

Contributions on the Economic Assessment Methodology of Industrial Projects (E.A.M.I.P)

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Abstract—The article tries to present some contributions of the authors on the development of economic assessment methodology (step-by-step) of industrial projects (E.A.M.I.P.). The methodology is constructed in four stages, each featuring its own substages and iterations. In the framework of the second stage were researched and grouped the economic indicators of investment efficiency in a model, V.R.Q.R.R.T. (consisting of: the net updated value, economic efficiency, the total updated ratio income/expense, internal rate of return, internal rate of return adjusted and capital recovery period), according to industrial projects implemented in Romania, that shows most clearly the efficiency of the project, and which answers to the main demands of end-users and investors.

Keywords—Efficiency; Economic Assessment; Investment; Industrial Project; Methodology.

Abbreviations—Economic Assessment Methodology of Industrial Projects (E.A.M.I.P); Internal Rate of Return Adjusted (RIRA); International Organization of Supreme Audit Institutions (I.N.T.O.S.A.I.).

I. INTRODUCTION

ECONOMIC evaluation of investment projects concerns the economic phenomena (including financial ones) and operates with notions, patterns, techniques and instruments specific to economic field, realising correspondence between resources and essential needs (benefits), so that the resource consumption is the key just by getting some significant results. In fact, the economico-financial evaluation (the financial derives from the fact that any economic result can be expressed with a degree of precision in money, so any result has a financial correspondent) take up the study of cause-effect relations [Cristian Doicin, 2009; Almahmoud et al., 2012]. The problems of economic investment evaluation and decision in projects can be reasonably resolved, on the criterion of efficiency, only if it is done the assessment and analysis of all the alternatives and situations, possible competing variants. All competitive variants will be developed with the same degree of detail, in order to provide relevant information, necessary for comparison and measurement, assessment of the effectiveness of the resources allocated.

The main elements of an industrial investment project are the following [Cisneros-Molina, 2006; Chang & Peng Shi, 2011]:

- Initial investment, I_j , where: $j = \overline{1, v}$; v - maximum number of alternatives of a project and/or industrial projects;
- Discount rate, k ;
- Available cash flows, CFD_n ;
- Project life duration, n ;
- Residual value of project, VR_n (for some project types);

Their representation, depending on the apparition moment and the variation mode is shown in Figure 1: where:

I_{j1}, I_{j2} - initial investment tranches of 2 years (d) of investment realization;

CFD_1, CFD_2, CFD_3 - Positive cash flows from the investment operation (D), $n = d + D$;

CFD_4 - Negative cash flow from the investment operation;

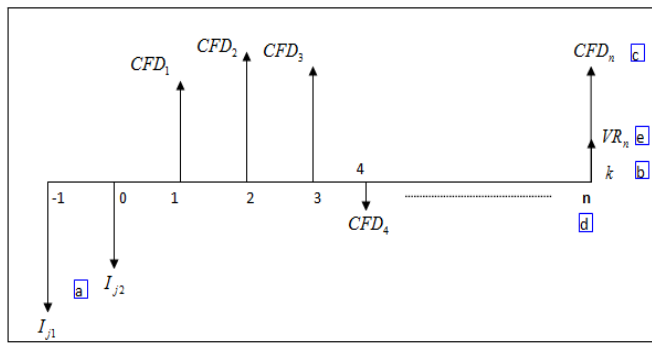


Figure 1: Investment Elements

Economic evaluation of investment projects requires primarily the rigorous estimating of investment efforts and its correlation with income and expenditure flows.

The E.A.M.I.P. objectives are the following [Cisneros-Molina, 2006]:

- Utility and viability argumentation of investment project in terms of sectoral interests, macro social;
- Verification and certification of opportunity and viability of investment project on the positions of the direct and indirect interests of participating entities in its realization: funding institutions, shareholders, investors, beneficiaries;
- The investment decision which maximizes the project market value.

II. E.A.M.I.P. PRESENTATION

E.A.M.I.P. 1 - Stage of Planning and Selection of the Initial Elements Investment

It is the most important stage, in which are done accurate calculations for identifying the values of investment elements, values and wrong interpretation leads to disastrous results of the project (the default blocking of funds, not worthwhile, etc.).

