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Cognitive Model of Library Management in Crisis Conditions

Objective. The article considers library management as a complex socio-communication system in conditions of uncertainty of the external environment. The essence and methods of cognitive library management as an effective means of overcoming instability and global challenges of the XXI century are substantiated. **Methods.** With the help of information analysis, the peculiarities of the cognitive approach to library management in a crisis situation were defined. **Results.** A conclusion is made regarding the effectiveness of cognitive analysis, in particular PEST and SWOT analysis, cognitive structuring technologies. Cognitive analysis is considered as a powerful tool for researching a certain state of the library in an unstable and poorly structured environment. The application of the cognitive modeling method was used to identify the components of library management in conditions of uncertainty. **Conclusions.** Attention is focused on the need to use cognitive modeling, which contributes to a better understanding of the problem situation, detection of contradictions and qualitative analysis of the library as a system. A cognitive model of library management based on knowledge application technology in the management and decision-making process and effective communication interaction is proposed.

Keywords: library science; management; library; cognitive model; cognitive management; communication interaction

Introduction

The national crisis that engulfed Ukraine in 2022 affected every citizen, every institution. The war affected all areas of the country's activities, including the library and information industry. Rapid and negative events for our country covered all processes of information provision, readers and simply citizens of the country in one moment became objects of both physical and information wars. The life of not only the country, but also every institution, every person who ensures its functioning has changed.

Libraries, as the leading socio-communicative institutions of society, fully felt that the war drastically changes the conditions not only of functioning, but also of survival to a certain extent. Managers and employees of libraries found themselves in the conditions of a rapidly changing environment, which required instant decision-making, quick response dynamics, balanced reactions to the events taking place. The scale and destructive force of this war affected every library, every reader and citizen, changed the style and methods of management of library and information institutions in conditions of great uncertainty.

This article highlights the cognitive paradigm of library management as a result of the diversification of forms and methods of management in conditions of crisis, the growth of the factor of situationalness and external instability. The purpose of the article is to justify the essence and methods of cognitive management of the library as a document and communication institution of society in the conditions of global challenges.

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Literature Review

The vision of the unfolding of the situation shows that the reaction of the scientific community to war events was for a certain time connected with the solution of the urgent task of survival of both every person and library institutions as a whole. Nevertheless, the invasion took many of us by surprise, because "most of us did not realize the potential scale and destructive power of this war" (Stanchyshyn, 2022). From the moment of the full-scale invasion of the Russian Federation to the territory of independent Ukraine, the readiness of everyone to defend their country became crucial. From the very first days of the Russian-Ukrainian war, domestic libraries, using all the knowledge accumulated during the previous eight years of Russian aggression in the east of Ukraine, help the armed forces of Ukraine to get closer to victory and civilians to withstand in this struggle. Specialists in the library field adjust their professional activities in the current conditions, trying to understand the events of today and build models of behavior for the future.

Analysis of the latest research and publications allows us to highlight a number of works in which the issue of library management in crisis conditions is considered from different angles. Thus, in the professional librarian discourse, N. Kropocheva (2023) considered and characterized the activity of the network of educational libraries in the conditions of martial law. The author emphasizes the idea of civic and patriotic orientation of the consolidated information resources of the network of educational libraries of the Ministry of Education and Science of Ukraine and the National Academy of Educational Sciences of Ukraine. The work describes the types of information products posted on the websites of library institutions of educational institutions, it is noted that the information resources produced by libraries in wartime conditions differ in genres, broadcasting channels, the principle of interaction and targeting. Of the similar topic are the scientific works of T. Vylehzhanina (2022), N. Vovk (2022), which highlight the work of library workers on the information and cultural front, emphasizing the moral, information and psychological support of the population using libraries accounts in social networks.

The first works generalizing experience of survival, stability and adaptation of Ukrainian libraries to wartime conditions appeared in the scientific discourse (Kolesnykova, 2023). The scientist thoroughly studied the issue of adaptation of library teams of Ukrainian higher education institutions working under martial law, identified the main vectors of library activity, including distance, openness, unification and improvement of one whole information space. The article effectively illustrates precisely the cognitive model of management of Ukrainian libraries in the context of Russian military aggression.

M. Onyshchuk (2022) provides a thorough prognostic and analytical study of foreign mass media reports regarding the prerequisites and course of events of Russia's armed aggression against Ukraine. The author justifies in the pages of a specialized scientific periodical that sooner or later Russia will fall from its own senseless thirst for domination in conditions when the catastrophe of the Russian economy and a devastating defeat in Putin's reckless attempt are not that far off (Onyshchuk, 2022).

It can be predicted that the number of publications on the role of the library and the management of information and knowledge in times of crisis will increase. According to the purpose of our research, it can be stated that the issue of managing the library and the library and information environment in the conditions of crisis is solved only at the applied level and remains important and requires scientific justification.

