

Pereira Diamond: How to Measure Projects Economic and Social Impacts?

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Abstract: This research study presents a 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 estimating and evaluating their projects benefits to apply in a business case, namely for projects with economic and social impacts. This model may be applied by any organizations (private sector, public sector or NGO) which may aim to leverage business value or generate more social value.

Key words: Benefits, project, business case, investment, strategy, social responsibility, decision-making

INTRODUCTION

What is a scientific business case? According to the BCBoK (2015), a business case consists on a decision-making tool to determine whether an investment will create value. Typically it consists on a well-structured document where it states the investment purpose followed by the business impacts estimation (benefits) and costs in order to determine whether the decision under analysis will be profitable. This guide also mentions that a business case should be free of non-validated assumptions, based on a rational and impartial process supported on business research methods to validate cause-effect relations between phenomena (BCBoK, 2015).

Business case; state-of-the art: When talking about project investment, according to Zwikaël and Smyrk (2012), project success measurement is a subject which still requires a few improvements since the process efficiency, namely in time, budget and scope is still dominant instead of effectiveness through organizational benefits generation. In other words, this means most project definitions and methodologies still ignore a relevant dimension which is benefits realization during the project management cycle (Muller and Turner, 2007). The project management professionals and literature available is still much focused on project deliveries (project management) which ends up neglecting the project's intended benefits (Ashurst *et al.*, 2008). A study conducted in September, 2014 by APM Benefits Management SIG (Specific Interest Group) undertook a questionnaire survey to find out how benefits management is perceived in the organizations that its members work for. Most respondents were based in UK and worked in a wide spread of industrial sectors. 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 states that "there is a need for guidance and best practice examples on how benefits management might fit within the overall approach to organizational change and project/programme/portfolio management. These researchers 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 organizations and industrial sectors).

The founder of ROI Institute, Phillips expresses the increasing need on key executives becoming aware of their projects' ROI: "The use of the ROI methodology has intensified during this global recession as organizations of all types have used this methodology to decide which programs to eliminate which to keep and which to fund in the future. As more organizations come out of the recession, key executives are demanding ROI up front before a project is implemented. Because there is a need to avoid wasteful spending and unnecessary expenses to keep the organization lean, executives are asking for a forecast of ROI in advance" (Phillips, 2011).

These statistics shows there is a recognition on the need of benefits management and that there are still a little actions to actively pursue and implement a benefits management culture within the investment decision-making and monitoring.

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 the Australian public sector, the Guide to Cost Benefit Analysis of Investment Projects published by the European Union and The Green Book, published by the UK Government and the ROI Methodology™ 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 by 6 critical stages which aims to provide timely advice to the Senior Responsible Owner (SRO) (the person in charge for a project or program). This methodology provides the SRO with an independent view on the current progress of the project or program and evaluate whether it can proceed successfully to the next stage.

Regarding the European Commission (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 on 6 main steps.

The Green Book (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™ 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 of 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 information about how to formulate the initiatives benefits in a more detailed and guided way which is critical to assure the correct benefits quantification leveraged by the future project.

Therefore, this study aims to provide a deeper comprehension and guidance in regards to the benefits modelling process to support any business case professional to be successful.

Social ROI:

What is social value and the purpose of SROI? According to social value UK, social value consists on 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 organization's work.

Social return on investment aims to measure social value (value that stakeholders experience through changes in their lives).

Organizations which have social objectives will want to know if they are achieving these objectives. SROI is a method that can help organizations 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. According to the A Guide to Social Return on Investment and there are:

Seven principles of SROI:

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).

Understand what changes for those stakeholders: identify and explain the rational of change as well as gather evidence of positive and negative change.

Value what matters (also known as the 'monetisation principle's): Need to recognize the values of stakeholders in which value refers to the relative importance of different outcomes and it is informed by stakeholder's preferences.

Only include what is material: In order to measure SROI, determine what information and evidence must be included in the accounts to give a true and fair picture in order to define the conclusions about the impact generated by the initiative.