E.A.M.I.P. 1.1- Setting the Initial Investment Size of the Project, I_j

The project initial investment I_j , is represented by the value of the capital required for realizing the project. The components which give initial investment value may be the following [Albert Hamilton, 2010]:

- The purchase price of all fixed assets (including all fees that will not be recovered, customs duties, etc.);
- Opportunity cost of the existing assets of the recipient society project (lands, buildings already in use of the society, etc.);
- Employees' wages costs (only related investment project);
- Special costs with assembly, delivery and handling;
- Costs related to testing the project functionality (materials used for testing of new production lines, etc.);
- Costs with current assets (inventories, receivables).

$$I_j = I_1(1+k)^{d-1} + I_2(1+k)^{d-2} + \dots + I_h(1+k) + I_{h+1}, \quad (1)$$

where:

d - The maximum duration of project realizing, (years);

I_1 - The first investment tranche, corresponding to the first year of construction;

I_h - The investment tranche corresponding of h year;

I_{h+1} - The last investment tranche, corresponding to the last year of construction;

E.A.M.I.P. 1.2 - Setting the Discount Rate, k

If the value of investment is from own sources, the discount rate is established on the basis of the average profitability of the funds invested in the period immediately prior to the project [Gurău Marian Andrei, 2012]. If financing is done from several external sources, the discount rate must be brought to a weighted average size of different sources capital costs, adding a risk margin:

$$k = k_1 + \chi, \quad (2)$$

where:

k - Interest rate applied by the lender including the margin of risk;

k_1 - Monetary market interest rate without risk of capital borrowed;

χ - Margin of risk (the amount of additional risk premium assumed through investments in certain industrial projects types, more or less risky);

E.A.M.I.P. 1.3 - Setting the Available Cash Flows, CFD_h

$$PN_h = PB_h(1-16\%), \quad (3)$$

where:

PN_h - Net profit after tax;

PB_h - Gross profit from the project operation (estimate);

16% - Taxation of gross profit share for Romanian environment;

$$CFD_h = PN_h + A_h - Ce_h, \quad (3)$$

where:

Ce_h - Economic growth formed of immobilizations variation on h year and net current assets variation from net debt;

A_h - Depreciation for the h year for the project new assets;

E.A.M.I.P. 1.4 - Setting the Life Cycle of the Project, n

For setting the project life duration are taken into account more concepts, as follows: technical duration of project, the accountant duration, the commercial duration and use the legal duration of the project. In practice the four durations will not ever be equal. That's why in the calculations for determining the efficiency of industrial projects, will be used the duration considered representative for the projects examined.

E.A.M.I.P. 1.5 - Setting the Project Residual Value, VR_n

Residual value represents the amount that can be recovered from fixed assets take out of operation at the end of their normal life cycle (n), fee expenditure relieved of assignment.

In fact, the residual value can be determined according to equation [Gurau, 2013]:

$$VR_n = \frac{CFD_{n+1}}{(k-f)}, \quad (5)$$

where:

CFD_{n+1} - Cash flow from the next year following the expiration of the reference period (n);

k - Project discount rate;

f - The average annual growth rate estimate for the project cash flow, $k > f$;

According to E.A.M.I.P. 1.4 the project maximum life for predictions, $n \leq 7$, but if consider a machine with a normal depreciation period ($n=10$), the residual value equivalent to flows generated in the years which surpass the prediction period, will be [Gurau Marian Andrei, 2012B]:

$$VR_{ech.} = VR_7 = \frac{CFD_8}{1+k} + \frac{CFD_9}{(1+k)^2} + \frac{CFD_{10}}{(1+k)^3} + \frac{VR_{10}}{(1+k)^3}. \quad (6)$$

E.A.M.I.P. 2 - Stage of Economic Assessment according to Model V.R.Q.R.R.T.

