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METHODOLOGY APPROACH TO STRATEGIC PLAN DEVELOPMENT FOR THE DEPARTMENT OF THE RESEARCH INSTITUTE IN UKRAINE

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ABSTRACT

In the paper it is proposed the methodological toolkit for a strategic plan development of research divisions that is illustrated by the example of the Department of the Ukrainian Research Institute. The result of using the methodology is the development of a roadmap for further development of the research divisions that has determined strategic directions and concrete indicators for monitoring achievement of goals. It is used PESTEL-analysis, Porter's Six Forces of Competitive Position Analysis, ranking method, SWOT-analysis. In the paper it is proposed Internationalization –Application Matrix for research activity analysis and for Department's strategic scenarios development. The main finding of the article is that using the proposed methodology we have revealed the strongest aspects of the Department's activity that are national and international theoretical research, and also national applied research in the field of seaside regions' sustainable development. The further strategy scenario should be aimed at the strengthening of international applied research through such activities as membership in international organizations and editorial boards, publications in media abroad, foreign internships, international grant project implementation

KEYWORDS: methodology, strategy, research institute, department

INTRODUCTION

The development of research institutes and it departments should be based on a strategic plan. The quality of the strategic plan and its further implementation and effectiveness are determined by the reliability of strategizing methodology. Strategies' development at the level of enterprises, regions and countries is a wide spread practice, but for research infrastructures' units it is no so common.

Research institutes as well as business entities are in a competitive environment. Competition is a dynamic process. The conditions of competition are constantly changing depending on market conditions, actions of competitors, means of competitive battle, etc. (Iermakova, Kozak, Shengelia, 2022). Under these circumstances, the management of competitiveness should be a permanent function that will ensure the ability to promptly respond to threats in the market, the ability to develop measures considering the identified threats, as well as the selection of methods and measures for prevention and minimization of adverse effects of the change of operational conditions on research infrastructures' competitiveness.

In this aspect the strategizing of the research institutes and their divisions should be based on the methodology for the research infrastructure units (ESFRI, 2021; Academy of Finland, 2020; University of Turku, 2020). But their qualitative analysis should be added with quantitative analysis, that will permit to determine not only strategic goals, but also key performance indicators for better monitoring.

I. Methodology

Traditionally, the stages of strategizing that are used at an enterprise are the following: preparation for strategizing, analysis, design, implementation, monitoring (Iermakova,Kozak, Shengelia, 2022).

Stage 1 - Preparation

This stage is the initial, there is a formal process of launching strategy, forming a team of developers. It is advisable to involve the heads of all departments and employees in the strategy development process, thus solving two important tasks: the receptivity of the developed strategy and its objectives by all employees of the institution, increasing trust, interaction, and obtaining innovative ideas (crowdsourcing effect) and considering the vision of people who in the future have to work daily to implement the developed strategy.

Stage 2 - Diagnostics

At this stage, it is performed a qualitative and quantitative environment analysis, including the study of factors influencing the competitiveness, assessment of available resources of the institution and its ability to create value for consumers (stakeholders), analysis of the competitive environment at the meso- and macro-level (PESTEL-analysis), assessment of the competitive environment at the industry level from the standpoint of M. Porter's six competitive forces, definition of key competitors, carrying out of quantitative assessment of the institution's competitiveness. Quantitative estimations are based on expert assessments methods and on a comparison principle - or with competitors, or with institute's own results during the previous periods.

For the purpose of generalization of the diagnostic results a SWOT-analysis can be used, which allows to identify strengths and weaknesses, as well as opportunities and threats that affect the research institution's competitiveness. SWOT-analysis allows to find out with what parameters are able outperform or lag behind, and what needs to be done to increase competitiveness.

