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ENTREPRENEURSHIP – A TOOL FOR RENEWAL AND MODERNIZATION OF THE EDUCATIONAL SYSTEM

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Abstract. One of the important aspects of organizational functioning is the adaptation process. Classically, the process is seen as adaptation to changes in the environment. and a factor for effective functioning. The publication presents the adaptation process as a cause of organizational aging – a classic problem of organizational development. As social systems, organizations go through stages analogous to biological systems. This presentation examines the specifics of the development process of organizations using a model representing the life cycle of an organizational system. The organization faces daily problems of different nature. In the stages of its life cycle, when it succeeds in dealing with problems, we see organizational growth. Over time, as a result of a declining ability to make adequate decisions, the organization reaches decline. There are a number of techniques for returning organizations to their creative period. In this context, this publication presents entrepreneurship as a tool for organizational renewal and modernization of educational systems. The conclusions drawn are supported by a study of a model organization Nikola Vaptsarov Naval Academy. The main research method applied is statistical analysis.

Keywords: educational organizations; management; life cycle of organizations; organizational aging; entrepreneurship in education

We live, study, work in a highly dynamic environment, and this dynamic is intensifying. We are forced to adapt (and do so unconsciously). Some succeed, some not so much. However, do we correctly understand the essence of the adaptation process?

The paper presents an adaptation process undertaken by one university – Nikola Vaptsarov Naval Academy. The main method to study the aspects of the process is statistical analysis. The following empirical studies were carried out:

1. Survey with employees.
2. Interviews.
3. Collection of empirical data.

Before presenting the results of the study, let us pay more attention to the paradigm of adaptation.

Nobel laureate Murray Gell-Mann in the monograph The Quark and The Jaguar: Adventures in the Simple and the Complex (Gell-Mann 2006) presents adaptation as occurring on three levels – "short-term", "long-term" and "evolutionary" adaptation. Here is an example.

Assume that the environment has changed to such an extent that the organization is unable to continue its activities. Three options of action are possible.

The first implies that the organization moves its business to an environment with favorable conditions and continues its activities. This is the so-called short-term adaptation. In this case, the purpose, structure and qualities (properties) of the system do not change.

The second option provides for the organization to reorient itself to a similar type of activity that it can develop in such a changed environment – an example of long-term adaptation. Here it will be necessary to redefine goals, tasks and the technology by which they will be implemented, if necessary, changes will also occur in the organizational structure.

The third option is related to a drastic change in the purpose of the organization. This is the evolutionary adaptation that starts directly with a change of purpose and a completely new planning of the system[1].

What are the risks of permanent adaptation to changes in the environment?

First of all, a change in the functioning of an organization that has been adapting to a prevailing factor for a long time hides the danger that it will not have the necessary resources and will not be able to adapt. This is the so-called press/pulse effect (Arens 2006, pp. 456 – 471).

Second, evolutionary adaptation is related to a change in purpose and all subsequent actions, which is a drastic change for the organization. The question is whether its threshold of adaptability[2] is sufficient and whether a systemic collapse will not follow.

Third, organizations with high adaptive sensitivity do not "filter" changes, but react to all changes. As a result, a kind of over-adaptation is reached – a high degree of specialization in the specific activity and a loss of identity. A high degree of specialization, in the sense that the organization will aim for high results with a minimum of effort and a minimum of resources. Over time, there will be a transition to a critical structure, reaching the threshold of adaptability and inevitable systemic collapse. Loss of diversity within the metasystem[3], in turn, reduces its adaptability, and an unforeseen change in the environment can cause metasystem breakdown and individual organizations to fail to adapt as well.

Last but not least, in the process of continuous adaptation, the organization continuously engages its system resources, thereby reducing its reserves and adaptation capacity[4].

And changes in environment are not always smooth. The organization adapts to a high degree to them and loses its ability to overcome a more drastic change.

