





## Enhancing Enterprise Competitiveness through Digitalization in Strategic Decision-Making

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### ABSTRACT

This research examines the enhancement of enterprise competitiveness through digitalization in strategic decision-making, specifically focusing on the implementation of the DIY4C method. The study employs a mixed-method approach to analyse structural elements and assess implementation frameworks for digital tools in non-governmental organizations. Findings reveal that the DIY4C method, comprised of digital modules (D4C, D4S, D4M, D4R) and specialized matrices, significantly transforms traditional decision-making processes by reducing consultation cycles from days to minutes while maintaining quality engagement. The digital component functions as an integrated real-time data processing system that supports the entire decision-making cycle from information collection to implementation monitoring. Performance metrics demonstrate remarkable improvements in time efficiency, resource optimization, and decision quality through 100% remote participation capabilities and automated analysis systems. The practical significance lies in the method's successful application across multiple domains including community development and policy planning, establishing a benchmark for leveraging digital tools to enhance organizational competitiveness in the digital age while ensuring transparent and inclusive governance.

### KEYWORDS

strategic decision-making; digitalization; reliability of event recognition; possibility of correct detection; information-control systems; managed development; enterprise competitiveness

## Introduction

In the context of contemporary business, the development of strategic solutions is often hindered by rapid social transformations and growing social complexity. The organisation is also unable to cope with rapid technological change and the increasing complexity of global markets.

Traditional strategic decision-making methodologies demonstrate significant limitations: lengthy data analysis cycles, inefficient information processing, and limited engagement of key stakeholders. Existing mechanisms create a persistent disconnect between management levels and diverse market perspectives.

These systemic deficiencies result in decreased competitiveness, reduced strategic effectiveness, and limited utilization of innovative potential. Current approaches often fail to account for the dynamic nature of modern business challenges, relying on outdated analytical tools and not reflecting the multifaceted nature of complex market situations.

The digital transformation of business processes creates an urgent need for innovative strategic approaches to decision-making. Digital technologies now present unprecedented opportunities to reimagine data analysis and forecasting mechanisms, offering potential solutions to long-standing institutional barriers in communication and efficiency enhancement.

## Literature Review

The comprehensive analysis of digital transformation in strategic management of non-governmental organizations (NGOs) reveals a multifaceted research landscape with significant contributions from both international and Ukrainian scholars. Research by Bozintan, Crişan, and Pincos (2023) and Melović et al (2020). Systematically explored digital technologies' impact on strategic planning, demonstrating how contemporary organizations leverage innovative technological approaches in their operations.

Key research directions include digital technology integration, strategic planning innovations, and transformation mechanisms. Scholars like Pereira et al. (2022) examined the critical role of digital transformation in international operations, while Mishra et al. (2023) investigated the synergies between traditional business strategies and digital innovations. Gong and Ribiere (2020) have proposed a comprehensive definition of digital transformation, highlighting the need for unified implementation strategies and adaptive methodological approaches.

Herbert (2017) provided comprehensive insights into digital transformation, exploring implementation from leadership strategy to operational execution. His book "Digital Transformation: Build Your Organization's Future for the Innovation Age" presents a holistic approach to implementing digital transformation from strategic planning to practical realization.

Based on the analysis of scientific literature, several research directions regarding decision-making processes in non-governmental organizations can be identified. The first direction is related to the digital transformation of NGO management. Research on "digitalization" highlights scholars such as D. Stiglitz, B. Van Ark, J. Licklider, and among contemporary researchers, O. Vyshnevsky, O. Gudz, and V. Lyashenko. The research focus is directed at how internal and external factors behave under conditions of digital transformation and the development of strategies for their development (Macintosh & Whyte, 2008; Huffman, 2017; Bondar et al., 2024; Tkachuk, 2019; Brechko, 2020).

K. Merkulova (2014) defines a self-governing organization as "a non-governmental, voluntary association of citizens united by a common goal regarding the implementation and

protection of rights, as well as social, economic, creative, age, national-cultural, sports and other common interests, which influences socio-political life and does not set profit-making as the main purpose of its existence". O. Yuldashev (2013) proposed a new definition of self-governing organizations, calling them non-governmental, specifically as "associations formed by citizens of Ukraine in accordance with the Constitution on a voluntary basis to satisfy and protect their legitimate social interests (achieve legitimate goals), operating transparently and openly, for which making profit from their activities is not the main goal, but a means to fulfil their own statutory goals".

### **Problem Statement**

**T**he purpose of this study is to identify ways to strengthen enterprise competitiveness through the implementation of digital tools in strategic decision-making processes, as well as to develop recommendations for the effective integration of digital technologies into organizational business strategies.