The performance of industrial investment projects is that level of results of technical, social and economic-financial that can generate an asset during the exploitation period, functioning or life period, results that satisfy investors and recipients of investment. Thus, all the economic evaluation studies for industrial projects, including economic decisions associated, must take into account the resulted value added, as a consequence of a project acceptance. Projects performance evaluation establishes the basis to adopt the decision, regarding the implementation of the investment (or not), analyzing the following aspects [Gurau, 2013]:

- Project profitability;
- The recovery of initial investment;
- The value of investments in environmental protection;
- Reconstruction of the affected environment (if is necessary);
- The reconstruction of the environment after the completion of the project;
- Sustainability;
- National interest, national safety and security.

In industrial projects, implemented in Romania, from the beneficiary's own project funds or bank loans, it's proposed the following economic evaluation model consists of the following indicators (V.R.Q.R.R.T.), outlined below [Gurau Marian Andrei, 2012A]. Were chooses these indicators in model because they reflect the best economic efficiency of industrial projects and quantify the main worry of investors in the current economic crisis.

E.A.M.I.P. 2 - V.R.Q.R.R.T. Model

E.A.M.I.P. 2.1 – Net updated value, VAN ;

E.A.M.I.P. 2.2 – Static and dynamic economic performance, RE , RE' ;

E.A.M.I.P. 2.3 – Ratio between income/ expense total updated, Q ;

E.A.M.I.P. 2.4 – Internal rate of return, RIR ;

E.A.M.I.P. 2.5 – Internal rate of return adjusted, $RIRM$;

E.A.M.I.P. 2.6 – Duration of capital recovery static and dynamic;

E.A.M.I.P. 2.1

The rationale which stays at the base of VAN indicator: when an organization wish to implement an industrial project, financed from external sources, the organization value will include the amount representing the net value of the updated cash flow estimate. Thus, if the net updated value of an industrial project is positive, organization value increasing outweighs the amount of foreign funds needed to finance the investment.

In fact, VAN is the first indicator that can appreciate the attractiveness of certain types of projects in order to make the investment decision, acceptance/ rejection; therefore it should not be excluded from any system of indicators.

Algorithm E.A.M.I.P. 2.1

Iteration 1: Written depending on incomes, investments and operating costs for the relevant year h , VAN becomes the difference between total incomes and expenditures updated, as follows:

$$\begin{aligned} VAN(k\%) &= \sum_{h=1}^n (V_h - I_h - CE_h)(1+k)^{-h} = \\ &= \sum_{h=1}^n V_h(1+k)^{-h} - \sum_{h=1}^n (I_h + CE_h)(1+k)^{-h} = \\ &= \sum_{h=1}^n V_h(1+k)^{-h} - \sum_{h=1}^n K_h(1+k)^{-h} = VA(V_h) - VA(K_h), \end{aligned} \quad (7)$$

where:

I_h - Investment tranche corresponding to h year;

$K_h = I_h + CE_h$ - Total costs with investments and exploitation;

$VA(V_h)$ - Total incomes updated;

$VA(K_h)$ - Total expenditures updated;

Iteration 2: Written according to the amount of available cash flow, VAN becomes:

a) The project self-financing case:

$$\begin{aligned} VAN(k\%) &= \sum_{h=1}^n (PN_h + A_h - Ce_h)(1+k)^{-h} = \\ &= \sum_{h=1}^n (CF_{function} - Ce_h)(1+k)^{-h} = \sum_{h=1}^n CFD_h(1+k)^{-h}. \end{aligned} \quad (8)$$

b) The case of project financing from external sources:

$$VAN(k\%) = \sum_{h=1}^n (PN_h + A_h + Dob_h - Ce_h)(1+k)^{-h} =$$

$$= \sum_{h=1}^n (CF_{function} - Ce_h)(1+k)^{-h} = \sum_{h=1}^n CFD_h(1+k)^{-h}. \quad (9)$$

Iteration 3: Writing detailed throughout the project life, n, VAN becomes:

$$VAN_j(k\%) = \frac{CFD_1}{1+k} + \frac{CFD_2}{(1+k)^2} + \dots + \frac{CFD_h}{(1+k)^h} + \dots + \frac{CFD_n + VR_n}{(1+k)^n} - I_j, \quad (10)$$

