

colloquium-journal

ISSN 2520-6990

Międzynarodowe czasopismo naukowe



Economic sciences

№16(103) 2021

Część 4



colloquium-journal

ISSN 2520-6990

ISSN 2520-2480

Colloquium-journal №16 (103), 2021

Część 4

(Warszawa, Polska)

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address the shortcomings of existing regulatory standards recognized by the international community, such as insufficient level of bank capital requirements, the possibility to include hybrid instruments without their obligatory conversion or write-off for losses, on the cyclical nature of regulation, underestimation of the risk

on securitized assets and the risk on the counterparty for derivative transactions; insufficient disclosure of information by banks.

Changes can be divided into directions (Figure 3.).

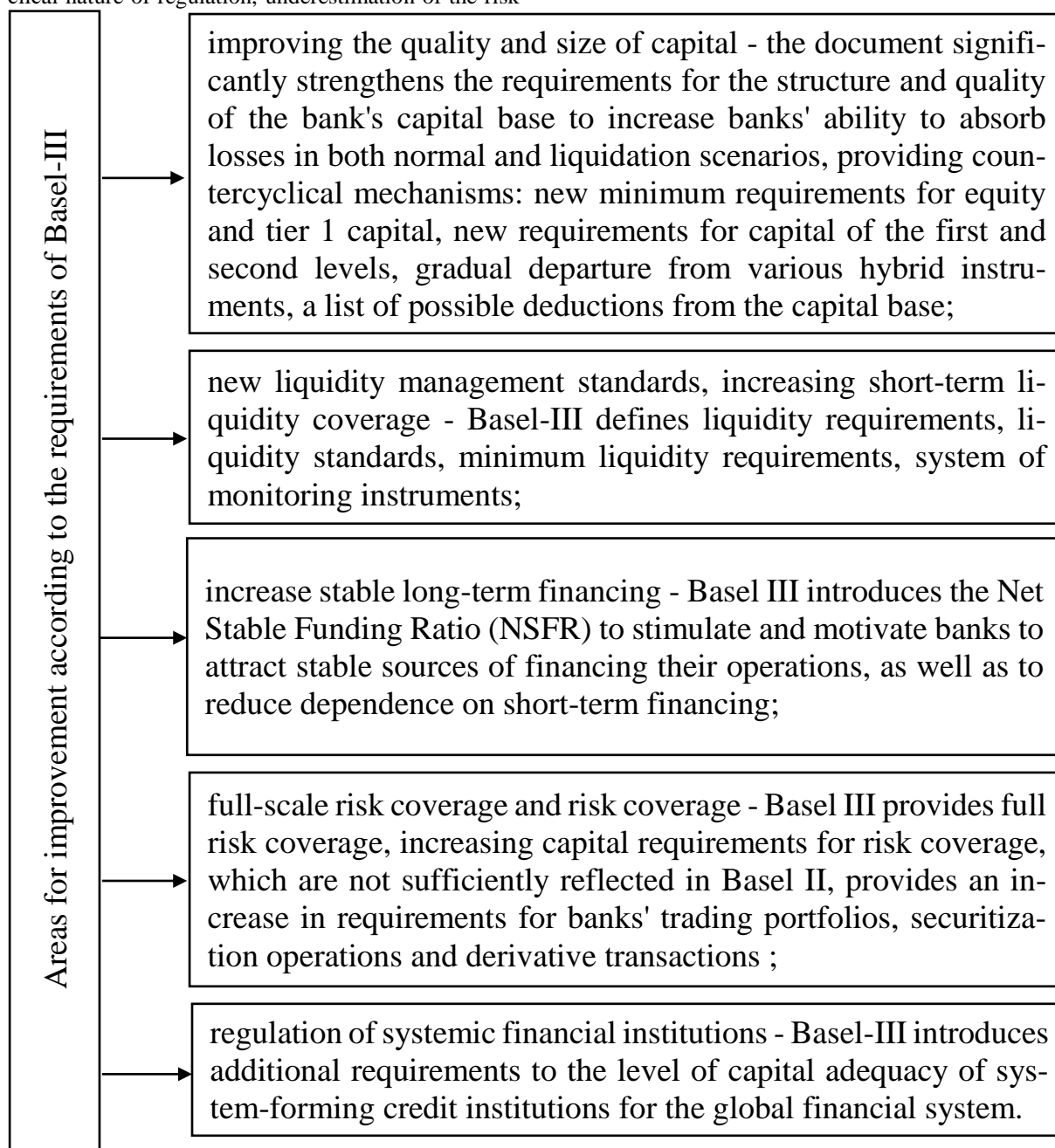


Figure 3 Areas for improvement according to the requirements of Basel-III [9]

The need for a clear implementation schedule of Basel-III is explained by the fact that the standards developed by the Basel Committee cease to be only recommendations for the world banking community, they become strict requirements for banking institutions, non-compliance with which applies strict sanctions by regulators [2, p. 123].

According to the decision of the Basel Committee on Banking Supervision, the amendments to the Basel Recommendations (Basel-III) aimed at the following main objectives:

Although the changes made to the International

Convergence of Capital Definitions and Capital Standards: New Approaches are not radical, their introduction is innovative, as follows: a) change of approaches to financial management and risk management by raising the standards of risk management, the degree of integration of financial management and risk of banking institutions; b) providing a stable base and the necessary reserves to counter all kinds of risks and crises; c) the possibility of forming a more complete, consolidated picture of business for shareholders and management.

Thus, banking supervision is a constant factor in strengthening the country's banking system. Adaptation

of domestic banking supervision to international standards will allow to move to the model of development of the banking sector, which is characterized by the priority of quality indicators and focus on long-term efficiency.

In recent years, Ukraine has taken an important step in improving the system of banking supervision and regulation and bringing it closer to international standards and practices, but there are still many unresolved issues and shortcomings, the main of which are: imperfect control over banks' adequate risk management systems. ; low level of practical implementation of prudential requirements, in particular, in terms of transactions with insiders and compliance with standards of large credit risks; lack of proper control over the availability of provisions, practices and procedures for banks to combat money laundering, etc.