It is interesting to relate the adaptation processes to the system of higher education. For ease of consideration, let us not take the system of higher education as a whole, but a separate university. In this publication, the Nikola Vaptsarov Naval Academy has been used as a model organization, but with great credibility the considerations can be applied to any university.

In education, the dynamics are extremely high. The lack of resources, both financial and in the form of consumers, in the conditions of inflation combined with a demographic crisis is indisputable.

Against this background, intra-systemic competition is growing significantly. It is hardly necessary to cite examples of the pressure to unite universities[5] to see the results of this competition, but since these processes will be mentioned later, it is now appropriate to present the theoretical foundations of the problem of systemic adaptation.

If we reason by analogy, the already described adaptation process resembles the aging of biological systems. Here is the moment to introduce the process of organizational aging.

Organizational life cycle models push this analogy further. With the proviso that we are talking about the models that consider stages of organizational aging, decline and decay.

While we do not aim to present all these theories, a generalized model[6] of organizational functioning is proposed.

In the process of development, organizations go through three main phases - "early", "mature" and "late" (Fig. 1). It is appropriate to divide the early phase into 'emergence' and 'subsequent development' stages, and the late phase into 'decline' and 'decay'. The "Maturity" period is not subdivided into stages, as all models claim that stability is an inalienable attribute of this phase.

It is useful to briefly trace the organizational development in a time perspective.

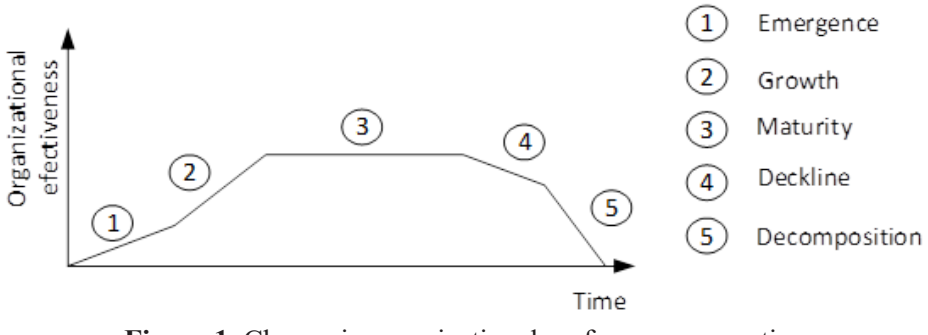

Figure 1. Change in organizational performance over time

In the "Emergence" stage, the purpose (mission) is not yet fully established. Goals are refined, tasks are constantly changing. The organization "feels" the environment, the hierarchy is poorly developed. The stage is characterized by initiative, creativity, enthusiasm.

With the establishment of the mission, goals and objectives, the organization enters the "Growth" stage. A process of improving the strategy for reaching the goals, of optimizing the structure, begins. Administrative culture begins to be valued, traditions are established.

In the event that within 2 – 3 years, a constant result is reported and no new development ideas are initiated, it can be argued that the organization has stepped into "Maturity". The stage is characterized by stability. Purpose and goals are constant, structure is generally constant, hierarchy dominates relationships. Changes are already "dangerous", there is a tendency to maintain the status quo. Initiatives are rejected with the argument that they do not fit into the organization's portfolio. There is a retreat from the functional indicators, but it is argued with the impact of external factors. The organization has imperceptibly moved into the Decline stage.

There is an extreme loss of flexibility, in the sense of the company's orientation towards the external environment for its activities. Decreased performance is not taken into account, it is increasingly talked about organizational image and public prestige. There is not enough will to finish the initiatives started. Work is campaign-led, employee turnover begins. This stage often goes unnoticed, which makes it dangerous.

At the "Decomposition" stage, there is no desire for any change, and there is no ability for such. Structural decay begins. "Reanimation" of the organization is practically impossible.

