

The role of integrated education digital platforms in change management system

El papel de las plataformas digitales de educación integrada en el sistema de gestión del cambio

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Abstract

Existing methods and mechanisms do not provide a balance of interests in the corporate structure during the integration of participants, do not allow taking into account the activity of system participants, and also show the inefficiency of existing mechanisms to manage the development of integrated entities in the context of digitalization, therefore, new approaches to managing changes to these systems taking into account their complexity and multi-level are justified. The analysis of the change management process methodology indicates a significant discrepancy between digital tools, achievement goals and the level of effectiveness of integrated education management.

The article concludes that digital platforms in integrated entities are one of the most successful innovations for business models in the digital economy creation. As digital technologies grow and spread, they will inevitably create new opportunities for business development in a changing external environment.

The relevance of the research problem is caused by the need to resolve contradictions: between the need to competently manage changes in integrated entities and the limited knowledge of leaders and management in this area in the context of digitalization of business processes; between the existing influence of the change management process on the further effectiveness of the functioning of integrated entities digital platforms and the insufficient development of tools on this topic.

key words: digital platforms, integrated education, change management, digitalization, business processes.

Resumen

Los métodos y mecanismos existentes no proporcionan un equilibrio de intereses en la estructura corporativa en el proceso de integración de los participantes, no permiten tener en cuenta la actividad de los participantes del sistema y tampoco muestran la ineficiencia de los mecanismos existentes para gestionar el desarrollo de entidades integradas en el contexto de la digitalización, por lo tanto, justifican nuevos enfoques para gestionar los cambios en estos sistemas teniendo en cuenta su complejidad y multinivel. El análisis de la metodología del proceso de gestión del cambio indica una discrepancia significativa entre las herramientas digitales, los objetivos de rendimiento y el nivel de efectividad de la gestión educativa integrada.

El artículo concluye que las plataformas digitales en entidades integradas son una de las innovaciones más exitosas en la construcción de modelos de negocios en la economía digital. A medida que las tecnologías digitales crezcan y se propaguen, inevitablemente crearán nuevas oportunidades para el desarrollo empresarial en un entorno externo cambiante.

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La relevancia del problema de investigación está causada por la necesidad de resolver las contradicciones: entre la necesidad de gestionar de manera competente los cambios en las entidades integradas y el conocimiento limitado de los líderes y la gestión en esta área en el contexto de la digitalización de los procesos empresariales; entre la influencia existente del proceso de gestión del cambio en la mayor efectividad del funcionamiento de las plataformas digitales de entidades integradas y el desarrollo insuficiente de herramientas sobre este tema.

Palabras clave: plataformas digitales, educación integrada, gestión del cambio, digitalización, procesos de negocio.

1. Introduction

Establishment and functioning of modern economic systems is based on the concept of "integrated entity", which is considered as a legal entity or a group of legal entities stipulating the pooling of assets of its participants for business purposes on the basis of legislation or a concluded agreement for joint economic activities.

At present, during the period of market relations development associated with the rapid pace of emergence of new enterprises and ways of communication, the saturation of the market with new goods, technologies, cultural and social mobility of society, it is quite difficult for integrated entities to maintain leadership in a competitive, rapidly changing market.

The management of integrated entity on a digital platform will make it possible to form a toolkit to increase the efficiency of the activities of both individual subjects and the intersystem formations which the individual subjects form by increasing their sustainability. Digital platforms make the change management process more flexible and adaptable to the turbulence of the external environment.

Therefore, in a turbulent environment, modern integrated formations are also forced to continuously change. And only those who can adapt better and faster to new conditions and respond to changes will be able to survive.

The purpose of the study is to form a technology for changes in the activities of integrated entities while implementing the digital platforms, based on a comprehensive analysis and study of the impact of the change process on the performance of integrated entities.

The development of integrated entities is due to many factors. This is affected by changes in market trends, increased competition, improvement of ownership, functions and management methods [1]. Therefore, the formation of integrated entities is a positive trend for the effective functioning of the economic system.

