The Impact of Digital Transformation on Project Management and Business Development: Case Studies in Diverse Industries

Ruslan Sayed
GfK Company (Growth from Knowledge), Riyadh, Saudi Arabia

ABSTRACT

In today’s world, digitalisation is one of the main features of the modern economy; it is a systematic approach to the use of digital resources to increase labour productivity, competitiveness and economic development of the company as a whole, which contributes to the formation of a new technological order. The global trend of digitalisation in the economy in a rapidly changing environment requires the creation of new models and mechanisms of project management based on the foundation of both traditional methodologies and innovative business ideas and development strategies. Due to these trends, approaches to the development of modern project management are rapidly growing under the influence of digital technologies and automation. Modern project management is primarily focused on obtaining a quality result, while the process itself can be organised depending on the specifics of the project being implemented. The purpose of the study is to determine the impact of digitalisation on modern project management and, in general, on the development of modern business. To achieve this goal, a set of general scientific methods was used, including analysis, synthesis, generalisation, systematisation, induction and deduction. The study proves that modern project management is characterised by the active development and implementation of innovative digital technologies that allow team members to focus on the result and quality performance of their functions, while routine tasks can be performed using automated systems and artificial intelligence.

Introduction

Competition in the market is constantly growing: in order for a company to attract and retain customers, it needs to adapt to the growing demands of the audience, quickly complete tasks and solve problems. One way to effectively organise work within a company is through project management (Aleksieienko et al., 2020a; Aleksieienko et al., 2020b).

How to cite this article:
The key concept in the understanding of project management is a project as a set of time-limited activities with a single goal: to create a new product or service and achieve certain results.

Therefore, project management is a way to organise work in such a way as to fulfil all the requirements for a project. For example, to close tasks, meet deadlines, and stay within budget. To succeed, a manager will need technical knowledge of the project, managerial skills, problem-solving, and teamwork (Correani et al., 2020).

In general, project management is a tool for achieving strategic goals. This method of management helps to identify tasks that are important for the company's development, to distribute and direct efforts to achieve them.

Project management divides the workflow into parts and monitors the budget, deadlines and progress at each stage. At the end of the work, you can evaluate the results for each process individually and in the context of a specific project.

Managing some routine processes is time-consuming and does not yield obvious results, so there is a need to automate them. For example, in order to understand what customers are interested in and improve sales processes, it is necessary to manually collect and systematise information about customer relationships and their reactions to certain types of product promotion, but this process is very time-consuming, expensive and inaccurate due to the human factor. Accordingly, there is a need to introduce modern digital technologies to improve the business management system, its development and project management.

For example, experts at the World Economic Forum believe that technology will create about 97 million jobs by 2025. In many ways, these will be vacancies for new professions: today, existing developers are retraining to become ecosystem auditors, neural network “teachers”, virtual reality architects, and 3D printing operators (Kaufmann & Kock, 2022). However, the tools have also been updated for many traditional professions. According to analysts, by 2030, about 60% of professions worldwide will be able to be automated by at least a third (Pan et al., 2022). It is obvious that ordinary office workers are already operating in a new environment, so people need to immerse themselves in the digital world and learn new technologies. One of the most obvious trends of the last few years is a serious increase in demand for data analysts. This is due to the increase in the amount of data collected and the transformation of information into a resource for business development. It is data analysts, big data and machine learning specialists who can effectively use the accumulated array of different data and participate as involved specialists in the process of project management and business development.

The second most popular qualification is cybersecurity. Since 2020, when the whole world faced the need to go online, cybersecurity has become a key issue, and it remains so even today, when the pandemic is a thing of the past.

**Literature review**

In the world practice, the concept of digitalisation of project management is interpreted ambiguously depending on the chosen model, approach to the structure of knowledge (Body of Knowledge), type and kind of projects, and other factors.

While project management is usually understood as a market-based management culture and professional activity in systems that are social in nature, project management is primarily a view of a project from the perspective of implementing certain processes.
A role in a project is a set of functions and responsibilities for dividing duties between team members. The PMBOK (Project Management Body of Knowledge) standard identifies key figures and defines their roles in project management - Table 1.