Do not over-claim: Make sure the results (value) presented reflect the values from the activities responsible for creating them and no more.

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.

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 A 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, the majority of 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. According to this guide, it is critical to measure and value the things that matters. That requires the clear and accurate identification of the metrics who better represents 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 regards 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. The timescale used is generally, the number of years that is expected the benefit to endure after the intervention in other words, it means the duration of the outcome or the benefit period. In order to define this timeframe it is important to have a longitudinal data to support the outcome duration. The longer is the duration, the more likely it is that the outcome will be affected by other factors and consequently less credible.

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 benefits from costs savings which resulted from a local government initiative (eg., 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 on 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, now a days SROI is a measure gaining more relevance across organizations when making investment decisions, it is important to be aware about its limitations:

SROI limitations: Some benefits important to stakeholders, cannot be monetized, hence, considered intangible. An SROI analysis should be seen as a framework for exploring an organization's social impact, in which monetisation plays an important but not an exclusive role.

Focus on monetisation: Although, quantifying in economic terms the social impact, it is crucial to follow the rest of the process. 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 (Gair, 2009). It is most easily used when an organization 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.

MATERIALS AND METHODS

Research questions: Below are presented the main guideline of the research questions:

- How to estimate a project economic benefits dimension?
- What 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 to structure the type of investment and that enables the organization to list the benefits of it becomes crucial now a days. 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 and E-Pereira Diamond) in order to provide organizations with a tool that drives the investment regardless its nature and purpose.

To test S-Pereira ROI Model 50 organizations 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 accepted to apply the S-Pereira ROI Model to one of its 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 12-18 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 10-12 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.

Conceptual model:

Pereira Diamond Model: The following model “Pereira Diamond Model” relies on the scientific management principle. In other words in order to follow a rational, objective and impartial process, the business case should have the end goal of getting two different people reaching the same or very similar result’s estimation when analyzing under the same circumstances/conditions.

A project’s origin within an organization is bounded by four possible dimensions presented in Fig. 2. Pereira Diamond Model presents these four dimensions as the primary causes for a project “birth”. But firstly, in order to identify the future benefits to be estimated (and measure in the future ex-post) it is important to bear in mind the principle of the value of something which is measured by the impact of having something or not having or losing it. Figure 1 shows of how the perception of value changes according to having or not having something:

This small exercise, allows to clarify the value generated to stakeholders of this project. In other words “the value” is measured by the impact it generates and its effect upon implementation and not by the financial cost implied itself.

Having clear how the future project may contribute to leverage value, a project proposal may be classified over one of the four dimensions according to the major benefit contribution: business increase, efficiency increase, costs reduction or legal compliance.

Figure 2 presents the four types of benefits an initiative may have: when conducting a business case to

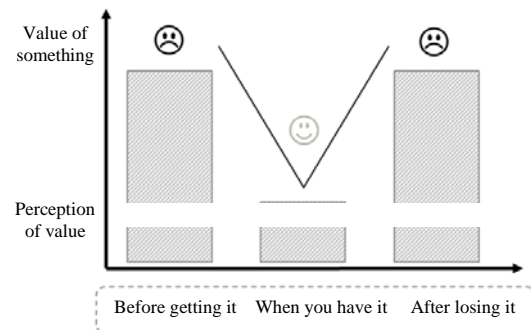


Fig. 1: The value of somethings (by the researchers)

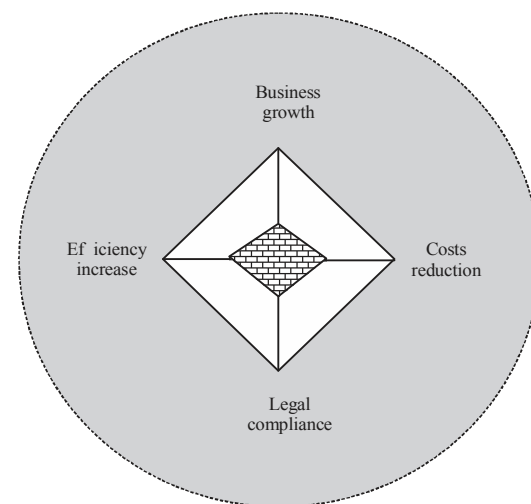


Fig. 2: Pereira Diamond, 1st level (by the researcher, 2015)

evaluate a project viability, the estimation should be based on the economic value generated and not on a financial perspective (eg., liquidity level; repayment schedule of external financing over the years, depreciations, etc.).

