Competencies of top management, and the needs of 21st century enterprises in a VUCA world

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Abstract
Modern management styles are a response to the changing environment, chaos, turmoil and reality, including generational changes and the resulting different requirements and approaches to reality. Therefore, it is obvious that more and more is expected from leaders. In the countries of the European Union the necessity of changes is being noticed not only in the environment, but also in all areas of economic life, management, social relations and political conditions. More and more often we hear about the "new normal", about a chaotic and uncertain reality in which the old, known and liked solutions cannot be used. All this has to do with the new challenges and modern approaches emerging in organizations, which are forced by, among other things: the new space of state devices, diversity of generations, digitalization, globalization and technological acceleration. Every day we witness the appearance of a huge amount of new information and it is increasingly difficult to select those most important for the organization. Permanent change makes marketing strategies and the whole strategic planning process shaky. Practically, in the world of managers, the statement "the world has gone mad" or "the world is standing on its head" is no longer used, more often we hear "VUCA World".

Keywords: top management, strategic competence, professional competence, social competence, VUCA.

Introduction

VUCA is an acronym coined by military strategists and lecturers at the U.S. Army War College to describe an entirely new situation that arose in the 1990s after the end of the Cold War and the collapse of the Eastern Bloc. The world found itself in a new geopolitical situation, and it had to find its way in this change. The four basic words that make up the acronym also represent the characteristics of the world of the last years of the 20th century and the first decades of the 21st century in which we have come to live: "V"-Volatility (volatility, transience) "U"- Uncertainty, "C"- Complexity, "A"- Ambiguity.

Therefore, it is necessary to work out newer and newer models of dealing with human resources, staff recruitment, motivation for action and continuous development, constant analysis of economic results and modern approach to competencies, skills of top management with a special emphasis on the role of innovation. Innovation can be one of the important factors influencing the performance and development of organizations operating in a turbulent environment.

This study is intended to help understand the new economic and business reality and indicate the directions for the preparation of modern management staff to ensure effective and efficient functioning of enterprises in the new reality and indicate the importance of competencies in the system of managing the organization in a VUCA world. The faster the top management understands the new reality, the...
more the company will benefit from it. We should not wait until we gain full knowledge, because it may lead to the fulfillment of the managerial saying: if you want to be 100% sure about something, you will be 100% late.

**Material and methods**

A managerial position is always associated with organizing the work of others, ensuring good cooperation and striving to achieve the objectives. This is a big responsibility that directly affects the financial performance of the entire organization. Competencies of top management have become a subject of special attention in modern management and functioning in a constantly changing competitive market. In 1990, the results of a study by American authors were published: Ricks Toyne and Martinez on the state and directions of research in the field of business management, along with a list of the main research problems. On the first two places of the list were personnel management and enterprise culture. Since then, there has been a dynamic development of research on aspects of human resource management and an increase in interest in these issues among practitioners and consultants (Pocztowski A., 2003). Special attention has been paid to top management, which plays a huge role in the entire management process, creating trust on external and internal levels of the organization. Another aspect studied, are environmental risks, natural and ecological disasters, the risk of ecosystem collapse or extreme weather events, large-scale hacking attacks (cyber attacks) and growing corporate debt, which goes hand in hand with the lower valuation of their assets - these are the most important global risks for the coming years included in the Global Risks Report 2018. The way a manager plays his role in an organization depends on: personal characteristics, powers and skills held, leadership style, social status or tolerance. It is well known that skills are the most important in a manager’s job. R. L. Katz, a (1974) points out three types of managerial skills:

- technical - necessary to perform or understand tasks related to a particular organization, the ability to use tools, methods and technology in a particular specialty;
- socio-interpersonal - these are skills of cooperating with, understanding and motivating other people, both individuals and groups; they are needed to cooperate with other members of the organization and to lead a team;
- conceptual - these are skills of coordination and integration of all interests and activities of the organization; they allow for strategic thinking.

