

RECENT TENDENCIES IN INVESTMENT PROJECTS EVALUATION METHODS AND TECHNIQUES

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ABSTRACT

The paper presents the recent tendencies in methods and techniques used in investment project evaluation. The purpose of the paper is to highlight the problems encountered and the appropriate solutions developed in investment project evaluation so far.

Many important projects in Romania have been evaluated using Cost-Benefit Analysis. Unfortunately, this method led to unrealistic results regarding the projects' success. Therefore, the Cost-Benefit Analysis developed in the pre-implementation period of the projects revealed that the projects would be successful in accomplishing their main objectives. However, an important part of this results did not fit the reality and many projects were not sustainable after their implementation. Consequently, we proposed to expose the adjustments that should be made in evaluation methods and techniques, in order to obtain more realistic results regarding the success of the future investment projects.

KEYWORDS: *Cost – Benefit Analysis, evaluation, investment, method, objective, successful project.*

1. INTRODUCTION

The study of the investment projects evaluation has become an important aspect since many projects proved to be unsustainable despite the first evaluation results.

One of the evaluation methods frequently used is the Cost-Benefit Analysis. Developing a Benefit-Cost Analysis depends on the existence and quantification the costs and the benefits of a project. However, there are several aspects related to the human activity that cannot be easily quantified. (Iacob, 2016) Another drawback of this method is the amount of subjectivity involved when identifying and estimating different costs and benefits.

Furthermore, the need to calculate the present value of the future costs and benefits implies inaccurate estimations due to the discount rate used. There is no guarantee that the rate is realistic. Considering the limits of the evaluation methods used, the paper will present several directions for improving the evaluation process of investment projects.

2. INVESTMENT PROJECTS: EVALUATION TOOLS AND METHODS

The paper contains a study on the limits of the Cost-Benefit Analysis, as an evaluation method, a few side-effects of overusing Cost-Benefit Analysis in the pre-implementation period of investment projects in Romania and alternative methods and tools to improve the evaluation process.

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2.1 Literature review on Cost-Benefit Analysis

According to the *Guide to Cost-Benefit Analysis of Investment Projects Economic appraisal tool for Cohesion Policy 2014-2020* (2014), published by the European Commission "Cost - Benefit Analysis (CBA) is explicitly required, among other elements, as a basis for decision making on the co-financing of major projects included in operational programmes (OPs). "

Cost – Benefit Analysis is an important tool which helps to appreciate an investment decision in order to assess the prosperity increased and its contribution to EU cohesion policy objectives. The aim of Cost – Benefit Analysis is to facilitate a more efficient allocation of resources, emphasizing the advantage for society of a particular intervention rather than possible alternatives.

On the other hand, one major criticism that has been brought to Cost – Benefit Analysis is that it assumes that those persons who are supposed to gain from the policy change compensate those that lose. This ignores distributive aspects, and the fact that, for example, a wealthy person would be able, and therefore willing, to pay more than a poor person for the same improvement in environmental quality, even though both cared about it with equal intensity.

Cost – Benefit Analysis is sometimes highly costly and time-consuming, and results are likely to be sensitive to the many suppositions often required to complete the estimation of the benefits and the costs of the proposed policy and program (Moore, 1995).

Furthermore, as Baram mentioned in his article *Cost-Benefit Analysis: An Inadequate Basis for Health, Safety, and Environmental Regulatory Decisionmaking* (1980), many environmental effects, cannot be estimated correctly because there is no appropriate tool to measure these attributes. In addition to that, even if costs and benefits are identified, they may not be included in following analysis for pragmatic reasons. Attributes may be too expensive or too complex to measure.

Cost-Benefit Analysis functions best when a socially accepted method, such as market pricing, is available to estimate the costs and benefits, and the measurement can be expressed in a commensurable unit.

Closely related to the problem of priceless values is the hidden supposition that everything can be traded for other things. This assumption is appropriate for things that can be quantified in money. But the assumption that everything can be exchanged for anything else becomes misleading when artificial prices are applied to the fundamentally nonmonetary values of life, health, and nature, as it is necessary in Cost-Benefit Analysis. (Ackerman, 2008)

Cost-Benefit Analysis is often limited by the set of alternatives it includes. "When a highway is congested, building a bigger highway often seems like an attractive alternative. But such an analysis only answers the question, "If there were no choices except the status quo or the new road, which would be better?" Other options such as improved railroad and bus service, or urban planning measures to reduce transportation demand, might be even more appealing – if they were considered. Reframing the question – for example, asking "What is the least-cost strategy for reducing congestion on a highway by a given amount?" – may yield a different solution." (Ackerman, 2008) In order to achieve study results that are more useful to the policy-makers, it is sometimes recommended to perform, in addition to the Cost – Benefit Analysis, a separate 'analysis of redistribution'; this should emphasize to whom in society return the costs and benefits. (Vlakveld et al., 2005)

Because of their fundamental subjectivity of exactitude, Cost-Benefit Analyses are frequently misleading. Many Cost-Benefit Analyses are just technical dissimulation for disguising previous political conclusions as rational decisions. Institutions often use Cost-Benefit Analyses to intimidate the inexperienced, politicians frequently call for complex Cost-Benefit Analyses in order to entangle and delay regulation (especially environmental regulation), and decision-makers may use them to depersonalize responsibility for judgments that are actually theirs (Nolt, 1995).

