THE ROLE OF THE SELECTION CRITERIA IN SUBSTANTIATING INVESTMENT DECISIONS

GÂDOIU MIHAELA
LECTURER PH.D., UNIVERSITY OF PITEŞTI,
FACULTY OF ECONOMICS AND LOW
e-mail: mihaela_gadoiu@yahoo.com

BĂNUȚĂ MARIANA
LECTURER PH.D., UNIVERSITY OF PITEŞTI,
FACULTY OF ECONOMICS AND LOW
e-mail: mari.banuta@yahoo.com,

Abstract
Making investments-making at entity level has a significant role in achieving the objective of maximizing its value for the benefit of both its shareholders as well as its managers and creditors. Starting from the importance of the investment decision, a significant problem is the optimal selection of the investment, i.e. the selection of the best projects from the existing versions, taking into account the funding sources involved and, at the same time, the recovery of the expenses. In this respect, it is necessary to apply the selection criteria correctly in substantiating the investment decision, funding sources.

Keywords: investment decision, selection criteria, discount rate, cash-flow, net present value

JEL CLASSIFICATION: G11, L21, M10

1. Introduction and context of the study

An important role in achieving the objective of maximizing the entity value is held by making investments, but it is perhaps equally important to select the right investment through the appropriate selection criterion. Selecting the right criterion from among the different possibilities is the most important part of the approach.

The activity of the economic entity is based on several financial decisions made at various levels and in different areas in order to accomplish the set objectives and strategies. Every day, in an entity, a multitude of decisions are made, but regardless of the form of the decision, the task of making it falls within the manager's job [2]. He makes the decision only on the basis of a pre-established financial diagnosis. The main purpose of financial diagnosis is to help the management of the entity make optimal decisions in the financial context in which the entity carries out its business. A correct financial diagnosis can be made by the financial analyst, the employee of the entity or an external collaborator, with the help of accounting information: annual financial statements, management reports, etc. Following the financial diagnosis, managers are in a position to make assessments regarding the past investments and the investment needs in the future, based on the analysis and on the evaluation of the effects of previous investments, and on a forecast of the effects of the projects in the future

The investment is the starting point in any financial decision.

From the financial point of view, making an investment involves changing a present but secure amount of money in the hope of obtaining future and probable profits [1].
From the accounting point of view, making an investment involves allocating available cash to acquire assets that will in future develop financial flows of incomes and expenses. From the point of view of the general investment policy of the entity, investments are differentiated into domestic investment and external investment. Domestic investments are the result of a strategy of

specializing the production and consolidating or expanding the position on the outlet of the goods and services of the company, while external investments are motivated by a strategy of diversifying the business and consist of capital investments with the purpose of increasing the financial participation to the formation of the capital of other entities. Last but not least, according to the financing method, investments can be financed from own sources and investments financed from borrowed sources.

2. Description of the evaluation criteria used in choosing investment projects

Own sources are all the funds the owners have made available to the entity, either by direct contributions (constitution and increase of the share capital) or by waiving all or part of the remuneration due to them in the form of dividends, respectively self-financing

A company can be fully funded by its own funds, but there are also cases where entities prefer to fund a large part of their assets through debt, and many also use preferential shares. There are various reasons why companies resort to debt. Firstly, borrowed funds can be attracted at a lower cost than the yield expected by the shareholders. This is especially true for companies with good financial performance that report high levels of financial profitability, thus lowering the overall cost of capital. Secondly, to the extent that the rate of economic return is higher than the interest rate, the company may benefit from the leverage effect, thus increasing its return on equity. Due to the deductible nature of the interest expenses, the entity benefits from tax savings. Finally, entities may use loans as an external source of funds because such credit agreements constitute genuine "signals" (addressed to financial markets, suppliers of the company concerned, potential investors or the general public) in relation to the creditworthiness of the credit applicant.

Regardless of the form it takes, the investment decision is very important in the life of an entity. That is why it should not be made hastily, but only after its assessment, which must show that the decision would produce an increase in the total value of the entity. This may be possible when the discounted cash flows exceed the cost of the investment.

Until the assessment of the investment, there is a major problem that should not be ignored, i.e. the correct estimation of all the elements specific to an investment. These refer to: the initial cost of the investment, the duration of the investment, the cash flows generated by the investment throughout its use, the cash flow generated by the investment at the end of its use, but also the profitability required to cover the risk assumed by making the investment.

The initial cost of the investment refers to the amount that the entity must hold in order to start the investment. More specifically, it consists of the purchase price of the goods needed to carry out the investment to which the cost of setting up the space for the commissioning of the project plus other incidental costs which may differ from case to case are added, such as the cost of transport insurance, the cost of fitting the equipment, cost of advertising, etc.