R.W. Grifin (2002) adds diagnostic and analytical skills to those mentioned above - enabling the manager to design the most appropriate response in a given situation. Managers with highly developed competencies ensure that the organization functions in an increasingly competitive environment. Of course, it is difficult to develop all competences, therefore each organization should identify the key ones in relation to the intended results, which should be achieved by its managers. From this follows another obvious fact, that the competitiveness of the company depends largely on the quality of competences of all employees, with particular emphasis on top management. One of the important factors is to recognize the need to invest in the development of human potential, to search for and use new techniques in management and to operate such elements of the human resources management process as motivation, evaluation and development of employees. Each organization is specific and is affected by many factors, each also has different organizational and financial capabilities. Often encountered barriers, including financial ones, limit implementation of many management processes and use of latest technologies in organization management processes. In all activities and situations of top management, we must remember that trust in the leader, his prudence, courage, maturity and high level of competence, as well as resistance to stress, sustainability and enthusiasm can be
strong arguments in the process of managing a team of employees in a situation of increased risk and perceived danger (Mazurek-Kucharska B., 2018). In every organization there is a need for purposeful and rational formation of competencies and employment (Oleksyn T., 2014). M. Armstrong points out that competence-based human resource management consists in applying the concept of competence and the results of competence analysis for informational purposes and with the intention of improving the processes of recruitment, selection and job design, management by results, development or remuneration of employees (Armstrong M., 2005). Competencies have become an object of special attention in modern management. Market-leading companies try to gain competitive advantage by identifying and developing their competencies (Rogozińska-Pawelczyk A., 2006). To be competent it is not enough to have a formal certificate, as it is in the case of confirming professional qualifications. What is important here is knowledge and experience, the ability to adapt to changing conditions leading to effective action (Konecki K.), in other words, an employee will be effective when he or she realizes (achieves) the set goals. It should be clearly emphasized that managerial competence is inextricably linked to the roles or functions of managers, which means that it changes over time, and these changes consist mainly in adding new items to the list of required competencies, which are the answer to the challenges of the present and the future. In the literature, managerial competencies are closely related to current models of the HR function or simply to trends dominating in management (Description of universal managerial competencies, Polish Agency for Enterprise Development, 2019).

People at the top level of large companies, spend a lot of their time on external contacts appreciating their importance and power. Looking at this, it should be said that managers at this level should have highly developed conceptual and social skills with essentially little technical skills. This is because the task of the strategic level is to adapt the organization to the demands of the environment and incorporate them into its goals, plans and ways of operating. This requires a broad knowledge, including knowledge of the environment and the conditions functioning in it. Knowledge-based competencies in terms of important company influences such as globalization, digitalization and social transformation are increasingly required when recruiting employees. Managers with highly developed competences (especially strategic ones) guarantee the functioning of the organization in conditions of increased competition, the globalization process of world economies, technological progress or scientific discoveries. The already mentioned article by M. Kacprzyk and A. Król presents a classification of managers and various competencies, mainly strategic ones:

1. competencies of knowledge managers. The strategic competencies of knowledge managers include creativity, innovation (Kacprzak M., Król A., Gralak K., 2014), the ability to take risks, systematic, continuous learning, rapid adaptation to changing environmental conditions, to create knowledge, leading teams or building a culture of knowledge in the organization,

2. competencies of e-managers. which are undoubtedly required to be leaders, to have thorough knowledge in the IT area and to act in a more expansive way based on a continuous learning process (Masłyk-Musiał, 2005). Harris J. and De Long (2001) developed a list of necessary competencies of e-managers in relation to six main areas:
   • rapid decision making, ability to analyze facts, identifying and solving business problems and opportunities,
   • building partnerships and the ability to make judgments, build relationships and negotiate efficiently,
   • knowledge of technology, ability to experiment, develop and integrate,
   • concentration on information, ability to filter, evaluate and prioritize it,
   • visioning, experimenting, anticipating, synthesizing and assessing, attracting and
retaining talent in the organization, ability to communicate, motivate, manage (Kacprzak M., Król A., Gralak K., 2012). Thus, an e-manager must be a flexible person, consistent in actions, expressive, devoid of bureaucratic tendencies, open to cooperation (Harris J, De Long D.W., 2001).

3. Competencies of global managers (euromanagers). Global manager must be able to move through the border of different cultures, lead people with different behavior, attitudes, views or beliefs. One of the most important tasks of a global manager is intercultural integration and overcoming cultural limitations. A global manager must first of all be aware of the fact that he cannot achieve anything on his own, so he must focus his actions on effective teamwork, have the ability to adapt to new conditions, think globally but act locally and be sensitive to cultural differences (Kuc B.R., 2008).

