

# Methods of investment planning and their application in the company

**MSc. Monika Zatrochová, Ph.D.**

*Department of Management at the Institute of Management and Food Technologies,  
Vazovova 5, Bratislava, Slovakia, e-mail: monika.zatrochova@stuba.sk*

## **Abstract**

Investment planning is a very important function of the company requiring to make decisions already during its establishing and also expanding. The contribution is dealing with a description of the general planning methods based on the theoretical knowledge. Its aim is also to point out to basic theoretical procedures which are used and known in practice from the aspect of making decisions on investments and from a viewpoint of the evaluation of investment projects. The theoretical considerations are followed by particular proposals of how the investment planning should be applied and utilized in the manufacturing company.

## **Key words**

Investment planning, general planning methods, investment project.

## **Introduction**

Investment planning in the company is a continuous process representing a complex of activities that must be performed for the benefit of its effective and long-term development. In other words, the investment process (or activity) considered from a closer point of view can be understood as a process of the implementation of investment projects realized by the company. In particular, it is actually a process of acquiring the new tangible and intangible property, its modernization, reconstruction, innovation and expansion. From a wider point of view the investment activity implies also the process of making decisions on investments and simultaneously the process of searching, finding and implementing the overall company optimum characterized by the most effective exploitation of invested sources.

The investment planning in the company is a specific area of all its activities which are aimed to renew and expand the tangible and intangible property and, to a lesser extent, to put investments into the financial property, permanent increase in current assets, advertising, and the training of employees. Investments into the financial property are typical for different financial or investment companies, or corporations.

**Investment activity and decision – making**

The decision on investments is a long-term process, in which the time factor must be considered. It has a great influence on the effectiveness of the whole company activity, on the business sector, demand factor, and the over-all knowledge of external and internal conditions in which the investment is or will be realized.

The investment activity is characterized not only by the above-mentioned areas but also by its specificities based on :

- company aims which alter the combination of production factors and lead to the increased effectiveness of expended sources,
- decisions in the long-term time horizon arising from the strategic planning, implementation of the business plan, and the operative plan,
- greater possibility of occurring some deviations → a higher risk and long-term consequences,
- capital-demanding operations which are beyond the instant investor's possibilities,
- necessity to assess the investment comprehensively,
- state support of the investment activity.

The financial aspect concerned with the company decisions on investments is solved in the area of capital planning and long-term financing which involves:

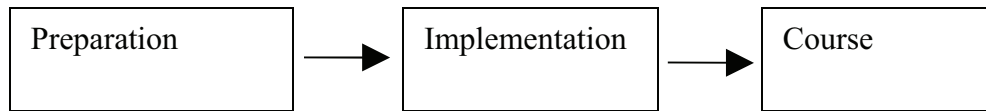
1. area of planning the monetary flows, i.e. capital incomes and expenditures from the realized investment,
2. financial criteria for a choice of the project,
3. consideration of the company risk during capital planning and investment decision-making,
4. long-term financing of the company's investment activity.

The basic element of planning the investment activity is the investment project characterized by:

1. investment expenditures,
2. expected incomes and expenditures during the lifetime,
3. economic lifetime,
4. residual value,
5. way o financing.

The investment project can include independent projects, complementary plans and the possibilities (variants) of implementing the investment plan.

**Fundamental stages in the investment:**



*Preparation of the investment* is based on the processing of the investment project when a firm thinks of the future, tries to anticipate events and consider eventualities. If the investment is suitably prepared, the firm can quickly and adequately react to changes in the surrounding environment. Therefore the preparation incorporates such a solution which would include marketing, financial and managerial problems.

The preparation is made correctly if the project:

- increases the hope of the successful business activity and gives assumptions for the improvement of the long-term economic results in a firm
- decreases a danger of the project failure which could seriously threaten the firm's stability and even its existence.

Therefore this stage is very important for the firm's success because in fact the point in question is the revaluation of production factors, their utilization and possibilities to make the company transformation process more effective. Furthermore, this stage reveals the company an objective state of its activity and allows the aims of investments and the ways of their achievement to be realistically formulated.

*Implementation of the investment* proceeds after the plan of the project has been drawn up on a basis of the previous determination of data related to:

- tasks of the legal, economic and administrative character,
- interrelationships and the interconnection of individual tasks,
- time limits in which these tasks must be implemented,
- persons responsible for their implementation,
- financial sources which are necessary to ensure individual stages.

The process of managing the implementation includes primarily management and control processes, the character of which is changeable in dependence on the scope of the difference between the actual course of the implementation and the plan. On ensuring the project implementation a great importance is attributed to the information basis and to the necessary continual update and innovation in accordance with the development of the situation.

*A course of the investment* is not always separated from a stage of the project implementation but it usually constitutes its part and requires the sufficient communication strategy of individual partial groups. The communication is an instrument of the management and control which are necessary during the implementation. An assumption of the effective communication is to determine the mode, strategy and means of the implementation.