In order to instantiate and organize the initiative’s benefits under consideration, each of these dimensions can consider different scenarios depending on the problem that will resolve or mitigate.

The following image (Fig. 3) illustrates the second level 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 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: For instance by portfolio diversification or reaching new geographic areas (product

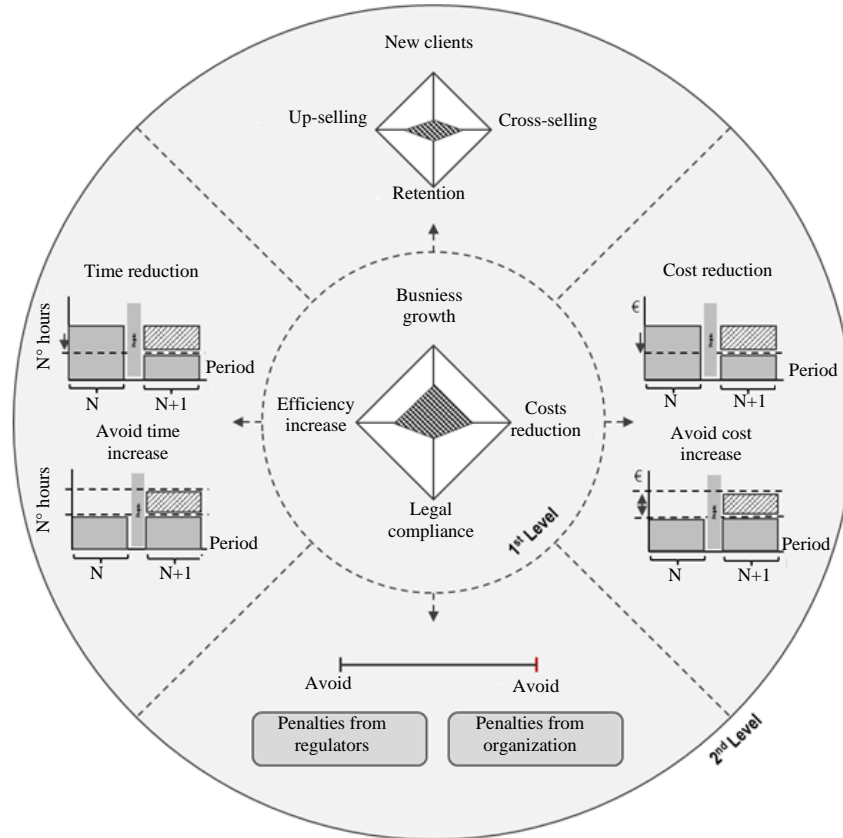


Fig. 3: Pereira Diamond 1st and 2nd levels (by the researchers, 2015)

development or market development, accordingly). It aims to increase sales volume by attracting new customers.

Increase cross-selling: Selling more of other products/service to current customers.

Increase up-selling: Selling more of the same product/service to current customers.

Increase customer loyalty: Increase customer life cycle. It aims to increase the time the customer stays in the company by retaining them for longer, i.e., avoiding disruption of the relationship.

Costs reduction: In the costs reduction dimension, the main initiative's goal is to obtain an effective decrease in the expenses (costs) account of the company. It is important to highlight that these costs decrease is reflected on a financial reduction, unlike projects classified on the efficiency dimension where it only represents team's hours of work (effort).

The costs reduction benefit is quantified by the amount of the cost decreased in the existing organization

or by the cost avoided in the future as a result of this initiative implementation. In order to determine the benefit, it is only required to identify the costs in the current process and the costs likely to be eliminated while bringing impacts in a short-term period.