It is a good summary: a long process of adaptation is a prerequisite for organizational aging. Life cycle models make it possible, knowing the behavior of organizations by stages, to notice the first symptoms of "disease" and propose the necessary measures.

This statement is confirmed in a study conducted in a military educational model organization for the period 2011 – 2020[7]. The period was chosen due to the fact that in 2011 the management of the academy was taken over by a new management team.

Data from earlier years are also collected in order to track certain trends over time.

The following empirical studies were carried out:

1. Survey with employees from Nikola Vaptsarov Naval Academy to determine aspects of the organizational specifics of the school. The survey does not claim to be an exhaustive study, but has an indicative character to reveal trends to be followed in a subsequent interview.

2. Interview with heads of administrative structures to reveal organizational characteristics.

3. Collection of empirical data describing the results of various aspects of the activity of the educational institution.

A number of indicators make it possible to determine the stage at which the organization is:

– own revenues – in the period 2002 – 2010, the average percentage of annual growth of own revenues was 17%;

– funding from European programs – in the period 2008 – 2010, funding from European programs increased 2.7 times;

– annual admission of students – in the period 2002 – 2010, the average annual growth was 72 people.

On the basis of the indicated data, the statement can be made: in the years before 2011, smooth growth was observed, a sign of a state of maturity.

At the same time, a number of indicators, such as lack of foreign students, lack of incoming student mobility, the amount of outgoing student mobility (only 40), the number of partnership agreements (3 agreements with universities and 3 agreements with companies), the number of active doctoral students (22 in 2010), the expenses for investment projects (194,047 BGN), the receipts from European projects (210,908 BGN in 2010) show that even with the presence of smooth growth of the various indicators for the processes in the organization, no opportunities for more significant achievements have been realized.

Data showing smooth growth and at the same time unrealized opportunities are an indicator that as of 2011 the organization was either in the "Late Maturity" or early "Decline" stage.

In 2011, after the end of the management's mandate, a new management team was formed. In the period 2011 – 2013, a policy was adopted to stimulate the teaching staff, their qualification, investments are made in directions that guarantee returns, members from other organizations are appointed, initiative is valued.

The results were not long in coming – by 2013, the organization was entering the "Growth" stage. Indicators that support this claim are:

– in the period 2015 – 2018, four new study specialties (courses) were opened;

– the percentage of foreign students against the total number of students is increasing sharply – by 2020 they were 18.99%. Schematically this is represented in fig. 2;

– in the period 2002 – 2019, the operating incomes grew 15.6 times and by 2018, the amount of operating incomes reached 49% of the school's total budget. The growth of operating incomes in the period 2012 – 2016 was most significant – 224% (fig. 3);

– in the period 2011-2016, the amount of income from projects and European programs increased by 13.1 times[8]. A graphical representation is given in fig 4;

– the data on incoming and outgoing student mobility for the purpose of practice also marked a sharp growth – in the period 2014 – 2020, outgoing student mobility increased 3.6 times (on average by 37 people per year), and in 2014 the incoming also begins;

– in the period 2008 – 2018, the annual admission of students increased by 78% (fig 5);

– in the period 2015 – 2020, the costs for investment projects averaged BGN 2,165,113 per year, which is a 6-fold increase compared to the average annual cost for the period 2008 – 2014 (fig. 6).

Similar are the indicators of scientific research activity, scientific projects, which inform that the effectiveness of the organization increases.

