The Relative Importance of Financial and Non-Financial Analysis in Project Evaluation – Evidence from Portuguese Firms

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Abstract

Project appraisal has traditionally put its emphasis on the financial aspects of projects, mainly the quantitative ones, underestimating other areas of analyses where factors of a qualitative nature, intangible and subjective, may also affect the implementation and value of projects.

Non financial evaluation supply information about less tangible factors and is expected to identify competitive advantages and risks that financial techniques cannot capture. In general there are few empirical studies addressing these other aspects. Most surveys are addressed to the financial techniques. We have done a survey, aimed at the non financial aspects of projects, which is the base of two papers. In this first paper, we aimed to identify the importance of non financial aspects at the decision making process and the evaluation of projects, and in particular to investigate the practices of Portuguese companies in this field.

The results of our study support the importance of incorporating non financial aspects into the appraisal of projects, and show how some of those aspects have greater relevance than that attributed to the financial elements. The study also points to the strategic and technical aspects of projects as the most relevant non financial factors considered by Portuguese firms. The financial analysis, according to the empirical data collected, comes only in third place of importance, both at the appraisal and at the decision-making stages. Commercial factors, showed similar relevance to the financial ones.

1. Introduction

The relation between investment decisions and value creation for the firm has long been established, being the work of Modigliani and Miller (1958) one of the pioneer references in these matters. We would therefore expect that, by now, all aspects that can affect investment decisions would be thoroughly analysed before firms undertake their projects. Capital budgeting decisions are among the most important decisions the financial manager of a company has to deal with. Capital budgeting refers to the process of determining which investment projects result in maximization of shareholder value.

We have written two papers concerning the role of financial and non financial aspects in project appraisal. With our work we tried to overcome the limited availability of empirical work, despite the valuable contributions listed on the importance of the various non-financial aspects in investment decision.

In this paper we addressed the following questions: (1) Are non-financial issues taken into consideration, by Portuguese firms, in the evaluation of projects? What is the importance of each area of analysis in that evaluation? (2) Who evaluates the various aspects of the project? (3) What factors most influence the study of non-financial aspects?; What are the critical success factors in project appraisal?.

In the following paper we tried to understand what the risk factors in each area of analysis are, and what procedures are used to minimize the project's non financial risks. We wanted to know the relevance of non-financial aspects in the decision-making process and investment evaluation, given this is an area greatly neglected. Our scope includes financial, strategic, technical, commercial, political, social, environmental, human resources and organizational issues. For that purpose we conducted an in depth survey that was sent to the Chief Financial Officers (CFO) of the largest Portuguese firms.

The importance of this study relies on the fact that we do not know of other empirical studies with a similar (and wider) scope on the role of non-financial aspects in investment decisions. To the best of our knowledge, we are the first to examine the importance of these aspects, in addition to the financial ones, in the context of project appraisal and decision making.

Our survey differs from previous surveys[1] in a number of ways. First, the scope of our survey is broader. We analyse not only the traditional financial approach but also nine other areas (non financial /non monetary / qualitative areas) that can affect the evaluation and the success of a project. We explore each area of analysis in depth asking more than 400 issues in more than 50 questions. Second, in what respects the qualitative areas of analysis, most other studies are based on case studies, interviews, or project managers' experience/practice. This is the first survey that addresses all the above mentioned areas at the same time. Third, we analyse the responses, for all areas of analysis, conditional on firm characteristics. We analyse for each one of the 10 areas the differences associated with industry, dimension, leverage, dividend policy, type of and duration of the project, cost of the project, project success, CEO education, CEO age, CEO tenure, management ownership, project manager (PM) education, PM age, PM position, PM experience, PM compensation and decision-maker.

The results of our study support the importance of the analysis of various non-financial aspects and show how some of those aspects have greater relevance than the one attributed to financial elements. As the most relevant areas, the strategic and technical ones stand out. The data also suggests that the analysis of financial aspects is considered by firms as the third most important area, both in project appraisal and in decision-making. Commercial factors appear with relevance similar to the financial aspects. Among the areas studied, the least relevant ones concerning firms' project appraisal practices are social and political. We also find that when a project is successful, environmental and human resources aspects are analysed. This analysis also allows us to conclude that social and organisational issues, for this sample of firms, are not directly related with project's success.

The rest of this paper is organized as follows. In section two, we review the existing literature, showing the myopia of the traditional financial analysis and focusing on the importance of non financial aspects. In section three, we present the research methodology of this work. Section four, includes a detailed analysis of the data, discusses the results concerning practices and success of companies in project appraisal

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[1] See, for example, Klammer (1972), Petty et al (1975), Gitman and Forrester (1977), Kim and Farregher (1981) Moore and Reichert (1983), Stanley and Block (1984), Kim et al (1985), Sangster (1993), Epps and Mitchem (1994), Poterba and Summers (1995), Pike (1996), Bodnar et al (1998), Brunner et al (1998), Block (1999), Rodrigues (1999), Kester et al (1999), Graham and Harvey (2001) , Brounen et al (2004) and Beleti et al (2007).

and identifies the aspects that contribute to a project's success. Finally, in section 5 we present our conclusions.

2. Project evaluation – brief summary of the state of the art

2.1. Financial analysis

Traditional approach on project evaluation usually treats individual projects as isolated investment opportunities on which it is necessary to take a decision on acceptance or rejection. The decision to implement an investment project is taken at time zero and is conditional on the fact that the value generated is greater than the cost of investing. Evaluation techniques may be based both on accounting information and on cash flow based criteria.

However, also the indicators based on cash flow have several limitations. According to Chen (1995), when knowledge about the new future investment is low, while the predictability of the operating environment is weak or when considering investments with many uncertain factors and intangibles[2] (hardly measurable), uncertainty and risk increase, affecting negatively the forecasting operating cash flows (Farrell, 1996). Cash flow criteria frequently underestimate investment opportunities and do not consider any strategic variable, leading decisions to myopia and potential losses.

The limitations[3] of the *Discounted Cash Flow* models are also related to inability to capture the role of organizational structure; lack of interest for management's behavior towards risk, i.e., consider the manager to be passive; ignoring imperfect information problems; difficulty in evaluating the project in the long term, which favors short term investments, whose benefits are more easily quantifiable; difficulty to verify the benefits associated to investment, such as flexibility, learning effect and company morale; inability of managers to integrate several areas of knowledge, such as

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[2] Harrison (1990), cit. in Lefley (1996), refers the difficulty in identifying and measuring many of the benefits derived from the investment (in technology) because they cannot be measured in concrete terms, bringing only intangible benefits.

[3] In case of an irreversible investment project the company should consider the option of not to invest at the moment. The possibility of waiting for new information may influence the willingness or the time to invest (Dixit and Pindyck, 1995). Considering the constant changing reality faced daily by businesses, obtaining further information can lead to changes in strategy as a way to adapt to the market in order to maximize their cash flows

marketing, among others; impossibility to correctly evaluate all the sources on value in an investment; impossibility to evaluate the synergies between current investment and future opportunities; failure to consider the operational flexibility and strategic value resulting from the interactions with future investments; inadequacy for uncertainty situations; and, assumption that the discount rate is constant throughout the project, without considering the gathering of new information.

2.2. Is financial analysis enough?

It is therefore consensual that traditional approach only takes into consideration the financial aspects in the evaluation of investment projects, underestimating any other aspects that may influence its viability. However, basing an investment decision only on financial criteria may result in inadequate decisions. Mohanty et al (2005, p. 5202) consider that human judgment varies from person to person because human perception contains a certain degree of vagueness and ambiguity. So, "*as a lot of uncertainty is associated with estimating cash flow values, conventional deterministic cash flow models are not effective in tackling monetary factors*". The decision-making process for investments is complex and goes beyond the financial aspects. Skitmore et al. (1989) point out that "*any knowledge that can help the decision-makers (...) to recognize and minimize the uncertainty and risk is expected to have some potential value*". Many of a project's goals tend to be qualitative and not easily measurable, apart from being long term goals and not immediately verifiable.

The financial projections can be improved and made less risky when non-financial aspects are used in project evaluation. The financial techniques must be used only as a guide and other factors that may influence the uncertainty analysis must be considered. The financial evaluation is only a part of the decision-making process and additional information is needed. Therefore, even if the financial conditions are extremely favorable, neglecting some of the qualitative aspects may cause serious problems[4]. The capital budgeting process must enclose a wide spectrum of dimensions, whether

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[4] Mohamed and McCowan (2001, p. 232) states that non-monetary project aspects need "*careful analysis and understanding so that they can be managed. In extreme cases, neglect of these aspects can cause the failure of a project despite very favourable financial components... to provide for the effects of these qualitative aspects, the majority of organizations resort to estimating the necessary money contingencies without an appropriate quantification of the combined effects of monetary and non-monetary factors*".

financial or not, as a way to fully study all the aspects that may influence its viability. As stated in Mohanty et al (2005) we consider that the project selection involves the evaluation of multiple attributes, both quantitative and qualitative.

2.3. What do practitioners do? Are there some gaps with financial theory?

We have worked Graham and Harvey (2001)[5] data, available on the internet address mentioned on their page 190, to conclude that, in US, from 392 CFO responses we verify that there are 4 (1,02%) companies that "never" take any of the techniques mention on their questionnaire when deciding which projects to pursue, and 5,87% of companies do not consider "always" or "almost always" those techniques. If we only consider the use of the four main capital budgeting techniques (NPV, IRR, PB and ARR), we verify that 1,02% of companies "never" take this one simultaneously, and 5,36% of the companies do not consider them "always" or "almost always". This study allow us to report that 5, 1% of companies "never" do NPV, 5,8% IRR, 9,6% PB and 35,9% ARR. Although we do not have the data from Brounen et al (2004) and Beneti et al (2007) studies for UK, Netherlands, Germany, France and Brazil, considering the data presented on their papers, we can assume that the non use of the techniques mentioned above would be greater than the findings based on Graham and Harvey data. In a less developed country, like Brazil, there are more companies that do not use these financial techniques, when compared with the other mentioned countries. Before these studies, Sangster (1993) finds that 8% of companies do not take into account any quantitative evaluation method.