Stage 3 - Design

At this stage, based on the diagnostics conducted at the previous stage, strategic and operational objectives and tasks, scenarios, target indicators are determined, a strategic map, an action plan is developed – it is defined the mechanisms, tools for achieving objectives, deadlines, funding sources, etc. Robert Kaplan and David Norton in their work (Kaplan, Norton, 1996, 2004) propose the development of a balanced scorecard that aligns strategic objectives with specific target indicators, and strategic maps – a tool designed to clearly describe strategies. Strategic map is an visual illustration of the strategy, provides a systematic approach to the coordination of goals, indicators and appropriate action plan. Each institution can adapt the model of the strategic map to solve its specific tasks.

Stage 4 - Implementation

Ensuring the implementation of strategic objectives is a management task, which

involves organizational management, as well as human and financial resources management.

Stage 5 - Monitoring

This stage is especially important in a turbulent conditions, it should include continuous monitoring, strategy adjustments, reassessment and view of target indicators, action plans, etc. depending on new realities, ensuring interaction of all participants in the development process and strategy implementation, collective decision making.

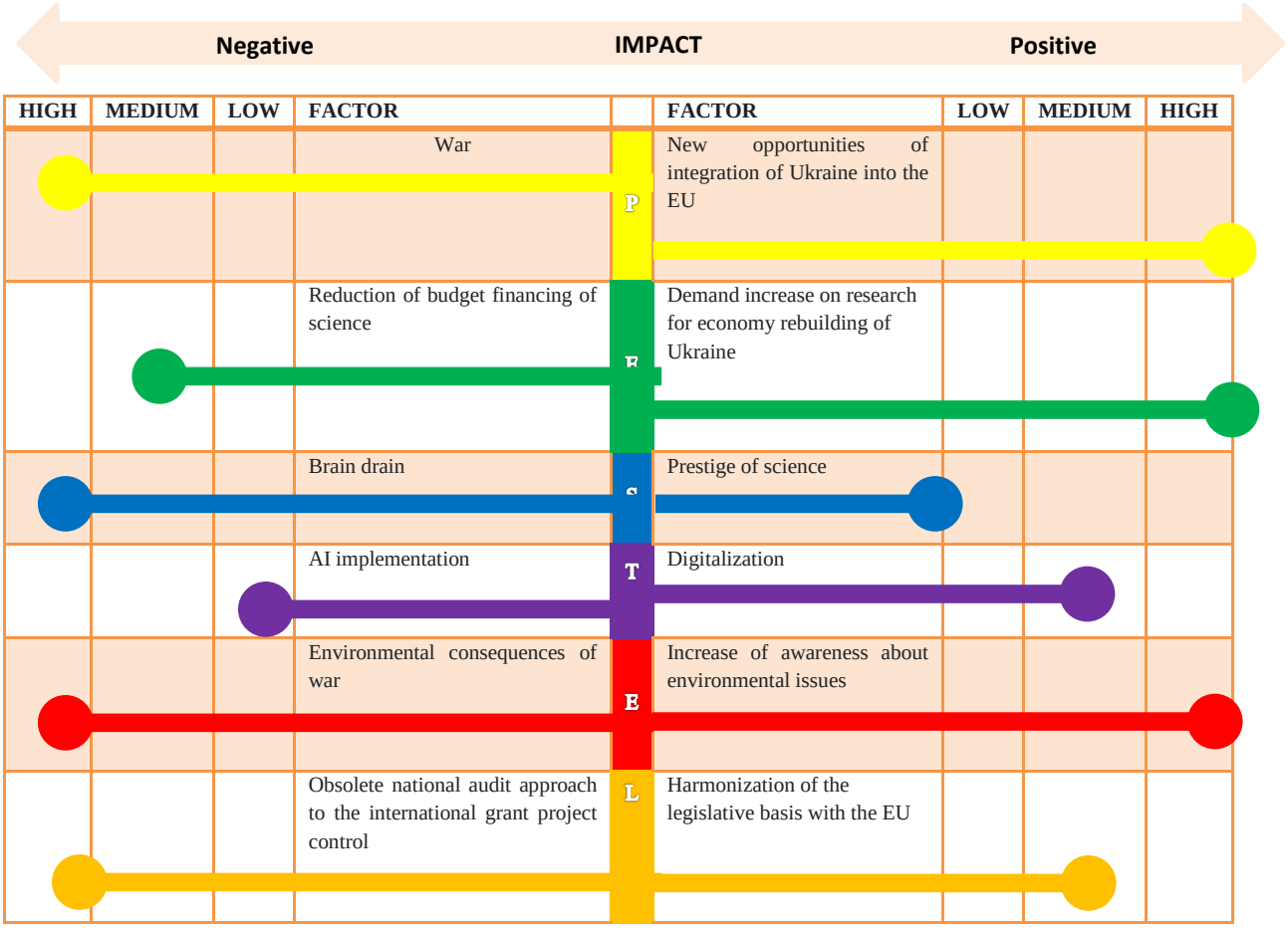
II. Results

The proposed methodology is applied for the Strategic Plan development for the Department of Economic and Ecological Development of Seaside Regions of the State Organization "Institute of Market and Economic&Ecological Researches of the National Academy of Sciences of Ukraine". Department's mission is to provide fundamental and applied research, aimed at deepening the theoretical, methodological and practical issues of seaside regions' sustainable development. Vision - ecologically friendly economic development of seaside regions in Ukraine. Determined values are: professionalism, team work, collaboration with stakeholders, international cooperation.

Environment analysis

The external environment is analysed through 6 PESTEL factors (Figure 1).

Figure 1. PESTEL-analysis of the external environment of the Department's activity



Source: Developed by the author

The results of this and following analysis methods are systematized by SWOT-matrix (table).

