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Enterprise management in VUCA conditions

Abstract. Today's world, which is characterised by variability, uncertainty, complexity and ambiguity (VUCA), poses a problem associated with a shift in the business administration paradigm. Therefore, the purpose of this paper is to define the features and develop a conceptual model of business administration in the VUCA world. The article defines the components of the VUCA world and describes their impact on business administration. The research was conducted from September to November 2017 based on a sample of 90 Ukrainian enterprises in Kharkiv city with the involvement of managers of 34 manufacturing, 36 trade and 20 transport enterprises to determine factors affecting the efficiency of management under the conditions of variability, uncertainty, complexity and ambiguity. The authors of the article have developed a conceptual model of business administration in the VUCA world based on the identified factors and characteristics of the modern world. The model includes objectives of entrepreneurial activity from the perspective of marketing approaches and stakeholders' interests with regard to environmental factors, as well as methods and management tools that ensure competitive growth.

Keywords: Management; Company; VUCA; Management Approaches; Adaptability

JEL Classification: D21; D80; L20; M11; M19

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Управління підприємствами в умовах VUCA світу

Анотація. У статті надано характеристику складових VUCA світу та розглянуто їх вплив на управління підприємствами. Визначено фактори, що впливають на ефективність управління підприємствами в сучасних умовах з точки зору менеджерів. Запропоновано концептуальну модель управління підприємствами в умовах VUCA світу. Обґрунтовано використання управлінських підходів, які сприяють підвищенню конкурентоспроможності підприємств в сучасних умовах.

Ключові слова: управління; підприємство; VUCA; управлінські підходи; адаптивність.

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Управление предприятиями в условиях VUCA мира

Аннотация. В статье дана характеристика составляющих VUCA мира и рассмотрено их влияние на управление предприятиями. Определены факторы, влияющие на эффективность управления предприятиями в современных условиях с точки зрения менеджеров. Предложена концептуальная модель управления предприятиями в условиях VUCA мира. Обосновано использование управленческих подходов, способствующих повышению конкурентоспособности предприятий в современных условиях.

Ключевые слова: управление; предприятие; VUCA; управленческие подходы; адаптивность.

1. Introduction

The momentum of current economic processes, global competition and globalisation, informatisation of society and swift technological changes call for new approaches to business systems management, including enterprise management. Effective management in the face of constant and swift changes is a key tool in promoting enterprise competitiveness and affects business quality standards. To make and implement effective managerial decisions, persons who make relevant decisions should consider volatility, uncertainty, complexity and ambiguity, which are the realities of today's world. This poses a problem relating to a shift in the paradigm of management, which should consider the above-mentioned realities.

2. Brief Literature Review

Scholars, such as B. Johansen (2007) [1], N. Bennett and J. Lemoine (2014) [2], S. Abidi and Joshi (2015) [3], J. Bartscht (2015) [4], P. Hollingworth (2016) [5] and others, focus their works on problems of enterprise management and the behaviour of business systems in VUCA conditions. Meanwhile, changes in management under the conditions of the VUCA world are reflected in the works by Ch.-E. Bouee (2014) [6] and O. Mack (2016) [7].

In this context, leadership behaviour and the ability of leaders to ensure prosperity and to succeed has been studied by R. Elkington (2017) [8], E. Gilman (2017) [9], A. Rodriguez (2017) [10], J. Bushe and R. Marshak (2016) [11] and others.

Issues related to personnel development and training were examined by E. Betof (2014) [12], D. Russell (2017) [13], etc. A. Saleh and R. Watson (2017) [14] have developed a business concept based on tackling each element of VUCA, as well as integrating quality management and risk management.

V. Garrow (2015) [15] researches changes in the organisation, while R. Raghuramapatrani and Sh. Kosuri (2017) [16] consider ways to achieve success by small and big businesses.

Yet, despite a number of theoretical and practical developments in the field of VUCA, problems relating to enterprise management under the conditions of volatility, uncertainty, complexity and ambiguity require further research.

