

S-PEREIRA DIAMOND: BENEFITS REALIZATION MANAGEMENT

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Abstract: The development and need for new projects created new business models which are a key asset to provide a competitive advantage. This research paper presents a new and intuitive model to assist business managers and decision-makers to make better decision of investment projects. This model provides a methodology and principles to assist organizations in estimating and evaluating their projects benefits to apply in different Business Case's, namely for projects with economic and social impacts from different business areas. This model can be applied from several organizations (private sector, public sector, or NGO) which may aim to leverage business value or generate more social value. In this case, this model has been applied to several companies from different organizations. The results obtained have provided, to the different companies from the different sectors, a great efficiency based in the model and its predictive power. Thus, this model is able to provide several benefits.

1. INTRODUCTION

1.1 Scientific Business Case

A business case consists of a decision-making tool to determine if an investment can generate profit, according to the BCBoK® Guide (BCBoK, 2015). Usually, it consists of a well-structured paper stating the expenditure goal followed by the calculation of market impacts (benefits) and costs in order to assess whether the assessed decision will be successful. This guidance further notes that a business argument should be free of non-validated claims, based on a fair and unbiased process backed by techniques of business science to validate cause-effect relationships between the phenomenon's (BCBoK, 2015).

According to Mcvey (2014), a business case is assumed to be part of the due diligence that the business case reflects, assessing the investment's gains, expenses, and threats. The business case evaluates and assesses the solutions required to address the business dilemma. The business case offers an incentive for the corporation to decide whether a proposal is warranted and whether the enterprise profits from the solution choices. Mcvey (2014) also indicates that a successful Business Case may be accomplished through both qualitative and quantitative analysis techniques, by describing if the solution is feasible and financially viable while meeting business goals. The business case is important since it is also based in the current and desired capability levels to simulate the expected behaviour of selected performance outcomes (Rodrigues et al., 2019) for a certain case.

1.2 Business case: State-of-the-art

When talking about project expenditure (Zwikael et al., 2012), assessing project performance is a topic that still needs a few changes as the quality of the operation, notably, is still dominant in time, budget and reach instead of efficiency through the generation of organizational benefits. In other words, this implies that most project concepts and methodologies still neglect a related dimension which, during the project management period, benefits realization (Müller et al., 2007). Project

management experts and accessible research also rely heavily on project execution (project management), which ends up neglecting the expected advantages of the projects (Ashurst et al., 2008).

A research by APM Benefits Management SIG (Specific Interest Group) published in September 2014 conducted a questionnaire survey to find out how benefits management is viewed in the companies under which its participants operate. The bulk of respondents were based in the UK and worked in a wide variety of sectors of business. One of the questions was: "By widening the focus to the whole organization, to what extent is benefits thinking integral to the wider approach to management, from strategy to operations?" to which 40,5% answered it is "weak benefits focus" plus 23,8% as a "very weak benefits focus". The survey report also notes that "examples of how to benefit management could fit within the overall approach to organizational change and project/program/portfolio management need guidance and best practice examples". These authors also noted that benefits practices cannot be a "one size fits all" approach, but instead needs to be tailored to different contexts, especially when considering different nature of businesses (different types of organisations and industrial sectors).

The use of the Return on Investment (ROI) methodology in the business case is widely applied. To obtain the ROI is calculated the ratio of the net present value of benefits and the net present value of costs using the formula (Gargani, 2017). The ROI includes all arguments and methods that are tangible, such as measurable in terms of costs, benefits, profits and revenues (Krishnamoorthi et al., 2018). Since excessive expenditures and needless costs need to be minimized to keep the company lean, executives are calling for an ROI forecast in advance (Philips, 2011). These figures indicate that the need for profit management is recognised and that there are very few steps to systematically pursue and incorporate a culture of benefits management in investment decision-making and tracking.

1.3 Economic ROI

Regarding economic ROI evaluation there are a few methodologies developed to date such as the Gateway Review Process (GRP) which have been assisting in the successful delivery of projects, programs and policy in several countries. The Australian public sector (Australian Government, 2009) is a perfect example of a successful case. The other methodologies are the Guide to Cost Benefit Analysis of Investment Projects published by the European Union (EU, 2008) and The Green Book, published by the UK Government (National Audit Office, 2003) and the ROI Methodology™ (ROI Institute, 2008) which is a North American-type methodology, whose mission is to help managers to assess the contribution of each decision to create wealth, value and corporate sustainability, by applying the main business techniques in the evaluation of investment projects. The purpose of each model:

The Gateway Review Process (GRP) is composed of 6 critical stages which aim to provide timely advice to the Senior Responsible Owner (SRO) (the person in charge of a project or program). This methodology provides the SRO with an independent view on the current progress of the project or program and evaluates whether it can proceed successfully to the next stage.

Regarding the Guide to Cost Benefit Analysis of Investment Projects (EU, 2008) it aims to support managing authorities, public administrators and their advisors in the Member States, when they analyse project ideas or pre-feasibility studies at an early stage of the project cycle. It consists of 6 main steps.

The Green Book (National Audit Office, 2003), published by the UK Government is a guiding document created to assist public sector bodies, departments and executive agencies in the appraisal and evaluation of public investment through several techniques and issues that should be considered when carrying out public project assessments. It aims to make the appraisal process throughout government to be more consistent and transparent.