### **Methods**

The methods used for the evaluation of investment projects and business aims are based on basic theoretical data materials. The basis are principles proceeding from the financial decision which is undertaken according to expected monetary flows.

The principles should be based on increment values and on depreciations of the long-term property; they should point out to the indirect consequences of investing and simultaneously to the fact that the flows of money from investments should include alternative costs.

The flows of money associated with the investment project incorporate capital expenditures and capital incomes from the investment.

#### ***Capital expenditures:***

- expenditures on installation of the new investment,
- expenditures on the permanent increase in current assets,
- expenditures reduced by incomes from the sale of a substituted investment property + influence on the income tax,
- expenditures on the research and development, and also on the education of new employees,
- capitalized interests, differences in the rate of exchange, and customs.

Expenditures distributed temporally must be discounted to the present value.

#### ***Capital incomes:***

- profit increment arising after taxation due to the project implementation (sales increment, savings of costs, savings from the income tax), i.e. the contribution to the all-company economic results,
- increase of depreciations,
- changes in current assets,
- income amounting to the liquidation value at the end of the lifetime + influence on the income tax.

It is necessary to respect also other principles of the financial decision, i.e. the factor of time value and the factor of risk. For the evaluation of the economic effectiveness of investment projects the methods considering the time factor are applied and from this point of view divided into static and dynamic. "The static methods are deduced from the application of the time value of money in the calculation of effectiveness and in the determination of a preferential order of the assessed projects. The dynamic methods apply a concept of the time value of money considering the factor of the changeable value of money within time."<sup>22</sup>

The methods considering the final effect from the investment are divided into:

- methods employing cost criteria of the assessment,
- methods based on profit criteria which are regarded in our country as obsolete,
- methods based on the money flow from the investment.

From the aspect of data accessibility in practice the application of methods based on the flow of money have proved to be the most applicable. The accessible and employed methods include: net present value, internal rate of return, payback period, profitability index, modified internal rate of return, discounted payback period.

***The characterization of individual methods:***

***The net present value*** (NPV) at the absolute rate expresses a difference between the actualized (present) value of money incomes from the investment and the actualized value of capital expenditures on the investment. The actualized value of money incomes and capital expenditures can be denominated as a discounted money flow. The method of the net present value can be expressed also by a below-indicated algorithm indicating that:

- the present value of all flows of finances generated by a given investment is defined; the last investment expenditures are actualized (bearing interest) and future net incomes from the investment are discounted (cleared of interest) to the present time; the rate for carrying and clearing of interest expresses capital costs (or the losses of lost opportunities), risks and the inflation rate;
- the NPV is determined as a difference in the actualized money flows;
- projects with a negative criterion value are considered to be disadvantageous;
- the final decision on refusal or an acceptance of the investment project depends also on other factors (for example, an urgency of the investment, availability of financial sources, etc.) which are not considered in the method of the net present value.

---

<sup>22</sup> Markovič-Šinský: Trends in the application of methods of the economic evaluation of preferences of investment projects

In mathematical terms it can be expressed as follows:

$$NPV = [ P_1 / \{ 1 + i \} + P_2 / \{ 1 + i \}^2 + \dots + P_n / \{ 1 + i \}^N ] - C$$

NPV = Net Present Value of the investment variant

$P_n$  = money income in the individual years of lifetime

$i$  = interest

$n$  = individual years of lifetime

$N$  = time of lifetime

$C$  = capital expenditure

### ***The internal rate of return: (IRR)***

This method is denominated also as an internal percent of return. It can be defined as the interest rate in which the present value of money incomes from the investment is equal to capital expenditures on the investment.

In mathematical term it can be expressed as follows:

$$[ P_1 / \{ 1 + i \} + P_2 / \{ 1 + i \}^2 + \dots + P_n / \{ 1 + i \}^N ] = C$$

Meanwhile the net present value is based on the given interest rate, the internal percent of return is achieved by searching for the interest complying with the equality of discounted money incomes and expenditures. It follows that the method indicates at what interest rate is the net present value of the investment project equal to zero.

### ***Payback period (reimbursement period): (PP)***

It is the traditional method of assessing the effectiveness of investment variants which is often used in practice but less important from the theoretical point of view. The payback period can be defined as the number of years during which is the capital expenditure paid off by money incomes from the investment. The investment having a shorter payback period is considered more favourable.

This method can lead to the incorrect decision on the choice of variants because it:

- disregards money incomes from the investment which are produced during the payback period and thus distorts a view of the effectiveness,
- usually does not respect the time factor nor the time value of money,
- prefers variants with a shorter lifetime despite their lower effectiveness.

By means of the payback period only investment variants with an equal lifetime period and an equal course of money incomes from the investment can be chosen. In that case the actually shorter payback period is derived from the higher effectiveness.

How do you correctly choose the method which you intend to apply? On asking such a frequent question the reply to it should involve your willingness to undergo a risk. In order to ascertain a dimension of the expected risk, it is necessary to define the investment characterized by returns, liquidity and a risk as the last factor.