Therefore, in order to further develop the components of the banking supervision system, it is necessary to create an effective system of internal control, the first step towards the construction of which is a clear definition of its purpose and objectives.

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UDK 005.8:004.045:658

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[DOI: 10.24412/2520-6990-2021-16103-74-80](https://doi.org/10.24412/2520-6990-2021-16103-74-80)

METHODOLOGICAL APPROACHES TO IT PROJECT MANAGEMENT

Abstract.

The methodological approaches of IT project management are analyzed in the article. It is determined that today experts distinguish rigid and flexible methods of project management. Rigid management methods involve the use of classical project management methods, including a cascade model, which provides strictly consistent (over time) and one-time execution of all phases of the project with rigid (detailed) pre-planning in the context of defined one-time and specific software system requirements. The WaterFall model has been found to be the most common model among software development lifecycle models.

It is determined that flexible methods of project management include Agile, Scrum, Lean, Kanban, Six Sigma,

PRINCE2. The flexible development methodology is based on a liberal-democratic approach to the management and organization of team work, the members of which are focused on the development of specific software. It is noted that the choice of project management methodology depends on the project objectives, requirements and conditions in which the project is implemented. The presence of various methodologies for managing IT projects, which differ in approaches to project process management, allows you to choose the model that will ensure the achievement of project objectives in conditions of limited resources, uncertainty and risk.

Keywords: project management, IT project, IT project management, Waterfall model, Agile model, Scrum model, Lean model, Kanban model, Six Sigma model, PRINCE2 model.

Introduction. Project management, project approach in the context of globalization and digitalization is becoming increasingly popular and used in various fields. Project management is a specific management activity aimed at achieving the goal in terms of given parameters. In fact, project management methods allow you to determine the stages and stages of the project, the resources needed to implement the project, the project team, the timing of the project, identify project risks, monitor project implementation, and more.