The ROI Methodology™ (ROI Institute, 2008) is a

North American-type methodology, whose mission is to help managers assessing the contribution of each decision to create wealth, value and corporate sustainability, by applying the main business techniques in the evaluation of investment projects.

All the referred methodologies have been developed and tested in several contexts and suffered improvements throughout the last few years. They have proven to guidance documents mainly oriented for projects from the public sector and supported several decision makers on investment appraisals.

However, there is a lack of information about how to formulate the initiative's benefits in a more detailed and guided way which is critical to assure the correct benefits quantification leveraged by the future project. Therefore, this paper aims to provide a deeper comprehension and guidance regarding the benefits modelling process to support any business case professional to be successful.

1.4 Social ROI

According to Social Value UK (Social Value UK, 2016), social value consists of the value experienced by stakeholders through the changes in their lives, where some of those benefits are not captured based in market prices. Social Value UK, also states how important it is to measure and manage social value from the perspective of those affected by an organisation's work. The SROI is a form of evaluation that offers answers to these questions of evaluation design, intent and utilization (Yates et al., 2017).

Social Return on Investment aims to measure social value (value that stakeholders experience through changes in their lives). Organisations that have social objectives will want to know if they are achieving these objectives. SROI is a method that can help organisations design systems that ensure they have the information they need.

This information can help in developing strategies to increase the social and environmental value you create, manage activities by comparing performance against forecasts and help communicate with funders and beneficiaries (Guide to Social Return on Investment, 2009).

According to the Guide to Social Return on Investment and Social Return on Investment Position (2010), there are seven principles of SROI:

1. Involve stakeholders – whoever is a beneficiary or is involved in the initiative should be involved in the benefits planning (in what gets measured and how).
2. Understand what changes for those stakeholders – identify and explain the rationale of change as well as gather evidence of positive and negative change.
3. Value what matters (also known as the 'monetisation principle') – Need to recognize the values of stakeholders, in which value refers to the relative importance of different outcomes and it is informed by stakeholders' preferences.
4. In order to evaluate SROI, decide what facts and proof must be included in the accounts in order to provide an accurate and equal view, to establish the assumptions about the effect of the initiative.
5. Do not over-claim – make sure the results (value) presented reflect the values from the activities responsible for creating them, and no more.
6. Be transparent – when making benefits estimation (ex-antes) and measurement (ex-post) demonstrate the basis and rationale used for the analysis, to support an accurate and reliable process.
7. Verify the result – in order to avoid biased data or subjectivity, ensure an impartial team/individual checking the results to bring independent assurance.

According to the Guide to Social Return on Investment, when making investments, the manager may need to prove its value to others. This may be regarding a social enterprise, a public authority, a business and investor or even a charity. Typically, most public, private and third sector organizations do care and control closely the costs they do, such as through annual accounts, management accounts, budget reports and a whole accountancy profession to make it sure it happens. Although some organizations are

somehow proficient on counting what they do with these resources, just a few can explain in a clear way, why all matters and the real value delivered. Social Return on Investment aims to redress the balance by looking at value and not just cost (Guide to Social Return on Investment, 2009). According to this guide, it is critical to measure and value the things that matter. That requires the clear and accurate identification of the metrics that better represent the outcome under analysis.

Also, in order to be capable of calculating the ROI, we would need to know the actual numbers of the indicator under analysis before and after the intervention (BCBOK, 2015). In regard to data collection this may be through existing sources (internal or external) or through new data collection (ex. Primary data collection: interviews, focus groups, workshops and seminars, surveys).

Another principle when counting SROI is not to double count outcomes, otherwise it is not reflecting a trustworthy result of the reality. Furthermore, when estimating future benefits, it is important to establish how long the outcomes last. In general, the time scale used is the number of years that the gain is supposed to last following the intervention, meaning the length of the result or the benefit cycle. In order to define this timeframe, it is important to have a longitudinal data to support the outcome duration. The longer the period, the more likely it is that the test will be influenced by other variables and thus less accurate.

It is important to note that sometimes the department/entity investing is not necessarily the one that makes the final saving. For instance, the central government may benefit from costs savings which resulted from a local government initiative (e.g., Prison savings from reduction in crime) and vice versa. Therefore, it is important to separate out the stakeholders impacted by the initiative to avoid any confusion and help with the communication.

Having all the information collected, the goal is to calculate the financial value of the investment and the financial value of the social costs and benefits. Some economic indicators recommended are: ROI%

(return on investment), NPV (Net present value) and Payback period. When making a business case to estimate future benefits in order to support a decision making today, there should also be conducted a sensitivity and risk analysis where it is possible to test which assumptions have the greatest effect on your model and the probability of each economic metric occurrence (BCBOK, 2015).