Efficiency increase: In the opposite side of costs reduction, the projects within the efficiency dimension do not have an economic or financial implications or in other words, a direct impact on the company expenses (costs) account. They do instead have an impact on human abilities by optimizing processes which release time.

The benefits quantification in this dimension are based on reducing the time of a particular process or in projects that will prevent a future increase in the time of a process. Once the process or task has reduced its time of execution, resources can be released or mobilized to another process.

Legal compliance: Projects under the legal compliance dimension are those projects which aim organizations to comply with the regulators entities and/or policy group instructions. Once these initiatives are mandatory, projects usually move forward without the requirement of

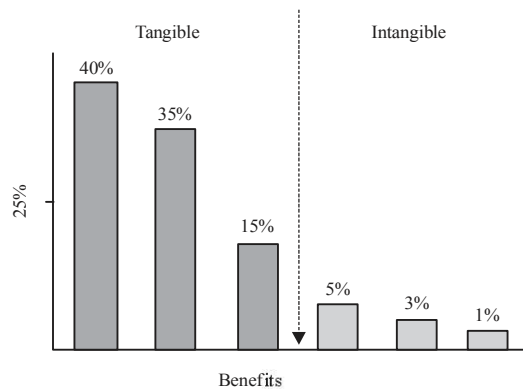


Fig. 4: Example Pareto histogram (by the researchers, 2015)

prior benefits quantification. However, sometimes organizations may be interested on evaluating the economic impacts that project will bring to its business.

Pareto law: According to Pareto principle, known for the 80/20, the estimated return on investment should consider 20% of the main benefits generated (ideally up to 3 benefits), since, they represent 80% of the value generated. Therefore, the remaining benefits should be classified as intangible for its residual weight and for its small contribution taken in the final decision upon deciding whether to go ahead or not with the initiative implementation. Pareto's theory became known as the "80/20" rule which states that 20% of the known variables will account 80% of the results (Basile, 1996) which was the result of the observations and writings by Juran (1975) a "pioneer in the development of principles and methods for managing quality control programs" (Juran, 1975) (Fig. 4).

The Pereira Diamond Model recommends the following steps within a business case process: the process of preparing a business case should follow a methodology complemented by a set of tools and techniques in order to analyse whether an investment will create value to the organizations.

Based on the business case practices developed by different researchers, the overall business case steps and benefits mind set may be synthesized on the following steps:

Ability to listen to the market continuously-teams needs to have the ability to understand the market, consumers needs and the competitive environment.

Executive team to establish a future vision and have a strategic plan clearly defined as it is the starting point to conduct any business. Decompose the strategic plan into strategic goals throughout the organization pyramid (from operational team to top management).

Convert that strategies and goals to valuable projects (set a projects portfolio following the benefits rationale).

Analyse the purpose of the new initiative, whether it is a business opportunity, problem or need. This is one of the most important steps in the process. This is where the business case will be based on, so, it must be clearly described and understood. Analyse its alignment to the mission, vision and strategic plan.

Determine the solution benefits, according to the four dimensions (stated in Pereira Diamond Model). Determine the solution costs and capture economic results. Analyse stakeholders and define a communication plan. Make a recommendation and a decision-making: GO/NO-GO benefits tracking and monitoring.

S-Pereira ROI Model: The proposed SROI 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 SROI calculation, namely, the benefits model where presents the four dimensions of benefit 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 economic) 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 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 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.

