STUDY ON FINANCIAL SUSTAINABILITY INDICATORS FOR NON-INCOME GENERATING PROJECTS

Ramona Mihaela GHINTU (BĂNICĂ)[1]

ABSTRACT
The present article aims at studying financial sustainability indicators for a non-income generating investment project financed through irredeemable public funds. The purpose of funding is to develop and increase the efficiency of public services, as well as ensuring that the principles of sustainable development and the diminishing of productivity gaps within the European Union. The technical-economic evaluation represents one of the stages of the evaluation and project proposal selection process. In deciding to invest, the cost-benefit ratio is also taken into account, in order to compare the two, especially when they result in different years. In this context the financial indicators provide information regarding economic profitability of the investment that will generate benefits in the society after the project is finalised.

KEYWORDS: *financial indicators, investment project, sustainability.*

JEL CLASSIFICATION: *G32*

1. INTRODUCTION

The aim of the paper is to present a brief perspective on the characteristics of the financial indicators in elaborating non-income generating investment projects.

2. DATA AND METHODS

The elaboration process of the projects implies covering the following stages:
- Analysis of a project in the socio-economic context;
- Clear identification of the project;
- Feasibility study of the project and of the alternative options;
- Financial analysis;
- Economic analysis.

All project proposals must include relevant information regarding:
- Total investment costs;
- Incomes and expenses of operating activity;
- Incomes and expenses of investment activity;
- Sources of funding;
- Financial sustainability;
- Financial profitability of the invested capital.

Other important aspects of a project proposal refer to:
- The time frame for which the financial analysis is made; it must comprise the investment period or be at least large enough to provide relevant information about the project's sustainability;
- The inflation coefficient and changes in the relative prices, which must be approached in a consistent manner;

[1] The Bucharest University of Economic Studies, Romania, ramona_banica@yahoo.com

- The internal profitability rate of the investment, which may be very low or even negative for projects that involve the public sector, but should be positive for private investors;
- The appropriate residual value should be included in the last year of cash-flows. For this section of the project proposal the European Commission gives three different methods, which should be used to determine the residual value of any investment proposal.
    - The first method takes into account the market residual value of the company assets. In this context the residual values becomes the liquidation value of the company.
    - The second method establishes the residual value of the project proposal by computing the residual value of all assets, debts and own capital by using a standard accounting depreciation formula. This method is the only one accepted for public infrastructure that cannot be sold or privatized.
    - The third method attaches the residual value of the project to the net present value of cash-flows discounted for the years remaining after the period of analysis. This method consists of two stages:
        - Forecasting of future project cash-flows;
        - Determining the discount rate for the project.

Given an investment project in IT equipment financed through irredeemable public funds, implemented by a public institution, the following hypotheses are considered to be the base of the financial projections:

- Reimbursements and returns are considered to be received at the end of the period;
- During the implementation and operation period of the project no income is generated;
- For estimating the residual value the perpetuity methods was used. The perpetuity growth rate considered was g=0, consequently the growth rate is equal to the discount rate, namely 5%, and the cash-flows of the years during which the project operates;
- The net discounted cash-flow method was used for the financial projections;
- The value-added tax for eligible and non-eligible expenses is claimed at funding and included in the projection of cash-flows for the entire period analysed.

From a methodological point of view, it is desirable that any project proposal is accompanied by an analysis of options associated to the project. According to this analysis the real benefits (financial, economic, social etc.) of starting the investment project for various investment alternatives may be distinguished. In compliance with the requirements of the solicitor's guide, in the case of investment projects financed through irredeemable public funds, the three investment alternatives chosen to be highlighted are the zero variant, the variant with investment and no irredeemable financial assistance, and the variant with investment and irredeemable financial assistance.

The decision regarding the options to be chosen is based on two possibilities. One of them refers to maximum investment costs and the other to medium costs, according to the requirements of the feasibility study as it is stipulated in HG 28/2008.

With the view to choose one of the variants, the appropriate budget is established. It will comprise a series of indicators that will be evaluated based on scoring criteria. Among the indicators in the domain of IT equipment investments, for example, there are also indicators regarding:

- The number of persons trained for using certain implemented software products;
- The number of persons that will ensure the maintenance of a software solution, employed by the beneficiary;
- Expenses with equipment acquisition;
- Expenses with license acquisition;
- Expenses with informatics application acquisition.

It may be considered that for analysing the options the following scoring criteria were established with reference to the advantages and disadvantages taken into account by the decision factor.

