Approach to the assessment of the financial and accounting risks with digital economy conditions for projects (representation)

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Abstract

The digitization of the economy in the modern world has become an inevitable process that objectively affects all areas of society and determines the direction of its development. The importance of the study is evidenced by the high degree of modern development combined with the constant transformation. In the process of informing the economy, the implementation of the principles of digitizing the economy by an organization is impossible without the use of tools that can ensure the continuous work on making changes to the current economic system. These tools are (acting) projects. Which called for classifying projects (representation) into the five groups. The numerical procedures for project risk (representation) are defined from three scenarios in which each scenario and its risks are identified. The evaluation of the assessed factors of the digital (representation) project was developed on a scale of 3 weight points for each risk, as well as calculating the importance of risks regarding the not optimal level for a fraction of the cost of the project and Implementing (feasibility) the project in decision-making of choose the project (representation) or Non-continuity of the project (representation) during implementation. Which indicates the importance and importance of this risk to the project and to the financial stability of the company as a whole.

Keywords: Projects (representation); Risks; Profit margin; Digital; Rating

JEL Classification: G32, M40

Introduction

A digital infrastructure is being formed at various levels, and the necessary systems are created, which are being improved by the introduction of new technologies and merging into a single
information space. Under these circumstances, many organizations are looking for ways to survive in the company, and strategies are developed to create a competitive advantage for the company.

The digital economy a particular interest in research is formed on the basis of a wide range of problems when working with projects (representation) from the point of view of research and development and the application of non-standard methods and methods of their analysis. It is necessary to take into account the specific features of each project and form an individual approach to evaluating programs, because there is an understanding of the future development directions of digitization and informatics processes.

The digital economy has reached a new stage in the global economy, as a result of the use of information technology in various economic fields, as happened in all areas of life, growth, integration and development of information technology, and the use of computer networks to identify vendors, evaluate products and services, compare prices, re-engineer production processes and simplify access to the customer. Through projects (application projects) which are projects to implement and support product services and information solutions for industry and improve security on the basis of technical infrastructure, software and hardware solutions for partner companies for corporate and government sector clients, as well as projects to create unique products and services for individual clients / groups of clients. (Al-Shammari, 2008).

Literature review

Analytics researcher Yves (2015) Inside the Digital Economy are highlighting the potential for action at all for all those involved in the economic information infrastructure. “This is the use of the potential of innovative digital technologies via the Internet by all participants in the economic system - from individuals to corporations and major countries” (Yves, 2015). This interaction makes it possible to analyze and publish information about the availability of digital information technology.

Lapaev describes the digital economy as a “tool for global governance”, stressing that “the digital economy is part of the real economy linked to the Internet, data processing and exchange” (Lapaev, 2018).

Ramachandran, within the framework of the concept of "digital economy", highlighted one of the features of this phenomenon: economics is the creation, consumption and management of value associated with products, services and digital assets in organizations ” (Ramachandran, 2014).

Mayer expresses the view that the opportunities presented by modern digital technologies "qualitatively change the principles of the use of information, the criteria for determining its value, and thus the patterns of potential threats to confidentiality. Data becomes an asset of immense value because of its so-called surrogate value as it is used for new purposes and used to implement ideas.” New (Mayer, 2014).

The decisive position of the projects applied in the digital economy has yet to be determined due to their industrialization and novelty. Alongside the traditional methods of doing business, applied enterprises have begun to gain decent market share, which contributes to the vigorous implementation of economic transformation processes (Ali, 2020).

It must be mentioned that the distinguishing feature of the projects (representation) is the absence of unified technical solutions, and as a result, it is impossible to standardize the definitions
of the set of services provided and the work performed and a unified development. Well-established schemes for implementing applied projects.

Since we live in the era of globalization, so everything has been globalized. Globalization has different types, including economic, social, cultural, political and technological. From this point of view the applied projects include the products used to provide the services of the information society, which is a product of technological globalization and is one of the emerging economies of information and communication technology, so it is the cradle. The way to a digital revolution, and in light of this is the provision of information and communication technology to customers from the consumer segment, as well as software in order to provide citizens and organizations with access to services based on modern information technologies, as well as developing the technical and technological basis to form the information society (Al-Shammari, 2008).