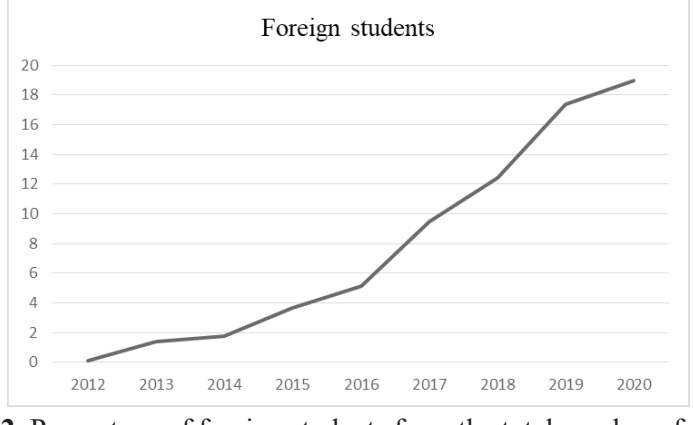

Figure 2. Percentage of foreign students from the total number of students trained in the professional field "Transport, shipping and aviation". Data is taken from the Rating System of Higher Education Institutions in Bulgaria

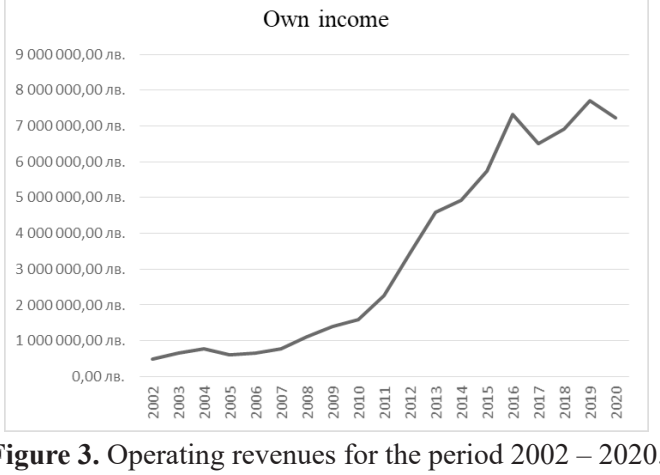

Figure 3. Operating revenues for the period 2002 – 2020.
Data is taken from annual accounting reports of the Naval Academy

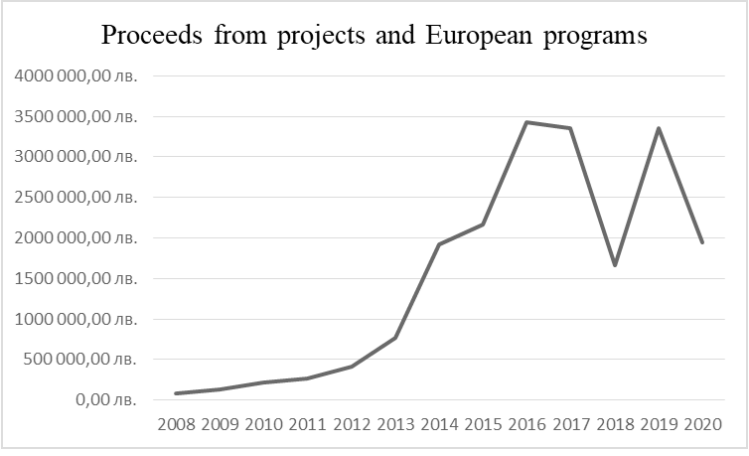

Figure 4. Amount of revenues from projects and European programs. Data is taken from annual accounting reports of the Naval Academy