The digital transformation of the economy affects the ecosystem of integrated structures [11]. The development of digital platforms will enable integrated entities to respond flexibly to ongoing changes.

2. Methodology

The problem of change management is reflected in numerous works of domestic and foreign researchers. In the research, the authors relied on the works of A.V. Sorokoumov, R. H. Hall, M. Hammer, D. Harrington and many others. Of course, the main works in the field of change management have been studied and written by foreign authors, Russian researchers mainly rely on the experience of foreign colleagues.

More utmost attention to the concepts of "digitalization" and "digital economy" is given in the works of foreign authors: N. Nigroponte, D. Tapscott, L. Mesenburg and others, as well as in the works of Russian authors: A. Babkin, V. Matveev, N. Vasilenko and others.

The issues of the research is in the fact that the majority of managers ignore the change management process when they use managerial mechanisms that can radically transform the work of their organization and subordinates.

The analysis of works of the mentioned authors shows that nowadays in economic science and practice there is a domination of the following approaches to the factual description and structural representation of change management systems:

- 1) System approach. The system is considered as an ordered set of interrelated elements and during analysis is decomposed into subsystems.
- 2) Process approach. The system is considered as a group of change management processes, and the heads of the structural subdivisions of integrated entity included in the system are considered as the “owners” of the processes.
- 3) Ecosystem approach. The system is presented as a community of change management participants.

The methodological basis of the study are the provisions of the information management theory, including the issues of interfirm and intercorporate interaction, which is formed under the influence of the factor of evolution of digital integration.

The proposed approach is based on the methods of analysis and synthesis within the framework of the study of integrated entity in the integrity, unity and interconnection of its constituent parts for the purpose of analyzing, information generalizing, trends identifying and developmental characteristics based on the principle of platform interaction. The implementation of the approach is facilitated by the use of the analytical method for digital visualization of business entities.

3. Results

Change is the path to excellence. Whatever the changes are, their goal is to increase efficiency and productivity [3]. But sometimes even the smallest changes bring stress and resistance to the system, and the reason is that permanence and stability have always been considered as a sign of well-coordinated work.

Change management is one of the most difficult tasks facing any organization [7]. Change is an inevitable and necessary phenomenon leading to the development of integrated entities, and to make it effective it is necessary to use adequate methods of organizational development.

Change is the addition, modification or deletion of something that may have an impact on the organization's activities, including business processes, assets, organizational structure, etc. [18].

There are many factors that can motivate an organization to start a period of change. They come from internal and external sources, including:

1. Creation of a competitive advantage.
2. Change in market positioning.
3. Growth, merger or acquisition.
4. Legal, political or economic changes.

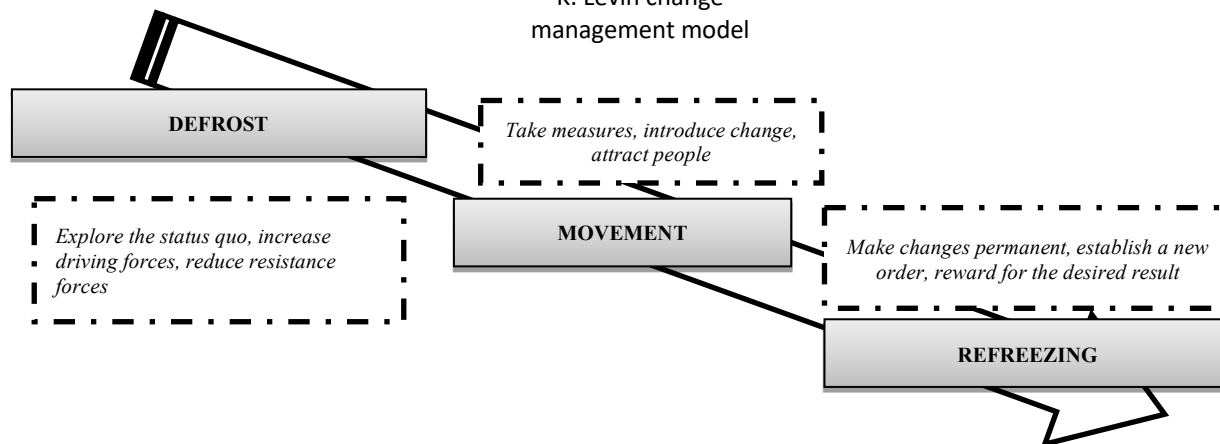
If there are motivated employees who understand the reasons for the changes and the way it is implemented, measures to implement the changes are most likely to be successful. However, detached, nervous, and opposing employees are a common problem [4]. People can resist change for many reasons, such as misunderstanding, lack of trust, low ability to adapt to change, disagreement with elections, or fear about the impact that change can have on them personally.