According to an article available at <https://www.investopedia.com/terms/c/cost-benefitanalysis.asp>, "for projects that involve small- to mid-level capital expenditures and are short to intermediate in

terms of time to completion, an in-depth cost-benefit analysis may be sufficient enough to make a well-informed, rational decision."

In major projects with a long forecasting period of time, Cost-Benefit Analysis typically fails to account for important financial concerns such as inflation, interest rates, varying cash flows and the present value of money.

Moreover, the revenue that will be generated by an investment project can be very hard to predict, and the value that people place on intangible benefits can range. This can often make the assessment of possible revenues unreliable.

Furthermore, Cost-Benefit Analysis has several related risks and uncertainties. These can result from human inaccuracies connected to the data utilized.

Many of the risks involved in the Cost-Benefit Analysis can be correlated to the human elements involved. Stakeholders may try to influence results by over- or underestimating costs. In some cases, promoters of a project may insert a personal or organizational influence into the analysis.

In addition, there can be a trend to rely too much on data compiled from past projects. This may inadvertently conduct to results that do not directly apply to the situation being considered.

A set of proposed rules for better Cost-Benefit Analyses is available online at: <https://www.smartsheet.com/expert-guide-cost-benefit-analysis>. Some of the rules that should be obeyed when using Cost-Benefit Analyses are presented below:

- Always use accurate information because incorrect cost and benefit information can abate findings around value;
- Always research benefits and costs rigorously to gather concrete data;
- Take into consideration that cash is unstable as revenue and cash flow are moving targets, experiencing tops and pits, and converting them into relevant data for analysis can be challenging;
- Income influences decisions. Income rate can affect a customer's ability or willingness to make purchases;
- Some benefits cannot be transformed in measurable amounts.
- Price is subjective. The value of impalpable can always be subject to interpretation.
- Do not double up benefits and costs as this can conduct to inconsistent results.

2.2 Successful in Cost-Benefit Analysis vs. Unsuccessful in reality

Although Cost-Benefit Analysis is a considerable method in the evaluation process of investment projects, important problems were identified in practice.

Some of the major projects, that we studied after their implementation, proved to be unsustainable. These projects have Cost-Benefit Analyses, developed in the pre-implementation period, which generated unreliable results as can be observed in reality.

One investment project was for building an underground car parking and an industrial park, whereas, another one was for building a leisure park. Initially, the implementation period of these projects was shorter but, then, it was extended. Despite of the Cost-Benefit Analysis for this project, representatives of the target group do not consider these newly built parking projects useful. Some of the problems invoked by them are the parks' inappropriate locations or the high rental costs imposed. These days, the parks are empty, not used at all, in a bad state of keeping but are generating operating costs with their administration. However, the population from the projects' location will have to repay the loan for these projects in 20 years since now.

Other investment projects we studied were for building grain and fish exchange and markets. These projects do not function after their implementation because of the lack of legislation or approvals to regulate their functioning. However, there are operating costs with administration companies, but no revenues.

Furthermore, projects for building convention and exhibition centers and spas were implemented but encountered sustainability problems. Some of them do not have perspectives to function someday, because of the legal problems that occurred and, again they generate operating costs but are in a bad state of repair.

There are many examples of unsuccessful investment projects, based on Cost-Benefit Analyses that failed to predict realistic scenarios. In addition to that, these projects' side effects will affect the authorities' budget for many years since now.

In conclusion, after studying several major projects in practice, we discovered a great necessity for improving the means of evaluating major future investment projects.

2.3 Alternative methods and tools for making better decisions

The paper presents four other tools for making better decisions in selecting investment projects, appropriate to different circumstances and levels of knowledge.

2.3.1 Multi-criteria analysis

Multi-criteria analysis is supported on a multidimensional set of objectives. Therefore, multi-criteria analysis evaluates projects and proposals by multiple criteria - often six to eight, although the number can vary.

Multiple-criteria decision-making (MCDM), also known as multiple-criteria decision analysis (MCDA) evaluates multiple conflicting standards in decision making. Adverse criteria are typical in evaluating options: cost or price is usually one of the main criteria, and some measure of quality is typically another criterion, in conflict with the cost. In purchasing a car, cost, comfort, safety, and fuel economy may be some of the main aspects we consider – it is uncommon that the cheapest car is the most comfortable and the safest one. In portfolio management, the main objective is to obtain high returns but at the same time to reduce risks, but the stocks that have the potential of bringing high returns typically also carry high risks of losing money. In a service industry, customer satisfaction and the cost of providing service are fundamental conflicting aspects.

One of the main strengths of this method is its transparency in reporting complex evaluations, where the result is not entirely black or white.

The weakness of multi-criteria analysis is its reliance on subjective judgments about the criteria. Both the choice of criteria to be included and the relative importance given to each criterion can affect the final result. Moreover, despite the fact that multi-criteria analysis does not use monetized data, necessary information to apply it can be rather considerable.