Materials and methods

As part of implementing projects (representation), the following tasks are solved:

1. The main mechanisms have been developed, and the basic technical means, software solutions, basic devices and information resources have been established, which in turn guarantee the establishment and operation of the services of these projects.

2. The applied projects are classified according to the degree of digitization.

3. Organizational solutions, software and hardware are formed to reduce the costs of time, as well as reduce the cost of providing services for these applied projects and the effectiveness of electronic methods of interaction between all topics related to these projects.

4. A unified technological platform is established for the fast and secure exchange of information between all contractors (Darim, Eisaa, and Lihashm, 2020).

Ali, (2020), a classification proposal for an analysis of project management processes in organizations in the digital economy, which was presented. This analysis is necessary to understand the location of the implemented projects in the organization, as well as to assess the likelihood of their implementation (Ali, 2020). The presented classification gives a clear understanding of the main processes and assistance that occur against the background of decision-making about the need to implement projects applied in organizations in the context of developing the digital economy, as well as the methods of their analysis (blocks (1), (2) and (3)). The use of this classification in further research helps to determine the niche of projects (representation) in the analysis of the activities of the organizations implementing the projects (representation), including financial analysis.

To do this, it is necessary, first, to define the technological focus and the investment opportunities focus on the set goals, in every possible way to develop a culture of innovation similar to the digital companies in the country. An equally important task requiring a timely solution will be education and training. It is clear that the digitization of production will necessitate the emergence of new occupations and the aging of existing occupations. Which can be divided into: investment and operational (Kinnon, 2019).

While exploring possible directions for future concept development, it is essential to understand the scenario in which the Enterprise Solutions Toolkit will be implemented. Therefore, the concept of "digital project" must be defined at the outset, highlighting the distinguishing feature that must be the main productive force used in such projects is digital technologies. In our opinion,
it is completely unacceptable to consider a digital project as a digital platform that describes project activities.

For digital technologies to become a productive factor of the project, it is impossible to justify the need to move to digital applied projects. It is quite clear that in the near future there will be a relatively large number of projects working on the spillover effects of digitization, but to identify these impacts a comparative analysis is required with digital projects, and not with traditional projects. The digital project must meet at least two digitization signs - external and internal, that is, its internal business processes must be digitized and implemented in a digital external environment with the realization that such a project cannot actually be established now, and that real applied projects will have a degree of approximation to digital solutions, and with So, despite the simplicity of comparison with traditional projects, it is necessary to develop the concept of the so-called digital management in order to form a new basis for the development of digital solutions.

For further research, it is necessary to classify projects (representation) into the following five groups (Table 1), which will not only assess the degree of approximation for the “digital project” category, but also determine in the future the potential for interaction between them to create added value:

- Digital leaders, that is, applied projects that are actually a model for the future, that have shaped (or created their own digital environment), are provided with digital assets, the digital technologies implemented and the result is a digital product;
- Projects (representation) that are received organizationally and are technically ready for digital interaction but do not implement them. As a rule, it is distinguished by individual solutions that outperform similar solutions on a global scale; The digital environment for these projects is internal;
- Projects (representation) are organizational ready for digital changes. These projects are attractive to interact in the external digital environment, but have not yet begun to make their own transformations. For example, projects for digitization equipment may not be digital at all;
- projects (representation) that require organizational changes and technical modernization, but the subject matter of their activity will be in demand in the digital future;
- Projects (representation) - external whose digital future is in doubt.

The classification above not only allows modification of project models (representation) for each specific project, but also allows for an assessment of the need to improve projects (representation) at each level. And therefore:

A) For the pilot projects, changes in the project model have become an urgent need, and it is necessary to implement the third scenario,
B) For projects subject to organizational and technical digitization, a choice can be made between the first and second scenarios.
C) Regarding organizational ready projects for digital transformation, the second scenario must be implemented,
D) For projects that require organizational changes and technical updating, only the first scenario is feasible.

Table 1. Classification of projects (representation) according to the degree of digitization
The most difficult decision on the level of inter-project interaction is to organize the alignment of shareholder priorities and interests. In our opinion, no digital technology will allow the process of interaction and negotiations to be eliminated to reduce risks, so digital solutions for projects should provide a mechanism for such communication and not a mechanism to reduce it.