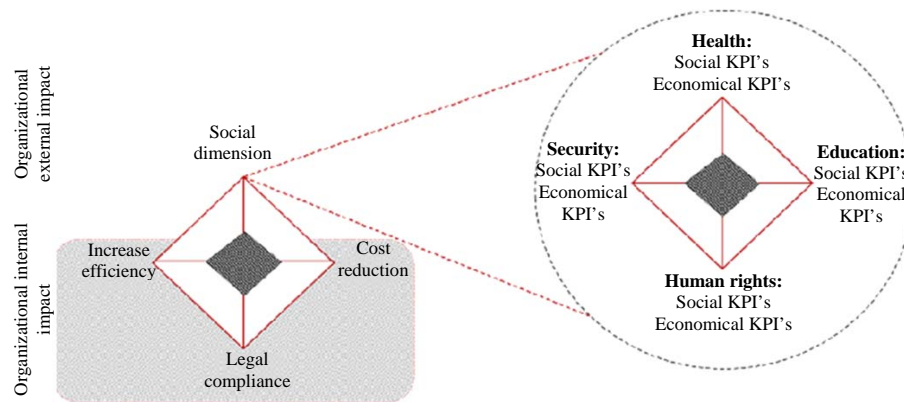


Fig. 5: SROI Diamond Model (by the researchers, 2016)

In regards to internal impact, as presented in Fig. 5, 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 Fig. 5:

Health: (eg: avoid or reduce the number of human losses or diseases):

- Drug prevention
- Disease prevention
- Mental health

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 (labourwise)

Social benefits are not possible to quantify economically by itself, for instance how much is worth saving 100 lives? Although, we cannot value how much a human live 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. Figure 3, 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 center). Having this 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). Below, it follows an example of the S-Pereira ROI Model application:

S-Pereira ROI Model application: These will be presented under the problem solving model. Issue under analysis: criminality in neighborhoods.

Impacts (three main impacts identified): First, high level of the n° of human lives losses; second, high costs associated to human losses (voluntary and involuntary) and third, high custodial/penitentiary costs.

Causes (three root-causes associated to this specific problem): First, massive house construction causes a higher population concentration which are 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 neighborhoods (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 centers/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: In order to make a decision about whether or not to invest in a initiative, the economics benefits identifies should pursue a sensitivity and risk analysis.

According European Commission (2008) the recommended method is the Monte Carlo Simulation. 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 (European Commission, 2008):

- What happens if these assumptions (variables) change?
- Which assumptions are most important in controlling results?
- Which variables have less impact in the results?

In order to complement the sensitive analysis information, the risk analysis allows to measure the probabilities of different results to occur. For each scenario (for a giving set of assumptions which come with uncertainty) the appraiser predicts outcomes (NPV, ROI, total cost, total benefits or others) according to a probability. By switching the values the assumptions may get, the appraiser will know how much a variable would have to fall (if it is a benefit) or rise (if it is a cost) to make it not worth undertaking an option, so, “this should be considered a crucial input into the decision as to whether a proposal should proceed and therefore, needs to be a prominent part of an appraisal”. The risk analysis allows to answer the questions (Schmidt, 2009):

- How likely is “most likely”?
- How likely are the other financial results?
- Could anything happen that would cause very different results?

Figure 6 and 7 provide graphical examples of probability and cumulative distribution for NPV. The same exercise should be pursued for the remaining economic indicators namely:

- ROI (%)
- Net present value
- Payback

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 results during project exploitation period. It is also recommended to make a deviation analysis where it should be compared the estimated ROI (business case) and the realized ROI (after project).

RESULTS AND DISCUSSION

The results obtained for each model is explained in a data table that elucidate the impact of models to achieve a successful ROI. Table 1 refers to S-Pereira ROI Model results and Table 2 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.

According to the PMI. (2013), costs from projects should be reviewed during the course of the project and the accuracy of a project estimate will increase as the project progresses through the project life cycle.

For instance with a project within the initiation phase (business case should be done) may have a rough order of magnitude -25 to 75%. However, later in the