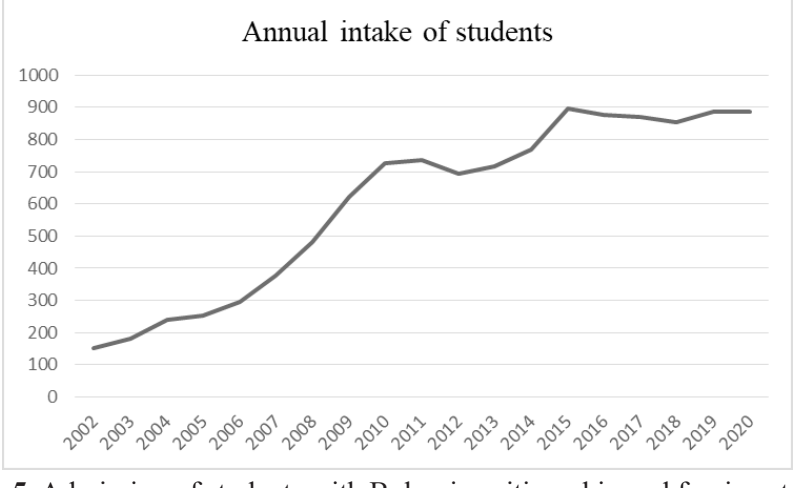

Figure 5. Admission of students with Bulgarian citizenship and foreign students. Data is taken from annual reports of the Naval Academy Rector

The period of organizational growth continued until 2019. In 2020, the functional indicators marked a slight decline[9], with some features characteristic of the "Late Growth" stage being noticed. In the period 2017 – 2020, a number of indicators, such as the number of students, own incomes and incomes from projects and European programs, student mobility seems to be relatively constant with a tendency to slow growth. A sign that the organization has entered a period of "Maturity".

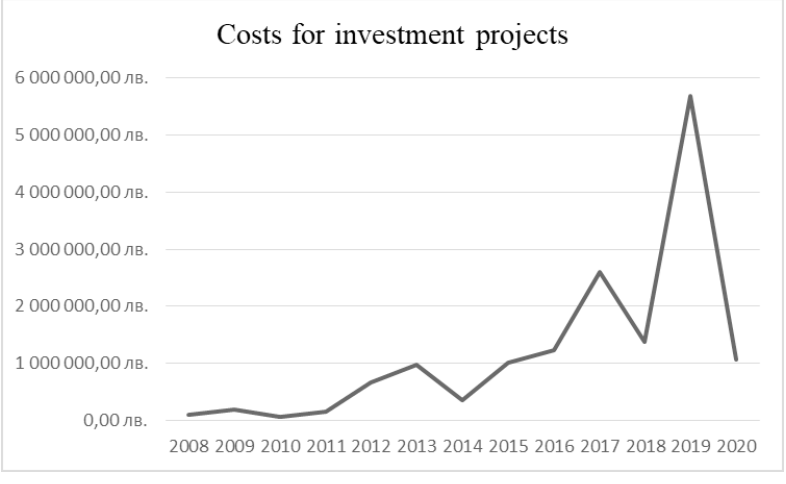

Figure 6. Costs for investment projects for the period 2008 – 2020.
Data is taken from annual accounting reports of the Naval Academy.

Measures were needed, but what kind? Let us go back to the organizational life cycle stages. It seems that in the presentation of the system development we missed extremely important characteristics – the organizational culture and traditions. It's not too late to track them down.

The "Emergence" stage is characterized by a high degree of flexibility, improvisation, creativity, low administrative consistency, no traditions are observed.

At the "Development" stage, traditions are established. Initiative is encouraged. This is a stage in which the organization's value system is formed, and it is an opportune moment for initiative and entrepreneurship to "step firmly" into the organizational culture. How? By encouraging each other. Whether through purely financial incentives or moral ones. Let us not forget that the resulting initiative implies personnel growth. But it is also necessary to create procedures and build structures to support entrepreneurship in order to establish a kind of entrepreneurial trend in the organizational culture. Why? Because the entrepreneurial culture has a highly developed tendency to "self-reproduce". The statement "under certain circumstances, entrepreneurship creates its own culture" applies to it. It is distinct from social culture, regardless of whether the latter has had or has a positive or negative impact on entrepreneurial culture' (Narleva, Narlev 2019, p. 37).