The digitalization leads to a change in the management paradigm in the future. According to the authors, such components of management as the technological, operational personnel ecosystems and the customers ecosystem should be subject to changes [19].

The platform approach should be based on the concept of change management in economic systems of various levels.

The American sociologist and psychologist K. Levin proposed a model that includes three stages of change, shown in Figure 1.

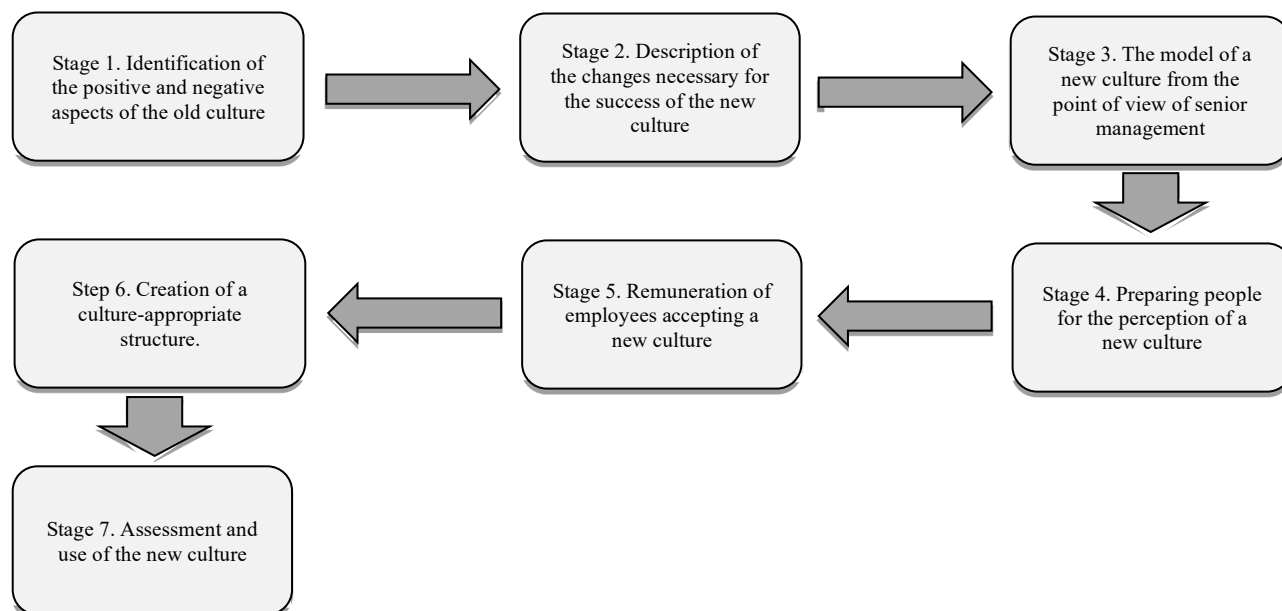
Figure 1
K. Levin change management model



To K. Levin also belongs the development of the “field of forces” theory, which is an analytical tool for determining the driving and constraining forces of change, their relative power and potential for change, which can be used to strengthen the driving forces.

By way of comparison let us consider the seven-step process (Figure 2) of the change developed by John Scherer.