Table 1.
Distribution of roles of the main actors in project management according to PMBOK

<table>
<thead>
<tr>
<th>An actor in the project management system</th>
<th>Functions in project management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer</td>
<td>Approves requirements and checks results, can reprioritise</td>
</tr>
<tr>
<td>Sponsor</td>
<td>Agrees on goals, budget and timelines, allocates necessary resources</td>
</tr>
<tr>
<td>Project manager</td>
<td>Assigns responsibilities to the team, monitors compliance with requirements</td>
</tr>
<tr>
<td>Head</td>
<td>Sets the team's direction and monitors the rational use of resources</td>
</tr>
<tr>
<td>Performer</td>
<td>a disciplined employee who performs regular and routine tasks</td>
</tr>
<tr>
<td>Idea generator</td>
<td>invents new things and is able to solve non-standard problems</td>
</tr>
<tr>
<td>Appraiser</td>
<td>analyses the developed concept, ideas and proposals so that the team can make balanced decisions</td>
</tr>
<tr>
<td>Moulder</td>
<td>encourages the team to act, helps to pay attention and set the framework for group discussion in accordance with the results of joint activities</td>
</tr>
<tr>
<td>Collectivist</td>
<td>supports the spirit of the project participants, helping in difficult situations, is a good mentor for newcomers</td>
</tr>
</tbody>
</table>

Compiled by the author based on (Garzoni et al., 2020; López-Rubio et al., 2022; Solberg et al., 2020; Wei et al., 2021; Arora et al., 2022).

An important issue is the organisation of work within the team of performers. To create an effective team, a manager takes into account the skills, experience, and personal qualities of employees and assigns roles within the team. What types of roles are there?

The composition of the ideal team depends on the specifics and goals of the project: you can involve additional specialists or, on the contrary, exclude unnecessary ones.

The weapon of top management in the digital era is technology, which emerges not on its own, but as a response to a business challenge. New technologies are being born today that support change (Afonasova et al., 2019). One of the main qualities of a digital age manager is flexibility and speed of reaction, as strategy formation is experimental: plans are quickly adjusted under the influence of technology development, regulatory practices, economic and geopolitical processes.

The widespread use of the project method in combination with innovative digital technologies allows companies of all sizes to achieve ambitious strategic goals. Despite the active introduction of digital project technologies, there are still a large number of errors in project implementation, such as failure to meet project deadlines, errors in the formation of initial requirements, underestimation of the scope of work, numerous changes during project implementation, etc. By analysing modern projects and comparing them with past experience, it becomes possible to give a more balanced assessment of current projects and to update the issue of introducing digital technologies into the project management system.

Following the pandemic, the project management system is being transformed to reflect the image of an innovative digital company that is actively introducing various digital technologies into production and management.

Therefore, according to the latest research, a project is a set of activities implemented in a limited period of time (Alkhudary & Gardiner, 2021; Guinan et al., 2019). The ultimate goal of the project is to obtain a unique result. Project management is the management of activities that
require constant regulation under strict constraints on time, quality and cost. The distinctive features of any project are its focus on achieving goals and the uniqueness of its results in the presence of many constraints. Project management, unlike the functional approach, involves eliminating processes that are not required to achieve the end result, which guarantees resource savings, initiates effective interaction between all stakeholders and, thanks to a detailed plan, makes its results more predictable. All of the above allows for high-quality project monitoring and ensures a high probability of achieving the set goals. However, for most companies today, there is a contradiction between project management mechanisms and functionality, as, on the one hand, the transition to project management is proclaimed, and on the other hand, these projects are implemented using the old set of approaches and mechanisms, which reduces the likelihood of their success, and the available digital tools are not used very effectively.

The importance of project management is determined by three main parameters for successful project management (Fig. 1).

Figure 1.
The sequence of actions to build a modern project management system in modern companies

- Formation of approaches to intensive business development (as opposed to extensive) based on innovative digital technologies
- Reducing the duration of production, operational and financial cycles to increase the efficiency of using various types of resources
- Systemic qualitative transformations in the strategy and tactics of business development, a change in the management paradigm with a focus on modern innovative project management tools

Compiled by the author based on (Bogers et al., 2018; Chen et al., 2016; Dey et al., 2019; Aleksieienko et al., 2021; Garcia De Lomana et al., 2019; Petrescu & Krishen, 2021; Rovelli et al., 2022)

In general, project management forms a system of motivation aimed at obtaining the result. This is especially important in the context of managing large companies and large businesses, where many managers and specialists are characterised by the mindset of an employee who is more responsible for current processes than for the result, since the specifics of project management in the modern world should be aimed at a qualitative result, not at ensuring the process.

Method
The study is aimed at analysing promising areas for the development of project management using digital transformation tools. The analysis of scientific literature is aimed at systematising approaches to building a modern project management system at large and small enterprises.
The article also identifies areas of potentially possible introduction of digital technologies in the development of approaches to project management.