4. Competencies of tomorrow's managers who want to learn at all costs is a manager who must be characterized by inquisitiveness. In the conditions of change, it may turn out that the knowledge and experience possessed by him, due to rapid obsolescence, will become the proverbial ball and chain rather than the golden mean. The manager of tomorrow will have to take into account social, cultural, ecological and ethical relations, and demonstrate knowledge of cultures of other countries. He should also be more of a leader than a manager (Kacprzyk M., Król A., 2014).

The outlined top management competences are based on a number of high qualifications, knowledge, predispositions and abilities. Thus, they require management experience, decision-making ability, leadership skills, inquisitiveness, accuracy, goal orientation, mobility, negotiation and innovation skills, consistency as well as shrewdness, culture and tact. Criteria also include a high level of performance, skills and work ethic.

Strategic competence is of interest to practically the whole world. In the survey carried out by Andersen Consulting among managers from different countries, the following competences were recognized as key competences: global thinking, appreciation of cultural diversity, attention to customer satisfaction, teamwork skills, orientation towards partnership relations, creativity, innovation, independence (Walcowiak R., 2006). Innovation or the ability to take risks, are key elements in developing and improving the competitiveness of a company. Worldwide research has shown that the most effective managers are not trying to change the personality of their employees, but they skillfully recognize the potential of their teams and allow talent to develop (Kacprzak M., Król A., Gralak K., 2012).

Regardless of the existing diversity of positions, functions and managerial roles, among the strategic competencies we can distinguish as particularly important creativity, innovation, empathy, global thinking, ability of systematic learning - long life learning, drive for knowledge, searching and finding opportunities to educate and improve oneself and others, reconciling work with private life (work-life balance), managing knowledge, knowledge workers, talents, diversity, creating employee teams and organizational culture (knowledge culture), diagnosing, forecasting, taking risks, visioning, experimenting or curiosity about the world. It is highly probable that the above-mentioned competences will become desirable in the future not only with respect to the managerial staff but also with respect to the majority of knowledge workers.

Human capital is the basis for proper management of the company, the realization and quality of which decide about market success. Therefore, it is possible to put forward a thesis that the quality of functioning, future and market value of the enterprise is directly influenced by the strategic competences of the managerial staff, which is an element of human capital. Equally important in creating the market value of enterprises are the other elements of human capital, which are the competencies, intellect, personal predispositions and certificates held by those who perform management functions. The manner in which
these functions are performed affects the strategic management of the organization, a complex definition of which was developed as early as 1978 by Schendel D. and Hoffer CH. (1978). In their definition, they stated that strategic management is an activity that aims to ensure the proper implementation of the adopted objectives with the help of the designated policy and adopted strategy. Pointing out that the effectiveness of the tasks performed largely depends on the competence and individual resources possessed by employees. It should not be forgotten that it is also conditioned by other factors: organization of work, tools used in the performance of daily duties, information, motivation, health, market conditions of the strategic management level and always by professional competence. Professional qualifications and education are not very distinct and at the same time strongly interrelated. In the catalog of professional competences, not only formal competences, i.e. the level of education, specific qualifications, but also interpersonal and social skills and predispositions are relevant.

An employee who demonstrates a given competence must possess knowledge at a certain level, be able to apply it in professional practice, and be motivated to apply it. With the above assumptions combined, a diagram can be used to provide a definition of professional competence.

Whenever we define an occupational qualification, we must be aware that it represents a set of competencies based on a range of knowledge, specific skills and aptitudes to achieve the goals defined in the organization related to a specific specialty. Depending on the industry, the specified objectives both qualifications, knowledge and abilities will be different. Knowledge, which according to the presented documents is acquired in the official education system and which has been confirmed by an official document issued on the basis of applicable regulations, is information about the recognized level of education. These documents, however, only allow us to assume that the person who holds them has the relevant knowledge and, in the case of confirmation of work experience, that he or she also has the relevant skills. When the above documents are combined with additional professional references, a more complete picture of the employee candidate is formed.