However, multi-criteria analysis is still the correct choice for those projects in which adverse objectives must be discussed and reconciled. It is important to be aware of the limitations of the method when using it, and to recognize the influence of the premeditated decisions that may be hidden in the phrasing of the question.

2.3.2 Holistic comparison of costs and benefits

An alternative to quantifying avoided deaths, is to evaluate proposals for life-saving expenditures as a whole. This tool involves the assessment of overall impacts. If analysts can describe the costs, and separately the benefits, of a proposal, then the evaluator can decide whether to select a project with a certain cost that will avoid a certain number of deaths or will eliminate a certain number of environmental damages.

This is a more understandable process than the attempt to put price tags on each unmeasurable component of the benefits.

Holistic evaluation is not the answer for every decision, but when costs and benefits are known with valid certainty and expressed in incomparable units, the holistic approach to evaluating costs and benefits is a valuable replacement for overused methods.

2.3.3 Precautionary approaches to decision-making under uncertainty

This method highlights the importance of carefully modelling a decision situation. This involves considering not just a singular act of interest but rather the full set of suitable alternatives. It involves considering different strategies and technologies that might be employed to realise a particular goal. (Tickner, 2003)

According to the article entitled *The precautionary principle: a new approach to public decision-making?* (2006), by Katie Steele "The precautionary principle has received much recent exposure in public debate, particularly in relation to international environmental management issues such as climate change and the adoption of modern biotechnology products." This principle has been mentioned as a legal regulation that is expected to guide the construction of more specific laws and public policy. In both policy and academic environment, however, both the scope and content of the principle have been abundantly interpreted, often in a biased condition to promote a particular agenda. On the other hand, the precautionary principle is best envisaged as providing extensive guidelines for formulating or specifying a decision problem, particularly in the public policy context.

2.3.4 Cost-effectiveness analysis

According to the online Business Dictionary (nd), effectiveness is "the degree to which objectives are achieved and the extent to which targeted problems are solved. In contrast to efficiency, effectiveness is determined without reference to costs and, whereas efficiency means "doing the thing right," effectiveness means "doing the right thing.""

The main difference between Cost-Benefit Analysis and Cost-Effectiveness Analysis is that in the last one only the intended effects are included and only the costs to obtain these effects are expressed in measurable terms. This type of analysis proves to be valuable for cases in which the effects have to be maximized within a determined budget or the costs have to be decreased guaranteeing a certain level of effect.

Cost-Effectiveness Analysis is an alternative to Cost-Benefit Analysis. The technique compares the costs to the outcomes of two or more proposals.

Cost-Effectiveness Analysis is more useful when analysts encounter constraints which prevent them from executing Cost-Benefit Analysis. The most common pressure is the inability of analysts to monetise benefits. It is commonly used in healthcare, for example, where it is difficult to put a value on effects, , e.g. 'the number of lives saved'.

Cost-Effectiveness Analysis estimates costs in a common monetary unit and the effectiveness of a course of action in terms of physical units. Because the two are incommensurable, they cannot be added or subtracted to obtain a single standard measure. One can only compute the ratio of costs to effectiveness in the following ways:

CE ratio = $C1/E1$;

EC ratio = $E1/C1$;

where: C1 = the cost of option 1; and E1 = the effectiveness of option 1 (in physical units).

"The first equation above represents the cost per unit of effectiveness. Projects can be ranked by CE ratio from lowest to highest. The most cost-effective project has the lowest CE ratio. The second equation is the effectiveness per unit of cost. Projects can be rank ordered by CE ratio from lowest to highest. The outputs ranked by cost-effectiveness analysis will often be social or environmental in nature." (UK Prime Minister's Strategy Unit, 2004)

Cost-Effectiveness Analysis is more useful before a programme has begun, as it enables the comparison of two different scenarios.

This type of analysis can also be used to build counter-factual scenarios comparing the effectiveness of the programme to alternative courses of action which were not used and to other similar programmes. (World Health Organization, 2003)

However, this method cannot indicate the more profitable project when comparing their Cost-Effectiveness Analyses.

Another drawback of using this analysis is that it is necessary to be completed with another type of evaluation method to obtain information about the level of financial sustainability of the project. Hence, it is often used in projects that does not generate revenues, such as healthcare, education and environment related projects.

Moreover, the Cost-Effectiveness Analysis can be used as a completion of the Benefit –Cost Analysis, in order to obtain a more comprehensive view of the future investment projects.

3. CONCLUSIONS

All in all, the Cost-Benefit Analysis generated unreliable results and, consequently, unsustainable investment projects were implemented.

As any other method or tool, this type of analysis does not fit in all types of situation. It has to be used only when benefits can be easily monetized.

The method or tool for evaluation of investment projects has to be selected in correspondence to the sector of activity in which the project will activate, the nature of benefits that are expected after implementing the project, the need for the project expressed by different stakeholders, the amount of resources consumed to monetize benefits.

In addition to that, it is necessary to take into consideration the opinion of various specialists when dealing with major projects that can generate important negative effects.

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