in two stages, in the case of reflective measurement models (Hair et al., 2011). Evaluate first the exterior model (or measuring) on the criteria for reliability, convergent and discriminant validity, and according to the internal model (or structural) to perform the analysis of the relationships between the constructs. Then, as a first step, the reflective measurement model was examined in relation to the criteria of internal consistency, it is, indicator composite reliability and reliability of the indicators, and also in relation to validity of the measures of the constructs, it is, convergent validity: Average Variance Extracted; and discriminant validity: Fornell-Larcker criterion and Cross Loadings to assess the level of the construct and indicator, respectively (Bentler, 1980; Chin, 1998; Hulland, 1999; Gosling & Gonçalves, 2003; Henseler et al., 2009; Urbach & Ahlemann, 2010; Costa, 2011; Hair et al., 2011, 2013). Valid and reliable estimates of the outer model allow evaluating the inner model (Henseler et al., 2009), because the evaluation of the structural model implies establishing the ability to predict and analyze the relationships between the constructs (Hair et al., 2013). The measurement model with the factor loadings of structural path obtained for the structural model after running the PLS algorithm is introduced in Figure 2.

This way, the second step, considered as criteria for evaluating the relationship of the structural way in terms of sign, magnitude and significance, beyond the determination coefficients, i.e., the values of R^2 (Henseler et al., 2009; Hair et al., 2011, 2013). Thus, the structural model statistically showed that the dependent variables: a) Strategy, b) People, and c) Operations; represented by the independent variables constituted in terms of aspects of the theory considered in this study: a) Deployment and Structure of Project Management Office [EEGP], Business Case [EBUC], Project Feasibility Analysis [EAVP], and Project Management Methodology [EMGP]; b) Project Management Frameworks Training [PTFM], Project Management Methodologies Training [PTMT], and Professional Certification [PCPR]; c) Performance Metrics [OMDE], Change Control [OCMU] Attenuation/Leverage Risk [OAAR], and Level of Satisfaction [ONSA]; respectively, constitute a moderate set that influences the performance of the Project Management Office (PMO).

The data presented in Table 1 records the bootstrap confidence intervals that provides additional information on the stability of the estimating confidence coefficients level of 95%, as well as *p* and *t* values for each relationship in the structural model, which shows the simultaneous statistical significance of all the structural path coefficients to the highest level possible ($p < 0.05$). That is, for every relationship in the structural model these are significant, with a 5% error probability.

Researchers also are interested in evaluating not only the direct effect of a construct in another one, but also their indirect effects based on one or more constructs mediators. The sum of the direct

Figure 2. Measurement model and Structural model with PLS factorial loadings. ***p < .01; **p < .05. Source: Elaborated by authors.

Table 1. Significance test of structural path.

Constructs	Path coefficients	t Value	Significance level	p Value	Confidence interval 99%	Confidence interval 95%
EAVP → STRATEGY	0.2988	14.5059	***	0.0000	[0.2451; 0.3524]	[0.2581; 0.3394]
EBUC → STRATEGY	0.3186	12.3179	***	0.0000	[0.2511; 0.3860]	[0.2674; 0.3697]
EEGP → STRATEGY	0.2717	11.8945	***	0.0000	[0.2123; 0.3310]	[0.2267; 0.3166]
EMGP → STRATEGY	0.3475	14.5142	***	0.0000	[0.2852; 0.4097]	[0.3003; 0.3946]
STRATEGY → PERFORMANCE	**0.2414**	**2.3218**	**	**0.0214**	**[-0.0290; 0.5122]**	**[0.0361; 0.4466]**
PCPR → PEOPLE	0.3964	15.7431	***	0.0000	[0.3307; 0.4620]	[0.3466; 0.4461]
PTFM → PEOPLE	0.3962	21.9453	***	0.0000	[0.3490; 0.4433]	[0.3604; 0.4319]
PTMT → PEOPLE	0.3402	19.6655	***	0.0000	[0.2951; 0.3852]	[0.3060; 0.3743]
PEOPLE → PERFORMANCE	**0.3040**	**2.9250**	***	**0.0039**	**[0.0334; 0.5745]**	**[0.0989; 0.5090]**
OAAR → OPERATIONS	0.3268	20.6302	***	0.0000	[0.2856; 0.3679]	[0.2956; 0.3579]
OCMU → OPERATIONS	0.2852	15.1815	***	0.0000	[0.2362; 0.3341]	[0.2480; 0.3223]
OMDE → OPERATIONS	0.2412	15.5487	***	0.0000	[0.2008; 0.2815]	[0.2106; 0.2717]
ONSA → OPERATIONS	0.2868	20.1880	***	0.0000	[0.2498; 0.3237]	[0.2587; 0.3148]
OPERATIONS → PERFORMANCE	**0.2179**	**2.2668**	**	**0.0246**	**[-0.0320; 0.4681]**	**[0.0282; 0.4075]**