The information base of the study was based on the scientific works of leading domestic and foreign scholars, in particular, the literature of the last 5 years was analysed to provide an up-to-date view of the issues being developed. The literature reviewed in the course of writing this article can be divided into two major blocks: those related to project management and those related to the digitalisation of the economy.

In the process of developing the topic, attention was paid to enriching the project management process with innovative digital tools.

**Data analysis and results**

As it has already been established, project management is a project management process that involves planning, organising and implementing projects to achieve the set goals within the specified parameters and criteria. Project management performs a number of functions:
- management of project goals;
- controlling the budget to minimise unplanned expenses;
- Determining the timing of the project in the face of limited resources;
- assigning tasks and identifying responsible persons for business processes;
- forecasting possible risks and taking measures to mitigate them or develop a plan to prevent threats;
- control over project implementation processes;
- Establishing effective communication between team members to achieve the goal.

The mechanism for implementing the management of an enterprise's activities through project management consists of several stages:
1. Initiate and develop a plan.
2. Manage, execute, monitor and promptly adjust as necessary.
3. Completion and analysis of feedback.

Traditional project management was carried out in the form of flexible methodologies (Bouncken et al., 2021; Bouncken & Reuschl, 2018; Fredrich et al., 2019). One of the most popular methods is Scrum, which is currently being transformed under the influence of innovative digital technologies and enriched with digital tools. With the development of management and the transition to process management, methodologies such as Lean, Kanban, and others have also emerged. Table 2 provides a brief description of traditional approaches to project management and business management in the modern context of innovative digital technologies.

In today's environment, companies do not often use a single approach to project management, often combining approaches with each other, and applying different variations to different tasks. It is also worth noting the need to more actively use the benefits of digitalisation and automation in the project management system.
Table 2.

<table>
<thead>
<tr>
<th>Approach</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scrum</td>
<td>An approach in which project implementation is possible in the presence of a scrum master, team and product owner. Implementation takes place through the distribution of roles, setting tasks and prioritising them. The work is divided into stages, and each stage has an owner (responsible person). Control over the distribution of roles is carried out through digital communication tools and communication between team members.</td>
</tr>
<tr>
<td>Lean</td>
<td>A constant striving to improve business processes and eliminate losses, also known as “lean manufacturing”. Lean companies are constantly striving to improve processes, reduce time and other costs without sacrificing quality, minimise redundant tasks, and so on. Lean manufacturing involves performing all functions and processes with minimal resource consumption. Modern digital technologies are widely used in management based on the Lean concept.</td>
</tr>
<tr>
<td>Kanban</td>
<td>The method involves dividing the workflow into several stages, in which tasks are divided into groups of “to do”, “in progress”, and “done”. Tasks are moved from column to column until the work is completed. For the technical use of the Kanban system, a large number of online services and shared “whiteboards” are used for efficient teamwork and quick information exchange.</td>
</tr>
</tbody>
</table>

Compiled by the author based on (Brock & von Wangenheim, 2019; Feroz et al., 2021; Kraus et al., 2022; Mas-Tur et al., 2020)

The project management system has evolved under the influence of digital technologies, and these changes have allowed us to identify some of the trends and vectors of project management development in the digital age:

- Asynchronous communication (creation of virtual spaces for interaction between project team members, which increases the speed and quality of communication, and therefore leads to improved results and reduced costs);
- Less management (in many ways, project team members from different levels have greater access to systems, which leads to a reduction in the role of project managers, making the team more cohesive and flexible, with the manager acting not as an authoritarian controller but as an opinion leader);
- More focus on results (optimising work and assigning most of the functions to software makes it easier for a person to work, so that a live employee can focus on more important and priority tasks while automated software performs routine process work);
- Analytics at the forefront (evaluating the performance of project teams in automated software products has become much easier, and artificial intelligence allows automated analysis of the performance of enterprises and identifying areas for improvement, while previously such analysis required close attention and work of numerous teams of employees);
- Remote project teams (project development teams have become remote, remote work requires less control and less financial costs).

As follows from the analysis of trends and vectors of project management development, the impact of digitalisation on the development of project management in the management of organisations’ activities is positive: automation allows to significantly free up labour resources, focus employees' attention on priority tasks, while routine work is “outsourced” to automated software solutions and products.

The main form of project management implementation in enterprise management is the formation of project offices, which are units that manage projects and analyse the effectiveness of project activities.
In addition, taking into account the use of innovative digital technologies, a number of sustainable national project management models have emerged in the global economy today, within which the economic potential of digitalisation is used in somewhat different ways. The main features of this role of country project management models are systematised in Table 3.