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Methods

Within the framework of the current study, an information analysis was carried out, which made it possible to trace the trend of changing paradigms of library management as a complex socio-communicative institution: from the paradigm of production management, through the dominance of paradigms of innovative and communication management to the model of cognitive management. The paradigm of cognitive management is determined by the trends of the general social development of the information environment from the information society to the knowledge society. Its emergence has been accelerated by Russia's large-scale military aggression against Ukraine and the global challenges of the XXI century, which require quick decision-making in a situation of external uncertainty. With the help of information analysis, the peculiarities of the cognitive approach to library management in a crisis situation were also clarified. The application of the cognitive modeling method was used to identify the components of library management in conditions of uncertainty.

Results and Discussion

Wartime conditions require the mastery and use of a special model of knowledge-based management. Its specificity is preparation and decision-making in conditions of high uncertainty of the external environment. The cognitive model of library management is based on the provisions of the situational approach as an effective management concept, the foundations of which were developed by Fred Fiedler (effective leadership model), Paul Hersey and Kenneth Blanchard (situational leadership model). According to the situational approach, the general process of managing an institution is the same, but the specific techniques that a director must use to effectively achieve the institution's goal can vary significantly.

The methodology of the situational approach in library management becomes more relevant with the emergence of the concept of cognitive management. This paradigm, the formation of which began in the 1990s, is now widespread. Internal resources, psychological characteristics and professional competences of managerial staff and library specialists, which are defined as the intellectual potential of an institution, are considered as fundamental sources of competitive advantages of a library. It is this parameter in conditions of uncertainty that determines the effectiveness of making certain management decisions.

The level of cognitive potential of the management staff of the library determines the quality of structuring of information that comes from the external environment, allows analysis and modeling of situations. An example of a cognitive analysis is PEST analysis (politics, economy, society, technology) and a SWOT analysis (an analysis of the strengths and weaknesses of an institution). They are the most powerful tools for studying an unstable and weakly structured environment. Compiling knowledge maps is essential for creating an effective knowledge management system of the organization, because "such maps provide an opportunity to combine knowledge components and get a general idea of structures, employees who have certain knowledge; about the relationship between different categories of knowledge" (Fedulova, 2007).

N. Semeniuk (2023) provides illustrative examples of the use of SWOT analysis as a method of assessing the organization's strengths and weaknesses, opportunities, and internal threats. The author singles out the questions that need an answer, visually presented in the form of a SWOT matrix (Fig. 1):
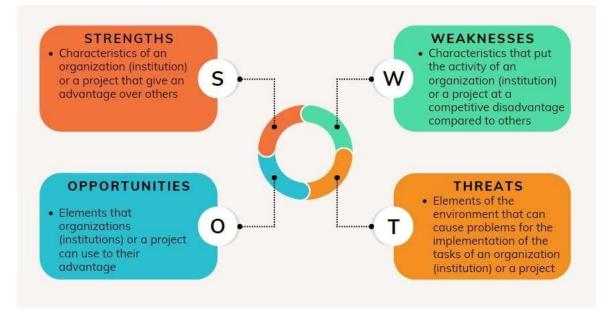
Fig. 1. SWOT Matrix

Strengths: characteristics of an organization (institution) or a project that give an advantage over others.

Weaknesses: characteristics that put the activity of an organization (institution) or a project at a competitive disadvantage compared to others.

Opportunities: elements that organizations (institutions) or a project can use to their advantage.

Threats: elements of the environment that can cause problems for the implementation of the tasks of an organization (institution) or a project (Semeniuk, 2023).

This methodology of strategic analysis of library development makes it possible to prevent the unfavorable development of a certain scenario. The cognitive model of library management involves solving tasks that are of a qualitative nature. In such cases, it is possible to use the technology of cognitive mapping. It involves clarification of the speculation regarding the functioning of the relevant object and is usually presented in the form of "if..., then...". The technology of cognitive structuring can be applied at all levels of library management: in the process of decision-making, generation, storage and use of knowledge by individual specialists. This knowledge is shared during multi-level communication processes, and as a result, institutional knowledge is created, which the institution possesses.

The cognitive model of library management is based on modern technologies of applying knowledge in the process of management and decision-making, which in management theory is defined as cognitive work. The phenomenon of cognitive work (Wissensarbeit, knowledge work) within the document and information sphere has not been sufficiently investigated. Among the empirical studies that provide additional material for substantiating the named phenomenon as an important component of the functioning of libraries in the digital space, an important research project of the University of Vienna and the Institute for the Retraining of Managerial Stuff (Austria) dedicated to the study of the interests and needs of people whose professional activities are related to knowledge management. According to the project participants A. Lasofsky-Blahut, M. Kofranek and S. Pernicka, there is no unified definition of the concept of "cognitive work" so far, however, three main features can be distinguished that differentiate cognitive work from other forms of activity:

- a set of various socially significant information, which in most cases requires a combination of professional education and professional qualification improvement;

- creativity and reflexivity of the nature of work, its result is often the production of new knowledge;

- employed ones in this field seek to find unconventional solutions to known tasks or address unsolved problems; a prerequisite for success is a high level of competence when solving problems in conditions of increased complexity (Lasofsky-Blahut, Kofranek, & Pernicka, 2007).