Akalu (2003, p. 361) find that although capital budgeting suggests the use of quantitative models for Research and Development and Information Communication Technology projects, the application is not found in practice in UK and Netherlands. However, "*firms are relying on qualitative and non-standard approaches. This does not have rigorous theoretical basis, and hence, the decision-making process may not get an acceptable yardstick for its rationality*". Myers (1984, a) find inappropriate to use DCF methods for investments that have got strategic implications. Myers (page 129) refers that "*US executives, especially MBAs, are said to rely too much on purely financial*

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[5] The most famous survey in the financial literature is by Graham and Harvey (2001), a paper, which was awarded the Jensen Price for the best paper published in the Journal of Financial Economics in 2001.

analysis, and too little on building technology, products, markets, and production efficiency. The financial world is not the real world, the argument goes...".

We conclude that there is a gap between academics and practitioners. We verify that there is a gap between the theory of capital budgeting financial techniques and the practice of firms.

Myers (1984, b, p. 395)[6] has the following view: "*One of the problems with the MBAs that we send out into the world is their almost Pavlovian reliance on discounted cash flow. You tell them, "how much is this worth?" And they say "Aha, value equals discounted cash flow. Let's project the cash flows. Tell me what the beta is; tell me what the discount rate is, Calculate NPV. Stop." There are lots of cases in which that´s the worst thing you can do, lots of cases where you should try to restrict the application of discounted cash flow to only those parts of the problem where you really need it*".

Myers (1984, a, p. 130) explain that "*smart managers apply the following check. They know that all projects have zero NPV in long run competitive equilibrium. Therefore, a positive NPV must be explained by a short-run deviation from equilibrium or by some permanent competitive advantage. If neither explanation applies, the positive NPV is suspect. Conversely, a negative NPV is suspect if a competitive advantage or short run deviation from equilibrium favours the project. In other words, smart managers do not accept positive (or negative) NPVs unless they can explain them ... Strategic analysis look for market opportunities – deviations from equilibrium – and try to identify the firms´ competitive advantages[7].*

So, our focus is on the non financial aspects of project appraisal towards a contribution to filling this gap.

2.4. Non-financial analysis

Myers (1984, a, p. 131) refers that "*the non-financial approach taken in many strategic analyses may be an attempt to overcome the short horizons and arbitrariness of*

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[6] Cit in Vining and Meredith (2000, p. 608).

[7] "*Turn the logic of the example around. We can regard strategic analysis which does not explicitly compute NPV... If a firm, looking at a line of business, finds a favorable deviation from long-run equilibrium, or if it identifies a competitive advantage, then (efficient) investment in that line must offer profits exceeding the opportunity cost of capital. No need to calculate the investment's NPV: The manager knows in advance that NPV is positive*".

financial analysis as it is often misapplied". Non-financial factors can influence the investment decision in that it can influence the viability and success, as well as affect the financial analysis through the cash flows and the discount rate of the project. The problem is that there are many non-financial aspects that are not easily translated into monetary terms, because some factors are difficult to estimate and can produce evaluation errors easily. The difficulty in evaluating these aspects is related to their intangible nature and measurement problems, which make this analysis highly subjective. Mohanty et al (2005, p. 5199) refer that qualitative attributes are "often accompanied by certain ambiguities and vagueness because of the dissimilar perceptions of organizational goals among pluralistic stakeholders, bureaucracy and the functional specialization of organizational members". This might be one of the reasons why the practice of firms still has a long way to go. Mohamed and McCowan (2001, p. 232) consider that the "lack of know-how in measuring strategic and intangible (qualitative) costs and benefits led current models to ignore their contribution to the overall economic analysis". In this way, Lopes and Flavell (1998) recognize that a "*major reason why non-financial and non-technical aspects are not considered more fully during project appraisal is probably the lack of an analytic framework that would highlight the importance of those aspects and would provide guidelines on how to incorporate them into the appraisal*".

Despite these difficulties that have caused the neglect of non-financial aspects, capital budgeting decisions must take into consideration subjective appreciations, particularly when it is difficult to quantify the costs and benefits associated with the projects. Non-financial evaluation techniques provide information about less tangible factors and are expected to be able to identify competitive advantages in a project that financial techniques cannot capture (Chen, 1995).

The importance of non-financial factors is mentioned by several authors. If to Pike (1983) managers should attribute the same importance to quantitative and non-quantitative methods, Proctor and Canada (1992) suggest that less importance should be given to the quantitative methods than the non quantitative ones. Chen (1995) indicates that non-financial criteria play a role as important as sophisticated financial evaluation criteria, and more important than non-sophisticated ones, for equipment substitution and expansion to new products, while in expansion projects for current products they seem less important.

In fact, given the nature of the project, the application of quantitative evaluation models may not be adequate[8] (Akalu, 2003). In the Portuguese context, a survey by Rodrigues (1999) have evidenced that in about 25% of the projects a formal evaluation is not performed and that more than half of Portuguese firms have used non-financial criteria. However, the study did not identify this other criteria and have a very restricted scope. We therefore decided to take the study of Portuguese practices further, and this time to concentrate on non financial areas.

Many studies have showed that, in most cases, firms adjusts risk in a subjectively manner, or using both qualitative and quantitative methods (Ho and Pike, 1991). In Portugal, about 20% of companies do not perform risk analysis on the project (Rodrigues, 1999). However, the inclusion of non-financial aspects in project evaluation is a task with a high degree of difficulty, given the wide range of areas with the ability to affect them differently.

For a long time, theory put the emphasis on the financial issues in investment project evaluation, not taking into account other aspects. Pike (1983) was one of the pioneer authors calling the traditional emphasis a myopic view. Many other authors have now emphasised the need to take a broader look at projects: Skitmore et. al. (1989), Proctor and Canada (1992), Chen (1995), Lopes & Flavell (1998), Adler (2000), Meredith and Mantel (2000), Mohamed and McCowan (2001), Love et al. (2002), to name just a few. All these authors share the view that the investment analysis and decision-making process must cover a wide range of aspects, financial and non-financial, as a way to identify all issues that can influence its viability.

Adler (2000) points out the evaluation of qualitative aspects that cannot be included in cash flow for strategic decision-making. Chen (1995) identifies the following non-financial aspects in the evaluation of projects: strategy, quality, flexibility, potential future growth, market tendency, ethic and social considerations, prestige, and legal issues. Meredith and Mantel (2000) suggest a list of production, marketing, financial, administrative and personnel factors. Love et al. (2002) find evidence of the importance

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[8] *"Projects such as related with safety and health requirements are executed irrespective of the appraisal outcome or type of model. Still there are groups of companies who pursue their argument in relation to their market position or presence of fierce competition in the market. In this regard, such types of investments should be executed irrespective of the type of model of appraisal or its result in order to remain in the market or to be the market leader. However, what is common practice among these companies is that the top management of the company decides the fate of R&D and ICT projects"* (Akalu, 2003, p. 358).

of studying aspects related to organizational, financial, human, technical, political, social and environmental factors. Mohamed and McCowan (2001), Nowak (2005) and Mohanty et al (2005) evidence technical, social, environmental, political, legal and organizational aspects. Lopes and Flavell (1998) suggest the study of various non-financial areas: strategic, technical, political, social, environmental, organizational, and management. Datta and Mukherjee (2001) find that for a project to be succeed it has to examine the social, political, technical, and financial implications.

Given the importance that the financial and non-financial investment decision has on the company, it becomes important to understand which of them are critical to the success of the project. There are several authors who refer to qualitative aspects, non-financial, as the success factors for projects. Dvir et al (2003, p.382) find that project success factors are based on "*subjective lists for respondents to check, on a limited number of managerial variables for our assessment*". They use 13 measures of success and 360 variables of project management. At the end they find that "*(i) A well-designed initiation phase is the most important factor in project success; (ii) organizational setup and project structure are not good predictors of project success; (iii) formal design and planning documents are instrumental in meeting project time and budget constraints, as well as in ensuring customer satisfaction from the end-product; (iv) design changes during the execution of the project are usually detrimental to the customer's satisfaction, and contribute little to the improvement of the end-products*". Jiang et al (1996) present the following 13 success factors: clearly defined goals; competent project manager; top management support, competent project team members; sufficient resource allocation; adequate communication channels; control mechanisms; feedback capabilities; responsiveness to client; client consultation; technical tasks; client acceptance; trouble-shooting. Skitmore at al. (1989) present a list of factors that influence the success of building projects, and they conclude that besides the financial area, there are 44 non-financial relevant factors.

3. Research methodology

We have used a questionnaire to gather information since this method permits a better understanding of firms investment practices. Because we did not know of published

surveys specifically addressed to non-financial aspects of projects, we create a questionnaire for our purpose. We used a preliminary version to make a few personal interviews, intending to validate the questions included in the questionnaire and to make sure they were clearly formulated, to guarantee a unique interpretation of questions. The people interviewed were chosen to have a similar profile to the ones selected for the postal questionnaire[9]. Respondents were asked to score how important is each area of analysis in the project's valuation, each non financial aspects in project's decision and the risk factors in each area of analysis, on a scale of 0 to 4 (0 meaning "unimportant", 4 meaning "very important"). Respondents had to tell us if they consider ("yes"), or not ("no"), non-financial evaluation, and the procedures that they used to minimize the project's non financial risks.