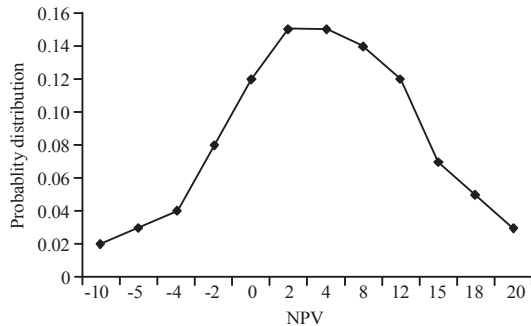


Fig. 6: Probability distribution for NPV (illustrative) by the researchers

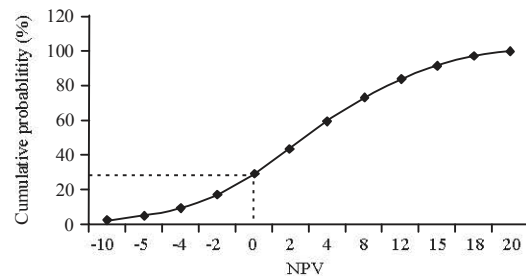


Fig. 7: Cumulative probability distribution for NPV

Table 1: 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 customer service	Cost reduction	Increase efficiency	320	328	8
Public	Culture patrimonial impact	Increase efficiency	Cost reduction			
Public	Natural park (Extension)	Social dimension	Education	801	820	19
Public	Archaeological supervision to a work construction	Social dimension	Health	722	700	-22
Public	Cycling path connection	Social dimension	Education	79	80	1
Public	Electrification with LED technology	Social dimension	Health	342	338	-4
Public	Sign language news	Cost reduction	Cost reduction	68	68	0
Public	Syringes distribution to addicts	Social dimension	Education	16	12	-4
NGO	Financial tax compliance	Social dimension	Health	272	286	14
NGO	Hosting political refugees	Compliance	Compliance	106	106	0
NGO	Scholar support center based in volunteering work	Social dimension	Human rights	3	8	5
NGO	Gender equality promotion	Social dimension	Education	1180	1180	0
NGO	Campaign against alcohol consumption	Social dimension	Human rights	172	148	-24
NGO	STD and HIV/SIDA prevention campaign	Social dimension	Health	262	294	32
NGO	Cost managing software implementation	Social dimension	Health	12	11	-1
IPSS	Neighborhood safety promotion	Increase efficiency	Increase efficiency	-20	----	----
IPSS	Class opening in a growing school	Security	Security	1	1	0
IPSS	Inclusion of mental illness patients	Social dimension	Education	15	11	-4
IPSS	Human rights promotion	Social dimension	Human rights	10	3	-7
IPSS		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	280	287	7
		Increase efficiency			
Bank	Home banking personal finance project	Business increase	15	13	-2
Bank	Digital signature project	Business increase	320	311	-9
		Increase efficiency			
Bank	Real time default alert	Cost reduction	71	69	-2
Bank	Convert mail extract into digital format	Cost reduction	-92	----	----
		Increase efficiency			
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	33	35	2
		Increase efficiency			
Transports	Maintenance alert system to preventive action	Cost reduction	1430	1430	0
		Increase efficiency			
Transports	Data mart for flights prediction	Business increase	585	587	2
		Increase efficiency			
Transports	Client unique identification over historical data	Business increase	202	195	-7
		Increase efficiency			
Transports	Mobile application for device management	Increase efficiency	1900	1872	-28
Transports	Passenger transfers alert system	Cost reduction	315	315	0
		Increase efficiency			

project once, we have more information, definitive estimates should narrow the range of accuracy to -5% to +10%.

Table 1 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 chose to apply the model as part of its 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 contribute 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 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 remodeling 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 shown a grouped 4% deviation.

CONCLUSION

The researcher Mcvey also states that “a business case is part of the due diligence the business case represents, measuring benefits, costs and risks associated with the investment. The business case assesses and evaluates the available options to solve the business issue. The business case provides an opportunity for the business to determine if a project is needed and if the solution options are beneficial to the organization”. The researcher also says this may be accomplished through both qualitative and quantitative analysis techniques by describing if the solution is feasible and financially viable while meeting business goals”.

RECOMMENDATIONS

Future contributions: This study has some limitations that may be seen as future opportunities for models 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 a 50 organizations sample for S-Pereira ROI Model and 40 enterprises sample 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 allows confirm with more accuracy the obtained results.

Finally, the study application period can be a 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.

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