Porter's Six Forces of Competitive Position Analysis were developed by Michael Porter (Porter, 1998) as a framework for assessing and evaluating the competitive strength and position of a business organisation. This theory is based on the concept that there are six forces that determine the competitive intensity and attractiveness of a market. Porter's six forces help to identify where power lies in a business situation (Table 1).

Table 1. Six Forces Model Analysis of the scientific research market

Force	Value	Description	Tools for competitiveness increase
Competition	Medium	The market of R&D in Ukraine is a medium competitive, but tends to be high. State research institutes compete with private and nongovernmental ones.	- Increase competences; - Develop the uniqueness of provided research; - Be open for modern demand for research directions, do not be limited with usual research directions.
New Entrants	High	Amount of state research institutes is cutting down because of reforms and budget cuttings. Instead private and nongovernmental institute appeared, with better finance support and less state regulations and limits.	- Expanding the range of stakeholders (market share increase); - Promotion and popularization of scientific research and opportunities (Media, social and professional networks etc.).
End Users / Stakeholders	High	There is a wide range of stakeholders among national and regional authorities, business, local communities, universities.	- Meet the demand of stakeholders; - Implementation of market-oriented thinking among RI managers; - Stakeholders portfolio differentiation; - Providing social responsible activities; - Presence on brokerage platforms for scientific sector and stakeholders.
Suppliers (Inputs)	High	Such inputs as finance and human resources are vital for scientific research.	- Diversification of financing sources, e.g. research providing at the business inquire on the contract basis, international grant applying; - Involvement of young scientists through possibilities for self-development and clear mechanisms of professional trajectories.
Substitutes	Low	Intellectualization of economy influences on demand increase on research, that can't be substituted. The analyzed Department provides research that has no analogues in Ukraine.	- Increase the uniqueness of provided research at the international level.
Complementary Products	Medium	Together with research there is on demand consulting services.	- Provide consulting services, e.g. for authorities of local communities, for business on the contract basis.

Source: Developed by the author

Current situation of the Department

There is the internal methodic for ranking the Institute's departments. Estimation is provided every year, thus it is possible to analyze the dynamics of the indicators' changes (Table 2).