The survey was sent to the Chief Financial Officer (CFO) of the 1.000 largest Portuguese firms in 2005. There were three reasons for this selection: large firms have a higher probability of having taken investments in recent years; they are also the most likely to have performed an appraisal including non-financial aspects; and finally, these firms tend to have more and better qualified human resources than smaller ones.

We have considered that in general a response rate near 20% would be a good mark. However, given the length and depth of our survey we expected somewhat less. Our response rate (approximately 10%) is comparable to other recent academic surveys. For example, Brounen et al. (2004) obtained a 5% response rate; Graham and Harvey (2001) obtained a 9% response rate in a survey mailed to 4.440 CFO; and Trahan and Gitman (1995) obtained a 12% response rate in a survey to 700 CFO.

Given the length, depth and complexity of the questionnaire, we decided to implement certain procedures to attempt to increase the response rate, namely, making phone contacts and sending an electronic questionnaire version later on. Ninety nine completed surveys were returned, from which three could not be validated, giving a final response rate of 9,6%. Given the size and complexity of our questionnaire, and comparing it to other surveys, we consider this response rate satisfactory.

The follow up phone calls to CFO gave us a very positive feedback. Almost everyone showed interest in this subject (the non financial appraisal) and in the survey's conclusions. They considered the survey well structured and referred that it made them

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[9] The questionnaire is available on request.

think about investment procedures and techniques that they usually do not think about, providing this way a learning experience.

We worked on our survey data using some statistical tools. We intended to know the way that different factors can affect the study of all dimensions of the analysis, given the characteristics of the company, the project, the company's administration and the project manager. In order to determine this relation, we need to isolate the impact of each of the characteristics of the company, and of the project. With that in mind, we divided the sample according to the characteristics of the company or the project considered to be the most relevant, and for each subgroup we calculate averages (for characteristics and risk factors) and percentages of items chosen (in risk minimizing procedures).

To find out if conditional characteristics of the aspects analysed has significant statistical difference at 1% (*), 5% (**) or 10% (***) level, we performed statistical test as in Siegel and Castellan (1988) and Kvanli et al. (2000). The statistical tests allow us to verify the behaviour similarity (i.e. if there are any differences). We have performed the t test for two independent samples, the Mann-Whitney test and the Kruskal-Wallis test, according to sample characteristics.

Finally, we have done a multivariate analysis to know which of these areas are important to the success of the project. To estimate the impact of the determinants of a project's success, we estimated the following equation:

$$SUC_i = \beta_0 + \beta_1 FIN_i + \sum_{j=1}^{J} \beta_j X_i + \sum_{m=1}^{M} \beta_m Y_i + \sum_{n=1}^{N} \beta_n Z_i + \sum_{o=1}^{O} \beta_o W_i + \sum_{p=1}^{P} \beta_p V_i + \beta_2 DM_i + \varepsilon$$

Where SUC_i is the level of success perceived by company i; β_0 is the regression constant; Fin_i is a dummy variable of financial analysis; X_i is a vector of non-financial analysis. Then we control for some variables that we have used in the conditional analysis: Y_i is a vector of company characteristics; Z_i is a vector of project characteristics; W_i is a vector of CEO characteristics; V_i is a vector of project manager characteristics; DM_i is a dummy variable of who is the decision maker and ε is the disturbance term.

4. Data and discussion of results

4.1. The sample

In tables 3.1 and 3.2 we present the main characteristics of our sample concerning type of firms, projects, administration (CEO) and project managers.

Panel A and B of Table 3.1 give us information about the firms' characteristics. From Panel A we can see that 39,8% of firms are in the *manufacturing sector*, 25,8% in the *commercial sector* and 17,2% are in *transportation / energy sector*. We verify that 58,3% are *private national firms* and nearly a third is *foreign firms*. Almost half the firms pay dividends, 60% of these in the year before the survey. In 15,6% of the companies, *the debt has been rated* and only 8 are *listed* companies.

Panel B indicates a high variation in terms of the firms accounting information (sales, total assets, total net worth, total debt, cash flow, and *number* of employees). For instance, sales go from a minimum of €2.408.000 toa maximum of €4.716.926.854, and *number of employees* range from 9 to 38.281.

Concerning the characteristics of the Project, Panel C of Table 3.1 shows that nearly half the projects are *expansion investments*, 39,6% are *modernization investments* and 16,7% are *substitution investments*. On average, the *investment amount* is 70.525 thousand euros, the project is implemented during 20 months and there are 64 employees directly involved in executing the project. However, these sample values are highly variable (see Panel D). Only six projects (6,2%) were not in the *same industry as the company's*.

Panel D shows that, on average, the *amount of the investment* is nine times greater than *sales* and represent 25,9% of *total asset* in the firm.

[TABLE 3.1 HERE]

Concerning the main characteristics of firms' CEO, we can see from Panel A of Table 3.2 that 46,7% of the CEO have a *university degree* and 27,2% a degree higher than that. On the other hand, nearly a quarter of the CEO has secondary *education* only.

CEO, as we can see from Panel B of table 3.2 below, are, on average, 52 *years old* and have a 10-year *tenure* as chairman of board. We can also see that in 45,1% of the companies more than 20% of the *firm is owned by Management*, and in nearly half of the sample no part of the firm is owned by Management (49,5%).

Nearly two thirds of Project Managers have a *university degree*, are 44 *years old* and 42,2% of them belong to the firm's administration, as we can see in panel C.1 of table 3.2. On panel C.2 of the same table, we observe that half of the project managers have large experience in project management and that more than half of them take fixed reward as *form of compensation* – this compensation consists in manager's normal wage and there is no further reward.

[TABLE 3.2 HERE]

Finally, in order to create homogeneous classes, so that we can analyse homogeneous behaviour inside each group of firms, we construct classes for each variable. In the rest of the paper, based on these categories, when we refer to the different variables as "large", "great", "long" and similar, we are referring to the class that presents the higher values.

4.2. Financial and non-financial areas in project analysis

Importance of each area of analysis in project appraisal

From Annex 1 (PANEL A) we observe that the most important areas in project appraisal are *strategic* (91,7%) and *technical analysis* (86,5%). *Financial analysis* (75%) only appears in third place, together with *commercial analysis* (75%). These results confirm the importance of analysing the factors that influence project appraisal, besides the financial ones. *Political* (20,8%) and *social analysis* (33,3%) are the least relevant areas in this context.

We must highlight the evidence in favour of the importance and contribution that non-financial areas, just as much as the financial area, can assume in project appraisal. This idea is also suggested by Meredith and Mantel (2000), Love et al. (2002), Datta and Mukherjee (2001) and Lopes and Flavell (1998).

From a thorough analysis of panel A of Annex 1 we observe a significantly different importance between each of the non-financial analyses according to certain characteristics of the company, the project, the company's administration and the project manager. Companies from the commercial sector, relatively to other sectors, attribute more importance to commercial, organisational and human resources analyses. On the other hand, large companies attribute more importance to technical, political, financial, social and environmental analyses than small companies. Firms that have implemented expansion projects consider more important, *strategic analysis* and *commercial analysis* and less important the *technical analysis*. For firms with long-duration projects the *political*, *environmental*, *organizational* and *human resources* aspects are more important, while in large projects *technical*, *political*, *social* and *environmental analysis* are more important than in small ones.

In what concerns the company's administration and the project manager, we note that when CEO's education is lower, firms attribute more importance to *strategic, commercial* and *project manager analysis* and less importance to *environmental analysis*. The younger the CEO and the project manager, the more importance is attributed to *human resources*. On the other hand, the greater the CEO tenure, the greater is the importance attributed to *commercial* aspects and less importance to *technical* aspects. When the project manager has a position in the administration, the most important analysis is the *political* one. On the other hand, when the person responsible for the decision to implement the project is in the administration, there is a tendency to consider the *commercial analysis* more important and *technical* aspects less important. We must point out that high successful projects consider technical, financial and project manager dimensions the more important ones.

Project valuation

Observing panel D of Annex 1 we can detect that the issues most evaluated in project appraisal are *strategic analysis* (95,8%), followed by *financial*, *technical and commercial analysis*, for which we obtain 85,4%, 83,3% and 78,1% of responses, respectively. On the other hand, nearly 40,6% of firms consider *social aspects* and 43,8% *political aspects*, in project appraisal. Note that, from the firms in the sample, only 5 have projects implemented outside Portugal, so we could not obtain relevant conclusions concerning the political international issues, consequently we do not analyse this area.

Decision-making

In relation to the importance of each of these areas (financial and non-financial) in decision-making, panel C of Annex 1 shows us a high relevance of *strategic analysis* (97,8%). However, there are also other areas considered relevant, namely *technical analysis* (79,6%), *financial analysis* (76,3%) and *commercial analysis* (72%). The *social analysis* (15,1%) and the *political analysis* (16,1%) are the least considered by Portuguese firms in project decision-making.

Also from panel C, we find that, firms from the commercial sector consider *technical analysis* to be less important in decision-making than firms from other sectors, and firms from manufacturing and commercial sector attribute less importance to *strategic analysis* than firms from other sectors. On the other hand, large firms consider *strategic analysis*, *political analysis* and *environmental analysis* to be more important, relatively to small firms. When it comes to projects, firms with expansion projects attribute more importance to *commercial analysis* and less importance to *technical analysis*, relatively to firms with other types of projects. On the other hand, firms with long-term projects attribute more importance to *technical analysis*, *political analysis*, *social analysis*, *environmental analysis* and *organizational analysis* than firms with short term projects. In large projects *strategic*, *political* and *environmental analysis* assume greater importance than in small projects. As for CEO characteristics, we verify that the higher the CEO education, the more importance is attributed to *political* and *environmental* aspects. The younger the CEO the more important are *organizational aspects*, while older managers attribute more relevance to *political and social aspects*. When management does not own any percentage of the firm less importance is attributed to *organizational aspects* than when they own it. When the project manager does not have

17

a position in the administration the *technical aspects* are more important. On the other hand, when the decision-maker has a position in the administration, there is a tendency to attribute more importance to *strategic aspects* and less importance to *political aspects*. Lastly, the most successful projects are associated to more importance being attributed to *strategic analysis, financial analysis* and *technical analysis"*.