The ultimate success of an IT project largely depends on the chosen project management model. There is no single correct project management methodology, but a sufficient number of project management approaches, methods and models have been developed, including IT projects, which allow to achieve the project goals in conditions of uncertainty and risk.

Analysis of recent research and publications.

The work of many foreign and Ukrainian researchers is devoted to the issue of project management, such as: H.V. Starchenko, V.V. Butkevych, T.D. Pol's'ka, A.A. Trus', O.V. Kolyanko, H.V. Ozymok, O.M. Yashyna, D. Sazerlend, T.V. Kulinich, L.I. Bolibrukh, ZH.M. Zhyhalkevych, V.YE. Chukhlib, S.O. Krams'kyi, A.I. Klislyn and others.

However, despite significant developments in the field of project management, this issue needs further study using the latest project management methodologies for software development.

Goals setting. The purpose of the study is to analyze the existing methodologies for managing IT projects, which in a changing environment will achieve the solution of IT project tasks while ensuring the required quality of the IT product.

Presentation of the main material of the research. Today, two groups of methods are used in IT project management: rigid and flexible.

Starchenko H.V. [1] at this stage of development of the science of project management identifies the following methods of project management:

1. Classic project management.
2. Agile.
3. Scrum.
4. Lean.
5. Kanban.
6. Six Sigma.
7. PRINCE2 [1].

The cascade model refers to the models of the classical life cycle.

The stages of development of the classical cascade model are the follows:

- Analysis of project requirements;
- Product design;

- Software implementation;
- Product testing;
- System integration;
- Software support.

The transition to each subsequent stage in this model is possible only after the successful completion of the previous stage. Such a rigid sequence allows to formalize the development process, which makes it extremely transparent, while the actual length of the stages often does not correspond to the time intervals that are defined in the graphs and documentation. If it is necessary to make changes to the documentation, product development is stopped until the documents are re-approved. Therefore, in case of insufficient level of processing of requirements, there is a risk to increase the development time to completely unacceptable values, changing the amount of costs.

The cascade model provides for strictly consistent (in time) and one-time execution of all phases of the project with rigid (detailed) preliminary planning in the context of defined one-time and well-defined requirements for the software system. Such a complex system saves a lot of time that will be spent on scheduling and documentation before starting the project development.

Stages of the project according to the cascade model: formation of requirements; designing; realization; testing; implementation; operation and maintenance.

Advantages of the classic life cycle:

- gives a plan and time schedule for all stages of the project;

- streamlines the design process.

Disadvantages of the classical life cycle:

- real projects often require deviations from the standard sequence of steps;

- the cycle is based on the exact formulation of the initial requirements for the software (actually at the beginning of the project the customer's requirements are only partially defined);

- project results are available to the customer only at the end of the work.

Work on this technique should be step-by-step, gradual [2].

The Waterfall model belongs to the class of rigid software development models and is the most common model among software development lifecycle models. It is very easy to understand and use. In this model, each phase must be completed by the next stage. At the end of each stage, a review is conducted to help determine whether the project is on track and whether the project will continue [3].

When using the Waterfall model, the main efforts are made to perform the current series of tasks, the list of which was compiled in advance for long-term

planning. When modeling using Waterfall, the estimate and order of tasks can be changed only to overlap the previously set number of tasks.

The Waterfall model is usually used in those projects where there are clear requirements for implementation that cannot be changed, the course of design and implementation is quite predictable and it is possible to clearly define the time frame required for project implementation. This is quite good for projects involving construction of various levels, because there the ultimate goal is determined in advance, it is possible to calculate all the deadlines for each group of works and to determine with great accuracy the project budget at the beginning. Also, Waterfall is ideal for complex and large-scale projects in the field of space engineering or for complex projects in the field of medical design and development. For projects in which the requirements for the final product or service are constantly changing, which is dictated by constantly changing trends in the markets of this product, the use of rigid methodologies is almost impossible and that is why Scrum is best suited for such projects. This methodology is an ideal solution for a market where there is constant uncertainty or variability. Scrum is ideal where you need to adapt to certain conditions in real time, as well as to specific needs that may change. At the same time, Waterfall, as well as some other traditional approaches involve the method of "command and control" [4].