Although nowadays, SROI is a measure gaining more relevance across organizations when making investment decisions, it is important to be aware of its limitations:

- Some benefits important to stakeholders, cannot be monetized, hence considered intangible. An overview of the SROI can be used as a mechanism for investigating the social effect of an enterprise in which monetisation plays a significant but not exclusive role (Social Return on Investment Position, 2010).
- Focus on monetisation: Although quantifying in economic terms the social impact, it is crucial to follow the rest of the process (Arvidson et al., 2010). Furthermore, an organization must know about its mission and values to understand how it may make an impact, or in other words, how to change the world “what it does and what difference it makes”, otherwise it risks choosing inappropriate indicators, including SROI calculation.
- Needs considerable capacity: SROI analysis requires time and resources (Millar et al., 2012; Basile, 1996)
- It is most easily used when an organisation is already measuring the direct and longer-term results of its work with people, groups, or the environment.
- Some outcomes not easily associated with monetary value such as, increased self-esteem, improved family relationships, cannot be directly associated with a monetary value. In order to incorporate these benefits into the SROI ratio proxies for these values would be required. SROI analysis is still a developing area (Arvidson et al., 2010).

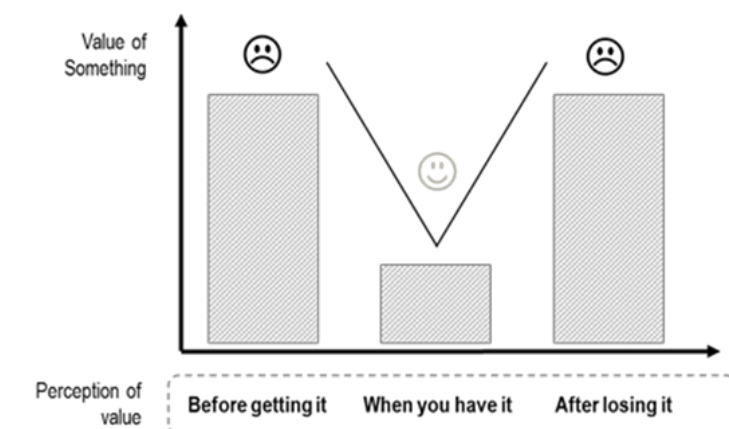
2 CONCEPTUAL MODEL

2.1 Pereira Diamond Model

The following model “Pereira Diamond Model” relies on the scientific management principle. In other words, in order to pursue a logical, objective and unbiased method, when evaluating under the same condition/conditions, the Business Case should have the ultimate goal of having two distinct individuals to achieve the same or very similar estimate of performance.

The root of a project within an organization is limited by the four possible dimensions shown in Fig. 2. These four dimensions are presented as the key causes of the birth of a project by Pereira Diamond Model. But first of all, it is important to bear in mind the concept of the worth of something, which is determined by the effect of having or not having or missing something, in order to define the potential benefits to be calculated (and to calculate in the future ex-post). The **Figure 1** illustrates how the understanding of worth shifts based on having or not having something:

Figure 1. The Value of Somethings (by the authors)



The calculation should be based on the economic value produced and not on a financial perspective when performing a business case to determine the feasibility of a project (e.g. Liquidity level; Repayment schedule of external financing over the years, depreciations).

Each of these dimensions can consider various scenarios depending on the problem that will be resolved or mitigated in order to instantiate and coordinate the benefits of the initiative under consideration. The following image (Figure 2) illustrates the levels of benefits within each dimension which are the main possible ways to achieve each dimension:

- **Business Increase** - When talking about increasing business (business sales) and consequently the company's revenue, then the project is connected to the "outside" (market). The project may contribute to it through one or more of the following: Increase market share; Increase cross-selling; Increase up-selling; Increase customer loyalty.

- **Costs Reduction** - The key objective of the program in the cost reduction dimension is to achieve an efficient reduction in the company's expenditure (cost) account.
- **Efficiency Increase** - On the contrary, projects under the productivity dimension do not have an economic or financial effect or, in other words, a direct impact on company expenditure (cost) accounts. Instead, they have an effect on human abilities by optimizing time-releasing processes.
- **Legal Compliance** - Legal enforcement projects are such projects that seek to comply with regulatory bodies and/or policy group guidelines for organizations.