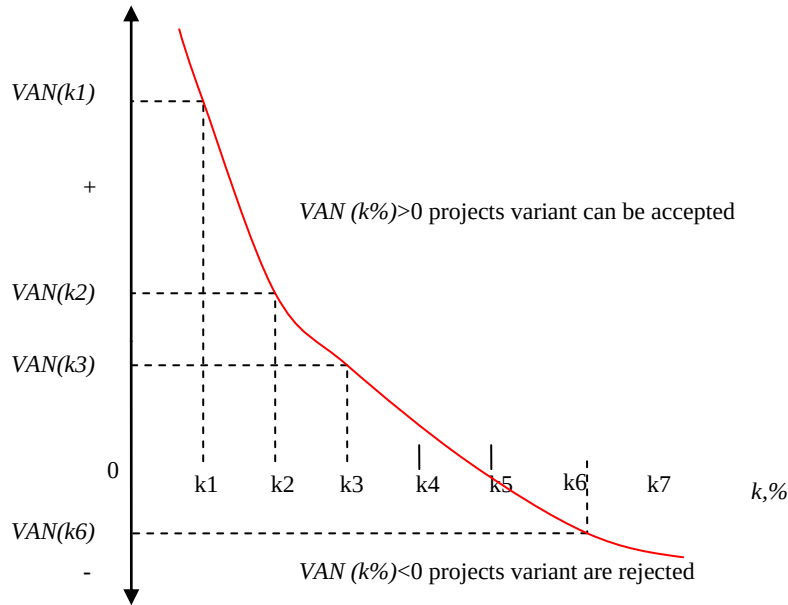


Figure 2: VAN Variation Mode

E.A.M.I.P. 2.2

For determine the static and dynamic economic efficiency, RE , RE' , of a project it departs from forecasting of total profit, P_t , that the project will generate and from total initial investment I_j [Lyandres & Zhdanov, 2010; Chiscolm Mark, 2010].

$$P_t = \sum_{h=1}^n P_h = P_{t(recovered)} + P_{t(surplus)}, \quad (11)$$

where:

$P_{t(recovered)}$ - The profit that will recover the initial investment total, ($P_{t(recovered)} = I_j$);

$P_{t(surplus)}$ - The profit that will represent a surplus for the beneficiary of the project;

The static economic efficiency (used for project with execution time, $d < 1$ year) can be written in the form:

$$RE = \frac{P_t - I_j}{I_j} = \frac{P_{t(recovered)} + P_{t(surplus)} - I_j}{I_j} = \frac{P_{t(surplus)}}{I_j}, \quad (12)$$

In other words:

where:

VR_n - Residual value of j project;

I_j - Total initial investment of j project;

The VAN represents a hyperbolic function descending on the discount rate, k and it intersects with the x-axis when $VAN = 0$, according to figure 2 [Gurău Marian Andrei, 2012C]:

$$RE = \frac{\sum_{h=1}^n P_h - \sum_{h=1}^{TR} P_h}{I_j} = \frac{\sum_{h=1}^n P_h}{I_j} - 1, \quad (13)$$

where:

TR - the period of the invested capital recover;

$n > TR$, absolute condition, otherwise $RE < 0$;

In case of industrial projects with a very high investment value, it is recommended to operate with an average value of profits, $P_{h(medium)}$:

$$P_{h(medium)} = \frac{\sum_{h=1}^n P_h}{n}. \quad (14)$$

Thus:

$$P_t = P_{h(medium)} \cdot n. \quad (15)$$

$$P_{t(recovered)} = P_{h(medium)} \cdot TR. \quad (16)$$

$$P_{t(surplus)} = P_{h(medium)} \cdot (n - TR). \quad (17)$$

If transformations are performed, the economic efficiency may be expressed in terms of project life duration (n). According to equation 13, it has:

$$RE = \frac{P_t}{I_j} - 1 = \frac{P_{h(medium)} \cdot n}{P_{h(medium)} \cdot TR} - 1 = \frac{n}{TR} - 1. \quad (18)$$

For the calculation of the economic dynamic efficiency RE' it will use the updated values of profit and of initial investment:

$$RE' = \frac{VA(P_i)}{VA(I_j)} = \frac{\sum_{h=1}^n P_h \cdot (1+k)^{-h}}{\sum_{h=1}^n I_h (1+k)^{-h}}. \quad (19)$$