Flexible development methodology - a manifesto that defines the way of thinking and contains the basic values and principles on which several approaches (frameworks) to software development are based (although recently there has been a trend and an attempt to apply flexible development methodology in other areas than information technology), which is an interactive development, periodic (dynamic) provision (update) of requirements from the customer and their implementation through self-organized working groups formed of experts of various profiles (developers, testers, etc.). Currently, there are many frameworks (methodologies) whose approaches are based on a flexible development methodology, such as: Scrum, Extreme Programming, FDD, DSDM, etc. [5].

Flexible software development methodologies are quite young. The Agile Manifesto was adopted in February 2001. This manifesto formulates four main ideas of the methodology:

- personal approach (individuals and their interactions are more important than processes and tools);
- ensuring the operability of the developed product (software that works effectively is more important than the availability of detailed documentation);
- ensuring a constructive dialogue between the developer and the customer (cooperation with the customer is more important than strict contractual obligations);
- flexibility of development methods taking into account the requirements of the customer, which are dynamically updated (response to changes is more important than strict adherence to the original plan) [6].

Agile principles can be applied to any field of

activity:

- 1) to meet the needs of the customer;
- 2) not to be afraid of change;
- 3) release new products as often as possible;
- 4) work in a team;
- 5) motivate people;
- 6) communicate directly with each other;
- 7) result is the finished product;
- 8) maintain a constant rhythm; improve quality;
- 10) simple solutions are the best;
- 11) the best solutions are in autonomous teams;
- 12) constantly improve [7].

Agile is one of the methodologies of iterative and step-by-step software development (software), as opposed to the traditional linear methodology of "waterfall". The flexible development methodology defines a system of design, development and testing methods throughout the software life cycle.

Flexible development techniques (e.g. SCRUM) are based on rapid response to change through the use of adaptive planning, collaborative requirements development, system streamlining, self-organized cross-functional development teams, and step-by-step software development with clear time frames. This approach is used in many modern commercial software development projects.

The flexible development methodology is based on a liberal-democratic approach to the management and organization of team work, the members of which are focused on the development of specific software. Due to the fact that software development using a flexible methodology determines a series of short cycles (iterations), lasting 2-3 weeks, minimizes the risks at the end of each iteration. The customer accepts the results and issues new or corrective requirements, controls the development and can immediately influence. Each iteration includes stages of planning, requirements analysis, design, development, testing and documentation. Usually one iteration is not enough to release a full-fledged software product, but after each stage of development there should be a "tangible" product or part of the functionality that can be viewed, tested and issued additional or corrective measures. Based on the work performed, after each stage, the team summarizes and collects new requirements, based on which it makes adjustments to the software development plan [5].

The most recent Standish Group Chaos Study results show Waterfall and Agile project success and failure rates. It should come as no surprise that Agile projects are statistically 2X more likely to succeed, and 1/3 less likely to fail than waterfall projects (Fig. 1).

Initially, the Standish Group definition of project success was limited to the triple constraint, which has been the standard for the Project Management Institute for a number of years. Using the triple constraint, the Standish Group evaluated projects as successful, challenged or failed.

Successful – A successful project was one that met all three of the triple constraints: schedule, cost, and scope.

Challenged – A challenged project would have met two out of three constraints, for example, delivered

on time and on budget but not with the desired scope.

Failed – A failed project is one that is canceled before it is completed, or completed but not used [8].