Another competence that should be mentioned is the ability to deal effectively with social situations, which is probably the simplest explanation of what social competences are. Thanks to them, we are able to work in groups, establish contacts with other people or simply adapt to our environment. Social skills are sometimes understood as interpersonal skills, i.e. the ability to cope with stress, to be assertive and to self-present. They are conditioned by factors such as: personality traits, temperament, general, emotional and social intelligence.

According to the Recommendation of the European Parliament and of the Council No. 2006/962/EC of 18 December 2006 on key competences (common, essential for all), in the process of lifelong learning, social competences are personal, interpersonal, intercultural and there are other forms of behaviour that prepare individuals for effective and constructive participation in social and working life. It is related to personal and social well-being. It is important to understand the rules of conduct and customs in the various societies and environments in which individuals function.

Figure 1. Definition of professional competence

Source: Own elaboration based on J. Abramowicz, A. Charyton; Competence model of qualification standards for OWES employees together with the method of their validation, Warsaw 2019.
Social competence at the level of attitudes is associated with openness to cooperation, externalization of moral norms, assertiveness, acceptance and respect for other people, and readiness to overcome prejudices (Koszewska K., 2014). Equally important is an awareness of basic concepts of individuals, groups, professional organizations, gender equality and non-discrimination, society, and culture. It is necessary to understand the multicultural and socio-economic dimensions of European societies, as well as the interplay of national cultural identity and European identity. Essential skills for this competence include the ability to communicate constructively in different environments, to show tolerance, express and understand different viewpoints, to negotiate with the ability to create confidence, and to feel empathy. Individuals should be able to cope with stress and frustration and to express them in a constructive way and should distinguish between the personal and professional spheres. This competence is based on cooperation, assertiveness and integrity. Individuals should be interested in socio-economic development, intercultural communication, value diversity respect other people, and be prepared to overcome prejudice and compromise (Key Competences for Learning ... 2006).

When discussing social competence in terms of top management, it is essential to pay attention to the important social competence of leadership. It is the competence thanks to which we are able to arouse enthusiasm and support for the vision we spread in order to move on to directing others with advice and guidance. We allow others a great deal of freedom in their tasks, but we do not relieve them of responsibility for the results. We set an authentic example ourselves by being an inspiration, not a boss. This competence means being able to create a mobile, efficient structure, not a bony one. The issue of leadership is a frequently discussed issue in the literature of management, social psychology, sociology, and human resource management (Armstrong M., 1998).

New challenges before top management, is the need to understand what is currently happening in the world surrounding the organization, the need for accurate answers to the questions that arise: What is happening to our world? Are we able to navigate in it? Will stabilization come? There are more such questions and, what is important, they are growing every day, because there are constantly new circumstances. Among them are also those that surprise us, for which, despite the greatest mobilization of management staff, we have not been able to prepare. A drastic example today is the COVID-19 pandemic or the Russian aggression against Ukraine, for which crisis teams around the world were not able to prepare or to determine the scale of the related problems. They are felt by all organizations, we feel them in our personal, professional and social lives. It turns out that the current world is completely unpredictable.

The Cold War, which was waged for years, led the world to divide into two camps, which the great powers built by dividing the countries, peoples and nations of the world by ideology, influence and supply of weapons. One looked at the other with fear and constant uncertainty. Standard measures to prepare a cadre of managers specializing in economic management were often relegated to the background. The most important were specialized training of secret agents, camouflaged acquisition of information. High instability every day was connected with the arms race and the pursuit of key information. All to keep the nuclear buttons intact and none of the black presidential briefcases open. The end of the Cold War in the late 1980s and early 1990s was supposed to bring stability and the longed-for return to normalcy. However, this did not happen. Volatility, uncertainty, complexity and ambiguity emerged. This very simplified version of the story of the emergence of VUCA confirms that everything begins somewhere, and every change sooner or later finds its justification.
These new and surprising situations, which change our known world, are experienced both locally (e.g., during crises caused by floods) and globally. Moments when the whole world felt what VUCA was were such as the terrorist attacks of September 11, 2001, which killed nearly 3,000 people. The whole world experienced the tragedy and the whole world changed, both in terms of trust in others and in the area of international security and international cooperation. We are now experiencing a VUCA situation caused by the corona virus pandemic and Russia's invasion of Ukraine, the whole world stopped and immobilized people at home. The pandemic has disrupted logistics chains for many companies living in a world of globalization, often disconnected education systems, causing significant problems in production and disrupting the economy of companies including liquidity. There is no person who has not experienced the change, everyone has been affected more or less: the ban on contact with people, the order to walk in masks, the closure of schools, kindergartens, courts, offices, working from home or in difficult conditions, closed businesses, bankruptcies and failures (Dąbrowska K., 2020). Variability, uncertainty, complexity, and ambiguity. Separately, each of these nouns causes anxiety for managers. Together they represent a dark side of power that, for the good of the organization and all of us, needs to be illuminated as quickly as possible, because it is the reality in which we live and increasingly work. The VUCA world is setting a new normal for decision making not only in the Army, but also in people management, business or education. From this perspective, waiting for things to go back to normal makes no sense. Today, the world of VUCA describes our everyday life.