E.A.M.I.P. 2.3

The ratio between incomes and the expenditures updated, Q is used as ranking criterion of investments projects, because every investor or the project beneficiary wants to maximize the revenue per cost unit. The ratio can be calculated by taking into account only investment costs or total cost of investment and operation (excluding depreciation), expressed in the updated values [Cristian Doicin, 2009].

$$\sum_{h=1}^n VA(V_h) = \sum_{h=1}^n V_h (1+k)^{-h}, \quad (20)$$

$$\sum_{h=1}^n VA(K_h) = \sum_{h=1}^n (I_h + CE_h) (1+k)^{-h}, \quad (21)$$

where:

$VA(V_h)$ - Net incomes updated;

$VA(K_h)$ - Expenditures updated;

$$Q = \frac{\sum_{h=1}^n V_h (1+k)^{-h}}{\sum_{h=1}^n (I_h + CE_h) (1+k)^{-h}}. \quad (22)$$

To be able to analyze the space of admissible solutions of this indicator in case of several variants of project, it is proposed to be done the graphic method. Assuming that there are eight variants of the same project, for each variant it will have a ratio Q_i ($Q_1, \dots, Q_8$).

It is assumed that the recipient of the project (the investor) has a minimum value of desired income ($\sum VA(V_h)_{(min)}$) and a maximum value of expenses that it will accept ($\sum VA(K_h)_{(max)}$), these two restrictions will make a limited space in which it can search for optimal solutions, according to figure 3:

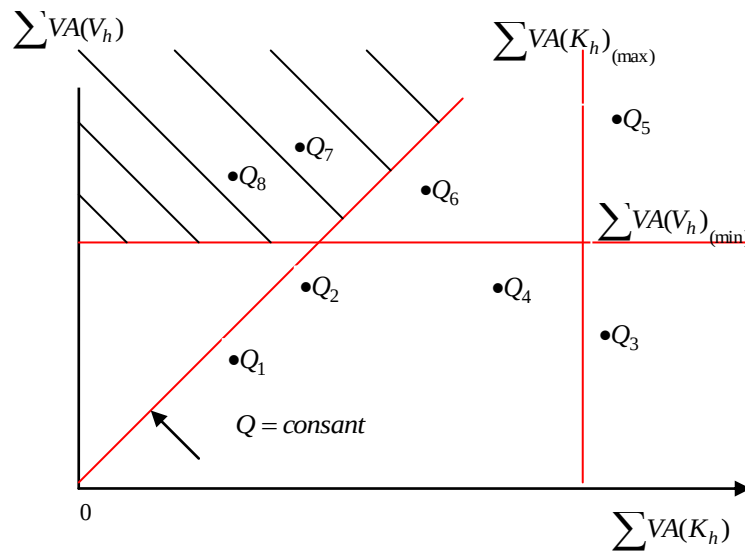


Figure 3: Q_i , Admissible Solutions of a Project

In figure 3, the bisector $Q = \text{constant}$, represents $\sum VA(V_h) = \sum VA(K_h)$. The lot of project admissible solutions is represented by the hashed area, so the only variations that can be implemented are Q_7 and Q_8 , according to investor restrictions.

Conclusions of E.A.M.I.P. 2.3

a) If the value of the discount rate is lower, $k \Rightarrow 0$, the value of Q is higher, ($k = 0 \Rightarrow Q = \text{maxim}$);

b) If the value of the discount rate increases, the value of the indicator Q will be lower and thus may be less than 1 [Gurau, 2010].