One of the characteristics of investment category projects is the need for investment to implement them. These projects are evaluated on the basis of the integrated point evaluation, which consists of the technical and economic indicators of the future project, in addition to assessing the legal risks during the implementation of the project and the general risks that the company will incur through launching the applied projects for implementation. It has investment projects in turn into 3 types (Bychkova, & Butina, 2018):

- Implementing projects that require the company to incur capital expenditures, taking into account (International Financial Reporting Standards).
- Applied projects that require the company to incur capital expenditures calculated in (the Iraqi Financial Reporting Standards).
- Projects requiring operational costs to be incurred can be classified as a type of project applied (Shahr, 2017). The effectiveness of this category of projects is evaluated taking into account the analysis of the feasibility of implementation within a given timeframe, while also taking into account the achievement of the required level of gross margin index in the current year.

As a list of the risks that arise in the analysis of projects (representation), the following can be distinguished:

1. Low technical and economic indicators of the project's potential efficiency, such as long payback period, low profitability, etc.
2. The impossibility of implementation for technical reasons (lack of necessary equipment, impossibility of technical support for the implementation of the project).
3. Re-evaluate the importance of the project for the company in the medium and long term planning.

Source: developed by the authors

<table>
<thead>
<tr>
<th>Project file</th>
<th>Prospects for entering the digital market</th>
<th>Digital environment</th>
<th>Digital assets</th>
<th>Digital technology</th>
<th>Digital product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital leaders</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Projects that are organizationally responsive and technology ready</td>
<td>√</td>
<td>√</td>
<td>partially</td>
<td>-</td>
<td>Partly in development</td>
</tr>
<tr>
<td>Organizational turnkey projects</td>
<td>√</td>
<td>√</td>
<td>partially</td>
<td>-</td>
<td>Partly in development</td>
</tr>
<tr>
<td>Projects that require organizational changes and technological upgrading</td>
<td>√</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>External projects</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: developed by the authors
4. Unpredictability of project receivables.
5. Incorrect assessment of the forms and means of interaction between the main project participants.

The likelihood of the occurrence of risks is directly related to the company's position in the market, with its financial stability, as well as to the current market situation and the possibilities of its change (Attia, 2020).

All implemented project initiatives must undergo performance appraisal prior to entering into the contract for their implementation, taking into account the changing market situation.

**Results**

In the process of evaluating all possible risks, it is necessary to determine how serious it is to threaten the company, what is the general probability of their occurrence, how long will the risks affect the implementation of the applied projects, etc. (Alkarawy, 2020). Therefore, a company that decides to implement a plan to introduce software into its product portfolio, sets expectations for the development of all potential factors affecting its activities.

To simplify the forecasting of the project implementation prospects, it is desirable to use a pessimistic development scenario, that is, the project evaluation should be carried out in the conditions of the onset of all the significant risks identified during the examination.

Substantial risks can be considered to be the risks described above, of very high value for their potential occurrence, which can greatly affect the economic performance of the company in the chosen direction (Talib, & Arshad, 2019). In addition, with the emergence of significant risks, the project may become impossible to implement.

In this respect, the digital economy is characterized by many criteria that make it distinct from the traditional economy in projects (representation), whether in terms of the economy or business through it, and other aspects of discrimination, and Table (2) shows that distinction.

Through these criteria, the major risks that the company faces in implementing projects (representation) (Bychkova, & Butina, 2018) may be:

- An increase in the implementation of the project or its components.
- Increasing the size of implementation costs.
- Failure to observe the quality standards of services provided within the framework of the project.
- Reduced interest of potential consumers in the services of the new project.
- A decrease in the profitability of the project.

An implementation decision cannot be made without a full evaluation and expectation of the effectiveness of the implemented project.

In the event of significant changes in the conditions of implementation and economic indicators of the project, a review may be made, taking into account the new changes and future expectations.