***p < .01; **p < .05. Source: Research data.

and indirect effects is referred to as the total effect (Hair et al., 2013). The total effect of the variables in the PERFORMANCE is presented in Table 2.

As the focus of PLS-SEM is to explain the variance of the endogenous latent variables, the fundamental concern is that the level of the constructs R^2 is high (Hair et al., 2011). The R^2 values range from 0 to 1. The judgment of what is a high level for R^2 specifically depends on the complexity of the model and the research discipline. For values of 0.75; 0.50 or 0.25 (Hair et al., 2011, 2013) and 0.67; 0.33 or 0.19 (Chin, 1998), the consideration is that the endogenous latent variables in the structural model can be described as: substantial, moderate, or low, respectively.

Another pertinent evaluation to the structural model involves establishing the predictive capacity of the model. The predominant measure of predictive relevance used is the value of Stone-Geisser Q^2, which postulates that the model should be able to adequately predict the indicators of each endogenous latent construct (Hair et al., 2011). For both, values of Q^2 above zero show that the model has predictive relevance (Henseler et al., 2009; Urbach & Ahlemann, 2010; Hair et al., 2011, 2013).

The STRATEGY, PEOPLE and OPERATIONS constructs have a substantial R^2 in this study, which implies a moderate R^2 on the PERFORMANCE construct. The Table 3 shows the values of R^2 from the PLS algorithm and the results of the procedure applied to blindfolding endogenous latent constructs for obtaining the values of Q^2, which confirmed the predictive capacity of the model.

Based on the factor values shown in Table 3, it is revealed that the construct PERFORMANCE, obtained a value of $R^2 = 0.4695$; suggesting that ≈ 47% of the variation in the performance of the Project Management Office can be explained by the behavior of "implementation strategies" (Strategy), the "capacitation and personnel training" (People) and "control of the operations environment in projects" (Operations). Considering the data presented in Table 1, the behavior of the "implementation strategies" (STRATEGY; 0.2414; $p < 0.05$), the "capacitation and personnel training" (PEOPLE; 0.3040; $p < 0.05$), and the "control of the operations environment in projects" (OPERATIONS; 0.2179; $p < 0.05$), the hypotheses was confirmed. The proposed conceptual model is introduced in Figure 3.

The research found that the relative importance to the performance of the behavior Project Management Office of "capacitation and personnel training" (People) is presented as the most significant predictor, followed by "implementation strategies" (Strategy), and finally for the "control of the operations environment in projects" (Operations). It, beforehand, is an indicator for decision making in the organizations that have institutionalized the functional unit PMO, because it implies knowledge and allows you to direct the strategic actions for the combined items of the literature on project management that result in greater benefits for business (Oliveira, 2013).

Table 2. Significance test of total effect.