Influence over the economic value of the project

In what concerns the factors that most influence the economic value of the project, from panel B of Annex 1 we discover the importance of *strategic analysis* (94,8%), followed by *technical analysis* (78,1%). The *Financial analysis* (74%) is only the third most important area. The *Political* (19,8%) and *social analyses* (21,9%) are said to have little influence over the economic value of the project.

Panel B shows evidence that firms from the commercial sector consider the *technical analysis* less important than firms from other sectors, and that firms from the manufacturing and commercial sectors considers the *project manager analysis* less important (relatively to other sectors). On the other hand, firms of big dimension consider the *political analysis* and *environmental analysis* more important than small firms. As for projects, in the expansion types the *commercial analysis* is more important and the *technical analysis* less important, relatively to others types of projects. On the other hand, firms with long project duration consider the *technical analysis*, *political analysis* and *environmental analysis* more important than firms with short duration projects. In large projects the *political analysis* and *environmental analysis* are more important, relatively to small ones. Lastly, when decision-making is performed by the administration of the firm the *strategic analysis* and *organizational analysis* are more important than when the investment decision is not taken by the administration.

4.3. Responsibility for decision and evaluation

The survey also inquired about the responsibility for the investment decision and the evaluation process: who decides to implement the project, and who evaluates the different areas of analysis. We find (see table 3.3 below), that for Portuguese companies 75,8% of investment decisions are taken by the *administration*.

[TABLE 3.3 HERE]

As for the people who are in charge of the different areas of analysis (table 3.4 below) we verify that the strategic issues are, fundamentally, evaluated by the *company's administration* (84,9%); the technical aspects are evaluated by *technical personnel* (in 55% of the companies that analyse this area), by the *project manager* (47,5%) and by the *administration* (36,3%); the commercial issues are mainly evaluated by the *company's administration* (58,3%) and by the *commercial director* (48,6%); the political aspects are evaluated by the *administration* (83,3%); the financial analysis is performed by the *CFO* (67,5%) and by the *administration* (55%); the social analysis is made by the *administration* (52,6%) and by the *project manager* (34,2%); the environmental issues are evaluated by the *administration* (42,9%), by the *project manager* (33,9%) and by *technical personnel* (32,1%); the organisational issues are evaluated by the *administration* (50%) and by the *project manager* (43,1%); the human resources are analysed mainly by the *administration* (50,8%) and by the *project manager* (40,7%); and the aspects related to the project manager are examined by the *administration* (86,8%).

[TABLE 3.4 HERE]

4.4. Project's success factors

Finally we wanted to know the factors behind project success and see whether the level of perceived success can be associated with the way companies perform the evaluation (mainly with the areas analysed).

"*There are few topics in the field of project management that are so frequently discussed and yet so rarely agreed upon as the notion of project success*" (Pinto e Slevin, 1988, p. 67). Project success may differ according to the one that evaluates the project because success means different things to different people (Freeman and Beale, 1992). Success criteria must reflect different interests and views leading to a

19

multidimensional / multi-criteria approach (Pinto and Mantel, 1990; Freeman and Beale, 1992). As project success measures we can point out meeting the objectives of project budget and schedule and achieving an acceptable level of performance, client satisfaction and costumer welfare (Pinto and Slevin, 1988), the implementation process, the perceived value of the project, client satisfaction with delivered project (Pinto and Mantel, 1990), technical performance, efficiency of execution, managerial and organizational implications, manufacturer's ability and business performance. Although many authors have pointed out several criteria and measures of success[10], de Wit (1988) concludes that "*to think one can objectively measure a project's success is an illusion*". Therefore, Baker *et al.* (1998) suggest the use of the term "a project's perceived success".

The project's success, whose definition remains ambiguous because it may carry different meanings for different people due to the various perceptions of success they may have (Lie e Walker, 1998), is the result of a previous analysis of financial and non-financial issues, that may lead companies to a decision towards investment.

The existing literature, points up to a set of factors of a varied nature that lead to a project's viability and success (Ashley *et al.*, 1987; Belassi and Tukel, 1996; Lopes and Flavell, 1998; among others). These factors fall mainly within the scope of strategic, technical, commercial, political, social, environmental, organisational, human resources and project manager analysis.

Level of success

When questioned about the project's level of success, the respondents attributed, on average, a level of success to their projects of 5,89 (the projects were classed as 0 – "Abandonment" to 7 – "Total Success"), a value that indicates that the projects developed had relative success. We note that 36,5% consider success with a grade six,

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[10] For example, Shenhar *et al* (2002) and Dvir *et al* (2003) present the following 3 dimensions and 13 measures (in parenthesis) of success: (1) meeting design goals (met operational performance; met technical performance; met project schedule; stayed on budget); (2) benefits to costumers (address a recognizes need; solved a serious problem; the product is used by the customer; the customer is satisfied); (3) commercial success and future potential (achieved commercial success; increased market share; created a new market; created a new product-line; developed a new technology).

32,3% with grade seven (total success), 21,9% with grade five, 4,2% with grade three and 5,2% with the remaining grades (see table 3.5).

[TABLE 3.5 HERE]

Critical success factors

As a way to identify the main critical success factors, the companies were questioned about the "most relevant critical success factors for the Project". A careful analysis of these factors has allowed us to verify the dispersion and diversity of the relevant critical factors, and also to identify factors originating from the various analyses considered in this work. The table below presents a summary of these success factors, by area of analysis.

[TABLE 3.6 HERE]

From the above table, we see that a wide array of non financial aspects were considered as critical in project evaluation. The factors most often mentioned are related with commercial issues, followed by technical, strategic and financial aspects. Beyond the aspects related to the various areas of analysis, we also find "deadline", "quality", "customer's satisfaction", "rapidity in implementation" and "partnership with clients" among the mentioned ones.

Is the success of the project associated with the analysis of each of the areas considered?

Relating project success with areas of analysis allows us to determine which are the most important areas to assess in projects. From Panel D of Annex 1 we see that higher project success is linked with higher frequency in the evaluation of strategic, financial, technical, commercial, environmental and human resources aspects. We also find, from Panel A, that when project success is higher companies consider the technical, financial and project manager areas more important in project's valuation than companies with lower project success.

One of the advantages in grouping factors of various homogenous dimensions is that although it is often difficult to identify the specific success factors, it is much easier to identify whether success or failure is related to each of the dimensions analysed. In this way, we try to discover whether the project's success is associated with the analysis of each of the areas considered.

Table 3.7 shows the correlation coefficients among the variables. As we can observe, some of those correlations are statistically significant. However, the correlations are not sufficiently strong to question the regression illustrated above.

[TABLE 3.7 HERE]

Table 3.8 gives us the coefficients of the analyses performed in the appraisal of projects perceived as successful. We have control this analysis for some company, project, CEO, project manager and decision maker variables. It stands out that when a project is successful, environmental and human resources aspects are analysed. This analysis also allows us to conclude that social and organisational issues are not directly related with project's success. We also verify that the project is perceived with more success when companies are stated owned, when companies implement modernization and expansion projects, when projects are smaller, and when the project manager do not have a fixed reward for his work.

From our data we verify that the areas more used by companies to evaluate project investments (finance, strategic, commercial and technical) are not relevant for the success of the project. We can interpret these findings as because almost all companies consider these areas in the project evaluation, the other areas can be the ones that make the difference.

[TABLE 3.8 HERE]

4. Conclusion

This first work aimed to identify the practices of Portuguese companies in relation to the evaluation and decision-making processes of investment projects, in particular concerning the relevance of non financial factors in those processes.

The information gathered allows us to verify the importance of the financial analysis in relation to the non-financial one. The results showed that the most important areas considered by Portuguese firms in their project appraisal and decision making processes, are strategic and technical. The financial aspects come only in third place, together with commercial factors, both in project appraisal, and at the decision making process. With less relevance in Portuguese companies' project appraisal we found social and political analyses. Note that less than half of the companies inquired consider political and social issues in their project appraisal.

What can we answer to our initial questions? (1) Are non-financial issues evaluated in projects?; What are the importance of each area of analysis in the project's valuation?; Our results support the importance of the analysis of various non-financial aspects and show how some of those aspects have greater relevance than the one attributed to financial elements. As the most relevant areas, the strategic and technical ones stand out. The data also suggests that the analysis of financial aspects is considered by firms as the third most important area, both in project appraisal and in decision-making. Commercial factors appear with relevance similar to the financial aspects. Among the areas studied, the least relevant ones concerning firms' project appraisal practices are social and political. (2) Who evaluate the various aspects of the project?; What factors most influence the study of non-financial aspects?; In the Portuguese companies 75,8% of investment decisions are taken by the *administration*. As for the people who are in charge of the different areas of analysis we verify that almost all individual issues are evaluated by the company's administration, followed by the project manager. (3) What are the critical success factors in project appraisal? Although strategic, financial, technical and commercial analysis are not significant in our regression, we verify that higher project success is linked with higher frequency in the evaluation of strategic, financial, technical, commercial, environmental and human resources aspects. We also find that when a project is successful, environmental and human resources aspects are analysed. This analysis also allows us to conclude that social and organisational issues, for this sample of firms, are not directly related with project's success.

