

DECISION-MAKING PROCESS IN INVESTMENT PROJECTS

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ABSTRACT

We present projects evaluation approaches in what decision should be based. We try to understand what we have to take into account in a project analysis, knowing that we have to consider much unmeasured aspects, like non non-financial areas. We verify how all aspects are used and analysed in the project appraisal. We also desire to understand if companies have adequate tools and methods to correctly analyse and to take decisions in a project evaluation.

In this study we identify several aspects that are able to influence investment projects evaluation and decision-making process. An investment is not a mere financial activity, but involves a diversity of behavioural factors, organizational and business perception, which should be properly adjusted to invest with success. Investment decision-making should take into account non financial aspects, mainly, through some evaluation's format and method. As non financial aspects have an intangible nature, they are difficult to estimate, and cause a subjective analysis to project evaluators, it is important to develop an objective and tangible method that incorporates and quantify all non financial aspects together in project evaluation.

1. INTRODUCTION

The decision making in project investment is not difficult to do when we apply financial knowledge. Traditional financial theory use NPV, IRR and Payback period methodologies in investment decisions. Simultaneously, we can make a project risk analysis using sensitivity analysis and probability analysis. However, cash flow based analysis also present some limitations. Chen (1995) evidence that when the knowledge about new future investment is little, when operational environment forecasts is weak, or when we analyse investments with many intangible and uncertain factors (difficult to measure), the uncertainty and risk increase, affecting the difficulty of operational cash flow forecasts. The discount cash flow criteria frequently under estimate investment opportunities and does not

consider any strategic and other variables, creating myopic decisions and potential competitive losses.

Lopes and Flavell (1998) refer that investment decision is relatively simple in case of only financial criteria are taken into account. However, the decision can be much more difficult to take when we consider other aspects than financial ones. In a way of taking the best investment decision, it is required information about all areas that can influence this decision. It is important to understand how all non financial aspects can be used in project appraisal, knowing that this could not be easily measured in monetary terms.

We have to consider that there are many aspects to be analysed in a project to take a decision. Skitmore at al. (1989), Adler (2000), Chen (1995), Meredith and Mantel (2000), Love et al. (2002) and Lopes and Flavell (1998) present some non financial aspects, in addition to financial aspect, that have to be consider in the project appraisal. Moutinho and Lopes (2010) have summarised the aspects to be analysed in an evaluation investment process as the following: financial, strategic, technical, commercial, political, social, environmental, organizational, and human resource plus management. In one hand, each one of these non financial areas can influence project financial analysis and, in other hand, these areas can provide additional relevant information to the decision making and, in another hand, these aspects can affect the implicit risk through the discount rate. To analyse all this areas together is important to know and understand some methods and tools that allow us to decide which projects to undertake.

The importance of each of these areas of analysis and critical success factors for each of the areas in the projects depends on the companies, projects, management and project manager characteristics.

The best way to analyse a project investment is to take into account all previous non financial areas. However, these financial and non-financial aspects may not take into account information and incentive problems that can emerge in a firm, because decision-making depends of people reports with its own interests and private information about the project. There are other aspects that have to be considered in an investment decision making: management and governance. Thus, in a project appraisal decision making we should also study the project capital structure, the agency problems, the governance and the postponement option.

Specifically, our study has three principal objectives. The main goal is to understand what we have to take into account in a project analysis, knowing that we have to consider much unmeasured aspects. The idea is to identify the important aspects to be considered in a decision-making. The second objective is to verify how all above aspects are used and analysed in the project appraisal. We also present some methods that take into account these aspects in a project analysis. The last objective is to understand if companies have adequate tools and methods to correctly analyse and to take a decision in a project appraisal.

This paper is organized as follows. In next section, we show how various aspects can influence project decision making. In section three we present the research methodology. Section four includes the results analysis about project decision making process. Finally, we present our conclusions.

2. DECISION-MAKING CHARACTERISTICS

Evaluation of Financial Aspects

Investment decision is done at the beginning and it depends of the final value being superior to the total investment. Gitman and Forrester (1977) refer that evaluation methodologies can be considered into two groups. For one hand, project performance is measured with accounting data. Payback period and accounting profit rate are also considered in this group. However, these evaluation methods are inadequate because problems associated with accounting data. In other hand, we have to consider cash flow criteria in project evaluation. The investment decision is measured by Net Present Value, Internal Rate of Return and Index of Profit Value. This second group of evaluation criteria are being more used than the criteria based in accounting dates.