Recognition of the cognitive nature of library work requires managers of all levels to make differentiated use of personnel management tools, where the assessment of the level of knowledge becomes a component of the assessment of the contribution of a certain employee. Managers should know what new knowledge and skills certain employees have acquired. It is this information that forms the basis of working with personnel and planning their career growth. Cognitive work requires new improved conditions (which is the sphere of labor law regulation) for its implementation. The task of library managers is, on the one hand, to give employees more freedom, and on the other hand, to involve them into the main processes related to the functioning of the library. In addition, it is in knowledge-rich areas the model of trust in the level of competence of employees, their creativity, and labor discipline, can be tested.

An important component of the cognitive model of library management is its ability to form and adjust the communication system, use intellectual assets, and manage knowledge as a resource of value. The communication component in the cognitive management system is implemented at all levels of the library: individual generation, obtaining and extraction, preservation, transfer of knowledge, its distribution within the organization, assimilation, expert activity, communication, exchange of knowledge with employees. Another level of cognitive management is the search for options for cooperation and relationship with information consumers, the creation of horizontal and vertical channels of information transmission, the involvement of readers in the development and improvement of the quality of information products and services.

The communicative component of the concept of cognitive management is also found in:

• formation of individual competence of employees and managers of all management levels;

• interaction between two different types of intellectual capital (individual competence and the internal structure of the institution; individual competence and the external structure of the institution);

• formation of corporate culture.

Two types of cognitive management effectiveness analysis can be distinguished: comparison of goals and tasks with results and comparison of resources with the obtained effect. Thus, the analysis of the effectiveness of cognitive management consists in the comparison of its goals and tasks with the resources necessary for its implementation, as well as in the comparison of the obtained results and the achieved effect.

Conclusions

Cognitive management should be considered as an integral component of library development management, which is a leading direction of strategic management. The essence of cognitive management of the library consists in making management decisions based on one's own experience and on organized and verified knowledge about the library as an object of management. Such management is a model that integrates activities related to knowledge formation, codification, dissemination and use, as well as communication development and training (Fig. 2).
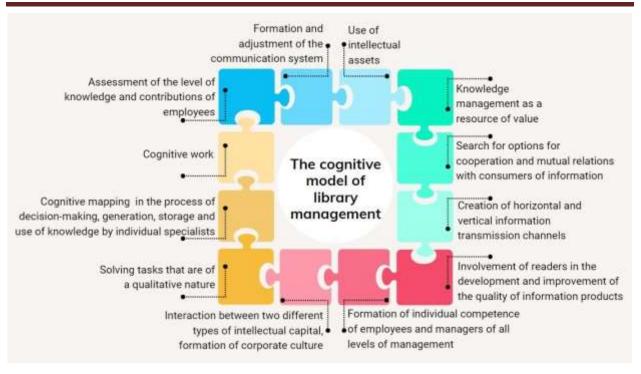
Fig. 2. Cognitive Model of Library Management

The technology of cognitive management has certain characteristic properties, among which one can single out novelty, efficiency, scientific capacity and situationality. The strategic ultimate goal of applying the cognitive model of library management is to ensure the stability of its functioning under conditions of uncertainty of the external and internal environment.

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Когнітивна модель управління бібліотекою в умовах кризи

Мета. У статті розглядається управління бібліотекою як складною соціокомунікаційною системою в умовах невизначеності зовнішнього середовища. Обґрунтовується сутність і методи когнітивного управління бібліотекою як дієвого засобу подолання нестабільності й глобальних викликів XXI століття. **Методика**. За допомогою інформаційного аналізу з'ясовано особливості когнітивного підходу до управління бібліотекою в ситуації кризи. **Результати.** Зроблено висновок щодо ефективності когнітивного аналізу, зокрема PEST і SWOT-аналізу, технологій когнітивної структуризації. Когнітивний аналіз розглядається як потужний інструмент досліджень певного стану бібліотеки в умовах нестабільного і слабоструктурованого середовища. Застосування методу когнітивного моделювання було використано для виявлення складових управління бібліотекою в умовах невизначеності. **Висновки**. Акцентовано увагу на необхідності використання когнітивного моделювання, яке сприяє кращому розумінню проблемної ситуації, виявленню протиріч і якісному аналізу бібліотеки як системи. Запропонована когнітивна модель управління бібліотекою, що базується на технології застосування знань в процесі управління та прийняття рішень та ефективній комунікаційній взаємодії.

Ключові слова: бібліотекознавство; управління; бібліотека; когнітивна модель; когнітивне управління; комунікаційна взаємодія