**Table 2.** The distinction according to criteria between the digital economy and the traditional economy

<table>
<thead>
<tr>
<th>Standards</th>
<th>Digital economy</th>
<th>Traditional economy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economically</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Markets | Moving | Stable
---|---|---
Competition limits | International (public and local) | Nationalism (independent risk)
Organizational form | Reticulum | Hierarchical-bureaucratic
Structure | Service / informational at its core | Manufacture in essence
Source of value | Human and social capital | Raw materials and natural capital

**In terms of business**

<table>
<thead>
<tr>
<th>Organization of production</th>
<th>Flexible production</th>
<th>Big production</th>
</tr>
</thead>
<tbody>
<tr>
<td>The main driver of growth</td>
<td>Creation / knowledge / innovation / invention</td>
<td>Capital / work</td>
</tr>
<tr>
<td>The technical engine of growth</td>
<td>Digitization</td>
<td>Mechanization</td>
</tr>
<tr>
<td>Source of competitive advantage</td>
<td>For quality, innovation, adaptability</td>
<td>Cost reduction through budgeting</td>
</tr>
<tr>
<td>The importance of research / innovation</td>
<td>big</td>
<td>Low and medium</td>
</tr>
<tr>
<td>Relationship with companies</td>
<td>Collaboration, and excel</td>
<td>Solo performance</td>
</tr>
</tbody>
</table>

Source: Muhammad Madloul

For each category of projects, a number of risks can be identified, which are preferable to evaluate the feasibility of implementation when implementing projects (representation).

Risk factors also changing from this standpoint that the previously inherent risk factors - key figures in business management, financial structure, company size, diversification, methods and techniques for managing a company's sustainability - are subject to digital pressures. Harmonization of results on transfer pricing and increased capitalization: risk and capital.

It is planned to develop transfer-pricing rules that prevent the withdrawal of profits by transferring risk or distributing excess capital among the members of the group. In particular, it is assumed that the correspondence between the income received and the value produced is ensured by avoiding "the accumulation of inappropriate profits for the structure merely because it bears risks or provides capital under the contract".

The risk of losing profitability directly depends on components such as sources of income generation. The risk can be considered minimal if the income is formed on the basis of the secured payments that are specified in the contract or taking into account actual costs, such as rental payments. Also, this risk is considered insignificant when the specific tariff for the specific project is fully controlled by the company. In cases where the revenue side does not include risks, such as the risk of inability to operate, the risk of losing control, or the impossibility of assessing the revenue component as a whole, the risks chosen may have a high likelihood of their occurrence, which will adversely affect the business of the company in bringing in a project. My application to the market. Projects should be evaluated according to the worst-case scenario, that is, taking into account the occurrence of all kinds of risks.

The risk of a low level of margin (earnings before tax),% (the ratio of profit before tax to revenue from the sale of goods, business, and services, expressed as a percentage) for the enterprise indicates an insufficient amount of cash receipts in the form of marginal profit before tax (Isabel, 2017). For each organization, a threshold level is set for this indicator, however, in general, it can be
said that if the margin (earnings before tax) is in the range of 10 to 30%, then the impact of project implementation may be positive and additional evaluation is required and it is necessary to forecast the profits of the calculated period. If the margin value (earnings before tax) is determined to be less than 10%, the project must be abandoned, except in cases of an increase in the value of the company's application projects or modifications to the developed project. It is not feasible to make additional evaluation and expected profit for the calculated period. If the value of the margin (earnings before tax) is set to less than 10%, the execution should be abandoned.

Implementation of the project, except in cases of increasing the value of the company's software or to make adjustments to the developed project. The risk of changing the income contract term is directly related to the payback period indicator of the projects applied. To settle the inconsistency between the terms of the contractual relationship and the payback period, a number of conditions must be taken into consideration. The best option for implementing applied projects is the contract period over the payback period of the project. In this case, there will be no need to amend the implementation plans of the applied projects.

If the payback period and the payback period of the contract are equal, if the latter can be prolonged, this threat can also be considered insignificant. The risk increases as the payback period increases and exceeds the duration of the contractual obligations. When forming risk scenarios, one should take into account the possibility that there is a risk of not prolonging the contractual relationship this for the first scenario.

For projects as in the second scenario, the risks of changing the income component structure, the risk of getting a low level of margin (earnings before tax), a percentage of the project, the risk of not improving the cost part of the project, and the risks of not implementing the project are similar to the project risks from the first scenario. The risks of the second scenario projects are shown in the figure. 1. The risks of an increase in the installment plan for the second scenario projects may adversely affect the economic performance of the future project (Hanseth, Lyytinen, & Design, 2010).