To provide theoretical justification and develop practical recommendations for implementing digital tools in strategic decision-making processes for non-governmental organizations on the DIY4C method.

Research Tasks:

1. To analyse the current state of digital transformation in strategic decision-making processes for non-governmental organizations and identify the structural elements of the DIY4C method's digital component (modules, matrices, and methodologies).
2. To investigate the functional capabilities of the DIY4C method's digital component across decision-making stages and evaluate its effectiveness in terms of time, quality, and resource efficiency.

To develop and validate the implementation framework for the DIY4C method's digital component in strategic decision-making processes, including practical applications and performance assessment in non-governmental organizations

### **Methods and Materials**

**T**his research methodology focuses on evaluating a novel DIY4C method's digital component through a mixed-method approach. The study design incorporated systematic analysis of structural elements, implementation assessment, and performance evaluation using defined efficiency indicators across various decision-making contexts.

Data collection encompassed documentation analysis of strategic planning processes, digital matrix implementation tracking, system performance metrics collection, and stakeholder feedback analysis. The evaluation metrics focused on time efficiency, measuring consultation process duration reduction; resource optimization through cost reduction analysis; stakeholder engagement rates; and decision quality assessed through implementation success rates.

The validation process employed cross-validation techniques, comparing traditional versus digital approaches, comprehensive stakeholder feedback assessment, implementation success metrics, and continuous performance indicator tracking. This methodology enabled a thorough evaluation of the DIY4C method's effectiveness in transforming strategic decision-making processes while ensuring robust data collection and analysis procedures (Kovalenko, 2024).

## Results and Discussion

**D**igital transformation creates an urgent need for fundamentally new strategic approaches. Modern digital technologies open unique opportunities for reimagining mechanisms of public participation and overcoming traditional communication barriers. They offer comprehensive solutions to longstanding management challenges through the implementation of intelligent technological solutions. The digital transformation of strategic management is not merely a technological trend but a fundamental necessity for the effective functioning of modern organizations. The implementation of innovative digital solutions creates preconditions for more flexible, inclusive, and responsible governance capable of quickly responding to the challenges of today's dynamic world.

The key advantages of digitalization in strategic management processes lie in accelerating the processing of large data sets, increasing the efficiency of management processes, ensuring maximum transparency of decisions, and creating effective mechanisms for comprehensive public involvement. Digital tools are becoming a powerful lever for transforming strategic management practices across sectors.

The digital component in modern decision-making represents an innovative automated software-analytical complex that ensures digitalization of consultation and strategic planning processes. This digital transformation performs digitization of textual contributions from participants, conducts analysis, and visualizes results for both individual groups and the entire consultation process, implemented through a set of digital SMART matrices. The outputs are presented as graphs, tables, and aggregated textual and numerical information. Structurally, this digital component consists of several interconnected elements:

Full-scale integrated products developed according to contemporary methodological standards for performing specialized tasks: forecasting, monitoring and evaluation, public consultations, and other strategic functions. These consist of digital components for basic data analysis and visualization, digital matrices, and additional digital modules for data analysis and evaluation.

The DIY4Change method is emerging as an innovative approach that ensures constructive interaction between all stakeholders and allows for more informed and inclusive strategic decisions. Developing a clear process for implementing the DIY4Change method is crucial to achieving the expected results. It should be applied at all stages of the strategic decision-making cycle and at all stages of the life cycle of non-governmental organisations, particularly in the context of the resource constraints and uncertainty that characterise the current public sector environment. The DIY4Change method consists of four components — general, digital, educational and gaming — which use social, communication and gaming techniques to create an effective mechanism for social interaction and collective decision-making.

Description of the rules for applying components to obtain better results: the basic component is the general component, without it no component can be used, the digital component — it is used in any combination, but does not always play the main role (for example, in training it plays a supporting role, and the first role is played by the training component), the educational component — is also always present everywhere, but it plays a key role only in its main direction — in other cases it only reinforces other components, the game component — is not mandatory at all

The digital component of the DIY4C method represents an innovative automated software-analytical complex that ensures digitalization of the consultation and decision-making process. The digital component digitizes textual contributions from participants, analyses them, and visualizes results for both individual groups and the entire consultation process,

implemented through a set of digital SMART matrices. The complex's outputs are presented in the form of graphs, tables, and aggregated textual and numerical information.

Full-scale integrated products, developed according to DIY4Change method standards for performing specialized tasks: forecasting, monitoring and evaluation, public consultations, etc. These consist of DIY4C – a digital component for basic data analysis and visualization, digital matrix, and an additional digital module for data analysis and evaluation.