1. The number of persons trained for using certain implemented software products – it is an indicator of maximum score and the maximum number of points is given for the highest values of the indicator;
2. The number of persons that will ensure the maintenance of a software solution, employed by the beneficiary – it is an indicator of maximum score and the maximum number of points is given for the highest values of the indicator;
3. Expenses with equipment acquisition – it is an indicator of minimum score and the maximum number of points is given for the lowest values of the indicator;
4. Expenses with licence acquisition – it is an indicator of minimum score and the maximum number of points is given for the lowest values of the indicator;
5. Expenses with informatics application acquisition – it is an indicator of minimum score and the maximum number of points is given for the lowest values of the indicator.

Table 1. Score by activity

Nr. crt.	Score criteria	Maximum score	Obtained score		
			Zero variant	Medium variant	Maximum variant
1	The number of persons trained for using certain implemented software products;	20	0	20	20
2	The number of persons that will ensure the maintenance of a software solution, employed by the beneficiary;	15	5	15	15
3	Expenses with equipment acquisition;	20	20	15	10
4	Expenses with licence acquisition;	20	20	15	10
5	Expenses with informatics application acquisition	25	25	20	10
	Total score (maxim 100 pct.)	**100**	**70**	**85**	**65**

Each of the above indicators is evaluated on a scale from 1 to 10 depending on the value and the importance level associated, which is determined by the solicitor according to the advantages and the disadvantages of each decision criteria used.

The no investment variant, the zero variant of an investment project is the one for which the applicant is a public institution. It may be represented by the implementation of a reporting application at local level, in each institution. The application would be used by the existent staff and would imply transmission of data at time intervals or upon request. The main disadvantages associated with this variant are:

- The interested parties cannot directly and continuously access the data;
- Not all the data can be correlated simultaneously.

The variant chosen for a project, as is the case of the chosen example, may be the medium variant (the variant with medium investment), since the implementation period can be reduced and the costs may be allocated from structural funds. Consequently, the financial effort of the Beneficiary is insignificant and the benefits of the institutions involved and the social benefits obtained will heave from the first year of activity, increasing thereafter.

In this case, the investment costs are supposed to be optimal, because the software application is central and unique for all its beneficiaries. All the cost levels will see diminishes that will result in a reduction of expenses. In turn, this leads to a better and more efficient operation of the activity.

The maximum variant implies exclusive use of commercial software that will be delivered and configured in order to meet the identified requirements.

The assumption made is that the maximum variant implies acquiring the following products and services:

- Acquiring and installing the hardware and communication infrastructure;
- Acquiring, installing and configuring the main software;
- Acquiring, installing and configuring the applications;
- Management, testing, training and technical assistance services;
- Connection to broadband and implementation of the LAN network services;

In conclusion, the supplier must offer project management services of high quality in order to ensure meeting the deadlines and the quality of the final system. The training of the users and of the administrators for exploitation, service and maintenance of the system will also be done for the implemented system. Moreover, all services required for connecting the data centre to the equipments for allowing the system users to access the data will be done together with auditing the security of the entire system in order to ensure the data and applications integrity.
The supplier will need to have the customisation components of the offered commercial solution for implementing the specific elements of the Beneficiary.
The advantages of the maximum variant are:

- The possibility to deliver and install an initial version in a shorter period of time (maximum three months);
- The maturity of the solution, proven by similar implementations;
- The independence of the Beneficiary from the Supplier, since there may be more than one supplier for the implemented software solution. This is an advantage especially in the period of maintenance and support.

The disadvantages of the maximum variant are:

- Given the novelties introduced by the system, the possible software solutions will need important customisation in order to correspond the procedures and workflows of the Beneficiary;
- The proposed informatic system will have to be integrated with a number of other technologically heterogeneous systems, thus it will be difficult to identify a software solution that would allow for a facile integration with all these systems;
- There is the possibility that the producer of the solution to withdraw its support for the continuous development of the solution, which would create problems for the Beneficiary in the maintenance and support stage, since the latter does not have the access to the code, which would ensure system sustainability;
- The software solutions may not fully comply with the requirements of open and extensible systems if the producer support and its interest for the continuous evolution of the system are lacking;
- The price of the licences estimated for the number of users is supposed to be higher than the cost of developing the system.

For the chosen project variant, the drafting of the financial analysis is based on estimations of incomes and expenses generated by and associated to the project. The project does not generate incomes, but brings a number of social and economic benefits.
The estimation of the expenses will be made based on system exploitation and maintenance costs. To this purpose the following categories of expenses will be estimated:

A. Utility costs;
B. Maintenance and repair of the hardware component costs;
C. Costs for own personnel, that will use the system;
D. Costs implied by the third party services for system maintenance and exploitation.