If the installment period does not exceed 3 years, then these risks will be minimal. If the installment period exceeds 5 years, the company must abandon the implementation of these projects, as the possibility of economic losses increases greatly with the increase in the repayment period of the project, and the installment plan for a period of 3 to 5 years in general indicates a lower risk of losing profitability and the feasibility of introducing an application project in Organization's product portfolio. The minimum unit for consideration of projects from the third scenario can be defined as a contract. The third scenario project includes a set of initiatives that are limited to a product or service within a specific component entity. The risks that the company must take into account when assessing the need to implement projects from Scenario 3 are shown in the diagram in Fig. 1. Project risks can be presented in the following graph.

This will then require additional evaluation of the project using indicators net present value. If the result of calculating the net present value is positive, then the applied project is subject to further study.

The final cost of a project can be defined as the present value of the cash inflows and outflows of the project, provided that there are constant growth rates calculated for a particular point in the future. Final value is the difference between the residual value of the equipment at the time of
dismantling, the cost of dismantling, and the failure rate (estimate of impairment) (Bychkova, & Butina, 2018).

![Figure 1. Scenarios representation projects](https://www.cibg.org.au/image)

Consequently, the risk of non-compliance may arise in the cost part if it is impossible to assess the full list of the costs of the company to implement an applied project due to lack of experience with such programs and work details in the terms of reference of the project. If only the individual components of a project can be predicted in the amount of the expected costs, then this type of risk may not be critical when deciding on the implementation of these projects. Risks can be considered minimal and insignificant only when equipment, software and operation are purchased at prices not lower than those determined by the contractual obligations of the parties, and optimized for the specific application project. In addition, risks are almost completely absent when the costs have already taken into account not only the purchase of equipment, but also its insurance or spare parts.

In the context of implementation risk or feasibility of an applicable Category 1 and 2 project, it is necessary to consider the circumstances under which the evaluated project may be implemented or rejected. If the company has experience in implementing similar projects and proves economic efficiency through positive values of key technical and economic indicators such as gross margin (gross margin, difference between proceeds from sale of goods, business and services and direct costs) and (operating profit before depreciation), etc. Then this initiative can be implemented in the portfolio of the organization (Bychkova, & Butina, 2018).

Based on the above criteria, 3 groups of risk scenarios can be suggested:

The first scenario: One set of scenarios depends on the possibility of parallel use of equipment in several projects simultaneously. When this scenario occurs, a description and calculation of the
technical and economic indicators for the implementation of these projects, as well as the features and conditions for the simultaneous operation of the equipment, should be made.

- The second scenario: The combination of the scenarios is used if the parallel use of the infrastructure in several projects is impossible from a technical point of view. These scenarios provide options for risk occurrence, while considering equipment reuse in other projects.

- Third scenario: A set of scenarios, as well as a group of second scenarios, are used when it is impossible to operate the equipment in parallel, in which case the possibility of reselling the equipment and generating additional income is considered. Then there is a complete rejection of a plan to put it on the market. New application project. The main parameters for assessing the positive and negative aspects of applying the three scenario combinations are the payback period for the applied project, the net present value, and the terminal value, as well as an expert assessment of the likelihood of risk occurrence (low, medium, high).

Discussions

When configuring any of the scenarios, it is necessary to adhere to a certain set of rules: the scenario must contain a descriptive part and the basic requirements for its occurrence, a feasibility study calculation for the conditions of the particular scenario, as well as a detailed explanation. Calculated probability of occurrence. Only in the presence of all these conditions is it possible to draw a complete conclusion about the suitability of the implementation of the given scenario, as well as about the possibilities of implementation of the applied project. The main risk in assessing the economic efficiency of Type 3 projects is the low level of gross margin. The decision on the implementation of projects as in the third scenario is made on the basis of potential future receipts. The higher the level of gross margin, the greater the amount of financial resources it saves for every ruble of project implementation in exchange for additional obligations and expenditures (Bychkova, & Butina, 2018). In general, this indicator does not directly affect the economic efficiency of projects, but is used in the calculations of a number of indicators to determine the financial stability of the company and the profitability of the future project. The level of (gross margin) is calculated and determined centrally in the company, and the future profitability of the project is evaluated by comparing and comparing this indicator with the target value stipulated in the organization's budget. If the project is carried out for more than a year, the level of gross margin should be considered and evaluated against the minimum value of the industry.