E.A.M.I.P. 2.4

If it starts from the idea that the RIR is the rate of discount for which $VAN = 0$, it will obtain [Duoxing Zhang, 2010]:

$$\sum_{h=1}^n CFD_h (1 + RIR)^{-h} + VR_n (1 + RIR)^{-n} - I_j = 0. \quad (23)$$

$$\sum_{h=1}^n CFD_h (1 + RIR)^{-h} + VR_n (1 + RIR)^{-n} - \sum_{h=1}^n I_h (1 + RIR)^{-h} = 0. \quad (24)$$

The RIR level will be determined by successive attempts, because it is not a relationship of direct calculation. Thus, it will be calculated VAN at different discount rates k and

almost close rate will reach k , for which $VAN = 0$. Thus, RIR becomes [Cristian Doicin, 2009; Duoxing Zhang, 2010]:

$$RIR = k_{\min} + (k_{\max} - k_{\min}) \cdot \frac{VAN(k_{\min})}{VAN(k_{\min}) - VAN(k_{\max})}, \quad (25)$$

where:

$k_{\min}$ - The lowest discount rate for that, $VAN(k_{\min}) > 0$;

$k_{\max}$ - The highest discount rate for that, $VAN(k_{\max}) < 0$;

Because it uses linear interpolation, it is recommended that $\Delta k = k_{\max} - k_{\min}$ may not be greater than 5 - 7%.

Selecting an investment project after maximum RIR criterion requires that all projects examined to have the same economic life; otherwise the RIR will achieve an incorrect ranking of projects. Internal rate of return enables the comparison of investment alternatives and variants, considering the staggering in time investment, cash flow and profits. RIR does not involve establishing beforehand the discount rate as the calculation involves the VAN.

E.A.M.I.P. 2.5

The internal rate of return modified RIRM (or internal rate of return adjusted, RIRA) represents a function $f(k)$ of discount rate k , for which the future capitalized values of the initial investment and the cash flows becomes equal at the end of project life cycle [United Nations, 2007]:

$$[1 + f(k)]^n \cdot VA(I_j) = \sum_{h=1}^n CFD_h (1+k)^{n-h} \Rightarrow \quad (26)$$

$$[1 + f(k)]^n = \frac{\sum_{h=1}^n CFD_h (1+k)^{n-h}}{VA(I_j)} \Rightarrow \quad (27)$$

$$RIRM = f(k) = \left[\left(\frac{\sum_{h=1}^n CFD_h (1+k)^{n-h}}{VA(I_j)} \right)^{\frac{1}{n}} - 1 \right] \cdot 100, \quad (28)$$

Or introducing and the residual value:

$$RIRM = f(k) = \left[\left(\frac{\sum_{h=1}^n CFD_h (1+k)^{n-h} + VR_n}{VA(I_j)} \right)^{\frac{1}{n}} - 1 \right] \cdot 100, \quad (29)$$

$$VA(I_j) = \sum_{h=1}^d I_h (1+k)^{-h}, \quad (30)$$

where:

k - Becomes the average specific rate of return of the organization that realize the project;

If $k = \text{constant}$, results:

$$(1 + RIRM)^n \cdot \sum_{h=1}^d I_h (1+k)^{-h} = (1+k)^n \cdot \sum_{h=1}^n CFD_h (1+k)^{-h}, \quad (31)$$

Thus:

$$(1 + RIRM)^n = \frac{(1+k)^n \cdot \sum_{h=1}^n CFD_h (1+k)^{-h}}{\sum_{h=1}^d I_h (1+k)^{-h}} = (1+k)^n \cdot IP, \quad (32)$$

where:

IP - the project profitability index;

The relation 32 can be written in the form:

$$1 + RIRM = (1+k) \cdot IP^{\frac{1}{n}} \quad (33)$$

This implies the calculation formula of $RIRM$ depending on profitability index and discount rate:

$$RIRM = (1+k) \cdot IP^{\frac{1}{n}} - 1 \quad (34)$$

E.A.M.I.P. 2.6

Both, in theoretical considerations also in practice, the duration of the capital recovery is calculated in static and dynamic approach to the investment process and it is express in years. In fact, the duration of investment recovery is the ratio between the value of initial investment and an annual volume of benefits considered [Gurău Marian Andrei, 2012]:

$$TR = \frac{I_j}{P_h / CFD_h}, \quad (35)$$

$$TR_{static} = \frac{I_j}{\frac{\sum_{h=1}^n CFD_h}{n}}, \quad (36)$$

a) The self-financing project case

$$TR_{static} = \frac{I_j}{\frac{\sum_{h=1}^n (PN_h + A_h - Ce_h)}{n}} = \frac{n \cdot I_j}{\sum_{h=1}^n (PN_h + A_h - Ce_h)}, \quad (37)$$

b) The financing project case form external sources

$$TR_{static} = \frac{I_j}{\frac{\sum_{h=1}^n (PN_h + A_h + Do_b h - Ce_h)}{n}} = \frac{n \cdot I_j}{\sum_{h=1}^n (PN_h + A_h + Do_b h - Ce_h)}, \quad (38)$$