The digital component includes digital tools consisting of modules (D4C module; D4S module; D4M module; D4R module); matrices (D4Fc; D4Eco; D4St; D4Adv; D4Com; D4MiO; D4Sol) and methodologies (MiO Solve; DZOR; IRMM; CivicLab) (Kovalenko & Khrutba, 2024; Kovalenko, 2022). D4C – a digital module for variative analysis utilizing artificial intelligence and mathematical modelling (Table 1).

**Table 1. Structure of D4C – a digital module for variant analysis for strategic decision-making in non-governmental organizations**

Component Type	Name	Description	Primary Function
<b>Digital Modules</b>	D4C module	Strategic Analysis & Decision Support	A tool for forecasting and evaluating potential outcomes of management decisions through scenario modelling and risk assessment
	D4S module	Public Consultation Management	Specialized module for organizing and supporting public consultations, creating an integrated environment for public engagement
	D4M module	Monitoring & Evaluation	System for systematic monitoring and evaluation of decision outcomes, providing tools for comprehensive analysis of management effectiveness
	D4R module	Regulatory Development	Module designed for developing proposals for regulatory acts, providing a structured methodology for legislative initiatives
<b>Digital Matrices</b>	D4Fc	Strategic Planning	Digital matrix for generating ideas and proposals for strategies
	D4Id	Problem Analysis	Multilingual digital matrix for problem identification and solution generation
	D4St	Stakeholder Management	Digital SMART matrix for stakeholder mapping
	D4MiO	Strategic Monitoring	Digital matrix for monitoring and evaluating strategic decisions
	D4Sol	Community Engagement	Digital matrix for participatory monitoring and community needs assessment
	D4Adv	Advocacy Development	Digital SMART matrix for advocacy planning
	D4Com	Communication Strategy	Digital SMART matrix for communication campaign planning
	D4Eco	Environmental Assessment	Digital SMART matrix for "green recovery" evaluation
<b>Methodologies &amp; Tools**</b>	MiO Solve	Process Monitoring	Methodology for monitoring participatory decision-making processes
	IRMM	Social Media Analysis	Internet Resource Monitoring Methodology
	RDED (DZOR)	Public Opinion Research	Research methodology for public demand and decision evaluation
	CivicLab	Public Engagement	Methodology for digital public consultations

*Note: Systematized by the authors based on the research of Kovalenko (2024), CivicLab (2023).*

The four modules within the DIY4C method provide a comprehensive framework for strategic decision-making, public consultation, monitoring and evaluation, and regulatory development. These modules integrate scenario modeling, risk assessment, stakeholder

engagement, and systematic analysis to enhance policy effectiveness and governance efficiency.

The eight digital matrices within the DIY4C method provide a structured framework for strategic planning, problem analysis, stakeholder management, strategic monitoring, community engagement, advocacy development, communication strategy, and environmental assessment. These matrices support decision-making through digital SMART tools, facilitating strategy formulation, stakeholder mapping, participatory monitoring, advocacy planning, and sustainability evaluation to enhance policy impact and governance effectiveness.

Digitization is a process of organizing and automating work. Through this process, all individual and group contributions, such as expressed opinions and submitted proposals, are immediately entered into a specially designed matrix. Supported by an innovative software and analytical system (the digital component), these inputs are analyzed, visualized, and displayed on a shared screen for a clear and accessible presentation of results. This approach is particularly effective in non-governmental organizations, ensuring streamlined collaboration between stakeholders (Yuldashev, 2013).

The primary objective of the digital component is to facilitate effective decision-making by leveraging innovative information and communication technologies (ICTs). This component provides several key advantages Figure 1. Creating equitable participation conditions for diverse citizen groups.

Remote Functionality:

- Conducting consultations and developing proposals entirely remotely in real-time, enabling decision-making even in scenarios with limited physical presence. This is especially relevant for non-governmental organizations, where stakeholders from different sectors collaborate.

Paperless Operations:

- Immediate entry of all records into a digital matrix for further analysis and documentation.

Time Optimization:

- Reducing initial processing and preliminary analysis time from the traditional seven days to two minutes.
- Automating text data analysis.
- Performance evaluation using defined indicators.
- Automatic grouping and visualization of information for immediate use.

Enhanced Decision Quality:

- Eliminating the risk of data loss or incorrect entry of participant opinions.
- Allowing the formation of multiple solutions with analytical justification.
- Ensuring comprehensive consideration of realistic proposals.
- Accelerating decision-making processes by two to three times, thereby increasing public trust in non-governmental organizations.