The hypotheses specific to each category of expenses are presented further:

1. Electricity costs

These are the electricity expenses necessary for optimal functioning of the infrastructure implemented through the project. They only refer to expenses generated by hosting the hardware infrastructure acquired through the project and the respective specific requirements.

The electricity expenses comprise:

- Electricity costs for servers;
- Electricity costs for air conditioning;
- Electricity costs for light sources.

The electricity expenses are computed based on the following formula:

$$Px = Qx \cdot qe \cdot th \cdot tz \cdot tl \cdot pe \quad (1)$$

Where:

Ps: electricity costs for the analysed IT equipment
Qs: number of IT equipments within the category
qe: energy consumption in the online state
th: number of hours of daily functioning
tz: number of days of monthly functioning
tl: number of months of yearly functioning
pe: unit price of electricity

The hypotheses on which the computations are based are the following:

- electric energy consumption is constant throughout the analysis period of the IT equipment,
- the number of daily functioning hours of the IT equipment are the same as the ones presented below,
- the servers work non-stop and so does the air conditioning that ensures optimal constant temperature for equipment functioning,
- storage equipment – functions non-stop and so does the air conditioning that ensures optimal constant temperature for equipment functioning,
- the electricity price increases annually according to the statistical index regarding consumption price index,

2. Maintenance and repair costs.

These expenses comprise the maintenance and repair costs for the hardware infrastructure acquired through the project. Taking into account that in IT the utility duration of equipments is of 4-5 years for workstations and 6-8 years for servers (after this period the equipment requires upgrades), these expenses will be taken into account for improving the hardware components.

3. Personnel costs

These expenses refer to costs implied by the solicitor's personnel that will be involved in the exploitation and administration of the system. The level of these expenses is determined starting from the estimated necessary personnel, who will ensure system maintenance.

Even if these personnel will be involved in the maintenance of other informatic systems, the estimated salary costs are average.

The social contributions of the employer were estimated to 27.75%, the quotas considered being the following:

	Social contribution	Percent
1	CAS	20.8%
2	CASS	5.20%
3	Unemployment	0.5%
4	Vacations and due allowances	0.85%
5	Work accidents	0.40%
	Total	27.75%

4. Third party service costs

These expenses represent costs for system exploitation and maintenance in the case where they are provided by third-parties.

The level of these expenses is estimated starting from an estimated level determined based on available information regarding commercial offers of informatic solutions suppliers. The offers also include maintenance and even exploitation of the system.

It is possible to acquire maintenance and technical assistance services for the entire duration of the project at the entry into service of the system. This would guarantee fixed operating costs.

3. RESULTS

Among the benefits of the implementation of the present investment project, reducing the costs is one of the important points. The following costs reductions were taken into account and computed:

- Salaries
- Utility costs (electricity, water, telephone)
- Maintenance and operating costs
- Administrative costs

Cash flows are considered to have the following structure:

A. Exploitation activity:
   - A1. Reducing salary costs
   - A2. Reducing utility costs (electricity, water, telephone)
   - A3. Reducing maintenance and operating costs
   - A4. Reducing administrative costs

1. Net cash flow from exploitation activity – Incomes from exploitation (A1+A2+A3+A4)

B. Investment and funding activity:
   - B1. Equipments
   - B2. Intangible assets
   - B3. Other investment expenses

2. Net cash flow from investment and funding activity – Total investment cost (B1+B2+B3)
3. Net cash flow of the period (1+2)
4. Available cash from the previous period
5. Cumulated cash flow

In the table below the incremental amounts associated with the investment project are presented, synthesised by chapters of income and expenses:

Table 2. Financial analysis – sustainability (incremental amounts)

Reference period	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Total investment cost	19,434	10,149	0	0	0	0	0
Total operating cost reduction	0	0	1,894	2,084	2,334	2,637	3,006
Exploitation income	0	0	1,894	2,084	2,334	2,637	3,006
EU assistance	19,434	10,149	0	0	0	0	0
Positive flows	19,434	10,149	1,894	2,084	2,334	2,637	3,006
Negative flows	19,434	10,149	0	0	0	0	0
Annual cash flows	0	0	1,894	2,084	2,334	2,637	3,006
Cumulated cash flows	0	0	1,894	3,978	6,311	8,948	11,954

The time frame during which the analysis may be done comprises, in this case, two years of implementation and five years of analysis.