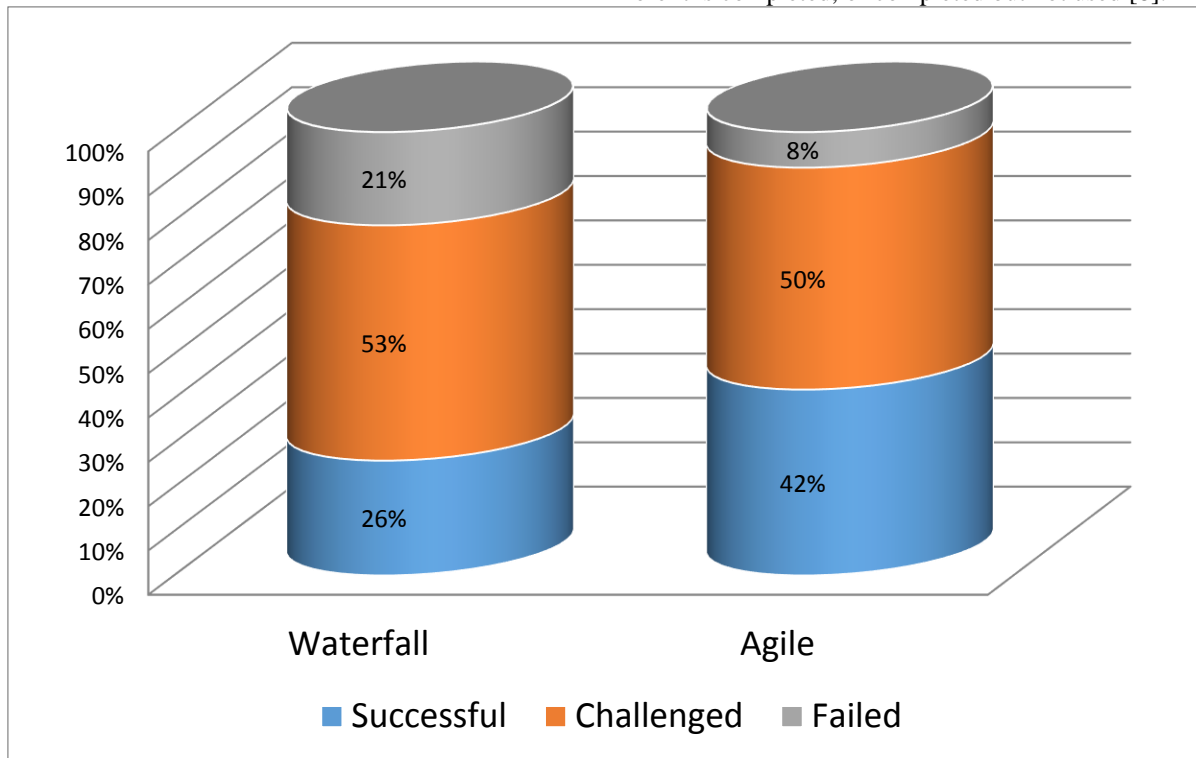


Fig. 1. The level of success of projects using Waterfall and Agile methodologies

Source: formed by the author on the basis of data [9]

Comparison of rigid and flexible models of project management are given in table 1.

Table 1

Comparative characteristics of IT project management methodologies

Criteria	Rigid model (Waterfall)	Flexible model (Agile)
Organization of processes	Cascade development model with a rigid sequence of processes	Flexibility of work processes and making changes as needed
Relation to documentation	Documentation is more important than the finished product	The finished product is more important than the documentation
Responsibility of participants	Responsibility for the result as a whole on the team	Personal responsibility of each team member for the result
Interaction with the customer	The customer is not involved in the workflow	Interaction with the customer in the development process
Interaction with the owner	The owner of the product is minimally involved in the workflow	Maximum involvement of the product owner in the workflow
Dividing into stages	Each workflow is a separate phase that lasts until the testing and approval phase is completed	The workflow is divided into short sprints. Usually from 1 week to 1 month

Source: summarized by the author for [10]

Thus, today in project management different management models are used, but in modern conditions for management of IT projects it is expedient to apply flexible Agile methodologies. Let's consider them in more detail.

