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Digital triggers in the system of formation and management of the investment portfolio of a metallurgical enterprise

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***Abstract* — The subject of this study is the economic relations that arise in the process of formation and management of the investment portfolio of a metallurgical enterprise based on digital triggers. The high importance of investment projects for business should be recognized by the management of the company, as a result, the investment process should be constantly in the focus of management's attention: It is necessary to develop a strategy for future development; evaluate the economic feasibility of projects; have a modern project management methodology; select competent staff for participation in project activities; constantly monitor the effectiveness of project activities and promptly make the necessary changes. Investment activity of an industrial enterprise is carried out through the implementation of investment projects consisting in technical re-equipment, modernization of production, and obtaining economic and social effect.**

Keywords — investment portfolio, investment strategy, uncertainty, metallurgical enterprise

I. INTRODUCTION

The effectiveness of the investment portfolio formation and management of an industrial enterprise affects the efficiency of the enterprise as a whole. The process of forming an investment portfolio requires careful planning and management [9]. Portfolio management is carried out through a comprehensive analysis of the proposed projects and their implementation options. In the investment portfolio management system of an industrial enterprise, expert appraisal of projects and programs is widely used. Evaluation of the economic efficiency of projects is carried out by financial modeling, risks are assessed, as a rule, expertly.

When managing a company's investment portfolio, it is necessary to take into account management features in vertically integrated structures while improving the quality of the investment management system must be improved along with the portfolio formation mechanism.

To select projects for implementation, the following indicators are used: economic, investment, environmental and social, which provides the opportunity to most fully use a systematic approach to solving investment planning problems. As the main principle of managing a company's investment portfolio, it is necessary to identify the dependence of the strategy and parameters of the investment portfolio on the external environment of the enterprise, as well as on its internal environment. Ways to manage the investment portfolio of a company must be considered in the framework of the following essential aspects of investment management of an industrial enterprise:

1) comprehensive analysis of proposed projects;
2) the high importance of the level of expertise of the staff;
3) specifics of managing vertically integrated holdings;
4) project evaluation methods;
5) application of the best available technologies;
6) a high level of environmental impact on the achievement of project targets.

According to the authors, the principles of managing an investment portfolio should be considered from various aspects of its activities: management structures; production system; financial system of the enterprise; marketing systems; investment process.

II. MATERIALS AND METHODS

Speaking about the industrial enterprise management structure, it should be noted that the following features should be taken into account in the principles of managing a portfolio of investments:

1) a significant proportion of opinions and subjectivity of top management decisions on the process of formation and

management of the investment portfolio, which is explained by the strengthening of vertical relationships of structures and the weakening of horizontal ties. The decisions formed in this way may not always be successful, because due to weak delegation of authority, a person who is not competent in this range of issues to be resolved within the framework of investment activity may be involved in the development and formation of an investment portfolio;

2) the problems of interaction between management and production units are explained by the complexity of the production process and the need to account for, evaluate and control a significant number of operations, as well as the insufficient competence of the governing structures in the field of production activities of the enterprise and the details of the production process. All this affects the quality of evaluation of investment projects aimed at technical re-equipment, modernization of production;

3) insufficient level of development of the quality management system at domestic industrial enterprises, which significantly affects the quality of implementation of the investment strategy and the effectiveness of investments. This is a significant factor in situations of attracting foreign financing. In particular, European investors require a potential partner to provide a certificate of quality for the enterprise management system, as well as additional product certification;

4) the level of development of corporate culture and the psycho-emotional climate in the company also affect the quality of work of employees. Currently, insufficient attention is paid to the level of corporate culture and the psychological climate at domestic industrial enterprises, since the management believes that the organization of the production process and minimizing the costs of the enterprise are the primary tasks. Any impact on the management structure, its adjustment, the formation of informal communication require additional investments, which, in the opinion of most managers, are inappropriate. At the same time, dissatisfaction of workers with working conditions and respectful standards of colleagues' behavior affect the quality of its work and employee turnover;

5) the absence of investment activity regulations that take into account the specifics of the internal environment in companies contributes to the appearance of possible errors in the formation of the portfolio, which affects the quality of implementation of its investment strategy, as well as the effectiveness of investment projects.

In view of the above features of investment portfolio management, its basic structural principles are:

1) delegation of authority by management on special competence issues to relevant specialists;

2) the presence of structural units involved in the planning and analysis of production processes, and a high level of their competencies;

3) a successful quality management system;

4) healthy corporate culture;

5) high quality of regulatory documents governing investment activities.