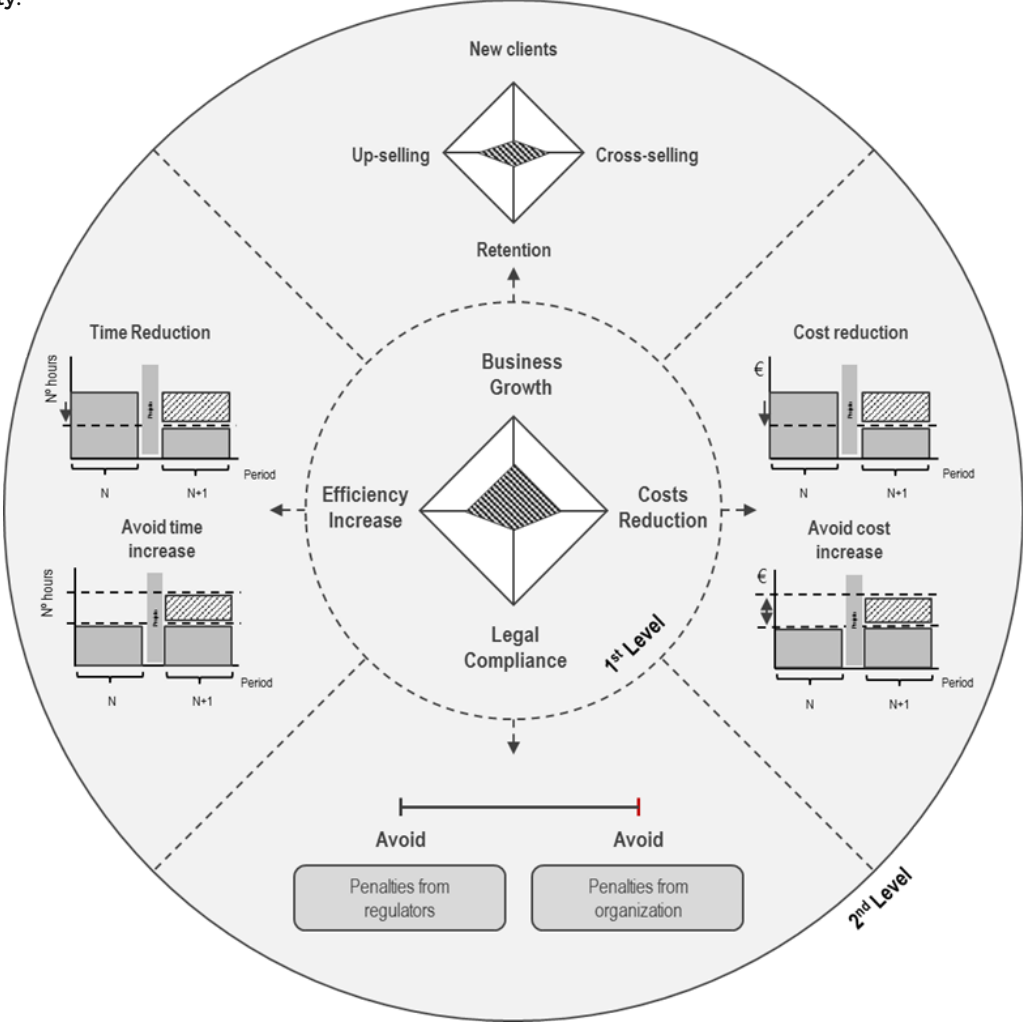


Figure 2: Pereira Diamond - 1st and 2nd levels (by the authors, 2018)

2.2 Pareto Law

According to the Pareto principle, known as 80/20, 20% of the key benefits produced (ideally up to 3 benefits) should be taken into account in the expected return on investment, as they reflect 80% of the value generated. This theory also creates allocations to enhance the uniform balance of markets and provides a new price discrimination strategy (Tremblay, 2019). The remaining benefits should therefore be listed as intangible because of their residual weight and the limited contribution made in the final decision when determining whether or not to continue with the introduction of the initiative. The theory of Pareto became popular as the "80/20" law, which states that 80% of the outcomes would be accounted for by 20% of the known variables (Basile, 1996), which was the outcome of Juran's observations and writings, a "pioneer in the development of principles and methods for managing quality control programs" (Juran, 2001). **Figure 3.**

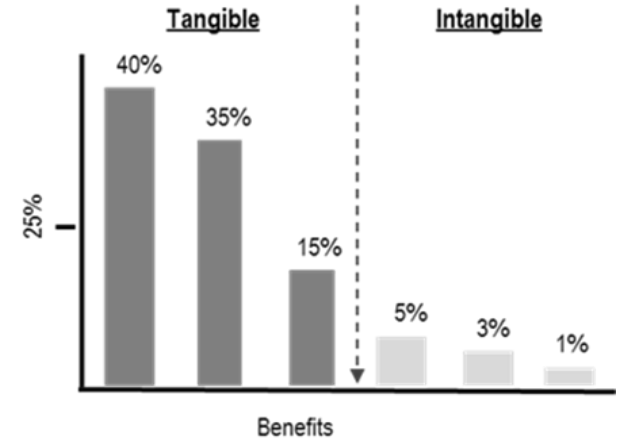


Fig. 3. Example Pareto Histogram (by the authors, 2018)

2.3 S-Pereira ROI Model

proposed S-Pereira ROI Model relies on a scientific management approach where it is aimed to assure a cause-effect relationship in the value proposition under analysis. This model aims to provide the main sequential steps when pursuing the S-Pereira ROI calculation, namely, the benefits model where presents the four

dimensions of benefits impacts that a project may leverage. This framework also considers a clear diagnosis previously to benefits identification to assure that the business case specialist undertaking this analysis, clearly states the problem to be addressed.

How can I know what the best solutions are if I am not aware about the problem? It is critical to understand the overall problem we seek to solve, the impacts (social and economical) this problem is generating and most importantly, understand why it is happening. This problem-solving exercise assists on identifying the "how", or in other words, identifying one or more alternative solutions to solve a specific need/problem or opportunity.

Problem-solving exercise: There is a hypothetic problem that is intended to be solved. The problem impacts should be identified, both social and economic, by measuring the according to KPI's. After this, the main root causes should be identified. Several techniques could be used to know more about root causes, for example, interviews observation, surveys, historical records, among others. The solution appears by fitting the identified causes. The benefit should be the opposite of the problem impacts identified. Based on the Pareto Law principle, it should be identified up to 3 main benefits.

Which type of benefits can be leveraged? An organization (namely a non-profit oriented) may intend to implement a project which may have internal impacts (to its own organization) or external impact.