Transparency:

- Providing online access to all developments and analytical data.
- Enabling verification of proposal consideration at any stage.
- Offering evidence-based rationale for accepted or rejected proposals.

Resource Optimization:

- Eliminating costs associated with venue rental, logistics, and related services.
- Reducing environmental impact by avoiding paper usage.

**Figure 1. Key benefits of the digital component for strategic decision making for reliable event recognition**

*Note: Systematized by the authors based on the research of Kovalenko (2024).*

The methodologies and tools presented support non-governmental organizations, decision-making transparency, and digital engagement through structured research, monitoring, and analysis. The DDED (DZOR) methodology ensures systematic public demand research, dialogue facilitation, and structured decision evaluation. CivicLab enhances civic education, critical thinking, and project planning to foster community engagement. MiO Solve focuses on participatory decision-making monitoring, integrating indicators, assessment criteria, and feedback mechanisms to ensure transparency. IRMM provides digital monitoring of public opinion via social media and messaging platforms, using automated analytics and data visualization to track societal trends effectively. These methodologies collectively strengthen participatory governance and informed policy development.

The application of digital components in the decision-making process transforms traditional approaches into dynamic, interactive processes that address complex organizational and social challenges. The digital component functions as an integrated, real-time data processing system supporting the entire decision-making cycle, from collecting primary information to generating analytical reports and monitoring implementation.

The digital component of the DIY4C method functions as an integrated, real-time data processing system. It supports the entire decision-making cycle, from collecting primary information to generating analytical reports and monitoring implementation. This online system enables simultaneous access for all participants and instant data processing. Its utility is particularly valuable in non-governmental organizations, where the complexity of decision-making benefits significantly from streamlined digital processes. The DIY4C method incorporates various functionalities at each stage of the decision-making process. The functionality of the digital component of the DIY4C method in terms of decision-making stages and performance indicators is given in Table 2 (Kovalenko, 2024; CivicLab, 2023).

**Table 2. Functionality of the digital component of the DIY4C method in terms of decision-making stages and performance indicators**

Decision-Making Stage	Application	Functionality	Performance Indicators
<b>Collection and processing of primary information</b>	Development of solution options	100% remote work; digital document flow	Time: 2 minutes instead of 7 days; qualitative: full data preservation; resource-friendly: no logistical costs
<b>Systematization and data analysis</b>	Analysis of solution options	Automated analysis; performance evaluation; grouping and visualization	Time: real-time processing; qualitative: objective assessments; resource: automated processes
<b>Forming alternatives</b>	Development and analysis of options	Generation of multiple solutions; inclusion of opposing views	Time: parallel processing; qualitative: comprehensive coverage; resource: optimized human resources
<b>Evaluation of alternatives</b>	Analysis and forecasting	Analytical justification; impact assessment	Time: quick option comparison; qualitative: validated choices; resource: reduced expert consultation costs
<b>Decision-making</b>	Preparation of reports and recommendations	Justification of selected options	Time: 2-3 times faster process; qualitative: enhanced trust; resource: streamlined coordination
<b>Implementation monitoring</b>	Performance tracking and transparency	Continuous monitoring; evaluation of outcomes	Time: constant tracking; qualitative: process transparency; resource: automated controls

*Note: Systematized by the authors based on the research of Kovalenko (2022).*

The DIY4C method has demonstrated remarkable versatility and effectiveness across multiple domains of public administration and strategic planning. Its digital component fundamentally transforms traditional research and decision-making approaches into dynamic, interactive processes that effectively address complex social challenges. Through successful implementation in strategic planning, public policy governance, legislative frameworks, and communication initiatives, this method has proven its adaptability to diverse organizational contexts.

The method's effectiveness is particularly notable in non-governmental organizations, where it facilitates multi-stakeholder collaboration while ensuring transparent decision-making processes. Non-governmental entities benefit from the method's ability to support systematic planning for territorial recovery, enhance regulatory frameworks, and promote innovative communication practices through inclusive participation of diverse social groups, experts, and stakeholders.

The digital component enables a comprehensive, interactive, and inclusive process for addressing diverse social challenges across numerous organizational activities. Its integration in non-governmental organizations demonstrates significant adaptability and value in managing multi-sector collaborations effectively. The method transforms traditional research practices into dynamic, participatory formats while providing powerful tools for transparent decision-making and systematic data analysis.