Constructs	Total effects	t Value	Significance level	p Value	Confidence interval 99%	Confidence interval 95%
EAVP → PERFORMANCE	0.0721	2.2671	**	0.0246	[-0.0100; 0.1549]	[0.0093; 0.1348]
EBUC → PERFORMANCE	0.0769	2.1405	**	0.0337	[-0.0160; 0.1703]	[0.0060; 0.1477]
EEGP → PERFORMANCE	0.0656	2.2091	**	0.0285	[-0.0110; 0.1429]	[0.0069; 0.1242]
EMGP → PERFORMANCE	**0.0839**	**2.2362**	**	**0.0266**	**[-0.0130; 0.1815]**	**[0.0098; 0.1579]**
PCPR → PERFORMANCE	**0.1205**	**2.6276**	***	**0.0094**	**[0.0009; 0.2400]**	**[0.0299; 0.2110]**
PTFM → PERFORMANCE	**0.1204**	**2.9594**	***	**0.0035**	**[0.0144; 0.2263]**	**[0.0400; 0.2007]**
PTMT → PERFORMANCE	**0.1034**	**2.8120**	***	**0.0055**	**[0.0075; 0.1992]**	**[0.0307; 0.1760]**
OAAR → PERFORMANCE	0.0712	2.2104	**	0.0284	[-0.0120; 0.1550]	[0.0076; 0.1347]
OCMU → PERFORMANCE	0.0621	2.2699	**	0.0244	[-0.0090; 0.1334]	[0.0080; 0.1161]
OMDE → PERFORMANCE	0.0525	2.2528	**	0.0255	[-0.0080; 0.1131]	[0.0065; 0.0984]
ONSA → PERFORMANCE	0.0625	2.2012	**	0.0290	[-0.0110; 0.1364]	[0.0064; 0.1185]

***p < .01; **p < .05. Source: Research data.

Table 3. Coefficient of determination and predictive capacity.

Endogenous latent variables	R^2	R^2 Analysis	Q^2
PERFORMANCE	0.4695	Moderate	0.2711
STRATEGY	0.9996	Substantial	0.2857
PEOPLE	0.9999	Substantial	0.4276
OPERATIONS	0.9999	Substantial	0.3965

Source: Research data.

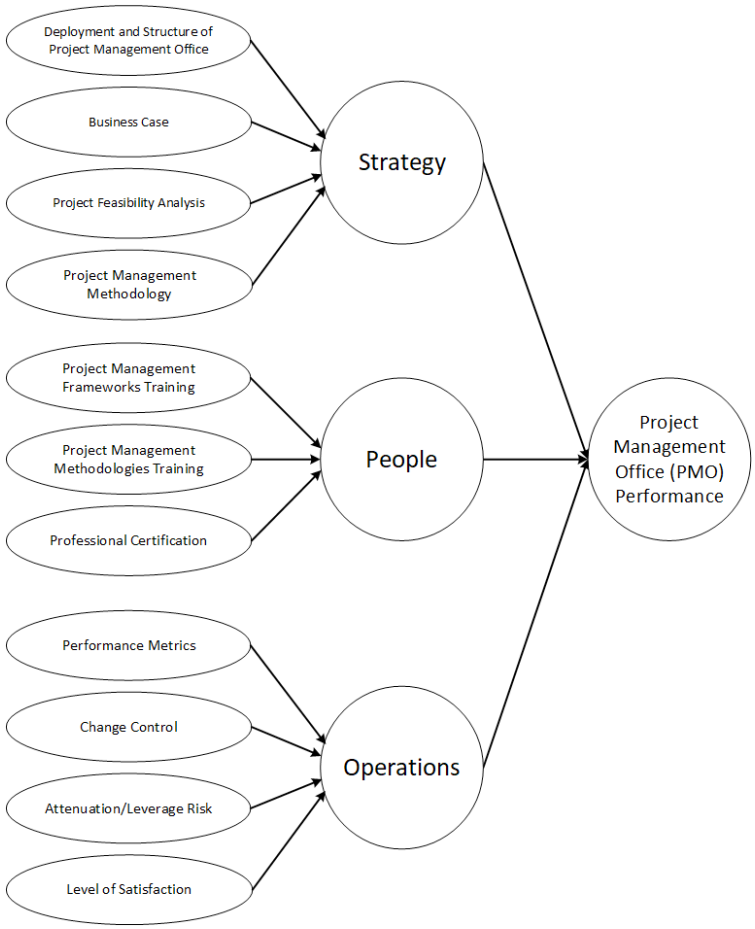

Figure 3. PMO Performance: Strategy, People and Operations. Source: Elaborated by authors.