Regarding the internal impact, as presented in figure 4, may have cost reductions, efficiency increase or legal compliance. When identifying a solution benefits with external impact, there are 4 types of social impact benefits that may be leveraged (see figure 4):

- **Health** (e.g.: avoid or reduce the number of human losses or diseases) - Drug prevention; Disease prevention; Mental health

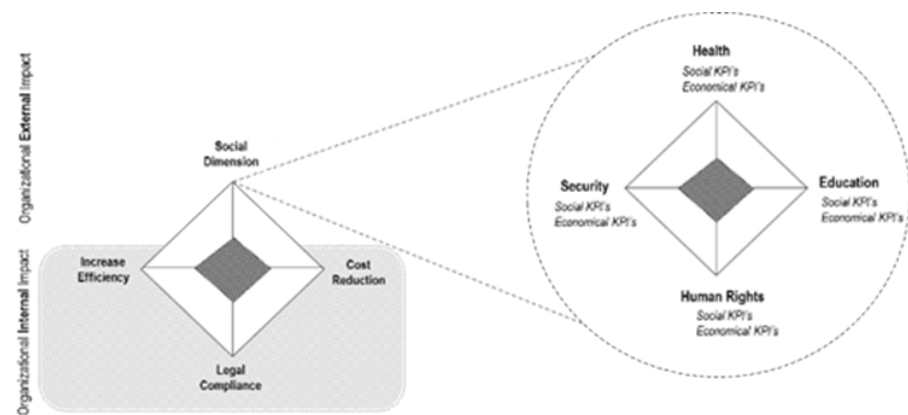


Figure 2: Pereira Diamond - 1st and 2nd levels (by the authors, 2018)

- **Education** - Increase population culture; Development in science; Increase scholar level; Increase employment level
- **Security** - Food security; Crime prevention; Accidents prevention: car, fluvial, trails and air; Economic Security
- **Human Rights** - Humanitarian Aid; Homeless support; Gender human rights (labour wise)

Social benefits are not possible to quantify economically by themselves, for instance, how much is worth saving 100 lives? Although we cannot value how much a human life is worth, it is possible to identify which costs the Government may save according to each life saved. Therefore, the next step is to identify which are the economic impacts generated with that solution. Fig. 2, presents the 4 main dimensions for economic benefits: business growth, reduce costs, increase efficiency or legal compliance. Typically, projects with social impacts, generate economic impacts in terms of costs and time reduction or reducing current costs and increasing efficiency.

For example: by avoiding an average of 100 human lives losses, which economic impacts may the Government get? Avoiding costs with human losses (ex. Courts, morgue, health centre). Having these metrics collected (such as average cost per death), it will be possible to take the next step: calculating SROI

by identifying Social KPIs (non-economic indicators) plus Economic KPIs (economic indicators linked to the social KPIs).

2.4 S-Pereira ROI Model Application

These will be presented under the problem-solving model.

Issue under analysis: Criminality in neighbourhoods.

- Impacts (three main impacts identified): First, High level of the n° of human lives losses; Second, High costs associated with human losses (voluntary and involuntary) and third, High custodial/penitentiary costs.
- Causes (three root-causes associated with this specific problem): First, massive house construction causes a higher population concentration which is socially homogeneous; Second, lack of policing efforts and as third, social inequalities exclusion and poverty.
- Solution (to counter the root-causes identified): Support Program and Family prevention living in Social Neighbourhoods (more policing efforts, more monitoring, more funds for family support and more society integration).
- Benefits (to counter the impacts of the actual problem): First, reduce n° of human lives KPI= After project - Before project; Second, costs reduction associated to human losses (courts, morgue, health care) and third, costs reduction by the decrease of n° of prisoners linked to this type of crime.

Data collection:

- The assignment of values to each metric comes from the data collection according to the Benefits Planning where we identified the source and collection technique. The values must depend on the process and not on who runs it, to ensure the most impartiality and accuracy to the study.
- Benefit 1 (Social KPI): N° human deaths (before project) - N° human deaths (after project) = N° of avoided human deaths
- Benefit 2 (Economic KPIs): N° of avoided human deaths; Average cost per criminal case in court (with resources costs); Average cost linked with human deaths (morgue and related services); Average cost associated with health centres/hospitals (overnight hospital costs and/or medication)
- Benefit 3 (Economic KPIs): Average cost per detention; Average cost per prisoner; Number of avoided prisoners

For each metric, it is essential to identify the data sources (who provides: Ex-Funeral Home, Hospitals, criminal record) and the technique (under three types of methods: historical methods, interrogative methods or experimental methods) to estimate the future results.

Costs Estimation:

In this step, there should be identified the components and tasks required for the solution development and implementation.

The costs should include: Initial Investment (one-shot investments); New operational costs (new costs per year due to the new project).

Sensitivity and Risk analysis:

To make a decision about whether or not to invest in an initiative, the economic benefits identified should pursue a sensitivity and risk analysis. The Sensitivity analysis methods are helpful to provide guidance on the reliability of a model and its predictions (Awad et al., 2019).