Based in risk analysis, we can obtain information about aspects that affect projects. Many times this analysis is subjectively evaluated by the companies (Kim et al., 1986; Schall et al., 1978; Ho and Pike, 1991). In Portugal, around 20% of companies do not perform risk analysis in the project scope (Rodrigues, 1999). This can mean that companies do not intend to measure risks but identify sensible variables to the risk (Pike, 1996). Despite of these results, Ho and Pike (1991) consider that the use of probability analysis and simulation analysis approaches can offer a bigger level of confidence in final decision.

The risk analysis is done, many times, through adjustments in the discount rate or cost of capital or through cash flows adjustment and use a free risk discount rate (Ho and Pike, 1991; Petry and Spow, 1993). Freeman and Hobbes (1991) and Petry and Spow (1993) show that many companies (47% and 30%, respectively) use the same discount rate for all projects. This is a signal that companies do not pay any attention to project evaluation risk. By the contrary,

Poterba and Summers (1995) assure that companies adjust the discount rate according to the project type.

Evaluation of Non Financial Aspects

The analysis and the incorporation of non financial aspects in decision making can be explored in three perspectives: how non-financial elements of the project are evaluated; the method used to quantify non-financial (qualitative) aspects in project evaluation; and the trade-off policy.

In relation to how non-financial elements of the project are evaluated, we have to consider various factors. Lopes and Flavell (1998) evidence that decision-makers experience in other projects is important for risk evaluation, doing through maintaining records of past evaluations to verify the credibility of management opinion. In other way, to avoid a qualitative evaluation much dependent of persons, of its personal experience and comprehension, companies must create a register of its own past experience and generate checklists of analysis of all aspects. These analyses should be systematic, rigorous and incorporating people from several backgrounds. The examination can be done using external advisors in project appraisal. The qualitative project appraisal should not have a standard-format, but a free-format qualitative evaluation. If projects are incorrectly analysed by management, it is important to define alternative strategies and consider all risks.

Nardini (1997) suggests that for non financial aspects companies can use a multi-criteria analysis of the projects. This analysis presents various advantages: non economic character of its valorisation; abilities to surpass various and conflicting issues; and structure problems of complex decisions, increasing its transparency. Esperança and Matias (2005) present ELECTRE method as the multi-criteria model with more application.

Lopes and Flavell (1998), relatively to the method used to quantify non-financial (qualitative) aspects in project evaluation, state that these methods are much dependent of personal opinions and perspectives. It should have combination between personal analysis and personal opinion, because this provides support information to decisions and influence risk probabilities and its consequences. It is essential good sense for assessment and identification risk factors, as well as assessing effects and risk probabilities. The decisions are justify through discussion of arguments of all aspects analysed in inter-relation. Although it is not well understand in practice, companies can create lists of risk indices, attributing a qualitative weight to each item. The success of these process depend of the personal experience, of the feedback of past projects, of the systematic and detailed analysis of expert support and of the people from several backgrounds and its relation with decision

making. Companies can also create checklists as risk warning to decision-makers.

Nardini (1997) refers that the ideal appraisal process should have: a strength and weakness balance sheet, knowing that the decision is a trade-off between conflicting criteria; comparing alternatives is a prerequisite to obtain a negotiated solution; scenario creation about future that permit to "choose the alternative that, in the most probable scenario, has the best performance"; an evaluation indices on the way to represent quantitative and qualitative impacts (that should permit the construction of an alternative top ranking); an analysis of all different impact category and of each alternative, connecting all affected people, and making all aspects the most quantitative as possible; negotiation as a process of conflict resolution; cost-benefit analysis; and public participation.

As a process to take decisions, Ghotb and Warren (1995) present two methods that study qualitative and quantitative aspects together: Analytic Hierarchy Process is a simple manner to combine qualitative ratings with quantitative measures to obtain priorities for the alternatives; Fuzzy Decision Methodology use common words to make the rating and transform this linguistic variables in fuzzy sets to the subsequent operations. On the other hand, Lefley and Morgan (1998) and Lefley (2000) present the Financial Appraisal Profile model that includes the principal aspects of investment decision making: financial aspects, risk feature and strategic side.