The economic set of principles for managing an investment portfolio is related to the level of investment resources available to the enterprise, financial stability, and its financial results [4,5,6]. The formation of the system of economic principles for managing investment activities of the company is associated with the following features:

1) possession of the necessary amount of own investment resources is one of the main parameters of investment activity. As a rule, the majority of investment projects of an industrial enterprise are capital-intensive, requiring significant capital investments. In real conditions, the company does not always have enough free financial resources and turns to the capital market for them;

2) the ability to attract external resources. This is justified by the presence of potential opportunities for the enterprise to implement an investment project with a given level of efficiency, as well as the ability to return the funds received from the investor and pay the amount of income due to him;

3) stable financial position of the enterprise is the basis for the implementation of the investment strategy.

In accordance with the above features, the main economic principles of managing the investment portfolio of an industrial enterprise are:

1) sufficient own financial capabilities;
2) the possibility of attracting external investment;
3) stable financial position.

The next group of principles for managing the investment portfolio of industrial enterprises is the marketing principles of investment activity [2].

The formation of a system of marketing principles for managing investment activity of industrial enterprises has the following features:

1) the presence of consumers of products planned for production. The implementation of the company’s project is advisable if there are consumers. As a rule, the main consumers of products of industrial holdings are enterprises of other industries (segment b2b);

2) moderate competition in the market. Outrageous levels of competition are highly likely to make the project ineffective. In view of the increasing competition in industrial sectors, the main advantage of the investment portfolio is innovativeness (the formation of a fundamentally new product, profitable from all proposed positions - from the manufacturer, customer, society, state);

3) margin management capabilities through effective enterprise pricing policy. This parameter is also associated with the innovativeness of the product, since the existing product has already gained a stable price in the market and cannot provide excess profits for the enterprise.

In accordance with the above features, the main marketing principles for managing the investment portfolio of an industrial enterprise are [7,10]:

1) the formation of a group of potential and real consumers of products planned for production within the framework of an ongoing investment project;
2) competitiveness in the market of products planned for production as part of an ongoing investment project;
3) effective pricing policy of the enterprise.

As the main tools for managing an investment portfolio, the author considers:

1) regulation of investment activity of an industrial enterprise;
2) standardization of the production process;
3) formation of a balanced investment portfolio;
4) continuous market monitoring;
5) methods of innovative enterprise management;
6) expert methods for evaluating investment projects;
7) mathematical apparatus for evaluating the criteria for the effectiveness of investment projects.

Regulation of investment activity of an industrial enterprise includes the formation of [1,3]:

1) organizational structure of investment management of the enterprise;
2) the sequence of stages of the enterprise investment activity;
3) methods of analysis of the external and internal environment of the enterprise;
4) the order of control procedures and adjustment of investment goals, strategies and investment projects of an industrial enterprise.

The standardization of the production process is associated with the need to standardize and unify existing production processes in accordance with ISO standards, which will improve the efficiency of production procedures, the quality of work of each employee, and the Expert methods for evaluating investment projects and financial modeling are mutually reinforcing [6,8]. In those areas of research where it is impossible to characterize the process by mathematical methods, it is advisable to use expert assessment methods.

Such situations, for example, include situations when:

1) it is impossible to accurately determine the risks of the project;
2) it is impossible to determine the exact market capacity of a new product;
3) it is impossible to take into account all external factors affecting the enterprise and the implementation of the investment project.

Based on the foregoing, the following main conclusions were made:

1) strategic and tactical aspects of investment activity determine the possibility and practical implementation of the investment process of industrial enterprises;
2) the investment activities of industrial enterprises include a number of significant features, including the scale of investment projects, the impact on related enterprises and the social sphere, a significant change in the management structure and production system of the enterprise, the need for training and retraining of both production and managerial personnel, and accounting for the impact activity and development of competitors, including foreign ones;
3) the investment portfolio of an industrial enterprise is a set of investment projects implemented within the framework of the general investment strategy and corresponding to it;
4) The criteria for forming an investment portfolio of an industrial enterprise include: level of economic and social efficiency, competitiveness of the enterprise, production and products, level of environmental safety, level of investment risks;
5) the principles and methods of managing the investment portfolio of an industrial enterprise are interrelated categories that characterize the process of investment activity of the enterprise and its effectiveness;
6) an empirical study showed that most industrial enterprises do not follow the most important principles of investment management specific to industry, which, in turn, affects the efficiency of the investment portfolio and the development efficiency of industrial enterprises as a whole.

III. RESULTS

Consider the impact of triggers as procedures that are triggered when certain events occur in the life cycle of an investment portfolio, using the example of the metallurgical enterprise EvrazHolding, LLC.

Currently, the Holding uses a modern project management system developed by internal experts based on the American project management standard PMBOK. PMBOK is a project management knowledge base developed by the Project Manager Institute. The standard is applied in most countries of the world.

Within the company there are structural divisions that carry out project activities: The Project Management Directorate and the Investment Assessment Department at the head office, as well as the Investment Activities Directorate of the Divisions. A database of regulatory documents regulating investment activities has been created.