Based on the factor values shown in Table 2, a careful analysis of the components of "capacitation and personnel training" (People) reveals clearly that Professional Certification (PCPR; 0.3964; $p < 0.01$) and Project Management Frameworks Training (PTFM; 0.3962; $p < 0.01$) are the variables that contribute most to this predictor. These relationships suggest that the quest for professional development in project management is the first step to leverage the knowledge of people working on projects. Consequently, obtaining professional certification (Alexim & Lopes, 2003; Torreão, 2005; PMI, 2013b) is a form of qualifications recognition, because it ensures that the professional has expertise in one or more aspects of the academic and practical knowledge.

Based on these results, the organizations must enter into the strategic planning process, policy clear and well-defined training in project management through academic education, since it induces the individual and collective development, and foster the entrepreneurial process on the search for more efficient and effective ways to carry out the projects, using the knowledge acquired by people (Botelho & Oliveira, 2005; Torreão, 2005; Kerzner, 2006; 2011; Guelbert et al., 2008; Almeida et al., 2011; Oliveira, 2011). The study also highlighted the relative importance of the Project Management Methodology, once, this item from the literature to establish the constructs distinct from the model. It is noticed that as part of the "implementation strategies" (Strategy), the need for Project Management Methodology (EMGP; 0.3475; $p < 0.01$), takes the third position, and as a component of "capacitation and personnel training" (People), the Project Management Methodologies Training (PTMT; 0.3402; $p < 0.01$) is the fourth item of greatest importance identified by the study. Therefore, as a custom element depending on the need of the organization and its training for its employees, it points to the next most influential variables on the performance of the Project Management Office that should be targeted for managerial attention.

It is clear that a methodology is no success guarantee and excellence, but should be considered as essential for the Project Management Office element, as seen, as a critical component tends to favor the project objectives achievement. In fact, this instrument is a way to an end, and points to the level of detail, the

steps that must be followed in the different phases of the lifecycle of a project. However, the Project Management Methodology will can only become an asset that adds value to the organization when, ideally, is considered the need for intensive training for professionals who have used this tool.

5 Conclusions

The purpose of this study was to evaluate the Project Management Office performance, from the "implementation strategies", "capacitation and personnel training" and "control of the operations environment in projects". In this sense, the proposed relations that culminated in the conceptual model deserve managerial attention in organizations, strategically when it constitutes a PMO, given the observation that the parsimonious subset of target distinct target-dimensions from research functionate as dynamic element, with estimated capacity ≈ 47% to explain the variation in the performance of the Project Management Office.

In presenting the conceptual model the research showed which items in the literature of project management result in benefit to the business. With emphasis on the components of policies of "capacitation and personnel training" (Project Management Frameworks Training and Professional Certification), which indicated increased relevance of relations of these variables with the Project Management Office performance. An interpretation of the effect of this trend, besides proving the relative importance of people in part of "capacitation and personnel training", is to attest that the expert's knowledge is one of the best tools and techniques that the project manager has (Oliveira, 2011). However, points out that strategic thinking coming from the top management is essential for the Project Management Office to develop its activities efficiently and effectively, once again, the predictor of "implementation strategies" present themselves as the second item of relative importance detected by the study. This means, that the direction of activities, even if these are conducted through a PMO, should start from the executive, because he is responsible for the success (or failure) of the project (OGC, 2011). Thus, the project manager focuses its attention on the daily management of the project in order to ensure that this produces the required products. For this, the conceptual model indicates the variables that deserve attention in "control of the operations environment in projects", which contribute to the performance of the PMO.

It is also essential to emphasize the importance of the Project Management Methodology for the PMO, since it integrates the "implementation strategies", and the 'training policies and personnel training'; and the results indicated that this item from literature in project management shelters relative importance when considering the set of knowledges assessed by the research. First, depending on the beliefs of the leadership at the strategic moment of definition and deployment, and second, with the definitions of training policies that provides the conditions for use of the tools for human resources. Therefore, the set of variables that constitute the conceptual model, when the target of managerial attention, allows better investments target to PMO which can, then, add value to the organization in an integrated and repeated way.