3. The purpose of the article is to determine the features of enterprise management in VUCA conditions in the context of the evolution of modern technologies and develop a conceptual model of management under such circumstances.

4. Results

In order to determine the necessary adjustments to the management model in VUCA conditions, let us define the features of the VUCA world as well as peculiarities of management in such conditions.

High macroeconomic volatility, rapid technological change and changes in the business environment, as well as the difference in the rate of the relevant change, constitute the key attributes of today's world. Volatility is associated with velocity and turbulence. J. Kotler and A. Caslione (2009) [17] explain the latter from the standpoint of turbulence in nature, where it is characterised by aggressive and unsustainable behaviour. In this context, it is necessary to monitor rapid changes in different business areas which boost business opportunities. This means that a reduction in the response time to changes is the only way for enterprises to survive in VUCA conditions.

Uncertainty, defined as a state of the system in relation to its operating conditions is reflected in scientific works by W. Walker, P. Harremoes and J. Rotmans (2003) [18]. They conclude that uncertainty is a gap between the expected state and the actual development of the system of economic

organisation. R. Wellborn and V. Casten (2004) [19] note that it is erroneous to assume that one can predict future with a reasonable probability in a period of uncertainty. Yet, this does not mean that there exists the so called absolute uncertainty of the ongoing processes, since globally there are steady trends displaying progress in science and technology, human development, changes in the economic environment, etc. Effective measuring and monitoring of such trends makes it possible to be competitive in today's world, provided there is flexibility in business and preparedness to cope with rapid changes.

E. Beinhocker (2006) [20] links the complexity of the modern world with the development of science and technologies, the increasing complexity of relations, defining it as «complexity economics» which is characterised by the fact that there is no division into micro- or macroeconomics, and the behaviour of a system occurs due to a variety of relations at the micro-level. It is open to the external environment and is unstable in view of constant changes. Complexity economics includes a number of aspects relating to behavioural economics, the network theory, simulation modelling and the chaos theory. According to the theory of complex systems, system behaviour occurs from interactions between economic agents, therefore simulating behaviours at an individual level and application of complex decision-making rules (both rational and irrational) under the conditions of informational incompleteness are considered to be important for a complex system.

The modern world is a world of economic, social and political ambiguity. On the one hand, the relevant situations and events may have a destructive impact. On the other hand, they may serve as a stimulus for further change and development. Ambiguity requires consideration of a significant number of possible scenarios relating to different situations and events and their likely consequences because the interpretation of the same factors involves evaluation of available alternatives.

To determine factors that impact the effectiveness of enterprise management in today's environment, as well as those that are to be altered in the system of management, we conducted an expert survey among managers of 90 Ukrainian enterprises representing different activity areas including trade (34 representatives), production (36 representatives) and transport (20 representatives). The survey was conducted in the period of September-November 2017 in Kharkiv city. In order to assess the significance of factors, we used a numerical form of the semantic differential, based on a 7-point scale of the degree of consistency of each of the impact parameters relevant to management effectiveness. The results of the survey are shown in Table 1, represented by 15 most significant factors out of 30 factors that the respondents were to assess.

The results of the survey show that the management model and the qualification level of management personnel are the most significant factors impacting management effectiveness. This means that enterprise competitiveness depends on the progressiveness of the management model and the ability of management personnel to choose an appropriate model. Flexibility in management decision-making, which is a response to changes in the external environment, is impossible without sufficient information support. A quick response and flexibility in decision-making make it possible for enterprises to adapt to VUCA conditions and provides a certain level of innovation.

Innovativeness requires proactive actions associated with qualification standards, training, personnel motivation and preparedness to change. Furthermore, high volatility and

innovativeness need flexible organisational structures to perform different tasks. This, in turn, requires personnel to be able to work as a team in order to achieve results.