Today, the Scrum Approach is recognized as the most effective. World leaders in business and manufacturing in particular believe that it is thanks to Scrum that they have been able to achieve such efficiency in the management of their businesses.

Jeff Sutherland, one of the authors of Scrum's approach [11], states: "We need coherence, unity of purpose and a clear understanding of the need for common achievement. It's the perfect metaphor for what I want from teamwork".

The secret to the success of the Scrum approach is several steps, each of which must be completed in order to successfully implement it in the organization. Thus, the authors and "followers" of this approach distinguish the following stages.

At the first stage, the product owner is selected who will have a vision of the finished product, which will take into account the possible risks and seeks to obtain a quality product for which it pays a fee. Both the state and private entrepreneurs can act as owners, depending on the level of project implementation.

The second stage includes the selection of the team that will perform the main work for the project (product). This team should not be large and include only well-selected, competent professionals who strive

for self-development, are not afraid of change and can objectively assess their abilities and capabilities that will work for the result, not for the process of achieving it. That is, in the team only those participants who primarily have intrinsic motivation.

The third stage focuses on choosing a Scrum-master who will ensure the successful work of the team and provide favorable conditions that will constantly motivate employees and motivate them to higher results. In this case, this motivation should not be material, but internal, because it is known that this type of motivation is the most effective. The scrum-master must motivate employees so that they strive for self-development and, as a consequence, for the development of the enterprise, for the fastest and highest quality achievement of the task. A scrum-master is not a manager who manages employees, but a person who destroys all obstacles that arise on the way to the tasks. No matter what the scale of these obstacles, the team must be able to work constantly.

The fourth stage is to create a so-called "backlog product" (a list of tasks) and set priorities. This is the part of the Scrum method that needs to be done with special responsibility, as it sets the main direction for further work. Therefore, you need to make a list of everything that needs to be done to create a quality product (project). At the same time, it is necessary to determine the priorities of work and realize that everything cannot be done at once.

Over time, all tasks are broken down into small intervals – sprints, which must be "run" quickly (in less than 1 month), efficiently and with full efficiency. To evaluate the latter, each task included in the sprint must be evaluated with a certain number of points. So, the fifth stage involves sprint planning.

As it is desirable that the return increases, it is recommended that the sum of the points of each subsequent sprint be greater than the previous one. Progression in the form of a Fibonacci sequence is used for the planned returns, namely: 0, 1, 2, 3, 5, 8, 13, 21, etc. Thus, there is a pattern that productivity increases with each subsequent sprint. In fact, another rule often applies: when the term remains the same and the complexity of the task increases [12].

Lean is called lean manufacturing – a project management methodology that removes all barriers to production. Lean-thinking is an effective management concept in which the optimization of business processes is achieved through the maximum focus on customer interests. By focusing on the core values and needs of the client, it is possible to anticipate possible risks and build the work so as to avoid the loss of resources.

This methodology is most popular in manufacturing. The basic principle of working with a project on the methodology of Lean - the company's activities are divided into operations and processes that have value for the consumer and those that do not.

In the Lean methodology, extra costs and waste are called Muda, Mura and Muri.

Muda - useless costs that have arisen due to management errors. These include miscalculation of logistics, excessive movement of raw materials, excess

stocks of raw materials, unnecessary movement of people in the shop, simple people and equipment, lack of tools, unnecessary processing processes, marriage, ignoring the potential of employees;

Mura - the causes of muda, uneven load. In other words, it is a lack of resources at times of demand and oversaturation of resources at other times;

Muri - unreasonable difficulties in work. When an employee does not do what he or she can, when the workplace is poorly staffed, or when there are not enough tools at all, when the employee is given vague, abstract tasks.

On the basis of all muda, mura and muri the main principles of lean production are formed, among which to eliminate garbage, minimize stocks, know customer requirements, expand the capabilities of employees [13].