The useful life of the investments refers to the period of time required to use the investment within the entity [3]. It generally coincides with the depreciation period for investment targeting the acquisition of goods.

The cash flows generated by the investment throughout its lifetime are the cash flows that are expected to be collected or paid by the entity each year. This is considered the most important element in the investment choice because cash flows are the source of return by which the investment is recovered and, on the other hand, may remain as a surplus of cash.

The cash flow generated by the investment at the end of its use is the residual value.

The desired profitability to hedge the risk assumed by making the investment relates to the cost of the invested capital.

Taking into account the existence of many market opportunities, an analysis of the economic and financial implications of the entity is recommended. This analysis refers to the correct estimation of all elements specific to an investment.

Once all the elements of an investment have been estimated, its evaluation is recommended.

In the decision making process, option criteria are used without discounting or discount-based option criteria [4].

The category of option criteria without discounting include: the cost criterion, the average profitability rate criterion, and the criterion of the duration of the recovery of the invested capital criterion, the latter being also the most used since due to the fact that it is of real interest to the investors.

The period of recovery of the invested capital is defined as the number of years and months required for the full recovery of the initially invested capital:

$$Dr=I/CF \ (1)$$

where:
I= investment,
CF= annual cash –flow.

For example, the period of recovery of a 1,000-lei investment project that ensures, for 5 years, annual cash flows of 250 lei, is determined as follows:
Dr= I/CF = 1000/250 =4 years.

If the annual cash flows differ from one year to the next, the assessment of the period of recovery is done step by step, comparing, at the end of each year, the investment that is still to be recovered (Ir) with the cash flow of the following year. When the investment to be recovered after year n is lower than the cash-flow of the following year, $Irn < CFn+1$, the period of recovery is determined as follows:

$$Dr= n + (Irn \ x \ 12/CFn+1) \ (2)$$

For example, an entity wishes to implement an 8,000-lei investment project that provides for 6 years the next evolution of net annual cash-flows: in year 1 13,000 lei, in year 2 14,000 lei, in year 3 14,600 lei, in year 4 14,800 lei, in year 5 14,200 lei and in year 6 13,600 lei.

In order to assess the period of recovery, several steps will be followed. First the cumulated cash flow is assessed: in year 1 13,000 lei; in year 2 27,000 lei; in year 3 41,600 lei; in year 4 56,400 lei; in year 5 70,600 lei; in year 6 84,200 lei.

The investment to be recovered can also be calculated: in year 1= 80,000 lei – 13,000 lei = 67,000 lei; in year 2= 80,000 lei – 27,000 lei= 53,000 lei; in year 3= 80,000 lei – 41,600 lei= 38,400 lei; in year 4= 80,000 lei – 56,400 lei= 23,600 lei; in year 5= 80,000 lei – 70,600 lei= 9,400 lei.

We can see that the Investment to be recovered in year 5 < Cash-Flow corresponding to the year 6 (9,400< 13,600). In this case the period of recovery is 5+ (9,400x12/13,600) =5 years 8 months and 9 days.

In other cases, the investment decision can be made using discount-based option criteria. The reverse discounting is the operation of bringing in a state of comparability, in the present moment, an amount of future cash flows [10]. There are four criteria that can guide the assessment of investment projects: the Net Present Value (NPV), the Internal Rate of Return (IRR), the Profitability Index (PI), the Payback Period (PP), The Modified Internal Rate of Return (MIRR).

Today, the NPV criterion is the most widespread since it is mathematically the most founded and in full compliance with the requirements of the financial theory.

The net present value corresponds to the basic objective of the financial function of the company, namely to maximize the value of the company. This is set for each investment project, and this criterion only compares investment projects in terms of its size. In practice, the NPV only compares a capital of today with a future capital.

From the point of view of the method of calculation, the NPV is established as the difference between the discounted cash-flow and the invested capital. The problem that emerges is the choice of the discount rate, thus by comparing future cash flows with current investment expenditures, it is possible to discount the cash-flow at the interest rate, the cost of the capital, or the rate of the opportunity cost over the lifetime of the investment:

$$NPV = \sum_{i=1}^{n} \frac{CFi}{(1+a)^i} - I \ (3)$$

where:
n = number of years
CFi = cash-flows in the management period
a = discount rate
i = management period
I = value of the investment.
Depending in the value of the NPV, the following cases were observed:

Table no. 1 **Selection of investment projects according to the value of the NPV**
Case
The NPV has a positive value
The NPV has a negative value
There are two investment projects for the same objective
Expressing the values to be compared (future cash-flows and investments) at the purchasing power at the end of the life of the investment

Interpretation

The company value is increasing, thus the entity will choose to make the respective investment

$$NPV = \sum_{i=1}^{n} \frac{CFi}{(1+a)^i} - I$$

The investment project is rejected
The one with a higher NPV will be chosen
By determining the future net value which implies a correction of the NPV, taking into account the discount rate

$$VVN = NPV(1+a)^n$$

For example, for the calculation of the NPV and VVN where the value of the investment is 10 million lei, linearly depreciated in 5 years; the annual profit ensured after paying profit tax by the investment is 1.5 million and the discount rate is 8%.