In respect to the trade-off policy, Lopes and Flavell (1998) refer that all risks should be balanced and the company has to verify which can be faced. All great identified risks should have solution, and companies should have established minimum requisites with the goal to maximize the viability of all areas. In this way, the trade-offs has maximum limits (risk company capacity) and practical limits (it is not possible to have the best standards in all areas). Companies have to have very careful with the trade-offs related with the cheapest way (it is need to conjugate the best solution with price, using the price-quality analysis). It is essential to reminder that each project and each industry has its own risks and policies that depends of timing and localization.

Project Capital Structure

Relatively to the way a corporate finance its activity is important to consider that the company's value is affected by the capital structure employed. In this way, we can analyse if there is an optimal capital structure: the one which maximizes the value of the firm. For beyond the importance of investment decision, it is important to know that is very important the way projects are financing. So, the debt policy and financing decisions are important for the project viability.

Agency Problems

Investment decision analysis does not usually consider incentives and information problems that can emerge by the fact that decision depend on the reports of people with its own interests and private information about the quality of the project. Investment decision can be influenced by agency problems and by asymmetric information between the decision makers (management) and capital owners (shareholders). Investment decision distortion can happen because of the misalignment of management and shareholder interests (Jensen and Meckling, 1976; Jensen, 1986), and because information asymmetry between insiders and capital markets (Myers and Majluf, 1984). Both motives become investment sensible to the available resources in the company. Jensen (1986) and Stulz (1990) refer that companies with more cash flow (companies are going to preserve free cash flow instead of pay dividends to shareholders) have more propensity to investment realizations, many times not lucrative – managers over-invest for private benefits. The over-investment increase the agent power through resources enhance under his control and arises, many times, associated to bigger manager's compensation (Jensen, 1986).

Management investment decisions in presence of imperfect information and short term management goals– due to the incentives/compensations and to the fear of loss control – guide to the sub-investment in long term projects and to the over-investment in short term projects (Bebchuk and Stole, 1993; Bohlin, 1997). The threats of hostile takeover and subsequent management unemployment show the way, also, to myopic investments (Knoeber, 1986). On the other hand, Noe and Rebello (1997) refer that managers prefer long term instead of short term projects because of their long-standing in company due to its importance for the success of the project. Bernardo et. al. (2001) show, that in presence of asymmetric information and moral hazard, managers with investment projects of higher quality will receive more payments incentive based than managers of projects with lower quality.

In a project analysis study there is another perspective of agency problem. According to Turner and Muller (2003), the company management (management) faces, basically, two problems in his relationship with the project manager (manager): by one hand, there are asymmetric information because managers has private information; on the other hand, as manager possess his own objectives, can arise opportunistic behaviours that drive to conflicts of interests with management.

In a way of decrease agency problems and for managers to make efforts and really reveal its private information, it should be create incentives to align managers' objectives and should adopt control mechanisms to prevent the opportunism. In respect to incentives, contracts can be based on results and on behaviour. The incentive contracts can be by sharing ownership and by

stock options (Jensen and Meckling, 1976; Fama, 1980). It is also important to improve the circulation of information, with implementation of a complete information system, to increase managers' actions and results under monitorization (Turner and Muller, 2003) and to impose penalties for lower performances obtained, as manager unemployment and/or reputation reduction, that has negative impact in manager future career opportunities (Jensen, 1986).

Governance

For beyond agency problems, also governance can pressure investment decisions. Malmendier and Tate (2005) evidence that CEO characteristics can create distortions in company's investment policy. Such as in Heaton (2002), this study show that distortions can be the result of too confident management and over estimation project returns by managers, mainly when they have free cash flow. There are some CEO characteristics that can pressure investment decision making: education, experience (career area), birth generation and position accumulation (CEO and chairman). Lundstrum (2002) evidence the relation between manager's age and its company investment decision. Chakraborty et al. (1999) show, also, that CEO compensation uncertainty has negative effect on investment level of companies.

Jensen and Meckling (1976) argue that ownership structure affects firm value by its effects in investment. Mork et. al. (1988) refer that the owner assumes management functions because of the firm value. Although ownership structure influence investment and firm value, Cho (1998) concludes that ownership may do not have an effective incentive mechanism on the way to encourage management to higher value investment decisions.