Typical component combination options are presented in formula (1).

$$\begin{cases} C_c + D_c \\ C_c + G_c \\ C_c + E_c \end{cases} \Rightarrow \begin{cases} C_c + D_c + G_c \\ C_c + D_c + E_c \\ C_c + D_c + G_c + E_c \\ C_c + G_c + E_c \end{cases} \quad (1)$$

where  $C_c$  – Common Component;  $D_c$  – Digital Component;  $E_c$  – Educational Component;  $G_c$  – Game Component.

Formula (1) represents the typical combination of options of the DIY4Change method components in the strategic management of non-governmental organizations. This mathematical model demonstrates the flexibility of the method through the possibility of different combinations of structural elements. It is precisely the triangulation of three components that provides a systematic approach to making strategic decisions and creates a methodological foundation for achieving high management efficiency in the development of non-governmental organizations under conditions of digital transformation

**Table 2. Reinforcement Connection Between Components in Typical Combination Variants**

Example	Mathematical Model of Connection Between Components
Development of a strategic management decision with the possibility of participants indirectly gaining new knowledge and tasks for further actions: digital component is used together with the educational component	$C_c + \{D_c, E_c\} \neq C_c + (D_c + E_c) \neq RD_c$ $C_c + \{D_c, E_c\} = C_c + D_c + \frac{1}{3}E_c = RD_c^{REc}$ $RD_c^{REc}$ – the main result will be alternative decision options with one recommended for consideration, and an additional result ( $RE_c$ ), that reinforces the main one — increasing the knowledge of participants involved in the development of this decision

Example	Mathematical Model of Connection Between Components
<b>Conducting a thematic training course to strengthen theoretical knowledge and practical skills of participants with current digitalized monitoring and assessment of success level</b>	$C_c + \{E_c, D_c\} \neq C_c + (E_c + D_c) \neq RE_c$ $C_c + \{E_c, D_c\} = C_c + E_c + \frac{1}{3}D_c = RE_c^{RDc}$ <p>Де <math>RE_c^{RDc}</math> – the main result will be a trained student with an appropriate level of knowledge and skills, whose individual learning trajectory was adjusted based on conclusions and recommendations formed from the results (<math>RD_c</math>) of digitalized monitoring and evaluation (<math>D_c</math>)</p>
<b>influence government decisions that concern them, with a digitalized advocacy plan</b>	$C_c + \{G_c, E_c, D_c\} \neq C_c + (G_c + E_c + D_c) \neq RE_c$ $C_c + \{G_c, E_c, D_c\} = C_c + \frac{1}{2}G_c + E_c + \frac{1}{3}D_c = RE_c^{(RG_c+RD_c)}$ <p>Де <math>RE_c^{(RG_c+RD_c)}</math> – the main result will be a participant who knows, is able to, and has already begun to influence (took the first step) government decisions that concern them, thanks to the results of using the reality game (<math>RG_c</math>) and digitalized advocacy plan (<math>RD_c</math>).</p>

*Note: Systematized by the authors based on the research of Kovalenko (2024).*

In conclusion, the digital component of the DIY4C method represents a transformative approach to strategic decision-making in non-governmental organizations. By integrating advanced information and communication technologies, it ensures efficient, transparent, and inclusive decision-making processes, ultimately paving the way for sustainable development outcomes and enhanced public trust in organizational governance.

### Conclusions

This research demonstrates that the digital component of the DIY4C method effectively transforms traditional strategic decision-making processes in non-governmental organizations through methodological innovation and technological integration. The comprehensive framework combines four specialized digital modules (D4C, D4S, D4M, D4R) with complementary digital matrices, enabling real-time data processing and analysis that significantly reduces decision-making cycles.

Implementation of the DIY4C method shows remarkable improvements in operational efficiency—reducing consultation processes from days to minutes through complete digitization of documentation and stakeholder engagement processes. The method enables 100% remote participation while maintaining high-quality interaction and optimizing resource allocation through automated analysis and monitoring systems.

The practical impact of the DIY4C method has been successfully demonstrated across multiple domains including community development strategies, recovery planning, and policy development. The approach enhances transparency and inclusivity in decision-making, providing measurable improvements in stakeholder engagement while creating a scalable and replicable model for digital transformation in non-governmental organizations.

The DIY4C method's digital component represents a significant advancement in strategic management methodology by effectively combining technological efficiency with meaningful stakeholder participation. Its modular structure enables comprehensive engagement, robust analysis, and transparent implementation tracking—critical factors in fostering participatory governance and integrating diverse perspectives into strategic planning.

In conclusion, the DIY4C method establishes a benchmark for leveraging digital tools in strategic decision-making for enhancing organizational competitiveness. By transforming traditional approaches into dynamic, participatory processes, it provides both immediate practical benefits and long-term strategic value for non-governmental organizations operating in the digital age.

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