In the event that in the growth stage, an appropriate entrepreneurial trend has not been formed in the organizational culture, then in "Maturity" more efforts are required. It may be necessary to replace managers from the middle hierarchical levels with personnel with a developed entrepreneurial spirit, and that as a team. Otherwise, there is a danger that an individual employee with entrepreneurial

abilities will “melt” into the team. “Because of social influences, individual behavior often conflicts with individual preferences, and collective decisions do not reflect the preferences of group members”. This happens because of "the tendency for the group to make a decision and follow a behavior that no one really wants, simply because everyone thinks others prefer them and does not want to go against the majority, preferring to be a 'group player' instead of to follow his personal preferences' (Kanev 2017, p. 4). As a whole it is usually too late to develop the entrepreneurial culture in the organization at this stage.

If even in maturity the organization misses the chance to bring the entrepreneurial spirit down to a cultural level, then at the “Decline” stage the problem is already serious. The real problem at this stage is the progressive departmentalization. The processes in the organization bring a rising number of internal products which are not necessary for the external product of the organization. The popular name of this process is an “increassing bureaucracy”. A personnel change is needed to cover all hierarchical levels. And whether the organization will endure such a drastic change and avoid systemic collapse depends above all on its adaptation capacity[10].

In summary, let's see how entrepreneurship fits into the life cycle of an organization.

1. Arguably, in the “Emergence” stage, entrepreneurship is the very content of the stage.

2. At the “Growth” stage, this is the moment to introduce entrepreneurship as an organizational model, to create that nuance in the culture of the organization that will provoke a search for entrepreneurial initiatives at the subsequent stages of the life cycle.

3. At the “Maturity” stage, entrepreneurship is vital, because can prolong the Maturity stage and delay the transition to Decline.

4. At the “Decline” stage, entrepreneurship should be imposed even by force through a drastic change of management and/or composition, a serious change of tasks, goals and the resulting restructuring.

5. At the “Decomposition” stage, entrepreneurship practically has no chance.

Entrepreneurship is associated with the ability to overcome the loss of flexibility and the aging of organizations. At the “Emergence” stage, the organization is characterized by great flexibility, at the “Decomposition” stage it is extremely late for its recovery. Loss of flexibility is observed in the “Development”, “Maturity”and partially “Decline” stages. The conclusion has to be drawn that entrepreneurship has a time scope precisely at these three stages (fig. 7) and a strong entrepreneurial initiative[11] is needed to restore the rise in the development of the organization. In practice, it is an adaptation.

The chosen model organization is the Nikola Vaptsarov Naval Academy and it is appropriate to introduce it briefly. The school trains sailors, petty officers and officers for the needs of the Armed Forces. Professional training is also provided to personnel

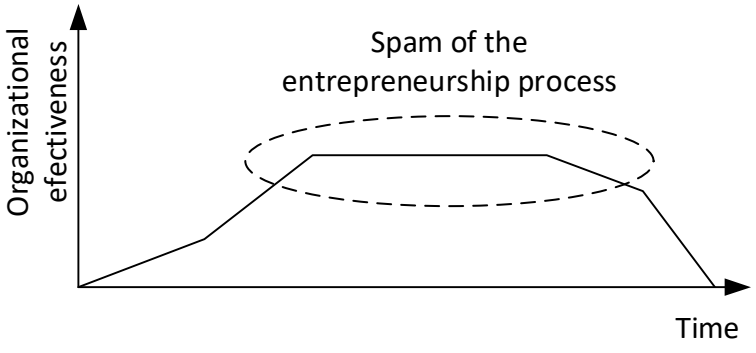

Figure 7. Span of entrepreneurship in the entire life cycle of organizations

directly related to the work onboard merchant ships – navigators, ship engineers, ship electrical engineers, ship repair specialists and others. In the process of their education, the need for knowledge of intercultural competence on board the ship, the ability to work together with people from foreign cultures[12] is taken into account.

Specializations such as "Water transport management", "Logistics", "Passenger ship management", "Fleet and port operation" prepare experts in the field of international sea trade, shipping business, ports. In other words, the mission of the naval school is "Training of highly qualified specialists for the Armed Forces of the Republic of Bulgaria, for the national security sector, for the maritime and IT industry, scientific support of the transformation of the Air Force and the development of the maritime sector of the Republic of Bulgaria".