The research contribution to the theory is a model with well-defined concepts from the literature reviewed in project management. The conceptual model is able to evaluate the relationships and impacts that permeate a substantial and significant portion of the performance in Project Management Office. On the other hand it is noticeable, that the study also contributed to the practice since the conceptual model can be seen as a new tool to support decision making when considering the implementation and maintenance of an PMO, depending on variables that require managerial action by adopting a project-oriented structure in the organizations, as the research identified and pointed their degree of impact that the conceptual aspects of literature in practice influence the Project Management Office performance.

It is believed that the main limitation of this study relates to the fact that the sample is non-probabilistic. Obtaining data for this format does not allow an objective assessment of the accuracy of sample results. Therefore, it is not possible to determine the probability of choosing any model specific element and statistically generalize the estimates obtained for the population. Some variations of this study can be performed, based on additional quantitative analysis, as well as recommendations for future studies, it is suggested to evolve the conceptual model with new constructs: Culture (seen as the Strategy predictor) and Maturity (seen as a predictor of Operations). The construct People, can also have their indicators expanded to practices arising checks of knowledge in human resource management and its influence on the PMO organizational structure performance. Additionally, in relation to the conceptual model introduced in Figure 3, it is also possible to conduct further quantitative study on a probability sample, in order to verify that the model is generalizable, confirming, thus, statistically estimates projected for the population.

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Appendix A. Survey research.

The survey research was developed and applied in the Brazilian Portuguese language.

PRELIMINARY ISSUES

The questions below are intended to characterize the organization's business sector and the presence of the Project Management Office (PMO) and record the training and professional experience of the survey respondents:

Q01. What the industry that best classifies the organization where you work?

☐ Aerospace
☐ Business (advertising, marketing, communication etc.)
☐ Food and Drinks
☐ Natural Resources (agriculture, mining, coal, gas, oil)
☐ Construction/Engineering
☐ Health
☐ Consulting
☐ Services
☐ Chemist
☐ Financial Services
☐ Government
☐ Information Technology
☐ Real State
☐ Telecommunications
☐ Judiciary
☐ Training/Education
☐ Manufacture
☐ Other, please specify:

Q02. Tick (s) level (s) of action of the Project Management Office (PMO) in the organization?

☐ Not have PMO
☐ Tactical level
☐ Strategic level
☐ Operational level

Q03. What is the role played by you in the organization?

☐ Team member
☐ Project manager
☐ Project analyst
☐ Director/Executive/President
☐ Project coordinator
☐ Other, please specify:

Q04. Which of the following ranges is your time of work in Project Management?

☐ Less than 2 years
☐ 14 to 17 years
☐ 30 to 33 years
☐ 2 to 5 years
☐ 18 to 21 years
☐ More than 34 years
☐ 6 to 9 years
☐ 22 to 25 years
☐ Not applicable
☐ 10 to 13 years
☐ 26 to 29 years

Q05. What is your highest academic background in Project Management?

☐ Training (16 h, 24 h or 32 h)
☐ Specialization (greater than or equal to 360 h)
☐ Extension Course (40 h)
☐ Not have

Q06. You own certification *Project Management Professional* – PMP®?

☐ Yes
☐ No

Q07. You have another one(s) certification(s) professional(s) in Project Management?

☐ Yes
☐ No

BASE ISSUES

Below are listed different propositions regarding the factors considered relevant for the performance of the Project Management Office (PMO). This block evaluates the STRATEGY that is the perspective in design, direction and guides on what to do and how. Contributes to the success of the project in the internal or external to the environment Project Office, being influenced by the beliefs of leadership, have orientation for the business and are subsidized by the artifacts that guide the activities implementation. Indicate your level of agreement or disagreement with each of the statements, according to the criteria:

1 – Strongly disagree	**2 – Disagree**	**3 – Not agree and not disagree**	**4 – Agree**	**5 – Strongly agree**

		1	**2**	**3**	**4**	**5**
Q08.	The alignment of project management with organizational strategy favors the achievement of the overall goals of business. (eegp_1)	☐	☐	☐	☐	☐
Q09.	In projects guided by a business case there is an optimization perceived by stakeholders in the use of budgetary funds allocated to projects. (ebuc_1)	☐	☐	☐	☐	☐