According to Guide to Cost Benefit Analysis of

Investment Projects (EU, 2008), the recommended method is the Monte Carlo Simulation due to its capabilities to model uncertain data (Sharma et al., 2019). Also, according to the European Commission (2008), sensitivity analysis "allows the determination of the critical variables or parameters of the model, which variations (either positive or negative), will have the greatest impact on a project's financial and economic performance". That analysis is carried out by varying one element at a time and determining the effect of that change on IRR or NPV or other economic indicators. The method consists of the repeated random extraction of a set of values for the critical variables, taken within the respective defined intervals, and then calculating the performance indices for the project (FRR or NPV) resulting from each set of extracted values. The most helpful way of presenting the result of Monte Carlo analysis is to express it in terms of the probability distribution or cumulated probability of the FRR (Financial Rate of Return of the Investment) or the NPV (Net Present Value) in the resulting interval of values (EU, 2008).

What happens if they change these assumptions (variables)? Which assumptions are most critical in monitoring results? In the results, which variables have less impact? The risk analysis allows the likelihood of various outcomes to occur to be calculated in order to complement the sensitive analysis details. The risk analysis allows the questions to be answered (Schmidt, 2009): How likely is the most probable?; How probable are the other outcomes of the financing? Can something happen which would yield very different outcomes?

Figure 5 and **figure 6** provide graphical examples of probability and cumulative distribution for NPV.

If the goal is to measure the benefits obtained from a past project, then the same problem-solving formulation should be applied in order to identify the metrics for measurement. In order to be possible to collect the ROI of the initiative this will require to have had collected the data (or get historical methods) to collect the scenario before the Project and collect the according to results during the project exploitation period.

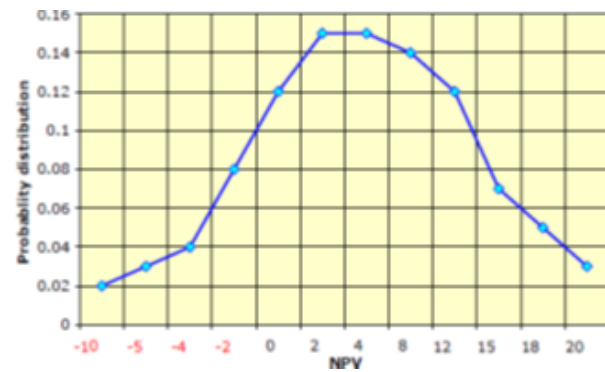


Fig. 5. Probability Distribution for NPV (illustrative) by the authors

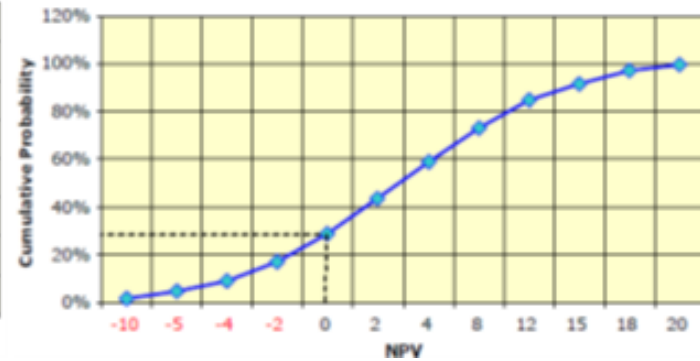


Fig. 6. Cumulative probability distribution for NPV GCBAIP (2008)

3 RESEARCH METHODOLOGY

Below are presented the main guideline of the research questions:

- How to estimate a project economic benefits dimension?
- What are the main social value dimensions? How to estimate the social value leveraged by a future project?

Taking into account the growing need for organizations to justify their investments the application of one model that allows structuring the type of investment and that enables the organization to list the benefits of it becomes crucial nowadays. Meanwhile, when it refers to a social return this exercise figures even more sensitive since the immateriality return is more tangible.

Following this logic, in this study it was intended to validate the Pereira Diamond models (S-Pereira ROI, that is a customization model of the SROI (Yates et al., 2017) and Social Value UK (Social Value UK, 2016) and E-Pereira Diamond), in order to provide organizations with a tool that drives the investment regardless of its nature and purpose.

To test S-Pereira ROI model 50 organizations, from different sectors such as telecommunications, banking, energy, transports and non-profit associations from sustainability, have been contacted in random order, to obtain a sample, grouping public, private and non-profit organizations. As a result, of this first contact, 27 organizations have agreed to

apply the S-Pereira ROI model to one of their business case projects. One organization after estimating the SROI for its business case project gave up the initiative and also the present study. The study application period was 12 to 18 months and the variation is explained by the implicit differences in each project and its close relationship with the benefits return. For the comprehension of the results was used a comparative method at two points in time. One initial estimation, before implementation, and one second measurement in order to ascertain the actual value of the return.

To try out E-Pereira Diamond model 40 organizations were contacted, in order to apply the model to one of its business case projects. For this challenge 20 organizations agreed to participate. A company operating in the banking sector after estimating the ROI decided not to proceed with the project initiative and this study. The application period varied between 10 and 12 months. The measurement of the results was made similarly to that described above. One moment of initial estimation and a second measurement for determining the actual value of the return.

4. MODEL APPLICATION AND DATA RESULTS

The application of the model began with the identification of the projects that were proposed for the present study. It started with a telephone contact, followed by the meeting schedule ending with a formal agreement and a kick-off meeting.