Cash Flow = Net Profit + Depreciation = 1.5 million + 2 million = 3.5 million
Depreciation = 10 million : 5 = 2 million

$$NPV = \frac{3,5mil}{(1+0,08)^1} + \frac{3,5mil}{(1+0,08)^2} + \frac{3,5mil}{(1+0,08)^3} + \frac{3,5mil}{(1+0,08)^4} + \frac{3,5mil}{(1+0,08)5} - 10mil$$

NPV=3.972 million
VVN= 3.972 (1+0.08)^5
VVN=5.836 million

We can see that the NPV is higher than 0, consequently, the investment project is approved. When two or more investment projects require unequal initial funding, it is recommended to apply another selection criterion, known as the Profitability Index. This index expresses the relative

return on investment throughout its life what is means knowing the extent to which the collections are made from the cash flows generated by the investment are charged for each invested RON.

It is considered that the investment project is feasible only if the value of the profitability index (Ir) is bigger than 1.

$$Ir = \frac{VAN}{I} + 1 \ (4)$$

Similarly to the VAN criterion, if there are two investment projects, for the same objective, the project with the highest index will be chosen.

For example, for an investment project with a NPV of 3.973 million lei and an investment value of 10 million lei, the investment to recover is $\frac{3,973}{10} + 1 =$ 1.3973 million lei.

Due to the fact that the profitability index is bigger than 1, the investment project is accepted.

There is a situation where at some point the profitability index calculated for a project indicates that it should be chosen but the fact that the project involves a large initial investment will make the decision maker choose another project that offers the greatest gain for each RON invested.

For example, there is the question of choosing one of the following two investment projects: Project 1 about which the following information is known: initial investment 45,000, VAN 18,000, Ir 1.4 or

Project 2 with the following indicator values: Initial investment 100,000, VAN 20,000, Ir 1.2.

According to the theory, since both projects have a positive VAN, it would be advisable to choose project 2 because it has the highest value for this indicator, but the investment needed to complete the second project is too high. It is therefore necessary to take into account the other assessment criterion, Ir. Depending on this, the best project is the first because it offers the highest gain for each invested RON. The conclusion is that, at the same time, the evaluation criteria may provide different conclusions and, ultimately, the criterion that best reflects the investor's objective will ultimately be taken into account.

3. Conclusions

In a first analysis, the investment involves an operation of modifying and increasing the financial position of an economic entity, for example by buying machinery or purchasing other equipment, but at a deeper analysis, the investment is the allocation of capitals saved in profitable lucrative activities that would increase the value of the invested capital.

In the selection of investment projects, it is recommended to use the NPV criterion, which is considered the most rigorous choice of investment because it has the least conceptual drawbacks. Investment decisions made on the basis of this criterion lead to the achievement of the objective of maximizing the value of the economic entity. It is also recommendable to know the objective envisaged by the investor and, depending on it, to apply the appropriate valuation criterion because, as can be seen in the examples above, the conclusions given by each criterion are different when the objective is to establish the feasibility of the investment.

4. References

[1] **Bondoc, Gh. N., Burcea, F.C**., Investments, the Publishing House of the University of Piteşti, 2011;
[2] **Brigham E., Houston J**., Fundamentals of financial management, South-Western College Pub, 2008;

[3] **Dragotă V. (coord.),** Financial management, Volume II: corporate financial policies, Economic, Publishing House, Bucharest, 2002;

[4] **Pătraşcu, L.** , Accounting Statement - Information Support in the Managerial Decision, Tehnopress Publishing House, Iasi, 2008;

[5] **Sichigea, N., Berceanu, D., Vasilescu L., Florea, N.,** Financial Management Company, Universitaria Publishing House, Craiova, 2015;

[6] **Stancu I.,** Finances, 4th Edition, Economic Publishing House, Bucharest, 2007

[7] **Stroe R., Armeanu D**., Finances, AES Publishing House, 2004

[8] **Ţilică E.V., Ciobanu R**., Finance and Financial Management, CECCAR Publishing House, 2019

[9] **Vasile I.,** Financial management of the enterprise, Meteor Press Publishing House, Bucharest, 2006

[10] **Vintilă G.,** Financial management of the enterprise, Didactic and Pedagogic Publishing House, Bucharest, 2005