As is calculated and the dynamic duration of recovery but using the updated value of cash flow:

$$TR_{dynamic} = \frac{n \cdot I_j}{\sum_{h=1}^n CFD_h (1+k)^{-h}}. \quad (39)$$

Concluding, in the field of industrial investments it operates with information and very safe values relating to investment costs and with estimated values relating to its effects and results that will be obtained. The need of evaluation calculations and economic efficiency of investments is from several conflicting factors and the fact that investment demand exceeds of available capital.

Table 1: Conclusions of V.R.Q.R.R.T. Model

Economic Evaluation Scope	Indicators					
	VA N	RE, RE'	Q	RIR	RIR M	TR
Comparing the benefits with the costs	Yes	Yes	Yes	Yes	Yes	-
Determination of the minimum acceptable investment for an investment project.	Yes	-	Yes	Yes	-	-
Maximizing the benefits.	Yes	-	Yes	Yes	Yes	-
Comparison of equivalent projects.	Yes	-	-	Yes	Yes	Yes
Selecting the best projects in the case of self financing or limited credit.	-	-	Yes	Yes	Yes	-
Determination of maximum acceptable interest for projects through loans.	-	-	-	Yes	Yes	-
Determination of payback through benefits.	-	Yes	-	-	-	Yes

Decisions justification of financial distribution requests motivations based on knowledge of future efficiency objective. Due to the fact that any project does not look like with others and the requirements of projects profitability varies from one industry to another, from one area of activity to another, there is not a single model for determining the economic and financial efficiency that can be applied in any situation. Instead, it can create models of economic evaluation (V.R.Q.R.R.T.), which may not lead to inconsistent results and look in a very clear manner, and effectively the results and benefits of the project [Gurău Marian Andrei, 2012A].

E.A.M.I.P. 3 - Stage of Project Sensitivity Analysis

In construction, nuclear energy, machine construction industries etc. the investment projects submitted to the economic evaluation has very large life cycle, $n > 10, 20, 30$ years. In this time intervals, the enter sizes of the economic evaluation model (I_j, k, VR_n, n, CFD_n) certainly will change the values. Thus, for an as possible correct estimation of the project economic efficiency, it is necessary to assess the effect of modifying the values of the input quantities in the pattern of the efficiency indicator (VAN, RIR, Q, RIRM etc).

This is accomplished in a sensitivity analysis based on:

- projects economic evaluation is based on working assumptions concerning future events and are subject to certain risks, uncertain;
- the prices and tariffs for goods and services are fluctuating and vary dramatically during analysis time of project (10 - 20 years);

- risk factors must be taken into account whenever there is the likelihood that a project to generate results different from those expected.

In fact, is testing the model V.R.Q.R.R.T. stability and the stability of the financial results, to some variation of the project revenue and expenditure, taking into account multiple possible variations: increases of expenses with the necessary equipment and construction project, the increases in operating expenses, variations in incomes etc. (these variations are periodical). Thus, in industrial projects implemented in our country is testing the stability of the expenditure and income variations, throughout the preview period, with a percentage of (5-10%):

Iteration 1: The initial investment amount and operating expenses are calculated increasing with 5% and 10%, and the annual revenues value and decreasing with 5%;

$$I'_j = I_j + 5\% \cdot I_j, \quad (40)$$

$$\sum_{h=1}^n CE'_h = \sum_{h=1}^n CE_h + 10\% \cdot \sum_{h=1}^n CE_h, \quad (41)$$

$$\sum_{h=1}^n V'_h = \sum_{h=1}^n V_h - 5\% \cdot \sum_{h=1}^n V_h, \quad (42)$$

where:

I'_j - Initial investment value corresponding to E.A.M.I.P.