Overall, we can conclude that strategic, technical and commercial areas showed greater relevance at the appraisal process than the traditional financial areas. We also identified the main non-financial aspects that can influence the project. We have found a dominant role of the corporate administration in decision making and in evaluation of each area of analysis. Finally, we pointed the main critical success factors in project appraisal. In summary, we found strong evidence of the importance of analyzing various non-financial aspects both at the appraisal and at the decision making stage of projects.

This study shows an overall relevance of non-financial aspects in the project appraisal and decision making processes of Portuguese companies. Yet, in some areas (mainly social and political) it was surprisingly low the "numbers" obtained across nearly every aspect inquired (relevance of the area, contribution to the success of the project, etc). We think this study has now to be deepened and complemented by interviews through which we can find the reasons behind some of the answers we got. As a way to generalise or contrast our results, it is important to apply this questionnaire to other countries and to some other industries, like oil or mining industries.

Acknowledgements

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TABLE 3.1: DESCRIPTIVE CHARACTERISTICS

Panel A - Descriptive Charactristics of Firms

		N	Freq.	%
Industry	Commercial	93	24	25,8%
	Mining and Construction	93	8	8,6%
	Manufacturing	93	37	39,8%
	Transportation / Energy	93	16	17,2%
	Communication / Media	93	2	2,2%
	Banking / Finance / Insurance	93	0	0,0%
	Technology (software, biotechnologies,…)	93	3	3,2%
	Agriculture / Fishing	93	4	4,3%
Listed Company		96	8	8,3%
Pay Dividends		96	48	50,5%
	in 2004	48	29	60,4%
	before 2004	48	19	39,6%
ownership	Private	96	56	58,3%
	Public	96	9	9,4%
	Foreign	96	33	34,4%

PANEL B: FIRMS' ACCOUNTING INFORMATION

	N	Average	Standard Deviation	Minimum	Median	Maximum
Sales	89	243.897.476	768.624.028	2.408.000	41.705.990	4.716.926.854
Total Asset	93	231.116.815	509.114.986	2.459.102	44.631.675	2.564.156.702
Total Equity	93	65.477.691	144.145.193	-10.574.898	17.815.594	1.047.058.000
Total Debt	93	165.639.124	415.706.811	442.791	25.147.150	2.380.259.193
Cash Flow	82	22.028.184	58.782.787	-16.568.621	3.145.017	390.100.000
Employees (n.º)	91	807	3.999	9	225	38.281

PANEL C: TYPE OF PROJECT

		N=96	Freq.	%
Type of Project	Substitution	96	16	16,7%
	Modernization	96	38	39,6%
	Expansion	96	47	49,0%
	Innovation	96	8	8,3%
	Diversification	96	3	3,1%
	Other	96	4	4,2%
In Same Industry of Company		96	90	93,8%

PANEL D: PROJECT CHARACTERISTICS

	N	Average	Standard Deviation	Moda	Minimum	Median	Maximum
Duration (months)	88	20	18	24	2	14	80
Employees (n.º)	86	64	412	5	1	6	3.828
Cost of Project	84	70.524.937	323.324.305	1.000.000	50.000	3.000.000	2.402.435.399
Dimention relative to Sales	79	9,065	56,039	0,032	0,00056	0,043	425,638
Dimention relative to Total Asset	82	0,259	0,569	0,486	0,00064	0,059	3,593

TABLE 3.2: CEO AND PROJECT MANAGER CHARACTERISTICS

PANEL A: CEO EDUCATION AND PROJECT MANAGER EDUCATION

	N	Primary	Secondary	Baccealorate	University Cource	MBA	Post-Graduation	Master	Doctorate
CEO	92	2	22	0	43	12	8	2	3
		2,2%	23,9%	0,0%	46,7%	13,0%	8,7%	2,2%	3,3%
Project Manager	93	1	10	4	62	3	7	4	2
		1,1%	10,8%	4,3%	66,7%	3,2%	7,5%	4,3%	2,2%

PANEL B: CEO AND PROJECT MANAGER CHARACTERIZATION

Panel B.1 - CEO and Project Manager Age

		N	Average	Standard Deviation	Moda	Minimum	Median	Maximum
CEO	Age	89	52	9	48	32	51	84
	Tenure	88	10	8	10	1	9	40
Project Manager	Age	89	44	9	40	28	43	71

Panel B.2 - Percentage of Firm Owned by Management

	0%	0-5%	5-10%	10-20%	>20%
N=91	45	1	2	2	41
	49,5%	1,1%	2,2%	2,2%	45,1%

PANEL C: OTHER PROJECT MANAGER INFORMATION

Panel C.1 - Position of Project Manager in the Company

N	Administration	Financial Administration	Project Director	Predution Manager	Technical Director	Management Control	Others
90	38	8	9	10	7	5	13
	42,2%	8,9%	10,0%	11,1%	7,8%	5,6%	14,4%

Panel C.2 - Experience in Managing Investment Projects

N	Zero	One	Two	Three	Four	More Than Four
85	3	5	11	14	9	43
	3,5%	5,9%	12,9%	16,5%	10,6%	50,6%

Panel C.3 - Compensation Form of the Project Manager Take

N	% completion	Goals for Each Stage	Fixed	Other
86	1	12	48	25
	1,2%	14,0%	55,8%	29,1%

TABLE 3.3: WHO HAD THE RESPONSIBILITY TO DECIDE WHETHER OR NOT TO IMPLEMENT THIS PROJECT?

N=91	Freq.	%
Administration	69	75,8%
Shareholder	5	5,5%
Financial Director	3	3,3%
Administration and Shareholder	11	12,1%
Administration and Commercial Director	1	1,1%
Administration and Project Manager	2	2,2%

TABLE 3.4: WHO EVALUATED THE VARIOUS ASPECTS OF THE PROJECT?

Evaluation Area	Strategic	Technic	Commercial	Politic	Finance	Social	Environment	Organization	Human Resource	Project manager
N	93	80	72	36	80	38	56	58	59	53
Administration	84,9%	36,3%	58,3%	83,3%	55,0%	52,6%	42,9%	50,0%	50,8%	86,8%
Financial Director	11,8%	3,8%	6,9%	11,1%	67,5%	15,8%	3,6%	13,8%	13,6%	9,4%
Commercial Director	3,2%	1,3%	48,6%	2,8%	1,3%	2,6%	1,8%	1,7%	6,8%	3,8%
All Areas	7,5%	5,0%	5,6%	5,6%	7,5%	15,8%	12,5%	17,2%	15,3%	3,8%
Technical persons	4,3%	55,0%	4,2%	0,0%	3,8%	7,9%	32,1%	19,0%	13,6%	5,7%
Externals expers	2,2%	3,8%	5,6%	2,8%	2,5%	13,2%	16,1%	1,7%	3,4%	0,0%
Project Managers	17,2%	47,5%	19,4%	16,7%	17,5%	34,2%	33,9%	43,1%	40,7%	11,3%
Human Resources	0,0%	0,0%	0,0%	0,0%	0,0%	2,6%	0,0%	0,0%	8,5%	0,0%
Shareholders	1,1%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Environmental Director	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	3,6%	0,0%	0,0%	0,0%

TABLE 3.5: PROJECT SUCCESS CLASSIFICATION

N	1	2	3	4	5	6	7	Others
96	0 0,00%	1 1,04%	4 4,17%	1 1,04%	21 21,88%	35 36,46%	31 32,29%	3 3,13%

TABLE 3.6: CRITICAL SUCCESS FACTORS BY AREA OF ANALYSIS

	Critical success factor 1	Critical success factor 2	Critical success factor 3	Critical success factor 4	Critical success factor 5	Critical success factor 6	total
Strategic	15	5	4	3	5	2	34
Technic	9	8	6	9	6	---	38
Commercial	11	10	5	9	7	4	46
Politic	2	---	---	---	---	---	2
Finance	1	9	10	5	4	5	34
Social	---	---	---	---	---	1	1
Environment	---	---	---	---	1	---	1
Organization	---	4	5	---	1	1	11
Human Resource	2	4	5	3	---	3	17
Project Manager	---	---	---	---	---	1	1
Time	4	2	3	2	---	1	12
Quality	1	4	---	---	---	---	5
Satisfaction of the Customer	3	1	---	---	---	1	5
Quickly implementation	2	---	---	---	---	---	2
Partnership with customer	2	---	---	---	---	---	2

TABLE 3.7: CORRELATION MATRIX

Variable	SUC	FIN	STR	TEC	COM	POL	SOC	ENV	ORG	HUM	PRM
SUC	1										
FIN	0,053	1									
STR	0,003	0,062	1								
TEC	-0,071	,211(*)	0,047	1							
COM	0,051	,353(**)	0,016	0,034	1						
POL	-0,008	,245(*)	0,184	,338(**)	0,111	1					
SOC	-,248(*)	,222(*)	0,172	,256(*)	0,13	,596(**)	1				
ENV	0,11	0,107	-0,054	0,173	0,163	,466(**)	,422(**)	1			
ORG	-,276(**)	0,097	0,156	0,105	-0,005	,224(*)	,219(*)	0,05	1		
HUM	-0,045	,307(**)	-0,024	,254(*)	0,146	,260(*)	,359(**)	,240(*)	,644(**)	1	
PRM	-0,1	-0,016	0,022	0,159	,334(**)	0,161	0,191	0,124	0,191	0,137	1