Table 2. Rankings of the Department of Economic and Ecological Development of Coastal Regions in 2021 and 2022

№	Indicator	Score, quantity (total score)		Change, 2022/2021
		2021	2022	
1.	**Research works:**	**440**	**630**	**+43.2%**
1.1	Financed from the state budget	2 (300)	3 (330)	+10%
1.2.	Financed by the private sector			
1.3.	Research grants:			
1.3.1	- national			
1.3.2	- international	4 (120)	6 (180)	50%
1.4.	Grant application:			
1.4.1.	- national project	1 (20)		-100%
1.4.2.	- international project		4 (120)	+100%
2.	**Publications:**	**843,45**	**750,58**	**-11%**
2.1	Articles in SCOPUS / Web of Science	4 (120)	8 (135)	+12.5%
2.2.	Articles in other scientometric bases, including Google Scholar:			
2.2.1	- published abroad in foreign language	1 (25)	1 (25)	=
2.2.2	- published in Ukraine in foreign language	3 (60)	1 (20)	-66.7%
2.2.3	- published in Ukraine in Ukrainian language	10 (150)	7 (85)	-43.3%
2.3.	Articles, published abroad:	1 (15)	1 (15)	=
2.5.	Abstracts in conference materials			
2.5.1	- in foreign language	7 (28)	16 (46,2)	+65.0
2.5.2.	- in Ukrainian language	27 (54)	21 (38,7)	-28.3%
2.6.	Monographs, study books (calculated by printed sheets)			
2.6.1	- published abroad		2,98 p.s. (44,7)	+100%
2.6.2	- published in Ukraine	34,7 p.s (347)	30,64 p.s. (306,4)	-11.7%
2.7.	Other publications (brochures etc.) (calculated by printed sheets)	16,43 p.s (44,45)	4,94 p.s. (34,58)	-22.2%
3.	**Practical implementation of conducted research**	**260**	**325**	**+25%**
3.1	At the level of national authorities:			
3.1.1	*prepared and sent*	5 (100)	5 (100)	=
3.1.2	*implemented (letter of support)*	4 (80)	3 (80)	=
3.2	At the regional level			
3.2.1	*prepared and sent*	6 (60)	9 (90)	+50%
3.2.2	*implemented (letter of support)*	2 (20)	5 (55)	+175%
3.3	At the international level:			
4.	**Presentations at conferences:**	**375**	**488**	**+30.1%**
4.1	abroad	18 (270)	19 (285)	+5.6%
4.2	in Ukraine	15 (105)	29 (203)	+93.3%
5.	**Expert and consulting activities**	**176**	**156**	**-11.4%**
5.1	Membership in international organizations	3 (45)	3 (45)	=
5.2	Membership in national organizations	7 (70)	1 (10)	-85.7%
5.3	Membership in regional organizations	3 (21)	3 (21)	=
5.4	Expert activity within the Institute	3 (15)	3 (15)	=
5.5	Participation in TV and radio programs	5 (25)	5 (25)	=
5.6	Interviews on television and radio			
5.7	Publications in the print media:			
5.7.1	- at the national / international level		4 (40)	+100%
5.7.2	- at the local level			
5.8	Publications about the Department's events and employees			
5.9	Expert materials, published in open sources			
6.	**Publishing and editorial activities**	**176**	**169**	**-4%**
6.1	Scientific editing of monographs	4 (40)	5 (50)	+25%
6.2	Membership in editorial boards:			
6.2.1	- in collections of scientific papers and journals of the Institute	5 (50)	7 (70)	+40%
6.2.2	- in collections of scientific papers and journals in Ukraine	4 (20)	1 (5)	-75%
6.2.3	- in collections of scientific papers and journals abroad	4 (40)	2 (20)	-50%
6.3	Article reviewing	8 (16)	12 (24)	+50%
6.4	Participation in the preparation and publication of journals of the Institution	1 (10)		-100%