Within the framework of the risks mentioned above for the implementation of the project, a distinction can be made between a number of factors (risk assessment values), on the basis of which a clear decision can be made regarding the inadequacy of further evaluation and implementation of the proposed applied projects in the company. These factors can be defined as estimating factors for a digital project (Bychkova, & Butina, 2018). The list of assessors for a digital project can be assigned to each project separately, given the characteristics of each applied project. However, it is possible to identify a number of factors evaluating a digital project, which will be universal to all project categories and essential in the context of project evaluation. The following factors can be distinguished as global evaluation factors for a digital project (Bychkova, & Butina, 2018):

1. The low level of % (earnings before tax) for the project (the minimum level of these indicators is usually determined centrally in the company for the current year, depending on market and environmental conditions);
A high risk of unpaid accounts receivable, or overdue debts, which may adversely affect the cash flow of the relevant application. In general, a model can be proposed to determine the degree of risk and the possibility of its occurrence for the initial evaluation of all types of applied projects.

Under this model, it is proposed to divide the risk values on a 3-point scale, where 1 - risk is the maximum, 2 - risk is medium, 3 - risk is minimal.

In addition, each risk is assigned a weight factor, which indicates the importance and significance of this risk to the enterprise and to the financial stability of the company as a whole.

Based on the implementation results from this multi-criteria method for assessing the risks of the applied projects, it is necessary to calculate the integrated indicator of the effectiveness and feasibility of implementing the program. When evaluating less than 2 points in terms of the integrated evaluation of the program, the presence of factors evaluating a digital project according to one criterion or another is an unconditional refusal to implement a project (representation).

An example of risk assessment for the representation projects according to the above scenarios is presented by showing them in Table 3. It is divided into the project risk assessment applicable to the first scenario projects. An example of the risk assessment for projects from the second scenario.

Table 3. Evaluate the assessed factors for a risk digital project

<table>
<thead>
<tr>
<th>Efficiency factor</th>
<th>Weight</th>
<th>Evaluation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 low</td>
<td>2 medium</td>
</tr>
<tr>
<td>Low-risk margin (earnings before taxes)</td>
<td>1</td>
<td>Maximum</td>
<td>Maximum</td>
</tr>
<tr>
<td>Risks of losing profitability</td>
<td>2</td>
<td>Maximum</td>
<td></td>
</tr>
<tr>
<td>The risk that the not optimal level for a fraction of the cost of the project</td>
<td>1</td>
<td>Maximum</td>
<td></td>
</tr>
<tr>
<td>Risks of implementing (feasibility) the project</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risks of increasing payback period</td>
<td>3</td>
<td>Maximum</td>
<td></td>
</tr>
<tr>
<td>Integrated evaluation of project efficiency</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The second scenario

<table>
<thead>
<tr>
<th>Efficiency factor</th>
<th>Weight</th>
<th>Evaluation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 low</td>
<td>2 medium</td>
</tr>
<tr>
<td>Low-risk margin (earnings before taxes)</td>
<td>1.5</td>
<td>Maximum</td>
<td></td>
</tr>
<tr>
<td>Risks of losing profitability</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The risk that the not optimal level for a fraction of the cost of the project 1 Maximum
Risks of increasing the installment period 2.5
Risks of impossibility of project implementation (impractical) 2 Maximum
Integrated evaluation of project efficiency

Source: developed by the authors

The above risk assessment model does not take into account the weights of the evaluation factors, as both risk statements are equally the most important in determining the feasibility of implementing the project. As in the models designed for the projects in Scenarios 1 and 2.

As for assessing risks for projects from the third scenario, as we can see, the described risks have different conditions, but the same consequences. Project management theory uses two characteristics of risks, with which you can assess their importance: the probability of risk and its impact on the project.

Based on Alkarawy & AL-Kuwair (2020) study, suggested that consideration be given to the extent to which risks affect and in order to get an idea of the numerical quality indicators for the selected criteria, a model was created using expert estimates.

Knowing these parameters, you can calculate the significance of risk by the formula:

\[ TI_R = L_R \cdot E_n \]  (1)

Where:
- \( TI_R \) - significance of risk;
- \( L_R \) - probability of hazard (probability);
- \( E_n \) - effect.