Lean adds to the Agile principles a workflow scheme so that each of the iterations is performed with the same quality. In Lean, as well as in Scrum, work is divided into small packages of delivery which are realized separately and independently. But in Lean for the development of each package of supplies there is a flow of operations with stages. As in classical project management, these can be stages of planning, development, production, testing and delivery, or any other stages necessary for the quality implementation of projects. Lean itself looks abstract, but in combination with Kanban it becomes much easier to use to build your own project management system [14].

Kanban is a concept of supporting a continuous flow of tasks and their efficient execution due to the maximum efficiency of the team. At the same time, a team is never given more work than it can do. If simple: the manager makes a list of tasks, and people do them.

Kanban has two main principles:

- visualization of work;
- limiting the number of tasks "in process".

Kanban's principles are simple, so they are easy to apply and adapt for any company. Kanban can also integrate other project management principles to manage and continuously develop the workflow, such as feedback and daily meetings.

It is a flexible and effective approach for projects with a large variety of tasks that differ in priority and size, such as creating a marketing plan to launch a product. Kanban is well suited for teams working in marketing, software development or content creation.

Advantages of Kanban:

- Improving efficiency. Because employees do not wait until they are given a job, and immediately after the task take another, there is no downtime.

- The best interaction in the team. Team members are always aware of who is doing what and how the project is moving - it's all on the board. If you have daily meetings, they also help to quickly resolve issues that arise during the workflow and allow the team to find solutions together.

- High flexibility. Kanban is a very flexible methodology. You can add and cancel tasks at any time. This methodology is easy to adjust to the current work processes in the company. There are no official roles, so it is easy to adjust to the structure of your company

and can be rebuilt at any time for specific needs.

- Reduction of time for discussions and meetings.

Because team members have a continuous flow of tasks, less time is spent planning.

Disadvantages of Kanban:

- Can brake instantly. For everything to work clearly, you need to have well-tuned processes, and everyone on the team needs to know what's going on. If you don't have it, Kanban will fall apart quickly. If employees are unsure about their job and area of responsibility, tasks may "sag", which will have a domino effect on other team members.

- Requires constant availability of tasks, as on the assembly line. If at some point they run out, the process of destruction will begin. Therefore, if the project has periods of uneven operation, it will be difficult to implement Kanban.

- There are no time limits. There are no deadlines in Kanban, the task is given as much time as needed. This can create problems with project deadlines. To combat this, the team can determine the time to work with each card.

- You can "lose" tasks with high priority. Because employees take on tasks themselves, they can choose the ones that have a low priority for the business. Therefore, all tasks on the board should be carefully checked and identified as a priority [15].

The purpose of the "Six Sigma" method is to make efforts to reduce deviations from the quality of products of the same type in production, which is considered a key factor in business success. The concept of "Six Sigma" refers to the ability of the production process to manufacture a product without deviating from the specified parameters. Six Sigma is divided into two main methodologies: DMAIC (improvement of the existing business process) and DMADV (creation of new product or process projects with predictable and defect-free quality). DMAIC consists of five steps:

Define - defining the goals of process improvement, which coincide with the needs of consumers and the strategy of the enterprise.

Measure - measuring the current process and collecting relevant information for future comparisons.

Analyze - analysis of the relationship and causality of factors. Determine what the relationship is, taking into account all factors.

Improve - process improvement or optimization based on analytical techniques.

Control - control to ensure that all deviations in product quality are corrected before they become defects. This also includes pilot launches and testing.

DMADV also covers five stages:

Define - defining design goals based on consumer needs and enterprise strategy.

Measure - measurement and identification of CTQS indicators (critical for quality), product properties and production process, as well as risks.

Analyze - analysis for the development and design of alternatives, the creation of high-level projects and assessment of design capabilities.

Design - design of details, design optimization, project verification. Simulation programs will be needed at this stage.

Verify - project verification, pilot launches, implementation of the production process and its transfer to the owner.