The term itself has quickly become fashionable and adapted to explain other phenomena far beyond the military. It is therefore necessary to explain what today's world of science understands by the key terms forming the acronym VUCA. These terms are used in the economic sphere, mainly in management, and constitute a simple and effective model to describe the environment that affects the functioning and economy of companies.

- **VOLATILITY** - volatility occurs when the established order is disturbed, we encounter unexpected events, and those expected do not occur. New concepts emerge that people are not sure are true or do not know how to apply, and old ideas do not seem to work.
- **UNCERTAINTY** - uncertainty nullifies the sense of control. This feeling is especially difficult for possession-oriented managers raised on planning, patterns, linearity, and vertical thinking.
- **COMPLEXITY** - complexity occurs when there are many possible causes of an event, cause and effect are unclear because there is not the typical cause and effect linearity between them. Complexity is further increased by universally increasing specialization, hypertechnology, cultural nuances, five hundred movie channels, seven thousand languages, and five generations present in the workforce.
- **AMBIGUITY** - Ambiguity occurs when there are multiple possible meanings or variations of a situation or event, so that the division between right or wrong, good or bad, is not so obvious or clear. It is impossible to find the right answer, or even to get everyone to agree on one version of what they see, hear, and perceive.

Each of these factors adds to the operational-level turbulence in leaders' work, making it difficult and arduous. Corporate leaders encounter the world of VUCA every day, yet they
are so attached to the linearity and predictability of events that few know how to act in new circumstances, so they make mistakes, lots of mistakes (Judek R., 2020).

Figure 3. VUCA world  

It is no exaggeration to say that there is very little or no use of the tools available to organizations to predict the future. And yet volatility occurs when the established order is changed or disrupted. This is a common phenomenon today. Unexpected events occur every day and predicted events do not happen. This causes that often chaotically, without the necessary knowledge in organizations, among strategic staff there appear new ideas, concepts which people are not sure if they are true, and often do not know how to apply them. Today, widespread volatility occurs at an almost constant level. The true ability to predict future volatility is minimal to say the least, often nonexistent. We need to be aware that volatility naturally leads to uncertainty, which can hinder the responsiveness of any organization. And taking the opposite approach, we can say that volatility can also lead to new opportunities for those who are focused, fast and flexible. There are areas of our lives where we deal with volatility on an ongoing basis, such as in finance. Asset prices often fluctuate chaotically and rapidly. The difficulty is to find a trend, although after time we find justification, most often, in the external environment of the organization. Investors consequently find it difficult to create an effective procurement strategy, but importantly many organizations are already trying to prepare for different situations and act decisively and quickly. The emerging challenge should be to identify a cause and effect chain overlaying different business areas and the impact of external factors. Executives need to be in possession of as much information as possible to anticipate certain events and influence decision making. More and more important in such activities is also to have the appropriate tools and skills to process the vast amount of information as soon as possible and draw conclusions and implement the necessary changes. It is said that change is one of the three sure things in life (besides taxes and death). The nature and character of the changes affecting us every day are increasingly difficult to predict. What we assume or plan today may be completely wrong or inadequate tomorrow or six months from now.