Since the chosen model organization is the Nikola Vaptsarov Naval Academy, it is appropriate to give an overview of the initiatives undertaken in it, concerning the rise in its development and related to the dynamics of the operating environment. In recent years, management systems with elements of artificial intelligence have been imposed in the maritime industry, cyber technologies are dynamically developing, which has led to the need for specialists to detect, analyze and promptly react to events in cyberspace. There was also a need for specialists in the technical operation of intelligent transport systems, in the safety and security of the port and, in general, the transport maritime infrastructure, in the field of military logistics and medical provision of the Armed Forces.

In this regard, for the period 2017 – 2022, new specialties have been revealed:

– "Military doctor"[13];
– "Cyber Security";
– "Naval Logistics";
– "Mechatronics";
– "Intelligent systems in transport (Mechatronics)";
– "National and Regional Maritime Security";

– "Management of national security";
– "Cyber Operations";
– "Management of passenger ships".

To support training in the new specialties in 2021, a training center for cyber operations was opened at the Nikola Vaptsarov Naval Academy, which has the necessary specialized offices and laboratories – for the study of computer hardware; to work with classified information; for cyber exercises and training; for simulation management in conducting computer-aided cyber exercises and training and a communication center with communication and server equipment[14].

Restructuring of the educational units was carried out – transformation of departments in order to match the specialties.

Regulations for the project activity have been adopted. For the period 2019 – 2022, research and development projects, projects for the development of the facilities, educational projects and others, with a total value of over BGN 800,000, were implemented, and projects with a total value of over BGN 11,000,000 are currently being implemented.

Apart from the mentioned sums, in 2021 a military scientific research vessel was acquired, owned by the Consortium "Bulgarian Antarctic Base "St. Kliment Ohridski" and scientific research vessel", whose members are Nikola Vaptsarov Naval Academy, Sofia University "St. Kliment Ohridski" and the Bulgarian Antarctic Institute (BAI). The total value of the project is BGN 13,775,600.

It should be noted that in terms of student training and research activities, the school competes in a national and international environment, according to national and international standards, and to a high degree self-finances its initiatives[15].

It can be seen that in terms of project initiatives, the Naval Academy is trying to make full use of the opportunities for more significant achievements and developing entrepreneurship as an organizational policy actively aimed at the environment.

Nikola Vaptsarov Naval Academy indisputably proves the claim that entrepreneurship is a component of organizational culture and reducing the entrepreneurial spirit to a cultural level is a successful approach to overcoming the effects of a complex problem such as organizational aging and a tool for renewal and modernization of the educational system.

NOTES

1. More on the systems analysis sequence in organizational planning in Aspects of Organization Theory (Kalinov 2017).
2. The adaptability threshold is appropriately described in "Target Resilience of Military Systems" (Velichkov 2003).
3. There is a simultaneous adaptation of multiple organizations that bind into a metasystem.