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

const	5,16965 ***	4,66311 ***	5,18079 ***	4,88603 ***	5,23916 ***	5,20796 ***	1,93381
	(8,3549)	(5,0435)	(6,2451)	(4,4292)	(5,2311)	(7,6715)	(0,6044)
Area Analysis Variables							
Finance	0,202065	0,336455	0,157508	0,0193024	0,12641	0,190602	1,06622
	(0,5978)	(0,7525)	(0,3162)	(0,05)	(0,3274)	(0,5219)	(1,2905)
Strategic	0,853408	1,02594	0,552648	0,672965	0,74532	0,733004	-2,59179
	(1,57)	(1,4871)	(0,7913)	(1,1158)	(1,1394)	(1,1929)	(-1,1337)
Tecnical	-0,194784	-0,012988	0,0693972	0,0444196	-0,068477	-0,121474	1,32803
	(-0,6546)	(-0,0306)	(0,1759)	(0,1093)	(-0,191)	(-0,3988)	(1,6905)
Comercial	-0,0158857	-0,143061	0,080793	0,00873602	-0,0137598	-0,108402	-0,409552
	(-0,0545)	(-0,4109)	(0,2122)	(0,0262)	(-0,0401)	(-0,3523)	(-0,6557)
Social	-0,862462 ***	-0,922635 ***	-0,935671 ***	-0,82399 ***	-0,831985 ***	-0,839984 ***	-0,584603
	(-3,4112)	(-2,7712)	(-3,0843)	(-2,8616)	(-2,8433)	(-3,1624)	(-1,0336)
Environmental	0,525947 **	0,802143 ***	0,735782 **	0,486781 *	0,545133 *	0,476589 *	0,756445
	(2,1855)	(2,6806)	(2,5888)	(1,7439)	(1,871)	1,9546	(1,4428)
Organizational	-0,961262 ***	-0,865074 **	-0,820878 **	-0,903383 **	-1,12808 ***	-1,01898 ***	0,47948
	(-3,2507)	(-2,2692)	(-2,4252)	(-2,5395)	(-3,3575)	(-3,1494)	(0,4999)
Humanresource	0,753063 **	0,599145	0,529238	0,87656 **	0,917605 **	0,794099 **	-0,650357
	(2,2429)	(1,4409)	(1,3188)	(2,2931)	(2,3786)	(2,1922)	(-0,7071)
Proj. manager	-0,0142788	0,0501748	-0,114503	0,028645	0,0338041	-0,0179993	0,170634
	(-0,0612)	(0,1757)	(-0,4112)	(0,113)	(0,1177)	(-0,0727)	(0,3522)
Companies Variables							
Commerce		0,102916					0,18116
		(0,2493)					(0,213)
Manufacturing		-0,343646					-0,359859
		(-1,0675)					(-0,6119)
Transport_Energy		0,173817					-0,112429
		(0,3909)					(-0,13)
Sales		-1,9667E-11					5,58576E-11
		(-0,0985)					(0,1503)
Leverage		-6,9803E-11					2,84588E-10
		(-0,2266)					(0,5679)
Dividend		0,343488					0,441938
		(1,2849)					(0,7955)
State		-0,179275					2,14504 *
		(-0,3712)					(1,8024)
Project Variables							
Substitution			0,0707921				0,978337
			(0,2016)				-1,1792
Modernization			0,0688234				1,88942 ***
			(0,1828)				-2,8261
Expansion			0,0488503				1,84499 **
			(0,1276)				-2,1986
Duration			-0,00350743				-0,0222125
			(-0,4229)				(-1,1559)
Cost			-2,9636E-10				-0,0000 **
			(-0,7043)				(-2,2643)
CEO Variables							
CEO_univ				0,34082			-0,483948
				(1,13)			(-0,6896)
CEO_Age				-0,00436013			0,0494302
				(-0,3128)			-1,2826

CEO_Tenure						0,0285555	-0,00881021
						(1,6339)	(-0,2345)
CEO_Owner						-0,0845794	-0,121664
						(-0,3311)	(-0,2215)
Project Manger Variables							
PM_univ						0,468462	1,64344
						(1,2954)	(1,6024)
PM_Age						0,000521921	-0,0125299
						(0,0338)	(-0,4279)
PMCargo						0,211395	0,232549
						(0,7959)	(0,5293)
PM_Experiance						-0,0811437	0,15375
						(-0,8789)	(0,8139)
PMcompFx						-0,539124 **	-1,54695 ***
						(-2,1213)	(-3,2943)
Decision Maker Variables							
decmaker						0,225141	0,818789
						(0,8712)	(1,6011)
N	96	86	80	86	83	91	59
R-quadrado	0,235928	0,293983	0,278528	0,253051	0,338742	0,252639	0,641296
R-quadrado ajustado	0,155967	0,130269	0,123134	0,118185	0,2026	0,159218	0,229451
F(,)	2,950536	1,795707	1,792401	1,876314	2,488162	2,704326	1,557129
valor P(F)	0,004218	0,049454	0,058841	0,047453	0,006557	0,006562	0,122991

THIS TABLE EVIDENCE THE RESULTS OF MULTIVARIATE ANALYSIS BETWEEN PROJECT SUCCESS PERCEPTION AND EACH AREA OF ANALYSIS IN PROJECT EVALUATION (DUMMIES VARIABLES). FIN_i is a dummy variable that equals 1 if the company performs financial analysis in project evaluation and 0 otherwise; STR_i is a dummy variable that equals 1 if the company performs strategic analysis in project evaluation and 0 otherwise; TEC_i is a dummy variable that equals 1 if the company performs technical analysis in project evaluation and 0 otherwise; COM_i is a dummy variable that equals 1 if the company performs commercial analysis in project evaluation and 0 otherwise; POL_i is a dummy variable that equals 1 if the company performs political analysis in project evaluation and 0 otherwise; SOC_i is a dummy variable that equals 1 if the company performs social analysis in project evaluation and 0 otherwise; ENV_i is a dummy variable that equals 1 if the company performs environmental analysis in project evaluation and 0 otherwise; ORG_i is a dummy variable that equals 1 if the company performs organisational analysis in project evaluation and 0 otherwise; HUM_i is a dummy variable that equals 1 if the company performs human resources analysis in project evaluation and 0 otherwise; PRM_i is a dummy variable that equals 1 if the company performs project manager analysis in project evaluation and 0 otherwise;