The results of the research prove that management effectiveness depends on a possibility to implement modern marketing strategies. This is due to the essence of marketing activity, which is related to market and consumer behaviour. If consumer behaviour changes in view of new opportunities which emerge owing to progress in science and technology, then it is natural to suppose that there occur changes in marketing concepts, aimed at meeting consumer needs.

Consideration of stakeholders' interests and development of logistics are also important in ensuring managerial effectiveness. The factors mentioned above promote social responsibility in business and give a clear idea that effectiveness of enterprise performance results from well-planned logistics processes, including feedback from stakeholders. To provide and maintain sustainable development and functioning in VUCA conditions, enterprises should work out the modalities of relevant strategies, which will be appropriate in a particular situation and cultivate corporate values that will motivate the personnel and promote teamwork.

Taking into consideration the results of the research, let us define a conceptual model for enterprise management in VUCA conditions (Figure 1).

The model includes the purpose of functioning of an enterprise, factors impacting its external environment, approaches to managing the enterprise under present conditions as well as appropriate techniques and tools for their implementation. The purpose correlates with both marketing and stakeholder approaches based on meeting consumer needs and taking into consideration of stakeholders' interests, which leads to the development of the enterprise.

In terms of enterprise management, one can define several essential elements that include the system approach, under which an enterprise is considered to be a business system with attributes such as integrity, which suggests that

Tab. 1: Factors impacting management effectiveness in VUCA conditions

Factors	Point average
Management model adopted by the enterprise	6.8
Qualification level of management personnel	6.8
Innovation rate	6.7
Information support	6.7
Responsiveness to change	6.7
Flexibility in management decision-making	6.7
Adaptiveness of the enterprise to the external environment	6.7
Proactive actions	6.6
Flexible organisational structure of the enterprise	6.6
Personnel training and motivation	6.6
Application of modern marketing concepts	6.6
Logistics	6.5
Stakeholder relationships	6.5
Strategy multivariance	6.4
Corporate values	6.4

Source: Compiled by the authors

each of the elements of the business system contributes to meeting consumer needs in quality goods and services; organisation resulting in a structure which promotes the effective functioning of the system; functionality which manifests certain features of the business system with regard to its interaction with the external environment when performing its main functions and achieving the goal; emergence which means that the whole business system has properties that its parts do not have; resilience which reflects the ability to preserve balance in the development process under the impact of factors relating to the external environment; adaptability which makes it possible for the business system to change its behaviour or structure in order to maintain, enhance or modify the existing features in the external environment.

Depending on the situation which results from the impact of the relevant managerial action, the business system continues on the trajectory which is viewed to be the most effective in terms of specified criteria. It is impacted by both endogenous and exogenous factors affecting the trajectory of the business system, which requires correction in terms of decision making. The motion of the business system is aimed at the final result (achievement of the goal) of its functioning (Figure 2).

