

## STRUCTURING OF ECONOMIC PROCESSES IN MODERN PROJECT MANAGEMENT BASED ON DESIGN THINKING

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**Abstract:** The article aims at investigation of the role and place of design thinking in modern project management. It is shown how the creative nature of design thinking contributes to structuring economic processes within projects landscape. Design thinking methodology, constituting elements, and vision within project management are outlined. The concept of project economy is considered in frames of the study of modern project management specifics.

**Keywords:** project management; design thinking; applied management; economic processes; integration.

### 1 Introduction

Among the various areas of applied management, project management, which explores the principles, mechanisms, and technologies for managing projects, programs, and portfolios of projects (programs) at various stages of their life cycle, occupies a special place. One can say that the formation and development of project management, based on modern information (digital) and innovative technologies, represents a new phase in the evolution of the management system [12].

The objects of project management are projects, programs, and portfolios of projects (programs). The subject of project management is organizational project structures, project team, project risks, project financing, project cost and quality, project marketing, optimization of project communications, interests of project stakeholders, etc.

The application of project management principles in practice makes it possible to achieve established goals and ensure certain resource savings due to the following [9]:

- Reducing management costs (defining roles, powers and responsibilities; effective use of the matrix structure; general rules of communication; common information space);
- Minimizing the impact of risks (analysis of stakeholders and project risks; response planning and taking into account risks in plans);
- Reducing the scale of rework (clearly defining the goals, results, and boundaries of the project; developing the required number of plans; building an effective control system).

Project management methodology represents an effective tool that allows solving issues of strategic development in a situation of constant changes and sometimes even quite extreme dynamics and turbulence in external and internal environmental conditions [1]. At the same time, economic processes are critically important within the project - in particular, determining resources and their characteristics, assigning resources, estimating costs, estimating budgets, distributing success criteria, etc.

The concept of economic planning and strategy has taken on new meaning in the context of the Project Economy. Financial planning and strategy, which were formerly associated with long-term forecasts and resource allocation, have become critical tools for organizations functioning in a project-centric environment.

Economic planning in the Project Economy is the methodical process of assigning and managing financial resources, both short and long term, to assure project success. To properly fulfill project objectives, it is necessary to anticipate project expenses, income streams, and cash flows, as well as optimize resource use [21].

In contrast, strategy comprises developing and implementing a set of actions and initiatives aimed at attaining the Project Economy's broad business goals. It entails making informed judgments about which initiatives to pursue, prioritizing them, and ensuring that they match with the organization's strategic goals.

The complex landscapes, interweavings and interactions that arise determine the need to search for innovative paradigms in building economic processes within the framework of project management. One of the most well-known and well-proven paradigms is design thinking.

Design thinking is a method that sets itself the task of creative problem solving, and has found its application in various fields, in particular, in project management. This innovative approach can change perceptions and improve processes in project management.

The design field began as a field of practice, with the goal of developing a new product. Design research has moved beyond the study of practical methodologies, tools, and procedures to the study of a style of thinking. The design thinking ideology is about developing solutions that are human-centered and tackle specific problems using a creative, practical, and iterative method. This concept entails thinking beyond the box, gaining a new viewpoint by observing patterns in the circumstance, and solving difficulties at hand. Design thinking refers to both a philosophy and an attitude. It entails viewing design as a process for solving user problems — beginning with empathy and understanding, then working with users to create a product or system that satisfies their requirements.

The reasoning behind design thinking is widely acknowledged to be abductive. Abduction is defined as the logic of possibilities, as opposed to deduction (the logic of necessity) and induction (the logic of probability). The usage of abductive reasoning can be traced back to the characteristics of the problems.

The main focus of design thinking is on empathy for users. This means deeply understanding their needs. Project teams using design thinking create solutions that not only meet real needs, but also anticipate potential needs.

Design thinking encourages creative thinking and the hunt for new ideas. This enables project teams to seek beyond established approaches in order to identify more effective solutions. Innovation becomes a norm rather than an exception in the workplace. The major goal and evaluation criteria of design thinking are to create meaningful solutions. The literature uses phrases like empathy, human-centered, co-creation, and participatory design to demonstrate this. Finally, design is evaluated based on its usefulness in the context (e.g., human, scenario) for which it was created.

Testing ideas quickly is a key aspect of design thinking. This method allows project teams to quickly receive feedback from users in the early stages of development. Using this experience, teams can make adjustments and improve their solutions.

Design thinking requires collaboration and interaction between team members. This creates stronger connections between colleagues, allowing them to better understand each other and collaborate more effectively. This process also creates a more connected and motivated team.

One of the adapted design thinking methodologies, consisting of six stages, each of which can be adjusted to a specific business problem, is presented in Figure 1 below.