Annex 1- Conditional analysis of each area	% Import and very Import	Average	Industry			Total Sales		Total Debt		Dividends		State Company		Type of Project		Duration of the Project		Cost of the project		Relative Dimension		Project Success	
			Manufact oring	Commerce	Other	High	Low	High	Low	Yes	No	Yes	No	Expansion	Others	Long	Short	High	Low	Big	Small	High	Low
			N=37	N=24	N=33	N=29	N=60	N=33	N=60	N=48	N=47	N=9	N=87	N=47	N=49	N=35	N=53	N=29	N=55	N=30	N=52	N=67	N=29
Panel A - What is the importance of each of the following areas in the project's valuation?																							
Strategic	91,7%	3,45	3,59	3,50	3,27	3,38	3,47	3,33	3,52	3,48	3,40	3,33	3,46	3,70	3,20 *	3,49	3,42	3,52	3,45	3,57	3,42	3,52	3,28
Technical	86,5%	3,28	3,38	2,92	3,42	3,59	3,12 **	3,52	3,15 **	3,44	3,15	3,56	3,25	3,06	3,49 **	3,46	3,23	3,59	3,13 **	3,50	3,15 ***	3,37	3,07 ***
Commercial	75,0%	2,9	2,62	3,38	2,88 *	2,97	2,87	2,82	2,98	2,85	2,96	2,44	2,94	3,13	2,67 **	2,83	2,96	2,83	2,87	2,93	2,87	2,99	2,69
Political	20,8%	1,47	1,30	1,50	1,67	1,86	1,32 **	2,06	1,17 *	1,31	1,60	2,67	1,34 *	1,34	1,59	1,94	1,11 *	1,93	1,09 *	1,83	1,12 *	1,34	1,76
Financial	75,0%	2,97	2,89	3,13	2,88	3,28	2,85 **	3,21	2,87 **	3,13	2,81 ***	2,89	2,98	2,89	3,04	2,91	2,98	3,03	2,80	3,17	2,75 **	3,15	2,55 *
Social	33,3%	1,8	1,43	2,04	2,06 ***	2,41	1,48 *	2,24	1,57 *	1,63	1,96	2,11	1,77	1,96	1,65	2,00	1,58	2,03	1,49 ***	2,23	1,38 *	1,82	1,76
Environmental	55,2%	2,3	2,35	1,92	2,58	2,86	1,98 *	2,79	1,98 *	2,15	2,43	3,00	2,23	2,43	2,18	2,60	2,00 **	2,90	1,82 *	2,97	1,69 *	2,46	1,93
Organizational	57,3%	2,43	2,49	2,75	2,18 ***	2,38	2,47	2,52	2,43	2,23	2,62 ***	2,44	2,43	2,49	2,37	2,66	2,25 ***	2,48	2,33	2,80	2,17 **	2,43	2,41
Human Resource	53,1%	2,3	2,32	2,71	2,09 ***	2,52	2,20	2,55	2,22	2,17	2,45	2,22	2,31	2,30	2,31	2,60	2,11 ***	2,45	2,11	2,57	2,06 ***	2,31	2,28
Project Manager	69,8%	2,71	2,73	2,79	2,73	2,83	2,63	2,67	2,73	2,77	2,66	2,56	2,72	2,74	2,67	2,89	2,58	2,93	2,55	3,10	2,44 *	2,79	2,52 ***
Panel B - To what degree each of the following analyses has influenced the economic value of the project?																							
Strategic	94,8%	3,44	3,46	3,54	3,33	3,38	3,42	3,33	3,48	3,42	3,45	3,22	3,46	3,57	3,31	3,51	3,47	3,48	3,45	3,47	3,44	3,51	3,28
Technical	78,1%	3,06	3,30	2,42	3,27 **	3,07	3,02	3,00	3,08	3,02	3,13	2,89	3,08	2,74	3,37 *	3,34	2,85 *	3,10	2,98	3,10	2,96	3,04	3,10
Commercial	67,7%	2,68	2,41	3,00	2,73	2,76	2,62	2,64	2,72	2,67	2,70	2,56	2,69	3,02	2,35 **	2,46	2,79	2,45	2,75	2,80	2,60	2,76	2,48
Political	19,8%	1,28	1,08	1,13	1,64	1,69	1,02 **	1,82	0,95 *	1,13	1,40	2,44	1,16 **	1,43	1,14	1,66	0,91 *	1,72	0,82 *	1,57	0,85 **	1,22	1,41
Financial	74,0%	2,91	2,68	3,17	2,91	3,07	2,83	3,03	2,83	3,00	2,81	3,00	2,90	2,89	2,92	2,94	2,81	3,00	2,67	3,17	2,58 *	3,01	2,66
Social	21,9%	1,31	1,35	1,08	1,39	1,34	1,20	1,39	1,25	1,04	1,55 **	1,67	1,28	1,40	1,22	1,40	1,11	1,41	1,07	1,77	0,85 *	1,34	1,24
Environmental	44,8%	1,99	2,19	1,54	2,09	2,38	1,68 **	2,21	1,80	1,73	2,21	3,11	1,87 **	2,09	1,90	2,31	1,66 **	2,76	1,45 *	2,77	1,35 *	2,06	1,83
Organizational	45,8%	1,98	2,00	2,21	1,82	1,76	2,07	1,97	2,03	1,67	2,28 **	2,11	1,97	1,94	2,02	2,20	1,79	1,83	1,95	2,10	1,85	1,94	2,07
Human Resource	36,5%	1,85	1,89	2,13	1,64	1,86	1,80	1,76	1,93	1,63	2,09 ***	1,56	1,89	1,94	1,78	1,80	1,83	1,62	1,78	2,20	1,50 **	1,87	1,83
Project Manager	44,8%	1,96	1,68	2,04	2,30 ***	2,17	1,77	1,91	1,93	1,77	2,15 ***	1,56	2,00	1,98	1,94	1,80	1,96	1,86	1,82	2,10	1,65 ***	1,97	1,93
Panel C - How important was each of the following areas in the decision to implement the project?																							
Strategic	97,8%	3,67	3,53	3,63	3,87 *** *|	3,82	3,57 ***	3,77	3,59	3,66	3,67	3,75	3,66	3,74	3,59	3,76	3,69	3,89	3,58 **	3,76	3,64	3,73	3,50
Technical	79,6%	3,02	3,22	2,33	3,29 * *	2,86	3,05	2,97	3,03	2,87	3,24 ***	3,25	3,00	2,64	3,41 *	3,30	2,87 **	3,07	2,91	3,07	2,88	3,09	2,85
Commercial	72,0%	2,76	2,50	3,17	2,74	2,71	2,76	2,68	2,83	2,70	2,89	2,75	2,76	3,09	2,43 *	2,52	2,88	2,50	2,81	2,83	2,68	2,85	2,54
Political	16,1%	1,11	1,14	0,75	1,35	1,46	0,90 **	1,65	0,80 *	0,89	1,36 ***	2,25	1,00 **	1,11	1,11	1,70	0,65 *	1,43	0,75 **	1,41	0,70 **	0,97	1,46
Financial	76,3%	3	2,92	3,13	2,90	3,18	2,97	3,10	2,98	3,02	2,96	2,88	3,01	3,02	2,98	2,88	3,04	2,96	2,89	3,31	2,74 *	3,12	2,69 ***
Social	15,1%	1,22	1,25	1,08	1,23	1,43	1,03	1,48	1,07	0,96	1,51 **	1,50	1,19	1,17	1,26	1,48	0,92 **	1,21	0,96	1,45	0,82 **	1,19	1,27
Environmental	44,1%	1,96	2,33	1,46	1,90 ** *|	2,39	1,64 **	2,13	1,80	1,68	2,29 ***	2,63	1,89	1,94	1,98	2,27	1,67 ***	2,46	1,49 *	2,66	1,28 *	2,09	1,62
Organizational	46,2%	1,97	2,17	2,21	1,58	1,89	2,00	2,10	1,97	1,70	2,29 **	2,13	1,95	1,79	2,15	2,36	1,73 **	1,82	1,91	2,14	1,78	2,00	1,88
Human Resource	32,3%	1,78	1,86	2,00	1,55	1,64	1,83	1,77	1,81	1,57	2,04 ***	1,88	1,78	1,79	1,78	1,91	1,65	1,61	1,68	2,07	1,46 **	1,90	1,50
Project Manager	41,9%	2	1,89	2,21	2,10	2,32	1,86	2,10	1,98	1,98	2,07	1,63	2,04	1,94	2,07	2,06	1,98	1,89	1,92	2,24	1,78	2,18	1,54 **
Panel D - Were the following issues evaluated for this project?																							
	Freq.	%																					
Financial	82	85,4%	91,9%	75,0%	87,9%	93,1%	85,0%	87,9%	85,0%	87,5%	83,0%	77,8%	86,2%	85,1%	85,7%	91,4%	81,1%	86,2%	81,8%	90,0%	80,8%	89,6%	75,9%
Strategic	92	95,8%	94,6%	95,8%	100,0%	100,0%	93,3%	97,0%	95,0%	95,8%	95,7%	100,0%	95,4%	100,0%	91,8%	100,0%	94,3%	100,0%	92,7%	100,0%	92,3%	97,0%	93,1%
Technical	80	83,3%	94,6%	45,8%	100,0%	89,7%	81,7%	90,9%	78,3%	77,1%	89,4%	100,0%	81,6%	76,6%	89,8%	94,3%	73,6%	100,0%	78,2%	93,3%	80,8%	82,1%	86,2%
Commercial	75	78,1%	67,6%	79,2%	90,9%	82,8%	75,0%	78,8%	78,3%	77,1%	78,7%	66,7%	79,3%	85,1%	71,4%	74,3%	79,2%	82,8%	76,4%	86,7%	75,0%	82,1%	69,0%
Political	42	43,8%	43,2%	12,5%	69,7%	62,1%	36,7%	66,7%	30,0%	35,4%	51,1%	88,9%	39,1%	38,3%	49,0%	65,7%	26,4%	69,0%	27,3%	66,7%	26,9%	46,3%	37,9%
Foreign	5	5,2%	5,4%	8,3%	3,0%	6,9%	5,0%	12,1%	1,7%	4,2%	6,4%	0,0%	5,7%	4,3%	6,1%	5,7%	5,7%	0,0%	7,3%	3,3%	5,8%	6,0%	3,4%
Social	39	40,6%	35,1%	29,2%	57,6%	51,7%	35,0%	54,5%	31,7%	29,2%	51,1%	66,7%	37,9%	44,7%	36,7%	42,9%	34,0%	55,2%	29,1%	60,0%	25,0%	38,8%	44,8%
Environmental	60	62,5%	73,0%	45,8%	63,6%	75,9%	53,3%	72,7%	55,0%	58,3%	66,0%	88,9%	59,8%	63,8%	61,2%	68,6%	58,5%	86,2%	52,7%	80,0%	53,8%	68,7%	48,3%
Organizational	59	61,5%	64,9%	54,2%	63,6%	69,0%	60,0%	81,8%	51,7%	60,4%	61,7%	55,6%	62,1%	59,6%	63,3%	71,4%	54,7%	58,6%	60,0%	53,3%	65,4%	56,7%	72,4%
Human Resource	67	69,8%	73,0%	70,8%	69,7%	79,3%	68,3%	84,8%	63,3%	64,6%	74,5%	55,6%	71,3%	68,1%	71,4%	74,3%	66,0%	75,9%	65,5%	76,7%	67,3%	73,1%	62,1%
Project Manager	53	55,2%	45,9%	50,0%	72,7%	69,0%	46,7%	54,5%	53,3%	52,1%	57,4%	22,2%	58,6%	55,3%	55,1%	45,7%	60,4%	55,2%	52,7%	53,3%	51,9%	56,7%	51,7%