Figure 2
Scherrer Change Management Process



Stage 1. Provides an objective method for determining the functionality of a practice that has been tested on a competitive marketplace.

Stage 2. Helps managers to identify the indicators that are most relevant to the new culture.

Stage 3. Allows to develop field behavioral models of leadership and to support cultural changes.

Stage 4. Able to facilitate the formation of the skills and behavior types necessary to support changes, and also helps in finding appropriate training methods.

Stage 5. Facilitates the selection of the most effective employee reward system in terms of a new culture.

Stage 6. Helps to form the organizational structures that are most consistent with the new culture.

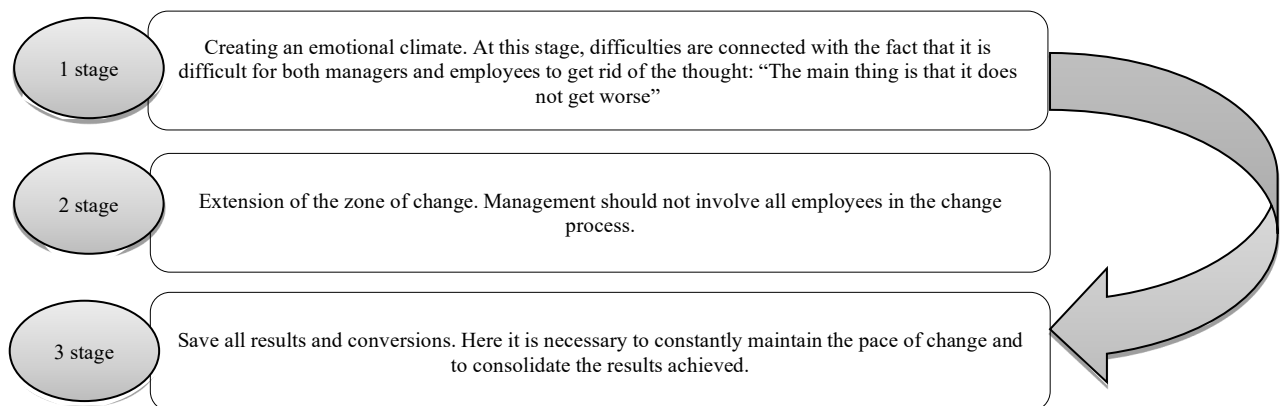
Stage 7. Offers current monitoring tools to determine the adequacy of the new culture to market conditions.

Taking care that employees do not resist change is vital for the well-being of employees and for the effectiveness of the organization [9, 14]. Therefore, it is necessary to competently manage organizational changes at the organizational level, as well as to pay due attention to employees at the individual level. All employees must feel their relevance and involvement in the process of change to make it successful.

It is essential to involve the employees from the very beginning in any change program, therefore full transparency is an integral part [15]. In order to take advantage of the changes over time, it is important to constantly monitor progress and adjust vision where necessary [10].

According to the authors, in order to introduce effective changes in any economic system, it is necessary to go through three following stages (Figure 3).

Figure 3
Highlighted changes stages
in the integrated entities



Changes in integrated formations come from above, while all top managers immerse in the future so that all employees have access to innovative opportunities depending on the functions performed and the tasks assigned [17].

In such a way, management of integrated entities based on a platform approach is a combination of intelligent physical components, objects and systems with built-in computing systems and data repositories connected between each other through local and global networks, which are one of the tools for implementing the concept of a smart factory in Industry 4.0.

The digital platform is a multilayer technology that allows to provide work, manage and automate connected devices in the space of the Internet of Things. It links hardware, which can be different, to the cloud using flexible connection parameters, advanced protection mechanisms, and computing power to process big data. For developers, the digital platform provides a set of ready-to-use tools that significantly speed up the application development for connected devices and solve the problem of scalability and compatibility between devices [13].

The beginning of the past decade was marked by the emergence of a new concept in the development of integrated entities - Industry 4.0. The emergence of this concept is sometimes even called the 4th Industrial Revolution. Industry 4.0 is the transformation of production, and nowadays of other areas of activity, in a unified environment consisting of people, data, services and systems [2].