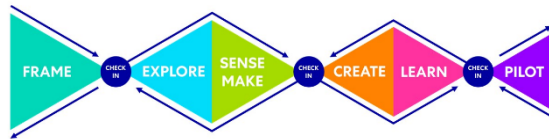


Figure 1. Example of an adapted design thinking methodology [6]

Design thinking is not inherently problem-oriented, but rather solutions-focused and action-oriented to create a preferred future. Design thinking draws on logic, imagination, intuition and systems thinking to explore the possibilities of what could be - and create desired results that benefit the end user (client). According to experts, "design thinking can be described as a discipline that uses design sensibilities and methods to combine human needs, technological feasibility, and a viable business strategy that can be converted into customer value and market opportunities" [16].

Design thinking leads to human-centered innovation. Human-centered innovation begins with developing an understanding of the unmet or unconscious needs of customers or users. "The safest source of new ideas that have true competitive advantage, and therefore higher profits, are unformed customer needs" [19]. Close connection with clients - deep knowledge of clients and their problems - helps uncover these needs.

Design thinking is now visible in a combination of widely used development and project management approaches, with Agile making its way into organizations as a tool to introduce innovation. Design thinking reduces uncertainty and risk in innovation by guiding customers or users through a sequence of prototypes that investigate, test, and enhance a notion. Design thinkers rely on customer insights gleaned from real-world trials, not merely statistical data or marketing research. This allows maximizing the efficiency of economic processes in project management, significantly increasing the cost-effectiveness of the project and its overall success in the plane of customers/audience satisfaction. Thus, the topic of using design thinking in structuring economic processes occupies one of the important places in today's discourse of project economics and project management.

## 2 Materials and Methods

The theoretical basis of the study was the works of scientists on creative thinking, design thinking, new product development, and project management.

To implement the research objectives, the following methods were used: a) review and analytical study of the literature; b) general scientific methods: analysis and synthesis, comparison, induction and deduction.

## 3 Results and Discussion

In its 2020 Pulse of the Profession® report [14], the Project Management Institute (PMI) described the project economy as a "fundamental paradigm shift" for enterprises. Essentially, it entails tackling most important difficulties that a corporation faces through initiatives. These can include everything from operational adjustments to market evaluations.

Project managers in the project economy must lead motivated, multidisciplinary teams that span many organizations. PMI emphasized that firms must use these teams to encourage change or risk "not just treading water but sinking".

Projects are no longer treated as an afterthought to "real" organizational operations. Instead, initiatives have become the driving force behind productivity, innovation, and growth.

According to PMI, team members come from a variety of backgrounds and bring "financial and social value".

Projects have gradually gained traction in the workplace as a crucial generator of innovation, growth, and success. To some extent, the rise of the project economy indicates the end of job classifications. The Project Management Institute (PMI) predicted that the global value of project-related activities would reach USD 20 trillion by 2027, creating numerous jobs for 88 million people. Even more interestingly, these predictions were generated before governments began spending on pandemic recovery projects, implying that the project economy is here to stay, with enormous economic and societal benefits [1].

Economics, as a discipline, asks and answers the question "why". It is used to explain phenomena, particularly human behavior, whereas engineering focuses on "how". The question arises: Does project management fall under economics or engineering? The project manager's primary responsibility is to ensure that the project starts and finishes on time, within budget, and according to specifications. As a result, project management invariably entails the optimization of project processes, which falls under industrial engineering or operation management. However, economic theories are necessary since project management invariably involves human decisions and actions. As a result, we propose that project management be defined as a profession that includes both economics and engineering, and design thinking is an effective instrument for achieving this symbiotic balance.

In PMBoK, working with documentation makes processes more structured, and there are ready-made processes that one can simply adapt to specific project. However, in practical projects, a clearly defined methodology and structured PMBoK processes in themselves do not guarantee the success of the project - flexibility is required, taking into account changing conditions, a highly dynamic environment, which is especially evident in the VUCA- and BANI-world. Economic processes play a critical role in this case, since deviations in budget and resource planning and the current situation can lead to the collapse of the project.

Furthermore, every R&D process is creative in nature. By definition, an R&D project is a journey to explore the unknown and solve issues that have no obvious solutions. This means that there is frequently no clear path, and scientists with open and creative minds are generally in the best position to create breakthroughs [15].

Solving ill-defined and difficult problems is a prevalent aspect of project and project management. When a project's output is intended to be distinctive and its success is primarily reliant on the end user's acceptance, design thinking can be an excellent methodology to adopt.