**Table 3.**

*Key features of national project management models using digital tools*

<table>
<thead>
<tr>
<th>Model name</th>
<th>Key features of project management within the model</th>
</tr>
</thead>
<tbody>
<tr>
<td>American</td>
<td>Intensive integration of project management systems with the potential of virtual capital markets. Active use of digital platforms and services in project management. Widespread use of the potential of remote use of economic resources and virtual outsourcing in project management.</td>
</tr>
<tr>
<td>German</td>
<td>Active inclusion of projects of various scales in the system of regional industrial clusters. Widespread use of the potential of virtual crowdsourcing and crowd investing in project management. Active use, especially in the context of the 2020-2021 pandemic crisis, of various partnership systems in project management.</td>
</tr>
<tr>
<td>Japanese</td>
<td>Development of modified, including digital, systems based on the principles of agile project management. Wider use of KPIs and the balanced scorecard in project management. Use of artificial intelligence elements for certain operations within project management.</td>
</tr>
<tr>
<td>Eastern European</td>
<td>Introduce agile methodologies in project management, and create product teams focused on delivering value to key customers. Establishment of project offices as separate structures of business and government organisations. Broad integration of project management systems into elements of the national innovation infrastructure (technology parks, technopolises, business incubators, etc.). Active use of the potential of robotics, including domestic developments, in the management of a number of sectoral projects. Use of artificial intelligence capabilities in project management. Use of digital platforms and services in the development of ecosystems of large corporations.</td>
</tr>
</tbody>
</table>

Compiled by the author based on (Fletcher & Griffiths, 2020; Gobble, 2018; Hai et al., 2021; Kraus et al., 2021)

In general, despite certain differences in the national project management models systematised in the table, some common features of the processes of formation and implementation of project management functions can be identified, namely

1. **In terms of project analysis:**
   - significantly expanding the possibilities of using big data in project analysis and project management of various types of projects, including small digital start-ups;
   - active use of the potential of cloud technologies in terms of storage and primary economic and statistical analysis of information relevant to the processes of project justification and further implementation;
   - use of neural networks to analyse non-standard project management situations;
   - application of certain elements of artificial intelligence technology to analyse the potential of projects and industry markets targeted by the projects.

2. **In terms of planning various parameters of project formation and implementation:**
   - improving the tools for scenario planning and forecasting of project development processes, abandoning the simple use of trend extrapolation tools for predicting the parameters of investment project efficiency;
   - development of the methodology of optimisation resource models for project planning, including by taking into account the parameters of financial and economic resources received by project initiators and managers in a remote format;
the widespread use of “intelligent digital assistants” at various stages of project planning and subsequent control over the implementation of projects of various operational profiles.

3. In the field of project management:
   - a significant increase in the use of outsourcing in project activities, including remote outsourcing, which has demonstrated a significant level of efficiency in rationalising project management systems during the pandemic;
   - widespread use of the potential of digital platforms and services to automate and support the administrative processes of project teams;
   - active use of resource saving management systems in the development and implementation of projects of various sizes, including international investment projects;
   - development of crowdsourcing tools, including volunteer tools, for the implementation of certain types of business processes within project management;
   - formation and active development of projects financed and organised on the basis of project promotion technology on modern virtual cryptoasset exchanges.

4. In terms of monitoring and evaluating the effectiveness of project implementation, the main trends are the development of digital project monitoring systems, improvement of tools for comprehensive assessment of the effectiveness of projects and start-ups of various kinds, including those based on various modifications of the balanced scorecard methodology.

5. In terms of project management methodology, the main trends are: transition to flexible project management models, use of hybrid models for complex, large-scale projects.

When considering the digitalisation of project management processes, it should be understood that there are more and more cases when, after the implementation of digital projects, a company or government agency remains dependent on new digital technologies. The implementation of such projects pushes organisations to make huge changes, not only in individual areas and business processes, but also, as a rule, in the entire organisational model and structure. In this regard, the implementation of digital projects requires careful analysis and preparation to ensure effective and useful improvements (Levchenko et al., 2022).

The project management of digital projects is currently imperfect, and the existing project management practice in some cases shows facts of violation of deadlines, budget overruns, and deviations from the established quality criteria, so a reassessment of the main areas of improvement and performance criteria is required.

The implementation of a digital project at domestic enterprises, unlike the implementation of any other project, differs in several aspects, as shown in Table 4.