Direct management of investment projects is carried out by project managers functionally reporting to the divisional Directorates for Investment Activities. Project managers (PM) are subject to project management teams (PMCs), formed from the necessary specialists for each specific project.

Investment projects are divided into two types:

1) maintenance projects (Capex Maintenance) aimed at maintaining current production volumes;

2) development projects (Capex Investment) aimed at increasing production volumes, improving product quality, reducing costs, etc.

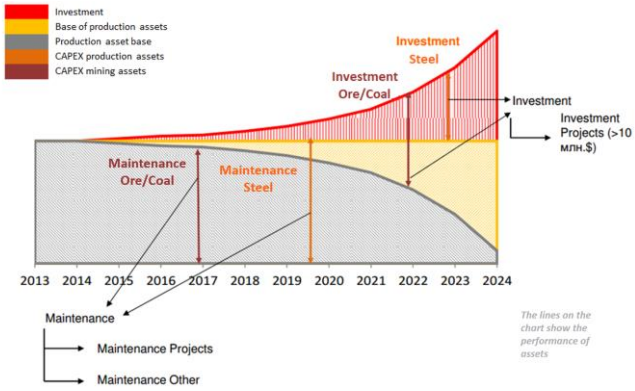

Fig. 1. Capex Maintenance & Capex Development

The investment project is implemented in several phases:

1) at the Concept phase, the project concept is formed, the source of value creation is determined;
2) at the Options phase, various options for project implementation are considered, preliminary design (basic engineering) is carried out and the optimal implementation option is selected;
3) the Define phase is intended for the final planning of the project, detailed engineering, preparation for the implementation of the project and obtaining the necessary permissions;
4) at the Execute phase, construction, installation and commissioning work, commissioning of the equipment complex and commissioning of design capacities are carried out;
5) at the Post Project Review phase, the results of the project are summarized, lessons learned are summarized and analyzed.

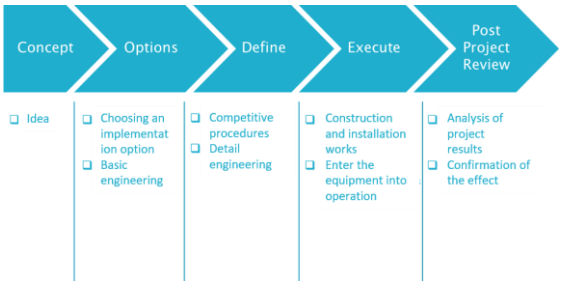

Fig. 2. Phase of the investment project

For approval of each next phase, the project is submitted to the investment committee, which approves/rejects the transition. Depending on the project budget and the approved phase, the decision is made by the Investment Committee of the Division, the Holding or the Board of Directors.

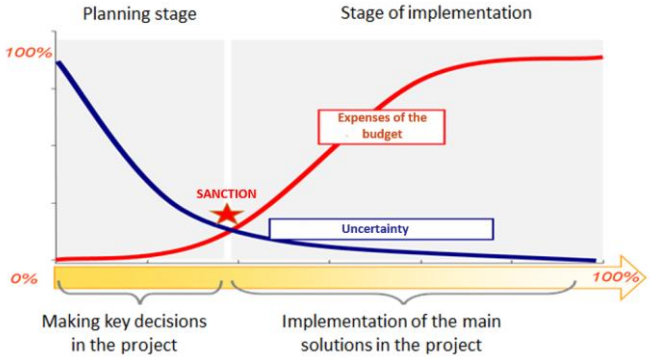

Fig. 3. The relationship of success uncertainty of the project and capital investments

Operational activity, in contrast to project management, is a repeating process that is carried out in accordance with existing procedures in the organization. Operational Management (OM) is one of the stakeholders in project activities and, as a rule, acts as a business customer.

The impact of operational management on project activities should be:

1) the correct formulation of business needs, project goals;
2) timely provision of necessary information to services that oversee and evaluate project activities;
3) meeting project requirements for operational activities.

Operational management should not impose any decisions related to the project implementation process on the Project Manager. Operational management should be involved in the planning process in the early stages, since it is at this time that key management decisions are made that affect the outcome of the project.

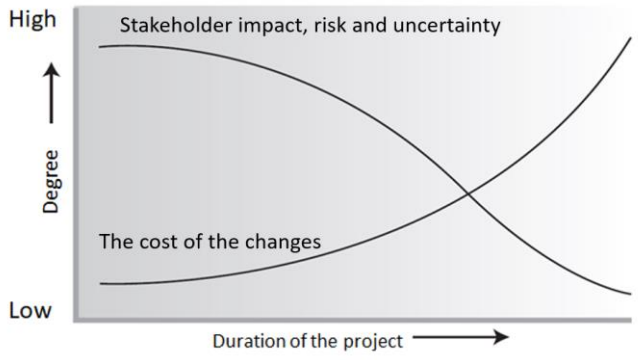

Fig. 4. Dependence of the management decisions impact on project results on the timing at which they are made

In order to motivate representatives of operational management for a fruitful participation in project activities, within the framework of their competencies, a customer motivation fund is provided, which is paid upon successful

implementation of the project and amounts to 5-10% of the motivation fund.