Design thinking tools, methods, strategies, and activities, such as visualization/materialization techniques, can promote creative processes by assisting design stakeholders in systematically alternating divergent and convergent thinking. Rather than accepting the problem as is, designers investigate the problem and its context, and may reinterpret or restructure the problem to arrive at a specific framing of the problem that indicates a path to a solution. It is so solution-focused thinking, as opposed to traditional problem-solving methodologies. It is further distinguished by the use of abductive reasoning: designers infer alternative solutions based on accessible problem knowledge, their experience, and nondeductive modes of thinking such as analogies [17].

From a methodological point of view, design thinking refers to a heuristic technique for solving problems in non-standard conditions. Their main features are cyclicity, nonlinearity, and one might say chaotic approaches to the formation and planning of new ideas. From a design perspective, this is how innovative thinkers approach constraints.

In project management, design thinking begins with a clear definition of the problem and an understanding of stakeholders' objectives and goals. It encourages project managers to actively listen, empathize, and monitor user behavior in order to gain insights that will move the project forward. Design thinking also promotes ideation and brainstorming sessions to generate a wide range of unique ideas. These ideas are then examined and improved to determine the most promising solutions. Rapid prototyping and testing are essential components of design thinking, enabling project managers to iterate and enhance their approach in response to user feedback. By incorporating design thinking ideas into project management, teams may improve customer satisfaction, increase innovation, and reduce the chance of costly mistakes. It promotes a collaborative and iterative process that values open-mindedness and flexibility, resulting in more effective projects and satisfied stakeholders [23].

Canfield and Bernandes [4] proposed a framework for combining Project Management (PM) aspects with Design Thinking (DT) to reduce the simplicity and superficiality of DT implementation. Their research employs an exploratory descriptive approach based on design science research (DSR) and a qualitative method, beginning with an email interview and progressing through an online discussion forum, a product development workshop, expert interviews, an online framework development workshop, and finally a framework validation workshop. The ultimate product is the Design Thinking Project Management Framework, which includes both PM and DT components.

The project manager accepts permanent and formal responsibility for ensuring the best possible outcome for a DT project. The inclusion of management concerns like as integration, scope, schedule, cost, quality, resource, communication, risk, procurement, and stakeholder will reduce the superficiality of DT while increasing trust and credibility as new phases and management tools are introduced throughout the process. Figure 2 shows the relationship between the DT and PM ideas.

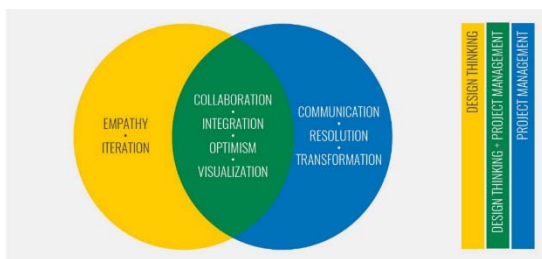


Figure 2. Relationship between the principles of DT and PM [4]

Phases of the framework proposed by Canfield and Bernandes are given in Figure 3.

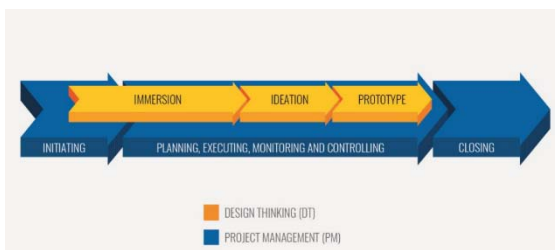


Figure 3. Phases of Design Thinking Project Management framework [4]

Today, Design Thinking is considered as a complicated thinking process for creating new realities, indicating the incorporation of design culture and methodology into domains such as corporate innovation [20]. It is not a fixed set of processes, but rather "a

human-centered, creative, iterative, and practical approach to discovering novel ideas and solutions" [7].

Brown stated in 2009 that design thinking combines three aspects. It originates from people' desire for what is technologically attainable, humanly desired, and an economically effective business strategy [3]. These three are critical in determining how to address the problem and develop the solution (refer to Figure 4).

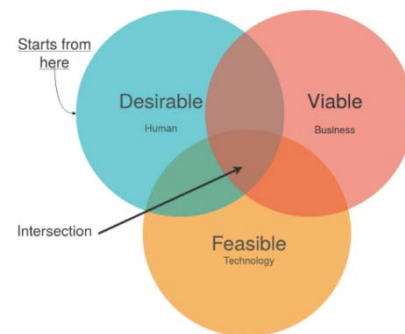


Figure 4. Three elements of design thinking [10]

The capacity to create frames and reframe a difficult issue in novel and intriguing ways is commonly regarded as a core feature of design thinking [13]. When creating new frames, professional designers engage in a sophisticated analysis process that is very similar to phenomenological techniques of analysis, in which a complicated situation is examined in terms of "themes" [5]. In this strategy, a "theme" is the sensation of focus and significance. Themes are not readily identified in either the problem or solution space. The process of distilling themes is referred to as insightful invention, discovery, and revelation. These "themes" serve as catalysts for the development of new frames, allowing the primary problem to be tackled in a novel and intriguing manner. This collection of clues is a purposeful method used by designers. It may appear to be an informal activity to an outsider, and the terminology designers use is often ambiguous: they talk about "getting close to a situation", the necessity of "richness" of the issue area, as well as the need of "getting first-hand experience" of the problem situation. This idea allows for structuring carrying out.