7.	**Training of scientific personnel and educational activities**	**575**	**300**	**-47.85**
7.1	Mentorship of postgraduate and postdoctoral students	2 (10)	3 (15)	+50%
7.2	Mentorship of bachelors and masters	7 (21)	5 (15)	-28.6%
7.3	Mentorship of practical trainings of:			
7.3.1	- students		5 (5)	+100%
7.3.2	- teachers and researchers			
7.4	Reviewing bachelor's and master's theses	14 (28)	30 (60)	+114.3%
7.5	Teaching in higher education institutions	7 (35)	3 (15)	-57.1%
7.6	Teaching of postgraduate students	5 (25)	6 (30)	+20%
7.7	Membership in the academic councils beyond the Institute	4 (160)		-100%
7.8	Membership in the Academic Council of the Institute	6 (180)	5 (150)	-16.7%
7.9	Participation in the scientific and methodological seminar of the Institute	6 (12)		-100%
7.10	Chairman / Deputy chairman / Secretary of specialized academic councils	1 (30)		-100%
7.11	Reviewing of theses	14 (70)		-100%
7.12	Membership in State Exam Committee at the higher education institutions	2 (4)	5 (10)	+150%
8.	**Public and organization activity**	**49**	**44**	**-10.2%**
8.1	Participation in organizing committees of scientific events	7 (14)	7 (14)	=
8.2	Organization and public activity on a regular basis	7 (35)	6 (30)	-14.3%
9.	**Improving professional skills**	**290**	**520**	**+79.3%**
9.1	Obtaining of foreign language certificate		1 (10)	+100%
9.2	Internships:			
9.2.1	- abroad	14 (280)	17 (340)	+21.4%
9.2.2	- in Ukraine	1 (10)	17 (170)	↑ 17 times
10.	**Awards**	**15**	**80**	↑ 8 times
10.1	State awards			
10.2	International awards		1 (20)	+100%
10.3	Awards of central authorities and of the National Academy of Sciences of Ukraine		3 (30)	+100%
10.4	Other awards	3 (15)	6 (30)	↑ 2 times
Total		**3199,45**	**3462,58**	**+8.2%**

- points that need increased attention Source: Developed by the author

Figure 2. SWOT-analysis of the Department's activity

STRENGTHS

- Research works, financed from the state budget;
- International research grants;
- Publications;
- Practical implementation of conducted research at the regional and national levels;
- Conferences participation;
- Improving professional skills;
- Educational activities and work with young scientists;
- Membership in international organizations.

WEAKNESSES

- Research works, financed from the private sector;
- Practical implementation of conducted research at the international level;
- Interviews on television and radio;
- Publications in the print media;
- Expert materials, published in open sources;
- Membership in coordinating bodies together with authorities and organizations at the national level.

OPPORTUNITIES

- New opportunities of integration of Ukraine into the EU;
- Demand increase on research for economy rebuilding of Ukraine;
- Digitalization;
- Increase of awareness about environmental issues;
- Increase collaboration with stakeholders
- Consulting services development;
- Diversification of financing sources, e.g. research providing at the business inquire on the contract basis, international grant applying;
- Involvement of young scientists.

THREATS

- War in Ukraine;
- Reduction of budget financing of science;
- Brain drain;
- Environmental consequences of war;
- Obsolete audit approach to the international grant project control;
- Competition with the private and nongovernmental research institutions;
- Uncompetitive salaries in science sector for qualified researchers and young scientists.