IV. Discussion

As practice shows, operational management does not always have a positive effect on project activities. Negative influence is amplified in situations when:

1) operational management of an enterprise underestimates the importance of project activities;
2) has a poor understanding of the project management methodology;
3) there is no pool of trained project managers;
4) the structural unit in charge of project activities does not have working levers of influence on operational management, and the head office of the group of companies is located at a considerable distance from the managed enterprise and cannot constantly monitor the actions of local management in real time.

The negative impact of operational management on project activities can be divided into two types:

1) as part of their responsibilities as one of the stakeholders;
2) outside the scope of the prescribed functionality.

Negative impact in the framework of functional duties:

1) the formation of project goals based on the benefits and convenience of individual departments, and not on the basis of a rational business approach to the interests of the entire enterprise or group of companies as a whole;
2) declaring the need for excess capacity;
3) providing incorrect information, failure to meet deadlines or complete failure to provide information to the necessary structural unit in charge of project activities for an independent evaluation of the project;
4) Failure to properly assist the PMC in the process of project implementation.

Negative impact outside the scope of functional responsibilities:

1) At the initial stages of the project development, when the importance of managerial decisions greatly affects the result, operational management tries to intervene in the planning of such key project parameters as the timing and budget in order to squeeze them as much as possible in order to increase the likelihood of project approval. As a result, “time bombs”, such as impossible deadlines, are already laid in the project at the initial stage; a budget that does not meet real needs; minimum contingency reserve, which almost always arise.
2) In the absence of a pool of professional project managers, operational management often offers the role of project manager to an employee who is considered a good specialist, the units with which the project is associated, while not always relieving him of his main responsibilities. This is a big methodological mistake, because to fulfill the role of the MP, competencies different from those needed by specialists are required, and a person does not always possess them; the employee does not have experience in project activities, which greatly increases the risk of making mistakes; a person is forced to engage in a project “in his spare time from the main work”, since no one exempts him from operational activities, which also cannot but affect the project results for the worse.
3) Intervention of operational management in the results of competitive procedures. As part of the project management, to identify contractors for the supply of equipment, construction and installation works, etc. in accordance with the regulations, competitive procedures are carried out, which are based on the principle of reasonableness and sufficiency of requirements for potential contractors, as well as an objective economic assessment of their technical and commercial proposals. In the case when the winner of the competitive procedures is an organization that operational management does not like, it intervenes in the results of the competition in order to give a contract to the more preferred organization from its point of view, despite the decrease in economic benefits for the company.
4) At the final stage of the project, if the management reserve has not been used up, the operational management tries to spend it on solving problems that are not within the project boundaries, which is also a violation of project management standards.
5) In situations where operational management has informal ties with the management of contracting firms, it may be difficult for the project manager to get the contractor to fully fulfill the contractual obligations under the influence of the authority of the operational managers.

V. Conclusion

After analyzing the project management system, the authors propose to consider and implement the following recommendations, which are designed to improve the quality and efficiency of investment activity of a metallurgical enterprise:

1) the project management methodology used in the company must comply with modern international standards, adjusted for local conditions.
2) it is necessary to consistently form the institute of project managers.
3) The project manager should be protected from the intervention of operational management in project management not only in theory but also in practice.
4) the structural unit that oversees investment activities should have real leverage over all stakeholders of the project, including operational management, to ensure compliance with the regulations, thereby increasing business efficiency.
5) stakeholders management meeting in the format of the “performance management” practice should be included in the

standard work of the project to comprehensively monitor the progress of the project.

According to the authors, the implementation of the above recommendations will improve the efficiency of investment activity due to:

1) improving the quality of planning the timing and budgets of projects;
2) better work with risks;
3) improving the quality of project implementation by fulfilling planned budgets and deadlines.

As practice shows, 90% of investment projects do not fit into the approved implementation periods, exceeding them by an average of 2 months. Exceeding the approved terms of the project even by 2 months, as a rule, reduces NPV by 1.0 m $, and IRR by 0.5%. The implementation of the recommendations of the authors will help to avoid reducing the economic efficiency of the project. The analysis of the investment project management system and the current investment portfolio of the metallurgical enterprise was carried out, according to the authors, the recommendations offered will contribute to improving the investment activity of metallurgical enterprises, which will entail an increase in profits, an increase in the shareholder value of the company and the satisfaction of other interests of all stakeholders of the company.

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