

## **PROVING THE FACTORS OF ENTERPRISE'S INNOVATIVE ACTIVITY INFLUENCE ON THE INVESTMENT**

*Annotation. The paper describes the magnitude of the impact of various factors on the investment, the use of which may have a significant contribution to attracting potential investors. With the help of factor analysis it has been found that several factors play the most important role and are key to attracting investors and other factors have less influence.*

*Анотація. Описано величину впливу різних факторів на інвестиції, використання яких може істотно вплинути на залучення потенційного інвестора. За допомогою факторного аналізу виявлено, що деякі фактори відіграють найбільш важливу роль і є основними для залучення інвестора, а інші фактори мають менший вплив.*

*Аннотация. Описана величина влияния различных факторов на инвестиции, использование которых может существенно повлиять на привлечение потенциального инвестора. С помощью факторного анализа выявлено, что некоторые факторы играют наиболее важную роль и являются основными для привлечения инвестора, а другие факторы имеют меньшее влияние.*

*Keywords: investments, innovative activity, factor analysis, economic and mathematical models.*

Let's start with the analysis of seemingly unrelated phenomena and their disparate and combined effect on the investment. Factor analysis takes a large number of dependent variables and seeks to isolate the independent variables determining them. Isolating the independent variables (called factors in this context) helps reduce the number of variables that the analyst must study in order to make accurate statements and predictions about the direction of the investment.

The aim of the article is proving the features of the influence of various factors and examining the degree of their influence on the investment attractiveness of innovation activity.

Capital investment decisions are not governed by one or two factors, because the investment problem is not simply replacing old equipment by the new one, but is concerned with replacing an existing process in a system with another process which makes the entire system more effective. Some of the relevant factors that affect investment decisions are discussed below:

### *1. Management outlook.*

If the management is progressive and has an aggressively marketing and growth outlook, it will encourage innovation and favor capital proposals which ensure better productivity on quality or both. In some industries where the product manufactured is standardized, innovation is quite difficult. In contrast, in industries such as chemicals and electronics, a firm cannot survive, if it follows a policy of "make-do" with its existing equipment. The management has to be progressive and innovation must be encouraged in such cases.

### *2. Competitor's strategy.*

Competitors' strategy regarding capital investment exerts significant influence on the investment decision of a company. If competitors continue to install more equipment and succeed in turning out better products, the existence of the company would be seriously threatened. This reaction to a rival's policy regarding capital investment often forces decision on a company.

### *3. Opportunities created by technological change.*

Technological changes create new equipment which may represent a major change in process, so that the need for re-evaluation of existing capital equipment emerges in a company. Some changes may justify new investments. Sometimes the old equipment which has to be replaced by new equipment as a result of technical innovation may be downgraded to some other applications. A proper evaluation of this aspect is necessary, but is often not considered. In this connection, one can note that the cost of new equipment is a major factor in investment decisions. However, the management should think in terms of incremental cost, not the full accounting cost of the new equipment because the cost of new equipment is partly offset by the salvage value of the replaced equipment. In such analysis an index called the disposal ratio becomes relevant [1].

### *4. Market forecast.*

Both short- and long-run market forecasts are influential factors in capital investment decisions. In order to participate in long-run forecast for market potential critical decisions on capital investment have to be taken.

### *5. Fiscal incentives.*

Tax concessions either on new investment incomes or investment allowance allowed on new investment decisions, the method for allowing depreciation deduction allowance also influence new investment decisions.

### *6. Cash flow budget.*

The analysis of cash-flow budget which shows the flow of funds into and out of the company may affect capital investment decision in two ways. First of all, the analysis may indicate that a company may acquire necessary cash to purchase the equipment not immediately but a year later, or it may show that the purchase of capital assets now may generate the demand for major capital additions two years later and such expenditure might clash with anticipated other expenditures which cannot be postponed. Secondly, the cash flow budget shows the timing of cash flows for alternative investments and thus helps management in selecting the desired investment project.

**7. Non-economic factors.**

New equipment can make the workshop a pleasant place. The effect would be reduced absenteeism and increased productivity. It may be difficult to evaluate the benefits in monetary terms and we call this as non-economic factor [2].

Economic and mathematical model is a mathematical model designed for the study of economic problems.

Operational research, construction and calculation of a mathematical model are used to analyze the situation and choose the best solutions to manage it or justify the proposed solutions. Using mathematical models is necessary in cases where the problem is complex, depends on a number of factors having different effects on the solution.

Currently, mathematical models are used to analyze, predict and select the best solutions in different areas of the economy, e.g. in planning and operations management, human resource management, inventory management, resource allocation, planning and siting, project management, distribution, investments, etc. [3].

Factor analysis (from Lat. *facere* – to make or do, producing and Greek analysis – decomposition, a breaking up) is a method of multivariate mathematical statistics used in the study of statistically associated symptoms to identify a certain number of factors hidden from direct observation [4].

For the real estimation factor analysis was carried out, where as an object of analysis the industrial complexes in all regions of Ukraine and Crimea were selected.

As the stimulants the following indicators were selected:

- 1) the distribution of total cost by regions;
- 2) the number of industrial enterprises that introduced organizational innovations by region;
- 3) the number of industrial enterprises that introduced marketing innovations by regions;
- 4) the number of introduction of new technological processes in industrial enterprises by regions;
- 5) the development of innovative products for industrial enterprises by regions;
- 6) the number of industrial enterprises that realized innovative products by regions;
- 7) the number of purchased and transferred new technologies in Ukraine;
- 8) the number of purchased and transferred new technologies from abroad;
- 9) foreign direct investment.

The factor analysis results should be grouped in 3 most dominant factors as represented in Table 1 and Table 2.

Table 1

**The results of factor analysis for the industry (eigenvalues)**

	Eigenvalue	% Total	Cumulative	Cumulative
1	3.813844	42.37604	3.813844	42.37604
2	1.381216	15.34684	5.195060	57.72288
3	1.313612	14.59569	6.508672	72.31858

The analysis of factors helps to identify the most attractive factors, according to Table 2, they are:

factor 1 – technological activities;

factor 2 – introducing of innovations;

factor 3 – effectiveness of using different sources of investment financing.

These factors are universal to attract investors; they are keys that would bring additional investment.

Table 2

**The intensity factor loadings for enterprises (in regions) with varimax raw distribution**

	Factor 1	Factor 2	Factor 3
X1	-0.040967	0.235946	0.741996
X2	0.500637	0.323481	0.552512
X3	0.445548	0.529659	0.442041
X4	0.907005	0.022469	0.165560
X5	0.404163	0.666646	0.106818
X6	0.445233	0.082011	0.771980
X7	0.906388	0.027427	0.062801
X8	-0.107628	0.903040	-0.008802
Y	0.037570	-0.175736	0.780662
Expl. Var	2.469601	1.739614	2.299457
Prp. Totl	0.274400	0.193290	0.255495

Thus, the above factors have a great practical value for attracting new investment. This paper investigated the various indicators of investment attractiveness, justified their applicability. Further research should be directed to the

development of recommendations for the implementation and development of the factors considered in the activities to the domestic industrial and commercial enterprises and adapting to the Ukrainian market.

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