Annex 1 - Conditional analysis of each area	% Import and very Import	Average	CEO Education		CEO Age		CEO Tenure		Owned by Management		Project Manager Education		Project Manager Age		Project Manager Position		Experience		PM Compensation		Decision-Making	
			University Course N=68	Others N=24	>57,75 N=23	Younger N=66	Long N=44	Short N=44	0% N=45	>0% N=46	University Course N=78	Others N=15	>=50 N=25	Younger N=64	Administration N=38	Other N=52	+4 N=43	Other N=42	Fixed N=48	Other N=38	Administration N=69	Others N=22
Panel A - What is the importance of each of the following areas in the project's valuation?																						
Strategic	91,7%	3,45	3,35	3,71 **	3,43	3,44	3,41	3,45	3,33	3,52	3,40	3,73	3,48	3,45	3,61	3,35	3,44	3,50	3,48	3,42	3,46	3,55
Technical	86,5%	3,28	3,41	2,88	3,43	3,21	3,05	3,48 **	3,62	2,93 *	3,31	3,33	3,52	3,22	3,29	3,33	3,33	3,21	3,23	3,34	3,22	3,55 ***
Commercial	75,0%	2,9	2,75	3,21 ***	2,74	2,94	3,16	2,55 *	2,80	2,91	2,91	2,73	2,96	2,88	2,97	2,79	2,79	2,98	2,94	2,82	3,07	2,36 *
Political	20,8%	1,47	1,59	1,17	1,48	1,45	1,30	1,64	1,64	1,24	1,51	1,53	1,68	1,41	1,79	1,23 **	1,44	1,52	1,44	1,58	1,52	1,41
Financial	75,0%	2,97	3,04	2,71	2,96	2,97	3,05	2,89	2,89	3,07	3,04	2,87	2,96	3,03	3,03	3,00	2,95	3,07	2,96	3,05	3,03	2,91
Social	33,3%	1,8	1,79	1,83	1,57	1,86	1,86	1,68	1,89	1,63	1,82	2,00	1,88	1,78	2,00	1,65	1,70	2,00	2,02	1,63	1,90	1,55
Environmental	55,2%	2,3	2,57	1,50 *	2,22	2,32	2,14	2,45	2,44	2,15	2,42	2,00	2,60	2,23	2,47	2,23	2,47	2,19	2,44	2,32	2,23	2,36
Organizational	57,3%	2,43	2,37	2,63	2,22	2,48	2,41	2,43	2,24	2,57	2,42	2,87	2,28	2,59	2,66	2,35	2,30	2,74 ***	2,46	2,58	2,42	2,36
Human Resource	53,1%	2,3	2,32	2,38	1,96	2,45 ***	2,34	2,25	2,22	2,35	2,35	2,53	2,04	2,50 ***	2,55	2,19	2,05	2,74 *	2,29	2,53	2,36	2,14
Project Manager	69,8%	2,71	2,66	2,88 ***	2,57	2,76	2,66	2,77	2,78	2,65	2,74	3,00	2,76	2,78	2,76	2,77	2,72	2,83	2,71	2,87	2,68	2,77
Panel B - To what degree each of the following analyses has influenced the economic value of the project?																						
Strategic	94,8%	3,44	3,40	3,54	3,30	3,47	3,52	3,32	3,44	3,37	3,41	3,53	3,36	3,48	3,42	3,44	3,42	3,50	3,46	3,39	3,54	3,27 **
Technical	78,1%	3,06	3,19	2,67 ***	3,13	3,08	2,86	3,32 *	3,27	2,87 **	3,08	3,20	3,12	3,16	2,95	3,27	3,12	3,17	3,13	3,13	3,00	3,27
Commercial	67,7%	2,68	2,65	2,88	2,74	2,73	2,86	2,57	2,67	2,72	2,65	2,73	3,00	2,50 ***	2,63	2,65	2,77	2,52	2,58	2,82	2,74	2,50
Political	19,8%	1,28	1,49	0,75 **	1,13	1,36	1,23	1,45	1,42	1,20	1,29	1,47	1,80	1,13 **	1,42	1,21	1,42	1,19	1,29	1,45	1,23	1,73
Financial	74,0%	2,91	2,91	2,79	2,78	2,98	3,02	2,75	2,93	2,89	2,97	2,80	2,72	3,08	3,29	2,75 **	2,86	3,07	2,90	3,03	2,93	2,95
Social	21,9%	1,31	1,38	1,13	1,22	1,36	1,39	1,25	1,33	1,28	1,32	1,47	1,48	1,28	1,47	1,21	1,44	1,26	1,40	1,37	1,32	1,41
Environmental	44,8%	1,99	2,19	1,50 ***	1,96	2,06	1,80	2,27	2,22	1,80	2,06	1,87	2,28	2,00	2,18	1,96	2,19	2,02	2,08	2,13	1,99	2,00
Organizational	45,8%	1,98	1,99	2,08	1,52	2,18 **	2,16	1,89	1,69	2,28 **	1,95	2,40	1,84	2,13	2,18	1,90	1,86	2,29	2,04	2,05	2,12	1,59 ***
Human Resource	36,5%	1,85	1,81	2,13	1,52	2,05	1,93	1,84	1,62	2,13 ***	1,86	2,13	1,80	1,97	1,97	1,85	1,86	2,12	2,00	1,97	1,96	1,68
Project Manager	44,8%	1,96	1,93	2,17	1,83	2,06	1,98	2,02	2,00	1,98	1,91	2,53	2,12	2,00	1,87	2,12	2,19	2,07	2,08	2,16	2,01	1,95
Panel C - How important was each of the following areas in the decision to implement the project?																						
Strategic	97,8%	3,67	3,72	3,58	3,64	3,69	3,76	3,58	3,72	3,60	3,71	3,47	3,83	3,63	3,57	3,76	3,78	3,63	3,67	3,68	3,72	3,50 **
Technical	79,6%	3,02	3,15	2,63	3,32	2,98	2,90	3,16	3,16	2,91	2,99	3,33	3,42	2,95	2,81	3,28 ***	3,10	3,05	2,93	3,27	3,01	3,00
Commercial	72,0%	2,76	2,69	2,96	2,95	2,77	2,95	2,56	2,65	2,84	2,77	2,67	2,83	2,69	2,78	2,70	2,76	2,63	2,63	2,81	2,79	2,59
Political	16,1%	1,11	1,29	0,63 **	1,09	1,17	0,95	1,35	1,12	1,11	1,12	1,27	1,71	0,90 **	1,24	1,02	1,22	1,05	1,17	1,19	0,99	1,64 ***
Financial	76,3%	3	3,05	2,88	2,77	3,14	3,17	2,86	2,93	3,11	3,11	2,73	2,83	3,18	3,22	2,98	3,00	3,22	3,04	3,14	3,03	2,82
Social	15,1%	1,22	1,29	1,00	1,27	1,25	1,29	1,19	1,23	1,18	1,23	1,40	1,63	1,10 ***	1,30	1,18	1,22	1,29	1,24	1,35	1,19	1,36
Environmental	44,1%	1,96	2,18	1,38 **	1,91	2,08	1,79	2,16	2,09	1,84	2,05	1,73	2,17	1,97	1,97	2,02	2,05	2,10	2,02	2,19	1,88	2,18
Organizational	46,2%	1,97	2,02	1,92	1,64	2,16 ***	2,02	1,98	1,58	2,33 *	1,99	2,20	1,79	2,15	2,19	1,90	1,88	2,32	1,91	2,27	1,99	1,91
Human Resource	32,3%	1,78	1,80	1,83	1,64	1,94	1,79	1,81	1,58	2,00	1,84	1,80	1,67	1,92	1,97	1,72	1,80	1,98	1,74	2,05	1,87	1,59
Project Manager	41,9%	2	1,98	2,04	1,82	2,11	2,10	1,95	2,00	2,04	2,05	2,00	2,08	2,06	2,08	2,02	2,29	2,00	2,11	2,22	2,03	1,82
Panel D - Were the following issues evaluated for this project?																						
	Freq.	%																				
Financial	82	85,4%	85,3%	83,3%	78,3%	87,9%	86,4%	81,8%	86,7%	82,6%	88,5%	66,7%	80,0%	85,9%	89,5%	80,8%	79,1%	88,1%	91,7%	76,3%	88,4%	77,3%
Strategic	92	95,8%	95,6%	95,8%	87,0%	98,5%	97,7%	93,2%	95,6%	95,7%	96,2%	93,3%	96,0%	95,3%	94,7%	96,2%	100,0%	92,9%	95,8%	94,7%	97,1%	95,5%
Technical	80	83,3%	89,7%	75,0%	73,9%	90,9%	77,3%	97,7%	95,6%	76,1%	83,3%	80,0%	80,0%	84,4%	73,7%	90,4%	76,7%	90,5%	91,7%	76,3%	81,2%	86,4%
Commercial	75	78,1%	76,5%	87,5%	82,6%	78,8%	84,1%	75,0%	77,8%	80,4%	80,8%	66,7%	84,0%	75,0%	76,3%	78,8%	79,1%	76,2%	83,3%	73,7%	81,2%	68,2%
Political	42	43,8%	51,5%	29,2%	39,1%	48,5%	40,9%	54,5%	53,3%	39,1%	46,2%	40,0%	56,0%	40,6%	42,1%	46,2%	48,8%	40,5%	45,8%	47,4%	39,1%	54,5%
Foreign	5	5,2%	5,9%	4,2%	8,7%	4,5%	6,8%	4,5%	4,4%	6,5%	6,4%	0,0%	8,0%	4,7%	7,9%	3,8%	4,7%	7,1%	6,3%	5,3%	5,8%	4,5%
Social	39	40,6%	41,2%	45,8%	39,1%	42,4%	43,2%	43,2%	46,7%	37,0%	41,0%	46,7%	44,0%	39,1%	39,5%	40,4%	37,2%	42,9%	50,0%	31,6%	39,1%	40,9%
Environmental	60	62,5%	70,6%	45,8%	65,2%	63,6%	61,4%	65,9%	62,2%	65,2%	67,9%	40,0%	64,0%	65,6%	71,1%	59,6%	65,1%	64,3%	66,7%	63,2%	63,8%	54,5%
Organizational	59	61,5%	66,2%	58,3%	43,5%	71,2%	61,4%	68,2%	53,3%	73,9%	64,1%	60,0%	56,0%	67,2%	63,2%	63,5%	53,5%	76,2%	68,8%	57,9%	65,2%	59,1%
Human Resource	67	69,8%	72,1%	75,0%	56,5%	77,3%	70,5%	72,7%	68,9%	73,9%	75,6%	53,3%	56,0%	78,1%	65,8%	75,0%	58,1%	85,7%	83,3%	60,5%	73,9%	54,5%
Project Manager	53	55,2%	52,9%	66,7%	52,2%	57,6%	50,0%	65,9%	60,0%	54,3%	56,4%	53,3%	64,0%	53,1%	39,5%	67,3%	62,8%	52,4%	56,3%	63,2%	55,1%	54,5%