Real Option Use

One of the main elements that influence the expectations in investment decisions is the available information and its interpretation. Some times it is necessary to wait for more information because we need to reduce investment uncertainty and risk and because of the possible net present value future volatility. Carruth et. al. (2000) refer that uncertainty increase the postponement real option value. The investment decision can be postponed to wait for new information about market conditions.

In case of an irreversible investment, companies should consider the option of do not invest in that moment. The possibility of wait for new information can influence the arrangement or the moment for investment (Dixit and Pindyck, 1995). Considering the permanent reality change daily faced by companies, new information obtained can force strategic modification as adaptation to the market, with the goal of cash flows maximization. Thus, companies can choose several

kinds of real options: postponement; abandonment; change; dimension alteration; growth; combined.

As owners delegate investment decision option in managers, these have power to take such decision. In this way, the agents will have an option for choose the moment of the investment. Managers will have postponed options with more value than the owners (Grenadier and Wang, 2005).

Other Factors

Other factors can influence project investment decision making. Papadakis et al. (1998) present some factors that influence strategic decision making process, namely the investment decision. This study identify the following decision elements: specific characteristic of decision (nature of strategic decision and characteristics of decision process); demographic characteristics and CEO personality (need of conquests, risk attitude, CEO tenure and CEO education); top management team characteristics (grade of aggressiveness, dynamic or hostile environment); external environmental context (heterogenic, dynamic or hostile environment); and internal environmental context (intern system, performance, dimension and company control).

Bruijn and Heuvelhof (2002) refer the importance of all stakeholders, considering its different perspectives and interests, with the goal of considering different viewpoints, driving to an improvement in the quality analysis and in the decision-making.

Slattery and Ganster (2002) evidence management decisions as decisions where the effective consequences of subsequent choices are influenced by the results of past decisions. The effect of previous decisions that cause unsuccessful (success) can drive to less (more) risky decision-making later. With such uncertainty level and dynamic environmental decisions, risk taking can be determined by an affective process that change the profits and losses values and by a cognitive process that determines his level of confidence.

It is still important that project decision maker has attention to the following factors: create levels of decision and intermediary trade-offs, avoid emotional decision-making, promoting rational debates and avoid the domain of arguments by the persons of strong character. The best decision makers are humble, are not presumptuous and are conscious that is difficult not to be emotionally involved (Lopes e Flavell, 1998).

3. METHODOLOGY AND DATA

The data for this study were obtained from a questionnaire sent to larger Portuguese companies in 2005. This questionnaire is the same used in Moutinho and lopes (2010). It was received 96 responses to the questionnaire, representing a response rate of 9,6%. Although we do not know the identity of the survey respondents, we do know some firm characteristics, as discussed below.

In our survey 39,4% of firms are in the manufacturing industry, 25,5% in the commercial sector and 17% are in transportation / energy sector. We verify that nearly half companies that implement projects have sales between 10 and 50 million thousand euros and 30% has sales superior to 100 million thousand euros. In respect to firm's total assets, 45% has until 36.245 thousand euros and 33% has more than 96.810 thousand euros.

We observe that 40% of projects are expansion investments, 32,7% are modernization investments and 13,8% are substitution investments. The project is implemented during 12 months and during a period superior to two years for 34% and 40% of companies, respectively. The investment amount vary as follow: 43% is inferior to 2,5 million thousand euros; 23% of companies invest between 2,5 and 7,26 million thousand euros; and, 35% invest an amount superior to 7,26 million thousand euros.

Relatively to CEO characteristics, we verify that 45% has between 46 and 58 years old and a majority (50%) has lot of experience as chairman of the board. We observe that in 45% 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%). We can also observe that 72% of project managers have no more than 50 years old.

4. PROJECT DECISION MAKING ANALYSIS

Evaluation of Financial Aspects

Project analysis has to consider traditional analysis taking into account not only sophisticated and unsophisticated analysis methods, but also risk analysis. Moutinho and Lopes (2010) report that IRR is the most important evaluation method. The companies also consider the net present value, the scenario analysis, the payback period and the ratio benefit/cost. The order of these results is similar to the results found in the Graham and Harvey study. In opposite, the evaluation techniques less important are breakeven analysis, simulation risk analysis, accounting rate of return and real options.

Evaluation of Non financial Aspects

Apart from financial analysis, it is need to consider all non financial aspects, which are difficult to measure. Moutinho e Lopes (2010) present the most important perspectives of analysis in a project appraisal. They evidence (see Table 1) the importance of the analysis of various non-financial aspects and show how some of those aspects have a greater relevance than that attributed to the financial ones.