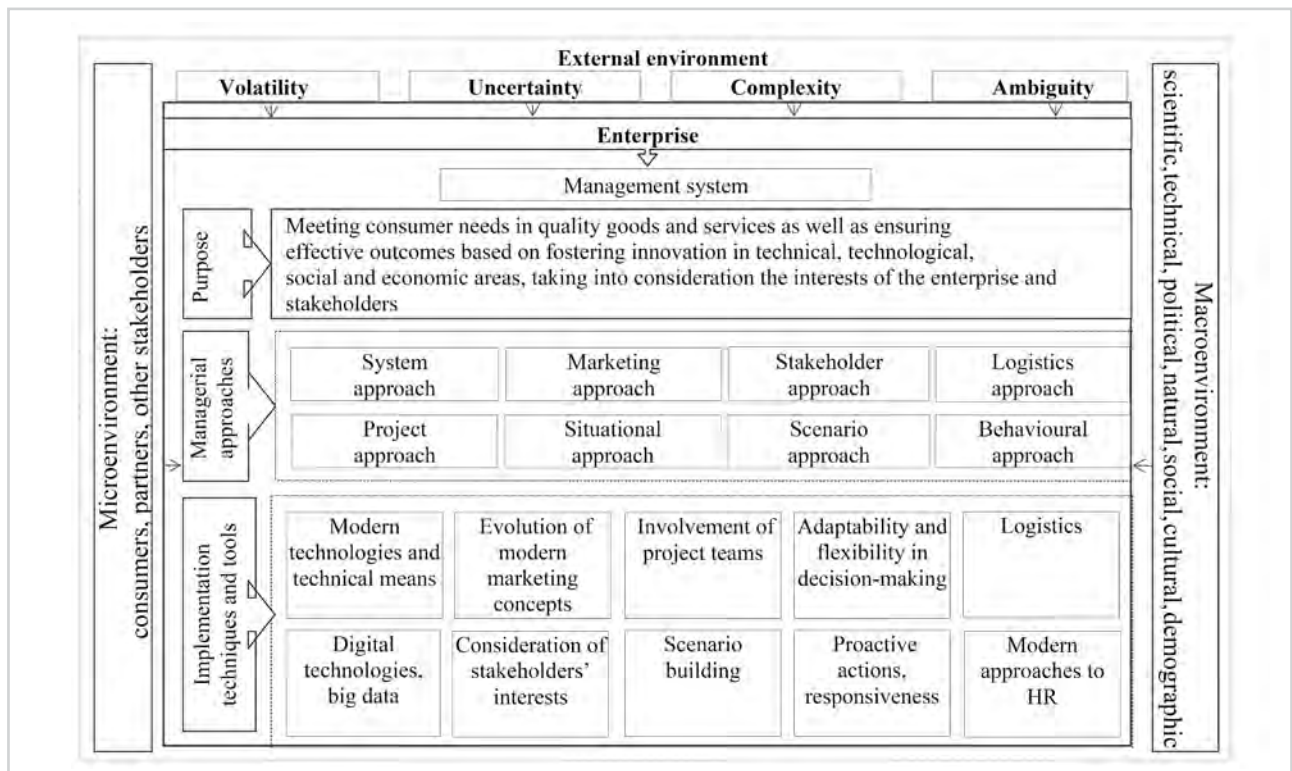


Fig. 1: Conceptual model for enterprise management in VUCA conditions

Source: Compiled by the authors based on [7; 9; 14-17; 20-21]

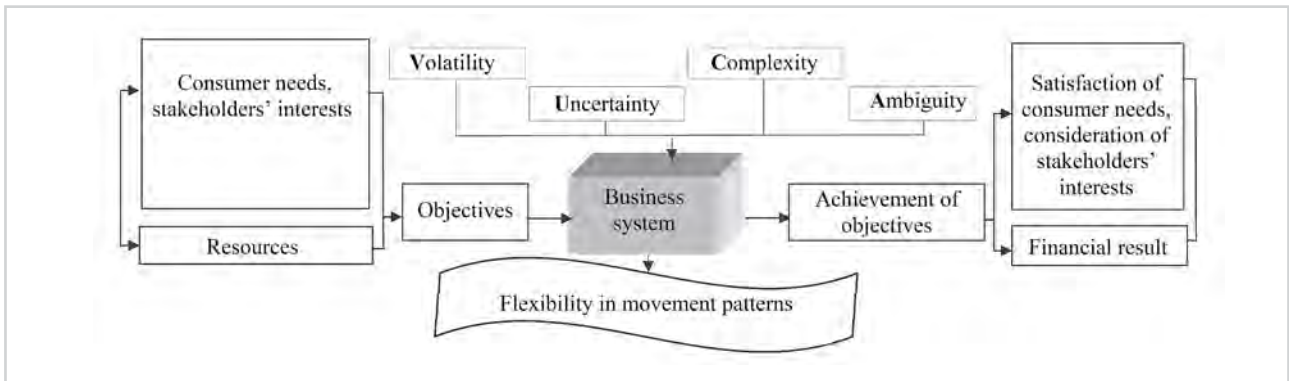


Fig. 2: **Functioning of the enterprise as a business system in VUCA conditions**

Source: Compiled by the authors based on [2-4; 9; 21]

The purpose of functioning of the enterprise as a business system is based on the marketing approach, which, in VUCA conditions, requires modern marketing concepts relevant to changes in social interaction. Today, the most important marketing concepts to be implemented are relationship marketing, trust-based marketing and stakeholder marketing, which have their own specific features that will allow enterprises to adapt to the current conditions, basing on the preferences which they will receive as a result of trust relationships.