The application of the model began with the identification of the projects that were proposed for the present study. It started with a telephone contact, followed by the meeting schedule ending with a formal agreement and a kick-off meeting.

In a second phase, the problem-solving step, based on Pereira Problem Solving (Pereira et al., 2019), initiated in which the issue for analysis was identified with a mapping not only of its impacts and trends but also of the causes. Finally, the project team identified the solution, framing it in the model dimension, with the identification of the according to benefits for analysis. In the data collection phase, it was identified the KPI's for the benefits measurement and the identification of the costs associated with the new intervention. Finally, a sensitivity analysis was applied in order to provide organizations with more robust information for decision-making. Before implementing the solution, a pre-intervention measurement of the KPIs was pursued, allowing to compare the estimated and real results obtained (ROI measurement).

The results obtained for each model is explained in a data table that elucidates the impact of models to achieve a successful ROI. **Table I** refers to S-Pereira ROI model results and **Table II** to Pereira Diamond model results. The tables, with a very similar structure are organized by columns that show: Organization type, for the S-Pereira ROI model, and the market sector organizations in the Pereira Diamond's case; the name of the business case in analysis; the type of benefit (whether external or internal, according to the description of the model) only for S-Pereira ROI Model; the dimension of the type previously identified benefits; an estimated ROI in percent; The actual ROI in percentage and the estimated ROI deviation over the measured.

The costs of projects should be checked over the course of the project, according to the PMBOK® Guide (2017), and the accuracy of a project estimate will improve as the project advances over the life cycle of the project. For e.g., a project will have a rough order of magnitude -25 percent to 75 percent during the initiation stage (business case should be done) with a project.

However, once we have more details later in the project, definitive estimates can narrow the accuracy range to -5 percent to +10 percent.

Table I presents the results which express the effectiveness of the model. The overall average deviation between the estimated ROI and the actual ROI was 7%. For the companies that choose to apply the model as part of their social responsibility policy had a deviation of 4%. Even if the size of the projects was lower in comparison to other types of organizations presented in the study, the recurrent use of management methodologies actively contributes to the value of the deviation. In the public sector projects also had an estimated deviation to the actual 8%. Also, the use of management methodologies contributed positively to this result. Although three projects have submitted deviations above 10% two projects obtain exactly the expected ROI estimation. The third sector, made up of NGOs, had a deviance value of 9% with two projects with 0% of deviance from the estimated ROI. On the other hand, and with a smaller sample, the IPSS demonstrated a 7% of deviance to the estimated ROI. Doing the same exercise, but now concerning to Pereira Diamond model, the results have shown a great efficiency of the model and its predictive power. An overall view, reveal 8% deviance between the estimated and the actual ROI. In banking sector the deviation presented stands at 11%. To this value contributed the layout agency remodelling project that had a deviation of 57%. If eventually the project had been excluded from the study deviation would fell to 4%. The transport sector presents a 7% deviance from the estimated ROI. The remaining sectors have shown a grouped 4% deviation. The main difficulties inherent to this process occurred at two levels. The first one regarding the willingness of the organizations to participate in the study (only 54% and 50% for the application of the S-Pereira model and the E-Pereira model accordingly). The second one, was related to the metrics identification that best reflects the projects, especially, the access to the information collection regarding each project under analysis. Organizations had very different levels of data collection maturity

TABLE I. S-PEREIRA ROI MODEL RESULTS (NGO - NONGOVERNMENTAL ORGANIZATION, IPSS - PRIVATE INSTITUTION OF SOCIAL SOLIDARITY)

ORGANIZATION TYPE	BUSINESS CASE	BENEFITS (INTERNAL EXTERNAL)	BENEFITS DIMENSION	ESTIMATED ROI (ER) %	ACTUAL ROI% (AR)	DELTA AR-ER %
Enterprise (Social area)	Volunteering hours Bank	Social Dimension	Education	17%	16%	-1%
Enterprise (Social area)	Cultural Cycle Promotion	Social Dimension	Education	24%	12%	-12%
Enterprise (Social area)	Health: at work, at home	Social Dimension	Health	14%	16%	2%
Enterprise (Social area)	Road Security	Social Dimension	Security	134%	129%	-5%
Enterprise (Social area)	Gender Policy implementation	Social Dimension	Human Rights	23%	25%	2%
Enterprise (Social area)	Yoga in the Office	Social Dimension	Health	19%	18%	-1%
Enterprise (Social area)	Training for me (out of work scope)	Social Dimension	Education	88%	96%	8%
Public	Database implementation	Increase Efficiency	Increase Efficiency	25%	25%	0%
Public	Mobile App for Costumer Service	Cost Reduction Increase Efficiency	Increase Efficiency Cost Reduction	320%	328%	8%
Public	Culture patrimonial Impact	Social Dimension	Education	801%	820%	19%
Public	Natural Park (Extension)	Social Dimension	Health	722%	700%	-22%
Public	Archaeological supervision to a work construction	Social Dimension	Education	79%	80%	1%
Public	Cycling Path connection	Social Dimension	Health	342%	338%	-4%
Public	Electrification with LED technology	Cost Reduction	Cost Reduction	68%	68%	0%
Public	Sign Language News	Social Dimension	Education	16%	12%	-4%
Public	Syringes distribution to addicts	Social Dimension	Health	272%	286%	14%
NGO	Financial Tax Compliance	Compliance	Compliance	106%	106%	0%
NGO	Hosting Political Refugees	Social Dimension	Human Rights	3%	8%	5%
NGO	Scholar support Center based in volunteering work	Social Dimension	Education	1180%	1180%	0%
NGO	Gender Equality Promotion	Social Dimension	Human Rights	172%	148%	-24%
NGO	Campaign against alcohol consumption	Social Dimension	Health	262%	294%	32%
NGO	STD and HIV/SIDA prevention Campaign	Social Dimension	Health	12%	11%	-1%
NGO	Cost managing software implementation	Increase Efficiency	Increase Efficiency	-20%	-----	-----
NGO	Neighborhood Safety promotion	Social Dimension	Security	1%	1%	0%
IPSS	Class opening in a growing school	Social Dimension	Education	15%	11%	-4%
IPSS	Inclusion of mental illness patients	Social Dimension	Human Rights	10%	3%	-7%
IPSS	Human Rights promotion	Social Dimension	Human Rights	62%	51%	-11%