The uncertainty that comes with action is a natural feature of humanity. It is a state in which there is uncertainty about what is happening, what will happen, and whether it is possible to take preventive action. The result can be paralysis of the organization, with leaders falling into a coma and inaction. Such uncertainty has a significant impact on mutual trust in the organization, lethargy and uncertainty of leaders is a curse for the organization. Under conditions of uncertainty, managers have a low level of awareness and understanding of events and problems that occur. As a result, it is difficult to predict what the effect of actions will be, which can lead to a prolonged planning process (to reduce uncertainty).

Uncertainty means that we don't know what will happen, when, and most importantly why. We don't know how to prepare, protect and counteract. Managers who are in possession of some information or can predict certain events often get lost in the amount of analyzed data that may affect the decision-making process. So, how do you find your way through the flood of data and how do you capture what is really important to you? When there is a lack of clarity about what is right or wrong, true or false, trustworthy or not, ambiguity arises. Ambiguity is especially debilitating when it affects a company's values and priorities. Ambiguity, or ambiguity as some say, refers to the vagueness of a situation that can cause misreading of
signals coming from the environment. Nothing is what it might seem at first glance. Be as some say "and interpret it however you want..." (Judek R., 2021).

Results and discussion

One has to wonder how to function in the VUCA world, what is most important, what do we need to learn, and are there paths we should follow? Certainly, the time of universal and unambiguous methods is over, the environment of the organization and the environment we live in are changing too quickly. So, to help ourselves, let’s refer to some key principles that should support us in successfully managing our organization in the challenging times of VUCA.

We need to have a clearly articulated goal to work towards by showing flexibility to the details. Continuously increase information resources and analyze them by monitoring industry trends. Don’t be stubborn in your beliefs, and master the ability to listen and analyze, especially with people who think differently than you do. Do not complicate your actions with difficult solutions, the most effective are clear and simple moves. Bold approach to experimentation will allow us to more efficiently determine the direction of action. Testing is the moment when we get the first signals whether we are heading in the right direction. It is important to realize that we will not always be right. It is necessary to develop resistance to failure. Each failure, after all, is a source of information, feedback that can explain a lot to us and direct our actions. Recognize the consumer as a central entity whose service and satisfaction of needs is the main sense and purpose of any economic activity, which ultimately translates into revenue and profit for the company. Buyers are therefore the most valuable resource, the basis of existence and source of value of the company, so everything begins and ends with the customers (Lake N., 2002) The activities of economic entities are closely dependent on customers, because in the modern economy the customer is the main "engine" of functioning enterprises. It is he who decides - through the purchase of products - whether the economic entities have a raison d'être (Bujak A., Szot W., 2009). A company that has no customers cannot function. Those who cannot recognize the needs and expectations of customers will not survive in the market - sooner or later they will be forgotten (Ali M., 2005). Thus, strategic competence and the ability to navigate in the world of VUCA are important. This sets the limits of classical planning for organizational development. It calls into question the validity of long-term forecasting and planning. In the IT world, this means that often projects with multi-million dollar budgets and at the same time long lead times should be reviewed, and it is not impossible that a significant part of them should be abandoned. This is due to the fact that what worked in recent years, at the moment is not enough (very quickly disavowed) because the organization operates in a VUCA environment. Today’s reality is a volatile, uncertain, complex and ambiguous world. In the VUCA world, very few things are certain - if anything at all. The essence is in constant motion. "Yes or no" now becomes "yes and no." "Either or" turns into "some of this and some of that." New definitions of reality become more difficult. Under all conditions, however, let us remember that it is our interpretation of what is happening that creates our reality. (Judek R.,).

The problem that arises is mostly information that needs to be listened to and before making a decision, it is helpful to ask yourself the three questions that Alan Seale's (2019) suggests and step into the role of observer:

1. - What does it want to happen? - this is a question about the potential that wants to come out;

2. who does it invite me to be? - is a question about what role I want to take in what is happening;

3. what is it inviting me to do? - is a question about the action I plan to take.

After a closer look at the characteristics of our manager, one gets the impression that if we add that he or she should be beautiful, we have
a book hero who is difficult to meet in life. So what does he do? Large organizations can afford to create management teams, it is a relatively small competent group of top management that controls the organization.

