Organizational Capacity Assessment Model for Digital Transformation

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\textbf{Abstract.} The aim of the research is to theoretically substantiate the need for an in-depth assessment of the current organizational potential of a company in order to successfully conduct digital transformation. The study is based on a method developed by the authors for assessing the current organizational potential in accordance with the requirements and characteristics of the digitalization process. The method includes an extended classification of management problems in conditions of increasing uncertainty and the rate of change in the business environment, a methodology for assessing (calculating quantitative values) the main parameters of the Digital Transformation Snake model (DTS model), a graphical representation of a digital transformation model based on improving the organization’s personnel structure. The DTS model includes the identification of two zones of organizational impact on the workforce of the organization: the zone of restructuring of the workforce and the zone of personnel development. The conclusion is made about the use of various technologies for improving the organization’s personnel to achieve a successful digital transformation. Technologies are distributed across the designated areas of organizational impact.

\textbf{Keywords:} Organizational potential \cdot Digital transformation \cdot DTS model \cdot Organizational change \cdot Personnel development \cdot Change management

\section{Introduction}

The World Economic Forum’s report, “Digital Transformation: Powering the Great Reset”, noted that the COVID-19 pandemic is a watershed moment for digital business transformation [1]. The rules for success have changed and are increasingly based on the possibilities of digital models to create new value and experience. At the moment, there are new opportunities to implement digital transformation, which corresponds to the changing role of business: to be a long-term tool for creating value for all stakeholders.

Laurent-Pierre Baculard, Laurent Colombani, Virginie Flam, Ouriel Lancry and Elizabeth Spaulding of Bain & Company have determined that digital leaders in every industry are vastly superior to their competitors, and digital transformation can deliver significant results [2]. By comparing the financial performance of companies with varying degrees of digital complexity, Bain & Company found that digital leaders’ revenues...
grew more than twice as fast as revenues of companies lagging in the digital space, and digital leaders’ profits are nearly twice as often as the profit of lagging companies.

At the same time, the introduction of digital technologies is changing the scale of employment and the structure of the workforce, including in leading innovative companies [3]. Y. Harari noted the hopeless obsolescence by 2050 of the idea of "lifelong employment" and the concept of "profession for life", as well as the emergence of "extra" people class because of the lack of work, education or weak psychological stability [4]. According to Bain & Company forecasts the rate of labor movement in the next decade could be two or three times higher than during other major transformation periods in modern history [5].

The World Economic Forum report "The Future of Jobs" indicates that by 2025, the working hours of people will be equal to the working hours performed by machines and algorithms, there will be problems with the employment of workers in different industries and geographic regions. Research by the Future of Jobs Survey showed “that by 2025, 85 million jobs may be displaced by a shift in the division of labour between humans and machines” [6, p. 4]. Bain & Company predicts that automation could eliminate from 20% to 25% of existing jobs by the end of the 2020s, hitting middle and low-income workers the hardest [5].

2 Theoretical Background

Digital transformation is not a new phenomenon for society and system of government [7–9], economy and business [10–12], transport [13] and all. However, as stated in the World Economic Forum’s report Digital Transformation: Powering the Great Reset many attempts have failed [1]. In the scientific literature this is explained by the influence of a number of factors and phenomena [14, 15].

The first is the level of readiness of companies and enterprises for digital transformation. Bain & Company surveyed 1,000 companies around the world to assess their readiness for digital transformation. And two points were highlighted: the return on digital transformation can be impressively high, but the probability of success is unfortunately low [2]. Bain & Company survey showed that only 5% of the companies involved in the digital transformation have reached or surpassed planned expectations (for comparison, it is 12% for conventional changes). 75% of companies experienced a decrease in value and mediocre results [2]. Thus, the researchers conclude that digital transformation is significantly more complex than traditional change management programs.

The reason for this phenomenon is the sheer difficulty of using technology to increase company’s speed and large-scale training. Even in situations where some traditional companies are successful in implementing innovations in product development, not many of them are able to quickly embrace digital technology to solve problems and improve organizational productivity [3, 16, 17].