1 – Strongly disagree	2 – Disagree	3 – Not agree and not disagree	4 – Agree	5 – Strongly agree				
				1	2	3	4	5
Q10.	Methods of analysis and financial tools (cash flow, Economic Value Added - EVA, operating leverage and financial, financing, leasing, risk analysis, cost of capital etc.) allow the organization to sustain the decision to apply the resources in projects. (eavp_1)			☐	☐	☐	☐	☐
Q11.	The organization should acknowledge the need for common procedures in project management and institutionalize a methodology that meets the strategic objectives. (emgp_1)			☐	☐	☐	☐	☐
Q12.	The organization must delegate authority to the Project Management Office (PMO) to implement their strategies. (eegp_2)			☐	☐	☐	☐	☐
Q13.	Using specific techniques, including the projection of cash flows for future periods, allow you to perform the economic analysis of investment (estimated cost) and predict the project budget. (eavp_2)			☐	☐	☐	☐	☐
Q14.	As the executive plan, the business case justifies and describes the necessary information from the point of view of business to determine the reason for the project. (ebuc_2)			☐	☐	☐	☐	☐
Q15.	Standardized processes and procedures established by the Project Management Office (PMO) in the portfolio level, programs and projects favor a common language and terminology in project management. (emgp_2)			☐	☐	☐	☐	☐
Q16.	Representatives of the Project Management Office (PMO) should play a role in the development of strategy in the organization. (eegp_3)			☐	☐	☐	☐	☐
Q17.	The project management methodology should give a consistent and flexible framework for the projects to deliver and store the knowledge of best practices. (emgp_3)			☐	☐	☐	☐	☐
Q18.	Consistent criteria of organization and methods as project feasibility analysis allow you to select and prioritize projects according to economic and financial parameters. (eavp_3)			☐	☐	☐	☐	☐
Q19.	The monitoring, control and update the business case should continue to reflect the current vision and future vision in order to ensure the viability of the project is ongoing. (ebuc_3)			☐	☐	☐	☐	☐
Q20.	Choosing the right format Project Management Office (PMO) for the organization must be aligned with its strategy, in order to maximize the benefits provided by it. (eegp_4)			☐	☐	☐	☐	☐
Q21.	Organizational processes of economic and financial analysis improve or ensure that projects are aligned with the processes of selection, prioritization and execution. (eavp_4)			☐	☐	☐	☐	☐
Q22.	The project management methodology add value to project management activities because it allows the reuse of templates and processes in the current project and future projects. (emgp_4)			☐	☐	☐	☐	☐
Q23.	The Project Management Office (PMO) integrates data and information projects and assesses how the strategic goals of higher education are being met. (eegp_5)			☐	☐	☐	☐	☐
Q24.	The business case establishes a solid relationship with corporate strategy and determining the expected benefits for the organization to carry out the project. (ebuc_4)			☐	☐	☐	☐	☐
Q25.	The project management methodology should enable the suitability of documents (templates) according to the specific needs of each project. (emgp_5)			☐	☐	☐	☐	☐

Below are listed different propositions regarding the factors considered relevant for the performance of the Project Management Office (PMO). This block analyzes the prospect of PEOPLE that is the achievement orientation training and obtaining professional certification in Project Management techniques. It is through ongoing training and recognition of professional qualification of the human resources that it will acquire a strong foundation to create and innovate in the design environment. Indicate your level of agreement or disagreement with each of the statements, according to the criteria:

1 – Strongly disagree	2 – Disagree	3 – Not agree and not disagree	4 – Agree	5 – Strongly agree