In any company, it is imperative that VUCA is organization-friendly and certainly not hostile. Leaders must be ambassadors of change and harbingers of the future. It must be accepted that even the best preparation for the role of top management will not make uncertainty and complexity disappear. They will live among us to a greater or lesser degree, and chaos will constantly accompany them. You cannot predict the future, but you can make sense of it.

It is already worth to form competences at the level of basic education, which requires changes in the system of education and professional preparation of the young generation. It is also necessary to develop appropriate systems of testing the level of competence. Today we can already see new trends, virtual community and computer games useful in testing competences. Their level of mastery can be studied in many ways. With the development of technology, there are opportunities and solutions involving computers and the Internet in the process of diagnosing professional competence. The growing role of computers in this area has been largely enabled by the development of two methodological concepts: Item Response Theory (IRT) (Baker F.B., Kim S., 2004) and Computer Adaptive Testing (CAT). Combination of these concepts usually results in creation of quality tools, characterized by high reliability, accuracy and resistance to deception (possibility of generating numerous versions of the test, which are equivalent versions), convenient in use (diagnosis is made by computer, data from diagnosis go directly to databases) and not overloading the tested persons (thanks to algorithms of question selection it is possible to shorten the test's length without loss of measurement precision) (Van der Linden W., Glas C.A.W., 2003). These questions include: How will we live in a world in which the Internet and mobile telephony will stop working, and there will be no more electricity or fuel - after all, we assume that these resources are unlimited?

The following summary explains in general terms what VUCA is, gives an example of each factor and how it can be counteracted. The generality of the summary has its advantages and disadvantages, on the one hand it allows you to understand the basics of the VUCA concept, on the other hand it does not make it easy to understand it in relation to a specific sector of the economy.

The following trends in the business environment of enterprises can be presented as examples of VUCA:

1. nothing is given permanently, and the world will change more in the next decades than in the last centuries. You are great today, but through VUCA your place may be taken by someone else who is more agile. Change is happening faster and faster - example: electric scooter went on sale worldwide in 2 years.

2. If we don’t start changing right away, we may not be around much longer - the question is what to change and to what extent. That is, if you are a large company, you need to reorganize everything adapting to the new times, otherwise others will do it for you and without you.

3. Thomas Cook's bankruptcy is an example of the dark side of innovation that kills legacy business models and large, inflexible corporations - market change ends the effectiveness of business models.

4. market changes eliminate existing advantages, which makes it necessary to be prepared/implement new solutions all the time. Technology gives a competitive advantage, but very quickly novelties become standard, which makes it necessary to constantly run ahead and develop new technologies. Machine learning is becoming an element of building technology and competitive advantage.

5. Digitalization - electronic tools are replacing functions performed in enterprises, digital transformation starts with tool creation and digital outsourcing appears. People are
replaced by artificial intelligence (AI), and in creative works AI is a support (robots teach robots, robots write scripts for robots, etc.) (Michalski D., Bulka E., 2022).

Conclusions

Knowledge orientation changes the essence of the functioning of the enterprise, which accumulates the potential of competence, information, and also uses the opportunities created by the environment. The core of the enterprise are the employees, who with their professionalism create the key competencies of the enterprise. An enterprise oriented on knowledge, which: (Grudzewski W., Hejduk I., 2004).

1. is based on intangible resources and virtual networks as determinants of competitiveness, among which knowledge plays a key role, also because it initiates the use of other resources,
2. is oriented towards creative management, taking advantage of emerging opportunities, which together with the competencies of employees and the company allows to successfully anticipate the growing complexity of the environment,
3. is characterized by consistency of management,
4. offers products saturated with knowledge in the form of technology, technology supported by modern tools of information technology, patents or organizational and management methods and techniques,
5. is focused on creating conditions conducive to the creation of a climate,
6. is focused on creating conditions conducive to the creation of a climate of cooperation, including broad professional and non-professional contacts, which ultimately creates an environment conducive to creativity, activity, entrepreneurship,
7. undertakes cooperation in various dimensions and on various principles with specialists having competencies that are necessary from the point of view of maintaining and increasing the competitiveness of the enterprise,
8. relies on the subjectivity of competent employees and partners, and at the same time has high intellectual requirements towards them. Knowledge-based enterprise is characterized by permanent learning processes, specific organizational culture, openness of the information system, constructive confrontation (K. Perechuda, 2000).

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