Another reason for the failure of the digitization process is with startups. Startups companies typically start the digital transformation process with a set of isolated initiatives, which are aimed at the most problematic point. However, these companies find it difficult to translate these initiatives into complete solutions and opportunities that could have a significant impact on the economy of the entire company. More mature companies
are better at clustering digital initiatives around shared strategic goals and are starting to focus on improving individual support processes, primarily IT. However, these initiatives are also localized and not distributed throughout the company without broad organizational impact. As the researchers explain there are many organizations that are responding to digital change in certain ways, but the overall digital transformation is being held back by legacy systems [2, 18].

The positive experience of digital transformation shows the following.

Digital leaders link their strategic ambitions to the innate abilities and behaviors they will need to achieve their ambitions. At the beginning of transformation leaders translate their strategy into a clear set of digital initiatives. Then they invest heavily in fundamental changes in their way of working, communication, organizational culture. This allows them to take digital initiatives both faster and on a larger scale. The conclusion that many researchers draw is that digital transformation implies changes at all levels of the organization [2].

Ronald Heifetz and Marty Linsky highlighted technical and adaptive problems [19, 20]. Technical challenges require the use of honed skills to solve well-defined problems. Adaptive problems are confusing, timeless and unclear. In many cases the question is difficult to formulate and the answer is even more difficult to find. Chris Ertel and Lisa Kay Solomon point out that the most important strategic challenges organizations face today are adaptive challenges [21].

It is necessary to assess the current organizational capacity for change to drive digital transformation across the entire company.

3 Research Method

In order to assess the current organizational potential of a particular organization for digital transformation we have developed a special research method. For our method we used the concept and hierarchy of integrated systems [22] and the Heifetz classification [19, 20, 23] to which we added another class of problems - complex problems. The characteristics of the complex problems that we introduce into the analysis method as

| Table 1. Comparative characteristics of technical, complex and adaptive problems |
|---------------------------------|-------------------|-------------------|-------------------|
| Criterion                      | Technical problems| Complex problems  | Adaptive problems |
| Problem formulation            | Clear             | (a) A sufficiently clear problem, or (b) a wide variety of clearly formulated problems | Fuzzy, indefinite |
| Initial conditions             | Initial data, goal, results, resources required are known | A lot of initial data, there is uncertainty in the goals, results, resources required | Not installed |
| Decision                       | Correct           | Optimal           | Better-worse ratio |
| Solution methods               | Application of known methods | Application of known methods | There are no ready-made methods |
| Terms of decision              | Definable         | Definable         | Not definable     |

Source: compiled by the authors
well as the characteristics of the technical and adaptive problems of Heifetz are presented in Table 1.

The classification of problems given in Table 1 was used to determine such a parameter for assessing the current organizational potential of a particular organization for digital transformation as the complexity of the problems being solved.

The second parameter of assessment is the parameter “participation in value creation”. For these parameters (the complexity of the problems being solved and the participation in the creation of value) the following levels were set: high, medium and low. The assessment is carried out according to the point method.

The complexity of professional activity is determined by the following components: level of education, training, complexity of the work performed, type of activity. Evaluation characteristics and the number of points for determining the complexity of the problems being solved are shown in Table 2.

### Table 2. Assessment of the complexity of the problems being solved

| Component                  | Evaluation characteristics and number of points                      |
|-----------------------------|-----------------------------------------------------------------------|
|                            | Low | Medium | High                       |
| Number of points            | 0–1 | 2–3    | 4–5                        |
| The level of education      |     |        |                            |
| Secondary specialized, secondary professional |     | Higher (bachelor’s degree, specialty) | Higher (master’s degree, academic degree) |
| Training                    |     |        |                            |
| Enough corporate training, development of skills within the company |     | Knowledge that is necessary only in their field of professional activity study of regulatory documents, training as needed | Availability of knowledge, skills in several areas, training to acquire knowledge, abilities, skills |
| The complexity of the work performed | Simple functions (work strictly according to instructions, constant repetition of the same type of actions) | Complex functions (knowledge of regulatory documents is required) | Complex heterogeneous functions (work related to solving issues in several areas) |
| Kind of activity            | Information technology activities | Analytical and constructive activity | Organizational and administrative activities |

Source: compiled by the authors

The author’s method assumes the summation of the scores for all the components shown in Table 2. The total score shows the group and the complexity of the problems being solved. The following rating scale is established:
- from 0 and less than 6 - solving technical problems,
- from 6 and less than 14 - solving complex problems,
- from 14 to 20 inclusive - solving adaptive problems.