In general, digitalisation has led to a new wave of innovations that will affect humanity, changing the relationship between citizens, government and business, as well as the structure of society and the economy. The rapid development of the digital economy has led to the fact that market leaders today are not determined by a long history of success, costs, number of patents or access to capital, but by the ability to change their business model as technological revolutions take hold.
Table 4.
The impact of digitalisation on key aspects of project management

<table>
<thead>
<tr>
<th>Project management aspect</th>
<th>The impact of digitalisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methodological</td>
<td>Project management in conditions of high uncertainty; Continuous monitoring of the market/products/technologies; High speed of response to changes in the internal and external environment, flexibility; Risks cannot be accurately assessed.</td>
</tr>
<tr>
<td>Organisational</td>
<td>Short-term planning; Improving communications and information exchange with other project participants; Attentiveness and high requirements for the preparation of project documentation</td>
</tr>
<tr>
<td>Financial</td>
<td>Difficulty in preliminary estimation of the final cost of the project and budgeting; The need for increased flexibility and speed in resource mobilisation; Frequent review of project financing plans and schemes</td>
</tr>
</tbody>
</table>

Source: Compiled by the author

Digital technologies have been developing at a particularly rapid pace in recent decades, fundamentally changing the nature of business and dematerialising, demonstrating and democratising every industry. They also help to find sources of efficiency gains and opportunities for sustainable competitive development of enterprises. At the same time, disruptive innovations require changes in existing management models, reformatting communications and technologies. These circumstances are boosting the development of small and medium-sized enterprises, which are one of the leading sectors of the economy that determine the pace of economic growth, the composition and quality of GDP, and are well positioned to respond to market needs and changing business conditions. Project management tools are being actively used today to more accurately allocate widely understood risks and increase investment potential. In recent years, the scope of project management methodology has also expanded significantly.

Many companies have become accustomed to using project-based management methods as part of business reorganisation, development and implementation of information systems, marketing processes, human resource development programmes and many other activities. New areas of application of the project approach include both large-scale government programmes and projects and relatively small projects of small and medium-sized businesses. Project management systems are increasingly being implemented as a tool to improve the efficiency of internal development processes at enterprises that were previously committed to a process-oriented production system. However, at the same time, a large number of initiated projects fail for reasons such as exceeding budget and/or time limits, not achieving the set goals, interrupting project stages, and many others. This fact allows us to conclude that there is a gap between the development of project management theory and the practice of its application.

In addition, expanding the scope of the project management approach in an organisation requires further development and adaptation of methods and tools.

Given the above, it is clear that the impact of digital technologies is greatest in small and medium-sized businesses worldwide, as unlike large corporations, small companies change quickly and easily.

Large corporations are not as responsive in implementing digital innovations. In other words, the peculiarity of modern small and medium-sized enterprises today is that digital technologies
have become an endogenous factor in their development efficiency. This means that everyone now has the same chances of meeting the expectations of customers, who have been taught by the global world to receive modern services from giants quickly and conveniently.

**Conclusion**

In a modern project management system, digital systems can automate specific management processes, such as controlling resource allocation, increasing information mobility, monitoring and identifying risk situations in case of deviations from indicators, compiling statistics, forecasting, etc. However, making a specific management decision remains fully within the manager's function, which reduces this trend to the automation and digitalisation of certain processes.

Furthermore, it is worth noting a pronounced trend in project management, such as the increasing role of the project manager, the growing importance of his or her skills and competencies, as well as the experience gained from participating in the implementation of large projects. In a company’s operations, one of the most important elements of efficiency is always the staff that performs various functions and directly implements digital tools. However, it should be noted that for the company to operate, it is enough to have employees who perform the full number of intellectual tasks within the project, and the main routine functions can be transferred to modern digital technologies.

The specifics of digital technologies, their rapid progress, high dynamics of change, almost universal spread and impact on all spheres of life require the application of special project management models that reflect a new digital methodology and organisation, as well as new approaches to financing.

**References**


**Declarations**

**Acknowledgements**

Not applicable.

**Disclosure Statement**

No potential conflict of interest was reported by the authors.

**Funding Acknowledgements**

Not applicable.

**Ethics Approval**

Not applicable.

**Rights and Permissions**

© 2022 European Knowledge Development Institute All rights reserved.

Marketing and Branding Research is published by the European Knowledge Development Institute (EUROKD). This is an open-access article under the terms of the Creative Commons Attribution (CC BY) License, which permits use, distribution, and reproduction in any medium, provided the original work is properly cited.