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- Resource Optimization: Efficient resource allocation is critical in a project-centric context where resources are frequently limited. Economic planning enables firms to deploy resources where they are most required, eliminating waste and achieving the highest project ROI.
- Risk Mitigation: Economic planning helps organizations identify potential project financial hazards. With a solid financial strategy in place, organizations may address these risks proactively and apply mitigation methods.

- Decision-Making: Strategy assists organizations in determining which projects to pursue and prioritize. It ensures that project portfolios are consistent with the company's goals and competitive situation.
- Adaptability: In the Project Economy, flexibility is essential. Economic planning and strategy enable organizations to adapt their financial plans and project portfolios in response to changing market conditions, new opportunities, or unexpected problems.

Managing economic planning and strategy in the Project Economy requires an organized approach. 1) Data-driven analysis: using previous project data, market trends, and financial forecasts to guide economic planning and strategy development; 2) Continuous monitoring: Regular monitoring of project performance and financial KPIs to maintain consistency with the specified strategy; adjustments to plans as needed. 3) Collaboration: Including cross-functional teams in planning and strategy development to guarantee a comprehensive perspective and buy-in from all stakeholders [8].

Recently, in an attempt to establish an appropriate problem-solving methodology as critical to project success, scientists have considered combining three popular approaches: design thinking, agile, and design sprint [22]. Though design thinking may not be as adaptable as agile, it is not a rigid paradigm either. Instead, it moves away from a rigid traditional hegemonic structure and toward a more creative approach [8]. As a result, it is not required to follow a precise pattern and define what must be done and set in order to complete the task. Instead, design thinking alters the approach to the problem by emphasizing people as the key to success and encouraging creativity. The goal is to collect as much information as possible in the early stages. That is why divergence occurs in the early stages. Nonetheless, design thinking is slower to generate ideas since it prefers divergence during the brainstorming phase [2].

While the three approaches can complement one another, design thinking is typically used early in projects to generate ideas, followed by a design sprint to create a prototype, and agile at the end to develop the final product. However, each strategy has its own advantages and can be used in isolation from one another.

While design thinking is particularly effective at promoting economic growth and customer happiness, its impact goes well beyond the commercial world. This unique technique is increasingly being used to address some of society's most urgent issues, including environmental degradation and social injustices. Here are a few ways in which design thinking is driving positive change [18].

1. Addressing climate change and environmental sustainability: Design thinking enables communities to create innovative ways to reduce their environmental imprint. Examples include developing energy-efficient housing projects, promoting sustainable agriculture methods, and developing novel waste management technologies.
2. Promoting inclusion and social equity: Design thinking, by focusing on empathy and user requirements, can help bridge divides and build solutions that serve various groups. Examples include producing accessible technologies for persons with impairments, designing inclusive and welcoming public spaces for everybody, and implementing educational programs to meet the needs of marginalized communities.
3. Improving healthcare and well-being: By prioritizing patient-centered experiences, design thinking has the potential to transform healthcare delivery. This could include producing user-friendly medical technologies, building hospital environments that promote healing and comfort, and devising novel treatments to chronic diseases and mental health issues.
4. Empowering communities and fostering collaboration: Design thinking promotes participatory problem-solving methods, allowing communities to identify their own

concerns and co-create solutions with designers and experts. This promotes a sense of ownership and agency, resulting in more durable and successful outcomes.

5. Creating a more resilient future. Communities that use design thinking can better prepare for and adapt to a changing reality. This includes finding solutions to natural disasters, building resilient infrastructure, and fostering social solidarity in the face of adversity.

Design thinking has enormous potential for generating positive societal effect, and its applications are constantly evolving. By adopting this human-centered approach, we can create a future in which innovation benefits not only economic growth but also the well-being of people and the world.

Economic processes in project management in this multi-stakeholder environment are complicated and non-linear. As a result, their strutting and management require nonlinear technologies. Currently, design thinking appears to be one of the greatest possibilities.

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**Primary Paper Section: A**

**Secondary Paper Section: AE**