4. It is the ability of the organization to adapt. Adaptive capacity does not define the actual ability to adapt, but the potential (Brooks, p. 9), inasmuch as adaptation is always in the context of a specific situation.
5. On 22.02.2022, the Minister of Education, Academician Denkov, announced after the meeting of the Council of Rectors of Higher Schools in a press conference the idea of restructuring higher education, an important element of which is the possibility of "small higher schools with a similar and/or complementary profile and located in the same or in nearby settlements to unite under a common name, with a common or shared leadership". For more information, see an interview with Minister Denkov "The goal is not to reduce universities, but to make them more visible". Darik News. Available from: https://dariknews.bg/novini/bylgariia/ministyr-denkov-celta-ne-e-da-namalim-universitetite-a-da-stanat-po-vidimi-2301361.
6. The model is the author's.
7. In individual cases, data from earlier periods are also cited, insofar as some trends need to be traced in a deeper time perspective. A limitation of the study is the fact that until 2011 the degree of digitization was low and electronic databases were missing, and other data were simply not stored or were transferred to an archive outside the school.
8. Data from 2016 were taken because classic projects usually receive funding from one to three years after applying for them.
9. The impact of the external factor "Covid pandemic" is taken into account.
10. Additionally, it should be noted that different individuals will react differently to changes. The hypothesis that “there are differences in the perception of the characteristics of the environment: legal framework, strictness of order, accessibility, contradiction, load, satisfaction, entrapment and protection” (Nedeva 2018, p. 65) is completely valid.
11. There are a number of regulations of organizational processes that to a certain extent concern entrepreneurship. One example are the quality management systems. The publication adheres to the concepts of their implementation based on the process approach presented in "Process-Based Approach in the Quality Management Systems Implementation" (Stefanova & Stoyanova 2016).
12. Considerations of the importance of such knowledge are presented in The Importance of Intercultural Competence on Board Ship (Karadencheva 2022).
13. Together with Military Medical Academy and Medical Universty “Prof. Dr. Paraskev Stoyanov” – Varna. The specialty combines training in “Medicine” for the educational-qualification degree “master” and specialty “Organization and management of military formations at the tactical level”, specialization “Medical provision of the Armed Forces", with the educational-qualification degree "bachelor”.
14. More information about the revealed specialties and the educational base on the school's website is available at: http://www.naval-acad.bg/ .

15. There is a tendency to fund higher education institutions on the basis of achieved results, which is not the case for the funding of the Naval Academy. The Academyis also subject to all the regulations typical of universities: accreditation by the National Agency for Evaluation and Accreditation, application for projects on a general basis (without a specific advantage), additionally applying a high international standard in the training of maritime specialists.

REFERENCES

ARENS, N.C. and WEST, I.D., 2008. Press/Pulse: A General Theory of Mass Extinction?. *Paleobiology*, vol. 34, no. 4, pp. 456 – 471.

BROOKS, N., 2003. Vulnerability, risk and adaptation: A conceptual framework. Web site. *Tyndall Centre for Climate Change Research*. Available from: https://www.researchgate.net/profile/Nick_Brooks2/publication/200032746_Vulnerability_Risk_and_Adaptation_A_Conceptual_Framework/links/0fcfd50ac169e15865000000.pdf.

GELL-MANN, M., 2006. *The Quark And The Jaguar: Adventures in the Simple and the Complex.* Sofia: Prometey – I. L. ISBN 954-94-61-04-01.

KALINOV, K., 2017. *Aspekti na teoriyata na organizatsiite.* Varna: Dangrafik. ISBN 978-954-9418-95-8.

KANEV, D., 2017. Chuvstvoto za dalg kato ogranichitel na presledvaneto na lichniya interes. *Ikonomika 21*, no. 1, pp. 3 – 23. eISSN 2534-9457; ISSN 1314-3123.

KARADENCHEVA, A., 2022. Znachimost na mezhdukulturnata kompetentnost na borda na koraba. *Zhurnal na Sayuza na uchenite, sektsiya "Morski nauki"*, pp. 3 – 11. ISSN 1314-3379.

NARLEVA, K.; NARLEV, YU., 2019. *Savremenni aspekti na predpriemachestvoto*. Varna: E-litera. ISBN 978-954-2912-75-0.

NEDEVA, R., 2018. Razlichiya pri vazpriemaneto na sredata spored nivoto na reziliansa. *Varnenski meditsinski forum*, vol. 7, pp. 62-66. ISSN 2367-5519.

STEFANOVA, M.; STOYANOVA, A., 2016. *Process-Based Approach in the Quality Management Systems Implementation.* Varna: Science and Economics, University of Economics, pp. 470 – 476.

VELICHKOV, V., 2003. *Tseleva ustoychivost na voennite sistemi*. Sofia: Rakovski National Defence College.

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