		1	2	3	4	5
Q26.	Specialized continuing education, through regular training allows to obtain more easily and quickly the necessary information to the project management activity. (ptfm_1)	☐	☐	☐	☐	☐
Q27.	The knowledge gained by the professional certificate in project management techniques allows this, provide training and provide advice to new employees. (pcpr_1)	☐	☐	☐	☐	☐
Q28.	A consolidated and flexible methodology in project management established in the organization through training increases the likelihood of project success. (ptmt_1)	☐	☐	☐	☐	☐
Q29.	Project management training improves the implementation of the company's strategies to achieve higher levels of success in projects. (ptfm_2)	☐	☐	☐	☐	☐
Q30.	The Professional, certificate in project management techniques is able to point mechanisms (formal and informal) for the exchange of knowledge and development of professionals working on projects. (pcpr_2)	☐	☐	☐	☐	☐
Q31.	Encourage increased knowledge in project management processes for acquiring skills in management should be part of the organization's strategic policy. (ptfm_3)	☐	☐	☐	☐	☐
Q32.	Training programs developed based on methodology allow improve organizational processes. (ptmt_2)	☐	☐	☐	☐	☐
Q33.	Obtaining professional certification in project management enables a holistic view of management and promote cohesively integrating processes. (pcpr_3)	☐	☐	☐	☐	☐
Q34.	Project teams consisting of professionals certified in project management techniques add value to the organization. (pcpr_4)	☐	☐	☐	☐	☐
Q35.	Project management training educate users and sponsors on their role and responsibilities in the definition and implementation of a project. (ptfm_4)	☐	☐	☐	☐	☐
Q36.	Training in the organization's project management methodology accelerates productivity, individual capacity and minimizes the uncertainties of work frustration on projects. (ptmt_3)	☐	☐	☐	☐	☐
Q37.	By conducting training, combining a project management methodology with the administrative talent of the professionals increases the project's chances of success. (ptmt_4)	☐	☐	☐	☐	☐
Q38.	Training allows us to understand the culture of the organization and improve understanding of policies, procedures and use of best practices to establish a common "language" in project management. (ptfm_5)	☐	☐	☐	☐	☐

Below are listed different propositions regarding the factors considered relevant for the performance of the Project Management Office (PMO). This block analyzes the perspective of what is OPERATIONS that is a structured and disciplined approach to Project Management. Includes the most relevant processes that drive efficiency in the implementation phases, monitoring and control of the project, to establish congenital dependency on the strategy and business goals. Indicate your level of agreement or disagreement with each of the statements, according to the criteria:

1 – Strongly disagree	2 – Disagree	3 – Not agree and not disagree	4 – Agree	5 – Strongly agree

		1	2	3	4	5
Q39.	The schedule of monitoring techniques and project costs, including the account codes for cost allocation systems must be aligned and consistent with the organization's strategy. (omde_1)	☐	☐	☐	☐	☐
Q40.	Changes should be identified, assessed and controlled through a systematic approach to formal procedures. (ocmu_1)	☐	☐	☐	☐	☐
Q41.	The project environment must contain a management system that functions as a central repository of risk (positive and negative) to organize, guide and (re)assess the identification of opportunities and threats in the projects. (oaar_1)	☐	☐	☐	☐	☐