3;

$\sum_{h=1}^n CE'_h$ - Operating expenses value corresponding to

E.A.M.I.P. 3;

$\sum_{h=1}^n V'_h$ - Annual revenues value corresponding to

E.A.M.I.P. 3;

Iteration 2: It is calculated the gross and net profit of the project;

$$\sum_{h=1}^n PB'_h = \sum_{h=1}^n V'_h - \sum_{h=1}^n CE'_h \quad (43)$$

$$\sum_{h=1}^n PN'_h = \sum_{h=1}^n PB'_h (1 - 16\%) \quad (44)$$

Iteration 3: There are calculated the six indicators according to E.A.M.I.P. 2 and thus will result the model V'.R'.Q'.R'.R'.T', which must fulfill the minimum conditions required to indicators and V'.R'.Q'.R'.R'.T'. not to be much smaller than V.R.Q.R.R.T (at project managers appreciation).

In case in, one or more of the values of the V'.R'.Q'.R'.R'.T' model results below the minimum acceptable threshold (for example, $Q = 1$, which means that the project will not produce any benefit), it is very clear that the project has a high sensitivity to variations of input parameters. At this point, managers must stop evaluating at E.A.M.I.P. 3, and to take the massive re-evaluation of the project (starting with E.A.M.I.P. 1).

In E.A.M.I.P. 3 calculation, it is not recommended to consider an advantageous variants than the average estimate, because if the V.R.Q.R.R.T. model has shown already that the project will produce benefits, it is clear that improving conditions will lead to better indicators values. [Gurău Marian Andrei, 2012B].

E.A.M.I.P. 4 - Stage of the Investment Project Performance Audit

According to the I.N.T.O.S.A.I. standards (International Organization of Supreme Audit Institutions) the performance audit is defined as an economy, efficiency and effectiveness audit with which the audited company use resources in order to accomplish the objectives and responsibilities of the project. Performance audit is synonymous with the expression “value for money”. Unlike the financial audit, performance audit is much broader and open to interpretations, expanding on the large periods of time. There is not only a financial exercise with certain documents, audit reports being very extensive containing comments and solutions to problems encountered by managers.

III. CONCLUSIONS

Analyzing and diagnosing the economic environment are very important components of the strategic management process that ensures organization's success in the competitive market (usually placed in feasibility studies).

The main stages in the economic evaluation and selection of industrial projects are as follows:

- Generate all possible variants of investments and the selection of the initial elements of an investment (E.A.M.I.P. 1);
- Economic evaluation of industrial projects (E.A.M.I.P. 2);
- Sensitivity analysis of project variants (E.A.M.I.P. 3);
- Performance audit (E.A.M.I.P. 4);
- Implementation and control of the project;

The selection of investment projects is carried out on financial criteria, after definition of the initial investments and comparing them, but taking account of the direct investment policy priorities. It refers to choosing profitable investments depending on the resources that can be allocated to them. According to V.R.Q.R.R.T. model it considers that the dynamic approach is a technique better than the static approach as regards consideration of these indicators/ criteria. Currently, the most commonly used methods are those which require an analysis based on time factor influence on the profitability. In large enterprises the decision-making power is decentralized on departments, sections, etc. For example, a department head has a budget that can be used for financing small investments (equipment replacements, greenhouse modernization etc.). Contrary, the major projects are the subject of long debates within the leadership of the firm, taking into account the various objectives of the enterprise (strategy development, prestige, etc.).

Also managers and initiators of projects are involved in the decision-making process from the standpoint of how the funds are spent. Knowledge of the factors that influence the profitability helps managers in channeling resources to the company's most profitable investment. The result of this stage is to develop an investment plan and funding. This document presents the synthesis of selected investments and their financing.

All planning procedures are associated with a procedure for monitoring the achievements. Control allows a good implementation of the plan and possible corrective action. For example, comparing forecast/achievement allows improvement of forecasting techniques used and also the choice techniques of investment projects. Investment decision is a decision of the general policy of the enterprise. It requires in enterprises an organization system, which allows a good flow of information and ensure the consistency of decisions. The investment decision hires the company for long periods and requires completion of funding policies in order to obtain the necessary funds.

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