

COST-BENEFIT ANALYSIS APPLIED TO HOSPITALS AND HEALTH INFRASTRUCTURES INVESTMENT PROJECTS

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ABSTRACT

The paper presents a proposal for evaluation of investment projects in the health sector (hospitals and other health infrastructures) based on Cost Benefit Analysis (CBA), which integrates the development of community policies and financial instruments and provides technical support and contribute to the reflection about co-financing rates modulation.

Keywords: cost-benefit analysis, structural reinforcement, ancient buildings.

INTRODUCTION

Health sector poses a series of unique and difficult issues. Unlike other sectors, there is no tradeoff in health sector activities. Moreover, the trend towards liberalization, market orientation, and privatization is reshaping the way projects are identified, designed, and evaluated. Health sector projects are heterogeneous requiring different approaches to different types of projects. In addition, until recently, economic benefits in health sector projects have been methodologically difficult to value and some of the basic input data have been unavailable. In view of these considerations, project designs and benefit valuation in the health sector are much more complex than in other sectors, especially those sectors that traditionally apply economic cost-benefit analysis such as infrastructure and utilities (Adhikari et. al., 1999). Given the increasing demands for performance, risk control, transparency in decision making and sustainability, as well as the need to maximize and preserve the conservation status of high buildings equity value existing in the national territory, approaches based on CBA methodologies emerge as an important contribution. The methodologies based on CBA can be powerful and highly functional tools, helping to support the decision process and compare the efficiency of different strategies in terms of cost effectiveness. The CBA is based on the monetary value conversion of all costs and benefits even when they are intangible, through several adjustments (EC, 2008).

RESULTS AND CONCLUSIONS

For the application of a CBA to hospitals and health infrastructures investment projects the following CBA generic phases should be considered (Figure 1):

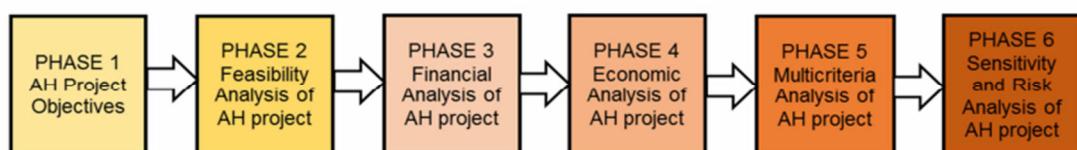


Fig. 1 - CBA methodology schematic representation

The definition of the *Project Objectives* concerning hospitals and health infrastructures investment projects, should include functional features i) include the prevention and/or treatment of different diseases; ii) serve different population categories depending on the age (children, adults, older people, ...); iii) sex; iv) professional conditions. The objectives may be quantified by the increasing of life expectancy (Adhikari et. al.; 1999). The *Feasibility Analysis* should take account the comparison in the options analysis should consider possible alternative medical-technological solutions (different treatment systems, different diagnosis technologies, etc.) and possible general alternatives with the same socio-sanitary objectives (e.g. building an outpatients department instead of wards in a hospital). The key issues will be the patients flows and trends (determined on the basis of demographic data) and epidemiological and morbidity data for the pathologies involved. The *Financial Analysis* of hospitals and health infrastructures investment projects must take into account financial inflows corresponding to: i) fees for hospital admission; ii) diagnosis and treatment which are paid separately and additional services; as well as the financial costs corresponding to: i) personnel; ii) medicines and materials; iii) out-sourced medical services necessary to run the structure. The most appropriate time horizon should be at least 20 years (EC, 2008). In what concerns *Economic Analysis*, it should be considered the following essential benefits: i) the future saving in health costs; ii) the avoided loss in production of the patients and their family; iii) the increase in the welfare or the reduction in suffering on the part of the patients and their family. The *Multicriteria Analysis* is particularly useful for a quantitative approach, and the results of such an analysis may lead to a profound change in the proposed investment or even to its rejection. This process must be based on multiple choices, and the treatment given to each of the choices is conditional on the final decision (Falcão Silva e Salvado, 2015). It is considered as a determining factor for the success of hospitals and health infrastructures investment projects: i) the availability and reliability of epidemiological data for the catchment area; ii) the risks incurred by administering (new) diagnostic, preventative or therapeutic treatment, etc); iii) the difficulty in correctly evaluating trends in the costs of personnel, medicines etc. in the long term. For a *Sensitivity and Risk Analysis* it should also be considered at least the following variables: i) the cost of the investment; ii) the percentage incidence of pertinent morbidity, disaggregated by pathological type, age range, sex, profession, etc.; iii) tariffs for health services and their dynamics in time; iv) dynamics in time of personnel costs; v) dynamics in time of the costs of medicines, products and critical services; vi) the value and dynamics of the risks involved in carrying out diagnoses or treatment (Falcão Silva e Salvado, 2016).

REFERENCES

- [1]-Adhikari R, Gertler P, Lagman A. Economic analysis of health sector projects: A review of issues, methods and approaches, 1999, Asian Development Bank.
- [2]-EC. Guide to cost benefit analysis of investment projects, Structural Funds, Cohesion Funds and Instrument for Pre-Accesion, 2008, European Comission,
- [3]-Falcão Silva MJ, Salvado F. Cost-benefit analysis: Methodology for decision support in Architecture, Engineering and Construction interventions, Relatório 288/2015-DED/NEG, 2015, LNEC (*in Portuguese*).
- [4]-Salvado F, Falcão Silva MJ. Applicability of cost-benefit analysis methodology. Externalities identification and evaluation in buildings rehabilitation”, Relatório 84/2016-DED/NEG, 2016, LNEC (*in Portuguese*).