The application of the stakeholder theory, which is being developed in the framework of value-based management by taking into consideration stakeholders' interests, becomes relevant in terms of the development of the network economy. Also, it is due to the need to look at wider issues regarding satisfaction of consumer needs in view of the fact that stakeholders impact enterprises' functioning and competitiveness and focus on business responsibility and corporate values.

The functioning of a business system under the conditions of volatility, uncertainty, complexity and ambiguity requires timely transformations of the management system, which becomes possible due to enterprises' adequate system of monitoring of the external environment that helps enterprises to detect and assess threats. This means that there is a need to pick up signals directly from the environment and respond to them as soon as possible. Those enterprises that cannot improve response time to changes may cease to exist in the future.

Responsiveness to changes requires high flexibility of organisational structures and processes, which can be achieved due to the use of modern approaches to organisational activities (logistics processes) and creation of mobile organisational structures (project teams).

Logistics processes are part of the logistics approach based on the concept showing that management influence is transmitted from the unified logistics system of management to sequential activities occurring when satisfying consumer needs and interacting with stakeholders. The logistics approach to enterprise management system makes it possible to converge stakeholders' interests due to achieving the most effective use of available resources in the functioning of enterprises and meeting their objectives. Also, it helps enterprises to optimise the processes of managing material, financial, labour and information flows with minimum resources and time, as well as to react flexibly to changes and challenges.

It is possible to improve responsiveness to changes, to coordinate actions as well as to enhance both the use of resources and the functioning of the enterprise, due to the application of the project approach, which is viewed as the most progressive in terms of implementing targeted actions under the conditions of volatility, uncertainty, complexity and ambiguity. It changes the business model by considering it as a set of interrelated projects which have well-defined goals and objectives, resources, time limits and results-based outcomes. Creating teams

to address particular challenges related to the implementation of a particular project is the basis of the project approach.

This very approach adequately reflects another feature of contemporary business when flexible behaviour becomes a strategic competitive advantage in the changing environment. In such conditions, a deviation from stiff organisational structures is inevitable.

Given the rapid change, uncertainty and complexity of situations and relationships, there occur problems associated with forecasting of further development of the business system in the long term based on happenings that took place in the past. Thus, the volatility of the environment requires a strategic vision and quick response to challenges of the external environment; uncertainty depends on understanding of the perspectives under different variants of the reference scenario; complexity needs an analysis of different factors of the external environment and their impact on the enterprise, while ambiguity demands clarity in defining different scenarios and their possible impacts. All this complicates forecasting and reduces the time the forecast covers. Therefore, management decision-making regarding the enterprise's development should be based on the situational and scenario approaches, which requires knowledge of the situation and elaboration of several possible development scenarios depending on changes in the external environment, which will make it possible for the enterprise to adapt to the conditions under which development is foreseen.

Adaptability includes parameters such as the pace of adaptation (every single business system should be optimal in terms of time and match the moment of transition to a new state), flexibility of the management system (the ability of the business system to deflect from its initial state to its optimal state with less effort), and the adaptation rate (a result that reflects a change in the level of the competitiveness of the business system occurring from its impacting factors). Trends in enterprises' adaptation to VUCA conditions are shown in Figure 3.

Yet, adaptability should not become a key feature of management. While impacting the enterprise, rapidness and innovativeness of the environment prompt the need for proactive actions. Proactive actions in management are based on innovation. Innovations act as a catalyst in breaking the sustainable functioning of the system in terms of bifurcations, due to which there occurs a switch to the chaotic regime, which, consequently, leads to self-organisation of the business system.