TABLE 2 - PEREIRA DIAMOND MODEL RESULTS

SECTOR	BUSINESS CASE	BENEFITS DIMENSION	ESTIMATED ROI (ER) %	ACTUAL ROI% (AR)	DELTA AR-ER %
Bank	Bank App for client profile recognition and suggestion	Business Increase	30%	31%	1%
Bank	Printers replacement project	Cost Reduction	120%	120%	0%
Bank	Remodeling agency layout	Business Increase	69%	12%	-57%
Bank	System banking guarantees for loans validation	Cost Reduction Increase Efficiency	280%	287%	7%
Bank	Home banking personal finance project	Business Increase	15%	13%	-2%
Bank	Digital signature project	Business Increase Increase Efficiency	320%	311%	-9%
Bank	Real time default alert	Cost Reduction	71%	69%	-2%
Bank	Convert mail extract into digital format	Cost Reduction Increase Efficiency	-92%	----	----
Energy	Accounting system for management control	Cost Reduction	79%	79%	0%
Energy	Remarketing project for cross selling	Business Increase	97%	81%	-16%
Public Administration	Facility management to release one floor	Cost Reduction	970%	972%	2%
Retail	Automatic invoicing for internet clients	Increase Efficiency	320%	320%	0%
Telco's	Wi-Fi system to increase web	Business Increase	12%	15%	3%
Transports	Logistics optimization for drugs control	Increase Efficiency	135%	124%	-11%
Transports	EDI project for revenue assurance	Cost Reduction Increase Efficiency	33%	35%	2%
Transports	Maintenance alert system to preventive action	Cost Reduction Increase Efficiency	1430%	1430%	0%
Transports	DataMart for flights prediction	Business Increase Increase Efficiency	585%	587%	2%
Transports	Client unique identification over historical data	Business Increase Increase Efficiency	202%	195%	-7%
Transports	Mobile application for device management	Increase Efficiency	1900%	1872%	-28%
Transports	Passenger transfers alert system	Cost Reduction Increase Efficiency	315%	315%	0%

5. CONCLUSIONS AND FUTURE CONTRIBUTIONS

The model allows to ensure that the causes of the real problems that affect the organizations are quickly identified so that solutions can be more effective by mitigating the negative impacts and thus able to provide benefits to all the stakeholders that are in interaction with organization. It is believed that this model stands out from the other models because it presents a dynamic and predictive characteristic, with a low-cost data collection and without leaving space for subjectivity since it has been tested and it is understood in a quantitative way.

This study has some limitations that may be seen as future opportunities for future model optimization. Thus, this study did not take into account the assessment of other indicators that could disclose the divergence reasons between the estimated and actual ROI for both S-Pereira ROI and E-Pereira models. As a future contribution, it is suggested to apply the root cause analysis methodology to identify the deviation causes and, thus, contribute to greater accuracy of both models.

At the same time, the original intention of the study was to include 50 organizations samples for S-Pereira ROI model and 40 enterprises samples for E-Pereira Diamond model. The final samples for this study were composed of 27 and 20 organizations respectively. It is recommended, in order to be more representative in a possible new study, to use bigger random samples that allow confirmation with more accuracy the obtained results.

The study application period can be another limitation because it would be possible to add more tracking moments to confirm the results accuracy and conclusions. Thus, in order to optimize the estimation techniques that both models advocate, it is proposed to future researches extend the application period of the study by developing additional tracking moments and combine with, above already cited, root cause analysis methodology. Finally, after the elaboration of this study it was understood that the S-Pereira ROI model could

undergo an optimization at the social dimension, which may be developed in future researches. This vertex could be divided in two: increase the social dimension to which the initiative is proposed (already presented in this model) and increase revenue or grants. In this way, from the point of view of the systematization of the model, we obtain a more focused and oriented vision for the organizations that look for internal sustainability to execute non-profit actions.

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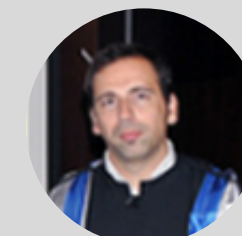
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