The strategic and technical aspects stand out as the most relevant issues. The financial aspects are considered only in the third place of importance, together with commercial analysis. The least relevant areas were the social and political ones. The study also analyse the

environmental, the organizational, the human resource and the project manager area. In a way of doing non financial analysis, we have to know how this knowledge is integrated in a global investment analysis.

Table 1: Project Investment Analysis Techniques

What is the importance of each of the following areas in the project's valuation?	% Import and very Import	Average
Strategic	91,7%	3,45
Technical	86,5%	3,28
Commercial	75,0%	2,9
Political	20,8%	1,47
Financial	75,0%	2,97
Social	33,3%	1,8
Environmental	55,2%	2,3
Organizational	57,3%	2,43
Human Resource	53,1%	2,3
Project Manager	69,8%	2,71

Source: In Moutinho and Lopes (2010)

Analyzing Table 2 we observe that companies choose, as main tools of non financial aspects evaluation, the incorporation people from several backgrounds (43,8%), the free-format qualitative evaluation (39,6%), the experience of evaluators/decision-makers in other projects, collected by several companies (36,5%) and the using of external advisors (35,4%).

Table 2: Evaluation of Non-Financial Elements

N=96	%
Free-format qualitative evaluation	39,6%
Checklists of analysis of non-financial aspects	31,3%
Past experience in risk assessment, gathered by several companies	24,0%
Maintaining records of past evaluations	20,8%
Experience of evaluators/decision-makers in other projects	36,5%
Using external advisors	35,4%
Incorporating people from several backgrounds	43,8%
Considering management's errors of judgement in non-financial evaluation	4,2%
Considering management's errors of judgement in risk assessment	5,2%

Relatively to incorporation and quantification of non financial aspects used, from Table 3 we observe that companies has preference for discussing and assessing favourable and unfavourable factors to the project's execution (77,7%). There are still others methods that deserve company's emphasis: coordinated analysis of financial and non-financial aspects (55,3%) and identifying risk factors and assessing effects and risk probabilities (51,1%).

Table 3: Methods used to quantify non-financial (qualitative) aspects in project evaluation

N=94	%
Identifying risk factors and assessing effects and risk probabilities	51,1%
Discussing and assessing favourable and unfavourable factors to the project's execution	77,7%
Coordinated analysis of financial and non-financial aspects	55,3%
Requesting opinions from each area and verification of consistency with the company's	35,1%
Creation of lists of risk indices, attributing a qualitative weight to each item	6,4%
Attributing positive and negative considerations to	13,8%
Dividing factors into levels of importance for subsequent evaluation	5,3%

Project Capital Structure

In a project analysis is always important to consider how to finance. Companies that answered the survey refer that their projects are, on average, 62% financed by equity capital and 38% by debt. As debt financing companies use bank loan, public financing, leasing, venture capital and financing of European Investment Bank. In our sample companies do not choose equity capital through going to public but they perform new capital through capital increased for project financing. In what respect to the discount rate used, Moutinho and Lopes (2010) evidence that the company's cost of capital and the project's cost of capital are the most used. These methods appear in the same order of use like in Graham and Harvey (2001) and in Brounen et al. (2004).

Agency Problems

When investment decisions are delegate to managers, contracts should be designed with the goal of provide incentives for management to make efforts and reveal its private information.

As it can be verified on the Table 4, around half of the managers have lot of experience in project management (more than four) and more than half of managers have fixed reward as compensation form – his normal salary. Managers do not earn on the basis of more elaborate compensation plans. However, some companies built different compensation forms as the following cases: reward associated with goals for each stage, reward associated with the percentage of completion and reward associated with the conclusion of the project.

Governance

It is also important to know who takes investment decision-making to identify how influence is exercise in respect to several stakeholders, to be exact the internal stakeholder. The investment decision making is able to

influence firm value and ownership structure may have an effective incentive mechanism on the way to encourage management to higher value decisions.

Moutinho and Lopes (2010) finds that companies' management is the main project implementation decision maker. They have identified others stakeholders that take this decision, however companies' management is, from far away, the main responsible by the decision. Portuguese companies have also appointed shareholders, chief of financial officer, project manager and commercial director as investment decision-maker.