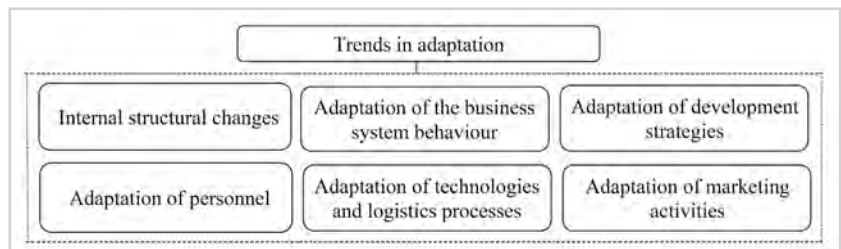


Fig. 3: **Trends in enterprises' adaptation to VUCA conditions**

Source: Compiled by the authors based on [3; 7; 9; 12]

Also, enterprise management in VUCA conditions requires the behavioural approach aimed at the promotion of personnel at the enterprise. Competencies needed in the new conditions affecting development are vastly different from those emphasised in the past. Therefore, it is important to elaborate and apply new methods and approaches to personnel management including:

- creativity and innovation methods based on the formation of motivational systems focused on the development of creative initiatives and proactive activities at all levels of management;
- methods focused on changes in the behaviour of managers at different enterprises based on strategic thinking, flexibility and quickness in management decision making, the ability to be credible and to communicate with the personnel and external stakeholders, including the ability to motivate the personnel to develop, achieve and feel comfortable under the conditions of constant changes;
- a focus on new qualities of the personnel, based on their critical thinking, openness to innovation, ability to adapt to changes, teamwork, as well as their capacity for constant learning.

The implementation of the management concept in VUCA conditions is possible due to the use of new technologies, modern communications, payment systems, blockchain technology and big data platforms.

Effective decision-making in management requires a wealth of information. Big data platforms, used by persons who make managerial decisions, cover volumes of information measured in petabytes and exabytes. Such information is collected from different sources, and it needs to be structured with the use of different analytical tools. The speed with which big data are accumulated and processed is an important factor which is to be synchronized with business processes and decision-making in management.

It is possible to enhance the effectiveness of managerial decisions and the speed with which they are made by using a wide range of possibilities given by blockchain technology. It serves to code any enterprise's transaction, condition it (for example, link it to shipment or any other logistics

processes) and make the conditions public with regard to stakeholders.

5. Conclusions

Basing on the conducted research, we have determined specific features of enterprise management in VUCA conditions. The authors of the article have developed a conceptual model of management which includes objectives based on the marketing and stakeholder approaches with an integrated use of the relevant approaches including system, situational, logistics, scenario, behavioural and project approaches, including methods and tools enabling enterprises to be competitive in the modern world.

Our research has shown that most managers of the enterprises understand the necessity to change the management model and the fact that realisation of this task strongly depends from the qualification of the executives. The managers have positive attitude for the implementation of the needed approaches and instruments. It is considered as a positive notion as far as flexibility of managerial decisions, fast reaction to changes, adaptability and proactivity enhance entrepreneurial effectiveness in the VUCA world. However, an obstacle for the modern concept of management introduction in Ukraine is low level of trust between enterprises and stakeholders, in particular, public institutions, as well as legislative constrains and slow reaction of state institutions to changes in the external environment.

Further research on the subject is possible in terms of the essence of each of the abovementioned approaches shifting the paradigm of management. The features of today's world in relation with globalisation, evolution of digital technologies in different areas of management, introduction of blockchain (including payments), logistics and the impact of VUCA on management processes require more detailed and profound consideration.

In our study, we wanted to point out that the digitization of the business administrative processes determine the inclusion of financial documentation for financial management tasks. One of the most important topics of this of a future research may be such a financial innovation process.

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