Table 3 presents the characteristics for evaluating the components of the parameter “participation in value creation”.

| Component                                      | Evaluation characteristics and number of points |
|------------------------------------------------|-----------------------------------------------|
| Number of points                               | Low | Medium | High         |
| Responsibility for the result of activities    | 0–1 | 2–3    | 4–5          |
| Material responsibility                        | Responsibility for work equipment and labor tools | Work related to the possibility of material damage, accidents, equipment breakdowns, its downtime, damage to raw materials, semi-finished products, defective finished product | Disposal of financial and material assets |
| Involvement of an employee in business processes | Auxiliary process, involves the maintenance of the main process | Main process | The main process with interaction with the client, work at the customer’s facility |
| The importance of involvement in business processes | The results of employees’ activities do not affect the results of other employees. The results of employees’ activities affect the performance of labor functions by other employees within only one department | The results of employees’ activities affect the performance of labor functions by other employees within only one department The impact is simultaneous, not permanent | The results of the employees’ activities affect the results of the activities of employees of several departments, on the organization as a whole. The influence happens all the time |

Source: compiled by the authors
By summing up the scores for all components, you can determine the degree of participation in value creation. The following rating scale is established:

- from 0 and less than 6 - indirect participation,
- from 6 and less than 14 - direct,
- from 14 to 20 inclusive - immediate.

Based on the assessment of two key parameters (the complexity of the problems being solved and participation in the creation of value), we propose the following model for assessing the current organizational potential of a particular organization for digital transformation. The model is shown in Fig. 1.

Further, in the research process the main measures were identified to change the organizational potential in each of the two designated areas for the digital transformation of the organization.

4 Research Results

Figure 1 shows the model we have developed for assessing the organizational potential for digital transformation.

The model identifies 2 areas of impact on the company’s personnel in terms of the company’s readiness for digital transformation:

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**Fig. 1.** Model for assessing organizational potential for digital transformation. Source: compiled by the authors
1. Personnel restructuring zone
2. Personnel development zone

The organizational arrangements for creating the conditions for a successful digital transformation in these zones differ.

The personnel restructuring zone as a basis for digitalization includes the process of automating the functions performed [24]. The automation changes the way we work, the interaction between different employees and the movement of resources in a company. But automation also doesn’t just improve the status quo; automation involves rethinking/reengineering business processes, how a company works, how a company’s employees work. Automation, firstly, is impossible without revising labor functions and secondly, without reducing labor functions and accordingly, reducing excess staff. Thus, labor functions in the field of administrative, clerical, analytical services with repetitive tasks or tasks based on standardized procedures and work algorithms are easily automated. Automation begins with the alignment of organizational capabilities and implementation requirements, goes through all stages of business planning and only then is completed with deployment and implementation affecting the entire company and covering the entire value creation process. We are talking about such technologies as:

- Process discovery and process mining
- Optical character recognition (OCR)
- Low-code/no-code automation
- Business process management (BPM)
- Workflow automation
- Robotic process or desktop automation (RPA or RDA)
- Artificial intelligence, including machine learning and conversational AI (natural language processing/generation)

The process of developing and implementing digital initiatives to make fundamental changes in the way of working, communication, organizational culture within the personnel restructuring zone includes 5 sequential stages of gradual transition from simpler problems (technical) to more complex (adaptive) ones while maintaining the level of personnel participation in value creation companies at the levels of “mediated” and “direct”.

The trajectory of movement of the complete transformation process in both zones is shown in Fig. 2.

When the level of personnel qualifications becomes sufficient to solve adaptive problems, it becomes possible to move to the personnel development zone (5th stage, transition from point 5 to point 6 in Fig. 2).