The computation of the indicators representing the net present value and the internal rate of return for the incremental amounts is presented in the following table:

Table 3. Financial analysis – computation of the indicators (incremental amounts) VAN (C) and RIR (C)

Reference period	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Total investment cost	19,434	10,149	0	0	0	0	0
Total operating cost reduction	0	0	1,894	2,084	2,334	2,637	3,006
Exploitation income	0	0	1,894	2,084	2,334	2,637	3,006
Public funds income	0	0	1,894	2,084	2,334	2,637	3,006
Cash flow	-19,434	-10,149	1,894	2,084	2,334	2,637	3,006
Residual value							10,235
Adjusted cash flow	-19,434	-10,149	1,894	2,084	2,334	2,637	13,241
Discount rate	5%	5%	5%	5%	5%	5%	5%
Discount factor	0.9524	0.9070	0.8638	0.8227	0.7835	0.7462	0.7107
Adjusted discounted cash flow	-18,508	-9,205	1,636	1,714	1,828	1,968	9,410
VAN (C)	**-11,157**						
RIR (C)	**-5.87%**						
VAN financial benefits	16,556						
VAN financial costs	27,714						
COST-BENEFIT RATIO	**0.60**						

Table 4a. Computation of investment recuperation period – implementation

Computation for investment recuperation period		IMPLEMENTATION		
Nr. crt.	Category / Year	1	2	Total
1	Reduction of operating costs	0	0	
2	Investment	19,434	10,149	29,583
7	Net adjusted operational cash flow (FNON)		0	
3	Net cumulated operational cash flow	0	0	
4	**Investment recuperation period from FNON**	**-**	**-**	**-**
5	Discount rate	5.00%	5.00%	
6	Discount factor	0.952	0.907	
7	Discounted investment	18,508	9,205	27,714
8	Net present operational cash flow (FNONA)		0	
9	Cumulated net present operational cash flow		0	
10	**Investment recuperation period from FNONA**			
11	Net average operational cash flow (FNONM)			3,905
12	**Investment recuperation period from FNONM**			**7.58 years**
13	Net present average operational cash flow (FNONAM)			2,558
14	**Investment recuperation period from FNONAM**			**10.83 years**

Table 4b. Computation of investment recuperation period – after implementation

Computation for investment recuperation period		AFTER IMPLEMENTATION									
Nr. crt.	Category / Year	3	4	5	6	7	8	9	10	11	12
1	Reduction of operating costs	1,894	2,084	2,334	2,637	3,006	3,517	4,115	4,815	5,633	9,013
2	Investment										
3	Net adjusted operational cash flow (FNON)	1,894	2,084	2,334	2,637	3,006	3,517	4,115			
4	Net cumulated operational cash flow	1,894	3,978	6,311	8,948	11,954	15,472	19,587	24,401	30,035	39,048
5	**Investment recuperation period from FNON**	-	-	-	-	-	-	-	-	**8.18**	-
6	Discount rate	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
7	Discount factor	0.864	0.823	0.784	0.746	0.711	0.677	0.645	0.614	0.585	0.557
8	Discounted investment										
9	Net present operational cash flow (FNONA)	1,636	1,714	1,828	1,968	2,136	2,381	2,653	2,956	3,294	5,019
10	Cumulated net present operational cash flow	1,636	3,350	5,179	7,147	9,283	11,664	14,316	17,272	20,566	25,584
11	**Investment recuperation period from FNONA**	-	-	-	-	-	-	-	-	-	**9.19**

4. CONCLUSIONS

- The net cumulated cash-flow is positive in each of the five forecasted years;
- The net present value was analysed based on net benefits. From the analysis resulted a negative VAN (-11,157 lei), which recommends the project for financing from European funds;
- The internal rate of return is computed based on the net benefits obtained during the reference period. RIR = -5.87 < 5%;
- The cost-benefit ratio is less than 1. Value = 0.60 < 1;
- The investment recuperation period is computed based on cash flows, as shown in Table 4.

From the cost-benefit analysis results that the investment recuperation period is of 8.18 years from net annual operational benefits and of 9.19 years from discounted net annual operational benefits.
Based on the analysis, the financial indicators of sustainability are in accordance with the required criteria for approving the funding of the non-income generating project from irredeemable public funds. The profitability rate obtained ensures sufficient income to cover the opportunity cost of the entries, so that, according to the European Union regulations, there will be no overfunding of the investment.

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