Table 4: Management Compensation

Panel A - Experience in Project Management (N.º Projects)

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

Panel B - Compensation's Form of the Project Manager

N	% of completion	goals for each stage	Fixed	Other	No One
86	2	12	49	16	7
	2,3%	14,0%	57,0%	18,6%	8,1%

Real Option Use

Given the permanent reality change daily faced by companies, new information obtained can force strategic modification. Companies could have to wait for more information because of investment uncertainty and risk. Thus, companies can choose several kinds of real options.

In respect to real options analysis, less than half of the companies use this methodology. Of the companies that use this technique, Moutinho e Lopes (2010) verify that they take in consideration, preferentially, the implications in future projects, changing inputs and changing outputs. Although we verify that "little importance is attributed to real options in project appraisal, we also confirm that these options are considered in the process of analysis. This might mean that firms do not consider the real option methodology in a conscious way" (Moutinho and Lopes, 2010).

Other Factors

There are other factors that can influence project investment decision making. Thus, we seek for issues that influence decision maker and project's goals with the aim of identify features that we do not have focus in the other aspects cited above. We verify dispersion and diversity of critical factors, as well as identify factors of several areas of analysis in this study.

From Moutinho and Lopes (2009) we verify that various non financial aspects were considered critical in project

evaluation. The issues with more relevance to project are the technical, strategic and financial aspects, followed by other non-financial aspects. Further than financial and non financial areas, companies mention "deadline", "quality", "customer's satisfaction", "quickly implementation" and "partnership with costumer".

5. CONCLUSIONS AND FURTHER RESEARCH

In this study we identify practices of companies in investment projects decision-making. Given the limitations from the use of traditional evaluation techniques in project analysis – resultant of non incorporation of subjective, intangible, and qualitative nature aspects – we remain that others factors can affect the projects' implementation. So, an investment is not a mere financial activity, but involves a diversity of behavioural factors, organizational and business perception, which should be properly adjusted to invest with success.

Investment decision-making should take into account not only the traditional evaluation criteria, but also non financial factors, through incorporation people from several background, free-format qualitative evaluation, experience of evaluators/decision makers in other projects, the uses of external advisors and create checklists of analysis of non-financial aspects. As method for incorporation and quantification of non financial aspects in the project evaluation, companies mainly choose the discussing and assessing favourable and unfavourable factors to the project's execution, a coordinated analysis of financial and non-financial aspects and identify risk factors and assessing effects and risk probabilities.

Non financial aspects have an intangible nature, are difficult to estimate, and cause a subjective analysis to project evaluators. In this way, investment decision-making only reflects, often, financial techniques. In that sense, it is important to develop an objective and tangible method that incorporates and quantify non financial aspects in project evaluation. Therefore, it is important to analyze various methods, and its application to the projects, which help in the decision-making as the Analytic Hierarchy Process, the Fuzzy Decision Methodology, the Financial Appraisal Profile, the multi-criteria analysis, the ELECTRE method and the cost-benefit analysis. Due to the influence of risks in cash flows adjustment and discount rate, it is important to build a model that is going to identify and evaluate risks of non financial nature in a structured way.

For beyond the areas referred above, there are another five aspects that can influence the feasibility of the project and the investment decision making. First, the project financing is, mainly, made with equity capital (that can influence the discount rates, the debt fiscal advantages, the agency and bankruptcy costs, as well as the management and stockholders attitude with the

project). Second, managers are not reward with advanced compensation plans, but on the basis of their normal remuneration. This can influence their efforts with the project, given their interests are potentially different from the company ones. Third, the project implementation decision is taken, mainly, by the companies' management. Fourth, the investment postpone decision can be important with the purpose to obtain more information. The use of real options methodology can be relevant for project value. However, implications in future projects, changing input and changing outputs are the most relevant options for the companies analyzed. Finally, there are diverse critical success factors from several areas.

In this sense, are company's correctly analysing projects? Are companies really making rational investment decisions? Are companies taking all aspects of projects into the appraisal process? Do companies need to change the way they evaluate projects? Maybe companies need to reformulate the techniques that they use to make investment decisions. Maybe real options can help them to understand the non-financial aspects in this context, but is it enough for company's decision? Are Analytic Hierarchy Process, Fuzzy Decision Methodology, Financial Appraisal Profile, multi-criteria analysis or ELECTRE method the best evaluation methodologies to analyse an investment project?

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