The personnel development area is characterized by:

- development of critical thinking,
- solving complex and non-standard problems,
- self-management skills.
The complexity of the problems

adaptive

complex

technical

indirect direct immediate

Participation in the creation of value

**Fig. 2.** Model “Snake of digital transformation” based on the assessment of labor functions. Source: compiled by the authors

The basis for the implementation of activities within this zone is digitization [19]. At the same time, the digitization is not a single stand-alone project, it is a corporate ecosystem that unites people, processes, technologies, support services and includes:

- Analytics,
- Business Innovation,
- Craftsmaster/Expert Network,
- Design,
- Digital Marketing,
- Enterprise Technology.

**Analytics.** Analytics enables to turn data into a competitive asset, gain insights and make smarter, faster decisions. Analytics turns data into a source of value - from customer service to employee interactions.

**Business Innovation.** This is not just about innovations and innovation activity but also about an entire ecosystem of people-generators of ideas, entrepreneurs, company leaders, venture capitalists, innovation experts, product managers seeking to forge mutually beneficial relationships. This allows to develop innovative strategies, optimal operating models, create and scale new products or entire companies.

**Craftsmaster/Expert Network.** Combining the best tools, technologies and their carriers: service providers, external experts from different sectors, geographic regions, different specializations, which opens up access to new opportunities and the emergence of synergies.
**Design.** The mandatory is rapid prototyping, usability testing, human-centeredness, customer journey mapping. Design nowadays involves interdisciplinarity, attention to user needs, special testing and training methods that allow quickly bring a product to the market.

**Digital Marketing.** Currently, we are talking not only about data analysis, systems integration, creativity, working with media, but also about working in a team with very different people with different personal value structures, experience and areas of interest.

**Enterprise Technology.** A company’s corporate strategy is directly influenced by its technology strategy and technology infrastructure. The company’s strategic ambitions must be aligned with the technology strategy and only then goes business planning. Systems and architecture are being modernized with a detailed digital transformation roadmap, modern operating models and agile methods.

A corporate ecosystem that includes the above elements cannot function without new competencies. The World Economic Forum’s report “The Future of Jobs” indicates that according to employers the main skills and skill groups that will be increasingly in demand by 2025 include: critical thinking and analysis, problem-solving, skills in self-management such as active learning, resilience, stress tolerance and flexibility.

## 5 Conclusions

Digital transformation involves innovative changes introduced throughout the entire system of an organization’s activities, at all its levels. For the successful implementation of digital transformation, a preliminary assessment of the current organizational potential and further monitoring of the effectiveness of changes are required. We have developed an assessment method and toolkit that meets the requirements and features of digitalization.

The method assumes, firstly, the differentiation of personnel depending on the problems to be solved - grouping and assessing the possibility of transition from technical problems (requiring the use of honed skills to solve well-defined tasks) to solving complex problems (with a large number of diverse tasks with a lot of initial data and limitations in resources, terms) and the final output to the formation of capabilities and competencies for solving adaptive problems (which do not have a clear statement and a known solution method). Secondly, our proposed method includes assessing the level of employee participation in creating value for the customer: from indirect participation (involvement in an auxiliary business process and limited impact on the performance of labor functions by other employees) to direct (involvement in the main business process and impact on performance of labor functions by other employees) and direct participation (performance of work at the customer’s facility).

The results of the assessment serve as the basis for building the Digital Transformation Snake model (DTS model). The model includes a clear identification of two zones of organizational impact on the workforce of an organization to achieve digital transformation: a zone for restructuring the workforce and a zone for personnel development.
The workforce restructuring area relies on process automation. At the same time, the automation not only improves the situation, but also involves rethinking/reengineering business processes. The automation is impossible without revising labor functions, reducing redundant labor functions and, accordingly, reducing excess personnel.

The personnel development zone is based on digitalization. Digitalization is not a single stand-alone project. It is a corporate ecosystem that brings together people, processes, technology and support services and includes Analytics, Business Innovation, Craftsmaster/Expert Network, Design, Digital Marketing, Enterprise Technology. This corporate ecosystem cannot function without personnel mastering new skills: developing critical thinking, solving complex and non-standard problems, and self-management skills.

The DTS model allows you to develop a set of organizational and management measures for the successful implementation of the digital transformation of an organization.

Further research involves a more detailed analysis and identification of specific groups of personnel regarding their job functions, distribution on the matrix for assessing organizational potential and making specific management decisions regarding the restructuring/development of these groups in the process of digital transformation of the organization.

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