1 – Strongly disagree	2 – Disagree	3 – Not agree and not disagree	4 – Agree	5 – Strongly agree
Q42.	Stakeholder expectations made by means of a cohesive communication between the leaders promotes feedback on the strategic objectives and performance measures in the projects. (onsa_1)			☐ ☐ ☐ ☐ ☐
Q43.	The use of performance metrics and multiple criteria for project success evaluation should be institutionalized and recognized by the organization. (omde_2)			☐ ☐ ☐ ☐ ☐
Q44.	Risk management is presented as a way of gaining competitive advantage, since the opportunity to explore the risks identified as positive and avoid the negative. (oaar_2)			☐ ☐ ☐ ☐ ☐
Q45.	The change control system must have evidence to classify the request, and set the rules for dealing with change in order to help decision making. (ocmu_2)			☐ ☐ ☐ ☐ ☐
Q46.	The proper allocation of sponsors to projects improves project success rates. (onsa_2)			☐ ☐ ☐ ☐ ☐
Q47.	The collected records (physical progress as a function of time and expenses incurred) result in relevant and accurate monitoring metrics about the project status. (omde_3)			☐ ☐ ☐ ☐ ☐
Q48.	Understand the needs and objectives of clients and users, since the beginning of the project, avoids a high level of change requests as the project evolves. (ocmu_3)			☐ ☐ ☐ ☐ ☐
Q49.	The aim of risk analysis in the project is to anticipate what can go wrong and predict what can go right, to then establish management measures that are efficient and effective. (oaar_3)			☐ ☐ ☐ ☐ ☐
Q50.	Use more resources efficiently in multi project environment improves the quality and customer satisfaction. (onsa_3)			☐ ☐ ☐ ☐ ☐
Q51.	To manage changes to project a formal mechanism is needed to serve as a barrier to attempts to change that generate negative impacts, this should only allow the execution of approved changes. (ocmu_4)			☐ ☐ ☐ ☐ ☐
Q52.	A record of consistent indicators, which meets the time and cost variables, allows to detect the existence of deviations to be combined with performance measurement mechanisms (e.g.: Earned Value Management - EVM). (omde_4)			☐ ☐ ☐ ☐ ☐
Q53.	The purpose of risk management is to identify, assess and control uncertainty, and as a result increase project success capacity. (oaar_4)			☐ ☐ ☐ ☐ ☐
Q54.	Audits and checks of products (or delivery) of the project should be carried out with the intention of ensuring the quality to meet the expectations of stakeholders. (onsa_4)			☐ ☐ ☐ ☐ ☐
Q55.	The changes that have valid purpose for business must be submitted to control changes to be legitimized and approved by the project stakeholders. (ocmu_5)			☐ ☐ ☐ ☐ ☐
Q56.	The strategy for managing risk should be systematic and be inserted into the organization's culture so that monitoring and control of uncertainties meet business goals. (oaar_5)			☐ ☐ ☐ ☐ ☐
Q57.	The quality management system must meet the organization's business objectives to be directed to the needs, desires and satisfaction of customers and users. (onsa_5)			☐ ☐ ☐ ☐ ☐

Below are listed different propositions about the Project Management Office (PMO). This block considers PERFORMANCE that are the characteristics who described as the quantitative and qualitative characteristics that show the existence of distinct dimensions in the Project Office. It is associated with perception of established value by the tradeoff between benefits and sacrifices, and it is observed by the leadership that has guidance for business. Indicate your level of agreement or disagreement with each of the statements, according to the criteria:

1 – Strongly disagree	2 – Disagree	3 – Not agree and not disagree	4 – Agree	5 – Strongly agree				
				1	2	3	4	5
Q58.	The Project Management Office (PMO) provides an adequate portfolio and program management, and increases the efficiency in achieving the goals of integrated plan on the organization's strategy through projects. (degp_1)			☐	☐	☐	☐	☐
Q59.	The existence of a Project Management Office (PMO) in the organization favors the reduction in the number of unsuccessful projects or canceled for no strategic fit. (degp_2)			☐	☐	☐	☐	☐
Q60.	The Project Management Office (PMO) having authority to better manage their enterprises and provides better performance on projects. (degp_3)			☐	☐	☐	☐	☐
Q61.	The Project Management Office (PMO) contributes to the achievement of the organization's future vision to be the management tool that makes the link between performance measurement systems, the programs and portfolio from organizations. (degp_4)			☐	☐	☐	☐	☐
Q62.	The performance and results of the projects are noticeable, satisfactory and improved with the performance of the Project Management Office (PMO) in the organization. (degp_5)			☐	☐	☐	☐	☐

CLOSURE ISSUES

Your answers to these questions will be used to help interpret the information gathered from the rest of the questionnaire.

Q63. Which of the following age groups best describes your age?

☐ Under 18 years
☐ 18 to 20 years
☐ 21 to 25 years
☐ 26 to 30 years
☐ 31 to 35 years
☐ 36 to 40 years
☐ 41 to 45 years
☐ 46 to 50 years
☐ 51 to 55 years
☐ 56 to 60 years
☐ 61 to 65 years
☐ Over 65 years

Q64. What is your gender?

☐ Male
☐ Female

Q65. What is your highest level of education?

☐ High School/Technical Education
☐ Bachelor degree
☐ Graduate degree
☐ Master degree
☐ Doctor degree