Integrated entities management based on a platform approach allows industrial systems to be able to network and to interact with each other, which adds new capabilities in production: structural monitoring of the state of objects, various remote services and diagnostics, remote control and many others.

The core of the platform are basic services and a data factory, which participate in the formation of personal offers based on existing customer data [16].

The company forms the transition from the financial profile of the client to the social one, striving to accumulate the level of knowledge about the client up to 95%, thereby forming the best offer [5].

Based on all of the above, the platform approach can be used in different ways in the integrated entities management. Usually this is a kind of middleware when it comes to connecting remote devices to user applications and the interaction between the hardware and the user interface. It can also be a cloud platform, if you only need to improve the functioning of ready-made services and devices using cloud technologies [8]. If the digital platform is used as a software layer whose purpose is to be a mediator between the hardware and the user application, its primary tasks include collecting data from devices using different protocols and network topologies, configuring and monitoring devices, managing and updating device firmware [12].

Modern digital platforms go further and provide various improvements in the hardware and software levels. They add components for user interface and analytics, on-device data processing and cloud-based deployment [6].

Let us consider existing digital platforms.

1. **Amazon Web Services (AWS) IoT.** Amazon's recently announced digital platform having the following key features:

1. Device registration.
2. SDK (Software development kit).
3. Secure gateway between devices.

According to Amazon's description, this platform makes it much easier to work with sensors and their data for a variety of applications from automobiles and turbines to smart lighting. This was made possible through partnerships with hardware manufacturers such as Intel, Texas Instruments, Broadcom, Qualcomm. For the products of these companies, special starter packs have been created to facilitate development.

2. **Microsoft Azure IoT.** Recently Microsoft has been very active in the Internet of Things market. Microsoft Azure IoT —is one of the proposals in the line of cloud services.

The platform has the following features:

- 1) Device shadowing.
- 2) Built-in engine for creating rules.
- 3) Device registration.
- 4) Convenient information monitoring.

Also, for processing huge amounts of data generated from sensors, Azure IoT offers Azure Stream Analytics.

3. Google Cloud Platform. Google offers an end-to-end approach. This means that the manufacturer takes upon itself the software and hardware, as well as the installation of the necessary equipment. Such a decision is objectively considered one of the best on the market, however, due to its cost it is not applicable for educational purposes. To work with big data, Google IoT Core is used. Additional analytics can be obtained in the Google's Big Query and Cloud Data Studio utilities.

4. ThingWorx IoT Platform. Thingsworx is a digital platform designed primarily for commercial development. It has the following features:

- 1) Easy connection of devices to the platform
- 2) Opportunity for multiple developers to work simultaneously.
- 3) Built-in utilities supporting machine learning and data analysis.

5. Oracle offers real-time analysis of big data from devices on the Internet of Things, the creation of virtual devices, high speed data exchange, as well as an analytics platform for IoT applications. The advantages of this platform are listed below:

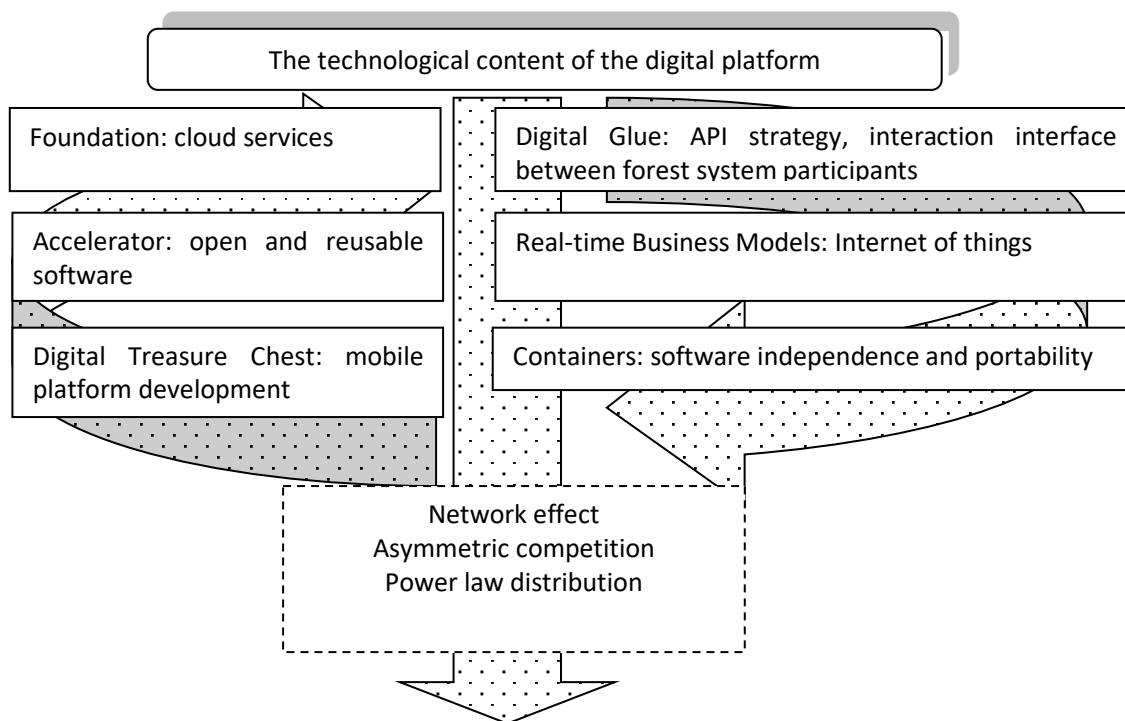
- 1) Ample opportunities for real-time analysis.
- 2) Speed work.
- 3) Safety.
- 4) End-to-end approach.

The technological content of a digital platform for change management in integrated entities is shown in Figure 4.

The adaptability of a digital platform provides the opportunity to optimize the business processes in the most complex change management models. The task of an integrated entity is to fit properly into this reality of the sharing economy and its future.

The role of the platform approach is that it presupposes the formation of a change management system as a communication barrier-free environment characterized by low transaction costs and a high level of coherence of integrated entity participants, which contribute to the development and adoption of comprehensive, well-grounded and timely management decisions on the transformation of business entities.

Figure 4
Technological content of a digital platform
for change management in integrated entities



The practical significance of the platform approach is in the possibility to create an effective, adaptive and high-tech change management system through the use of digital technologies, the implementation of new management functions, the use of a flexible organizational structure, as well as the consolidation of the potential of internal and external actors of integrated entity in the process of changes development and implementation.

4. Conclusions

The current changes in the market economy and the dynamic establishment of the digital environment make the problems of the complex transformation of integrated entities as well as the creation of tools for managing their changes a crucial issue of the economic science.

As part of the solution of the designated tasks, the authors proposed the use of a platform approach in the change management system of integrated entities.

The research problem lies in the fact that the majority of integrated entities leaders ignore the process of change management when they use managerial mechanisms that can radically transform their work and their subordinates.

The digital platform significantly reduces integration errors and risks because it can offer consistent integration blueprints and templates, standardized interfaces, a unified and predictable architecture and behavior logic.

In the modern world, stagnation is destructive for a company, and has irreversible consequences. Therefore, it is very important to understand what a change is and be able to correctly and easily convey the idea, purpose and reasons for these changes for integrated entities in the development of digital platforms. For leadership, in turn, it is very important to make changes in such a way that the change allows use of the resources of digital platforms for integrated entities more efficiently.

The platform approach increases the quality and the speed of making management decisions, as well as provides flexibility and adaptability of the change management system in integrated entity, it also allows to quickly exclude, add and change its elements with no loss of integrity, thereby optimizing the content and order of functions and processes performance for transformation economic system.

Further research areas can be focused on the development of indicator systems for monitoring, analyzing and controlling the effectiveness of measures for managing changes in integrated entities based on a platform approach.

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