One of the key factors in the success of the system is its high organization and large-scale involvement of project staff. All activities are carried out in the framework of projects, each of which is evaluated in terms of cost increase and has set goals, deadlines, budget, responsible, etc. Another important factor in the success of Six Sigma is the excellent set of statistical tools that allow you to achieve the required level of quality [16].

The PRINCE2 methodology (PRojects IN Controlled Environments) is a structured project management method widely used in the UK. In the structure of the studied standard the chapter in which the process of risk management is described is allocated. It should also be noted that the risk management process in PRINCE2 is based on the work of the OGC "Management of risk guidance for practitioners". Risk - an uncertain event or set of events that, if implemented, will affect the achievement of goals. Thus, as a risky event is "opportunity" and "threat" [17].

There are 5 risk management processes in The PRINCE2 standard:

- Identification of the environment and risks - collecting information about the project in general and in accordance with this compilation of a register of risks.

- Risk analysis and assessment - determining the probability and impact of risks on the project.

- Planning - preparation of a risk response plan.

- Control - checking the effectiveness of the response plan and its improvement.

- Communication - discussion of project risks within the project team, as well as discussion of these risks with project stakeholders.

The first four processes are sequential, and the fifth process is performed in parallel with each stage. According to the PRINCE2 standard, all project risk management processes are iterative [18].

The PRINCE2 methodology identifies key points when risks need to be identified and assessed, provides an approach to risk analysis and management, and to track risks in any process. PRINCE2 emphasizes the need to control the changes [19].

EXtreme Programming methodology (XP) - doing development robustly to ensure quality. EXtreme programming (XP) is a software development project management methodology which defines values and processes to improve software quality and ensure responsiveness to evolving customer requirements. The values, or principles are very similar to Scrum, around simplicity, communication, feedback, respect, and courage.

Where it really deviates from Scrum is in defining rules or prescriptive processes. Some of these are similar to Scrum but there are rules around technical practices around designing coding and testing that make it specific for development projects. These rules include making mandatory; Including user stories, Test-driven development (TDD), Pair programming, and Continuous integration among many others [20].

In today's project management world, forward-thinking managers and leaders don't adhere to a single methodology – they become well-versed in many of them, and they learn how to mesh together various practices in order to accommodate whatever the project calls for [20].

Thus, the considered methodologies of IT project management differ in the mechanisms what they use: processes, principles, standards or their combination, the level of detail, formalization, self-sufficiency.

In general, the choice of project management methodology depends on the project objectives, requirements and conditions in which the project is implemented. The presence of various methodologies for managing IT projects, which differ in approaches to project process management, allows you to choose the model that will ensure the achievement of project objectives in conditions of limited resources, uncertainty and risk.

Conclusions. Today, there are many methods, models and systems approaches to IT project management. Specialists distinguish classic (rigid) and flexible project management methodologies. There is no ideal model of project management, because you need to take into account many factors that accompany the project. The considered methods of project management will help to define tasks of the IT project, to reveal its structure (having divided the project on subgoals), to define sources of financing, to select executors, to calculate the budget of the IT project, to define terms of project implementation, to consider possible risks.

The use of flexible Agile methodology in project management provides an opportunity to solve IT project problems in conditions of uncertainty and risk, transparent control of project processes, flexible response to changes in external and internal environments, provides the necessary quality of IT product, which will increase the company's competitiveness companies and growing business profitability.

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Colloquium-journal №16(103), 2021

Część 4

(Warszawa, Polska)

ISSN 2520-6990

ISSN 2520-2480

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Umowa z RSCI nr 118-03 / 2017 z dnia 14.03.2017.

Redaktor naczelny - **Paweł Nowak, Ewa Kowalczyk**

«Colloquium-journal»

Wydawca «Interdruk» Poland, Warszawa

Annopol 4, 03-236

Format 60 × 90/8. Nakład 500 egzemplarzy.

E-mail: info@colloquium-journal.org

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