Project risk assessment (representation) for Scenario 3. It is often suggested to consider the extent to which the risks affect four aspects: risks of losing profitability, risks of the not optimal level for a fraction of the cost of the project, risks of increasing the installment period, and risks of implementing (feasibility) the project.

To describe it, you can use the impact matrix given in the table. 2.

**Table 2. Influence matrix**

<table>
<thead>
<tr>
<th>Influence</th>
<th>1 low</th>
<th>2 medium</th>
<th>3 high</th>
</tr>
</thead>
<tbody>
<tr>
<td>Losing profitability</td>
<td>0.0-3.7</td>
<td>3.7-6.4</td>
<td>6.4-10</td>
</tr>
<tr>
<td></td>
<td>= 1</td>
<td>= 2</td>
<td>= 3</td>
</tr>
<tr>
<td>The not optimal level for a fraction of the cost of the project</td>
<td>0.0-3.7</td>
<td>3.7-6.4</td>
<td>6.4-10</td>
</tr>
<tr>
<td></td>
<td>= 1</td>
<td>= 2</td>
<td>= 3</td>
</tr>
<tr>
<td>Increasing the installment period</td>
<td>0.0-3.7</td>
<td>3.7-6.4</td>
<td>6.4-10</td>
</tr>
<tr>
<td></td>
<td>= 1</td>
<td>= 2</td>
<td>= 3</td>
</tr>
<tr>
<td>Implementing (feasibility) the project</td>
<td>0.0-3.7</td>
<td>3.7-6.4</td>
<td>6.4-10</td>
</tr>
<tr>
<td></td>
<td>= 1</td>
<td>= 2</td>
<td>= 3</td>
</tr>
</tbody>
</table>

Source: developed by the authors

To calculate the overall risk impact on the project, we use the formula (Fedosova, 2008) as:
\[ EF_R = \frac{LP_R + OC_R + IP_R + IF_R}{4} \]  \hspace{1cm} (2)

Where: \( EF_R \) the overall impact of risk on project continuation / rejection.
\( LP_R \) risks of losing profitability.
\( OC_R \) risks that the not optimal level for a fraction of the cost of the project.
\( IP_R \) risks of implementing (feasibility) the project.
\( IF_R \) risks of increasing the installment period.

The impact of the first risk on the project according to formula (2) provided that \( LP_R = OC_R = IP_R = 3, IF_R = 0 \) is \( EF_{R1} = 2 \).

Since the outcome of the second risk (project failure (representation) during implementation) is the same as for the first, its impact on the project is evaluated based on the same considerations. As a result, we obtain the estimate of \( EF_{R2} = 2 \).

**Risk comparison.** After calculating the probability of occurrence and impact of risks according to formula (1), the importance of risks is calculated. The results obtained are given in table 3.

**Table 3.** Results of risk assessment on the project (representation) according to the third scenario

<table>
<thead>
<tr>
<th>Risk content</th>
<th>Numerical estimate of the probability of occurrence ( L_R )</th>
<th>Numerical evaluation of the effect ( E_n )</th>
<th>Significance of risk ( TI_R )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose the project (representation) without understanding its full list of requirements</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Non-continuity of the project (representation) during implementation</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

Source: developed by the authors

In this example, the second risk associated with project failure (representation) during implementation is more important than the first risk of project selection (representation) without understanding the complete list of requirements.

The proposed methodology should be used to determine the importance of project risks (representation) in the digital economy, and as a result, a classification of the importance of risks can be obtained according to what is presented above.

**Conclusion**

Of course, these assessments are subjective and depend on the level of experts. If statistics can be found on the probability of materialization of risks, then only the expert method is used to determine the impact. Nevertheless, even such an assessment, which is not devoid of subjectivity, seems better than no assessment at all.

Thus, within the framework of implementing projects (management), it is possible to distinguish between different categories of programs depending on the costs incurred by the company. Each category of implemented projects has specific risks, to a greater or lesser degree, that limit the company's ability to implement projects.
There are also risk values which, in the evaluation stage of the applied projects, can indicate inappropriately that it is not feasible to consider the possibility of implementing the projects applied in the current form without any changes.

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REFERENCES