The return represents a growth of the company's market value detected by NPV and IRR methods. The risk represents a danger resulting from the fear that the achieved business results will differ from those which are predicted. The liquidity represents the payable ability or else the time of releasing invested sources.

In practice, there is a search for such projects which give the maximum return at the acceptable rate of risk. For measuring and managing the risk it is necessary to know its types and causes of its emergence. The risk can be measured by means of a dispersion where the standard deviation is characterized by the following equation:

$$\sigma^2 = \sum_{j=1}^N (P_j - \bar{P})^2 * v_j$$

$P_j$  - expected money incomes from the investment in accordance with a selected variant,  
 $v_j$  - probability of occurring the respective variant of expected incomes,  
 $\bar{P}$  - expected average income.

The managing of the risk proceeds from the effort to minimize or eliminate its occurrence, namely by removing the causes of its development and by reducing its unfavourable consequences to an acceptable measure. However, everything should be done on the assumption that a risk will be considered already during decision-making. Example: The investor asks for a certain premium as a compensation for bearing the risk which reflects in the required return, i.e. he asks either for a risk-free return or a risk premium. Every investment is acceptable for him as long as it is valid that the expected return from the investment  $\geq$  required return.

### Results and discussion

On searching for the practical utilization of investment planning methods it was found out that the individual periods of 70-ties, 80-ties and 90-ties had preferred different methods.

70-ties: in that period attention was focused on methods exploiting the time value of money, and especially to the method of payback period (reimbursement) before the other ones.

80-ties: there was a trend to use the methods of internal rate of return before the other ones.

90-ties: in this period a large support was given to the most precise net-present-value method before that of the internal rate of return.

2000-ties: the continual orientation (mainly of financial managers) was directed to the payback method, but also to the application of IRR and NPV time methods.

The research results can be summarized in the following conclusion:

- there exists a permanently high share of the PP method applied in the monitored time periods, regions and countries;
- small companies use the PP method at a higher extent than large companies;
- the PP method has acquired in several research programmes the position of the secondary (auxiliary) method;
- countries of the Central and South Europe (including the new member countries of the European Union) apply the PP method to a great extent;
- a continual growth of the scope of application of sophisticated NPV and IRR methods;
- comparison made in the set of sophisticated methods shows that the application of the IRR method prevails over the NPV method;
- large companies (having a high capital, history and a well-know commercial name) use only sophisticated methods;
- in the economic practice, methods which are economically evaluated are combined.

### Conclusion

It can be concluded that from the viewpoint of financial managers there exists an imaginary gap between the diction of the theory and the practical application of methods used in the economic evaluation of preferential investment projects. It is interesting to find out that despite the theoretically “ideal” NPV method the widely applied ones are PB and IRR methods. On the other hand, it is necessary to add that the penetration of information technologies into financial decisions and a growing uncertainty of the financial environment both will lead to the more frequent application of relatively non-traditional approaches to the evaluation of preferential projects such as, for example, indicators of the “ex post” financial analysis, pyramidal decompositions of the chosen indicators of profitability and, of course, evaluations based on the synthesized EVA (Economic Value Added) indicators.

### References

- Anand, M. 2002. *Corporate finance practices in India: a survey*. Vikalpa, Vol.. 27
- Fabozzi, F. J., Peterson, P. P. 2003. *Financial management & analysis*. N.Y, Wiley, 2nd ed.
- Fotr, J., Souček, I. 2005 *Business aim and investment decisions* (in Czech). Prague: Grada Publishing, 304 pp. ISBN 80-247-0939-2
- Koráb, V., Režňáková, M., Peterka, J. 2007 *Business plan in practice* (in Czech). Prague: Computer Press. ISBN 978-80-251-1605-0.
- Kraľovič, J., Vlachynský, K. 2006. *Financial management* (in Slovak). Bratislava, Iura.
- Valach, J. 2006. *Investment decisions and long-term financing* (in Czech). Prague, Ekopress.  
<http://www.sjf.tuke.sk/transferinovacii/pages/archiv/transfer/12-2008/pdf/72-75.pdf>



**Summary**

Monika Zatrochová

**Methods of investment planning and their application in the company**

In companies an important role is attributed to investment planning and decision – making. This activity is implemented by various methods which are described in the contribution. The most frequently applied are payback and internal rate – of – return methods except for the theoretically ideal net present value method. On the other hand, it is necessary to add that the penetration of information technologies into financial decisions and a growing uncertainty of the financial environment both will lead to the more frequent application of relatively non-traditional approaches to the evaluation of preferential projects such as, for example, indicators of the “ex post” financial analysis, pyramidal decompositions of the chosen indicators of profitability and, of course, evaluations based on the synthesized EVA (Economic Value Added) indicators.

**JEL Classification:** O16, G11

**Doručeno redakci:** 1. 11. 2009

**Recenzováno:** 6. 11. 2009

**Schváleno k publikování:** 9. 11. 2009