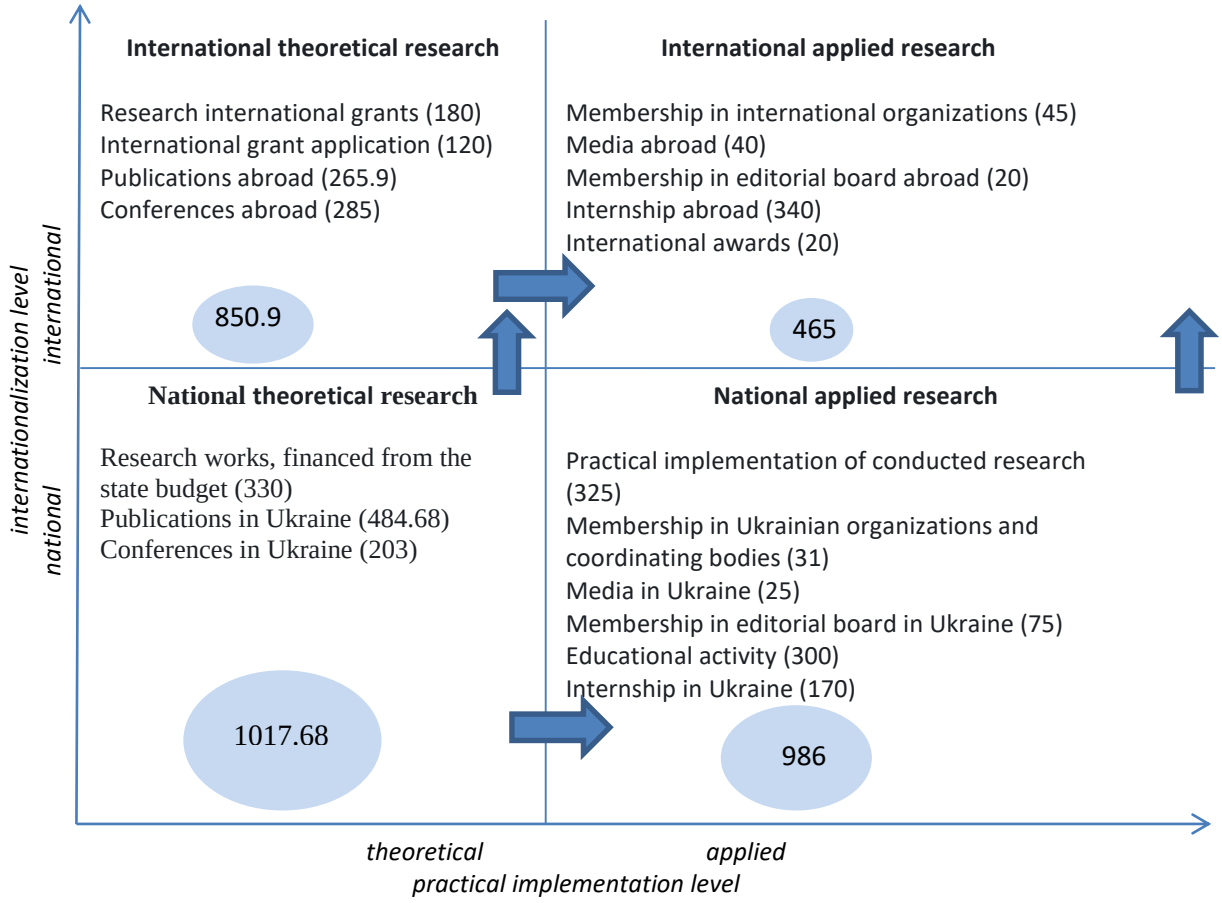
Source: Developed by the author

SWOT-analysis will help to systematize the results of conducted PESTEL-analysis, Six Forces Model Analysis and rankings of the Department of Economic and Ecological Development of Seaside Regions in 2021 and 2022 (Figure 2).

Strategic scenarios for the Department's development

On the basis of provided analysis strategic scenarios should be determined. For this purpose, the author proposes the Internationalization –Application Matrix (Figure 3).

Figure 3. Internationalization –Application Matrix for research activity analysis and for Department's strategic scenarios development



Source: Developed by the author

Key performance indicators

After the strategic scenarios and goals have determined it is necessary to determine indicators for monitoring the achievement of them (Table 3).

Table 3. Key performance indicators for the Department for the 5-yers period

Priority	Scenario	Indicators	Current scores (quantity)	Planned scores for a 5-years period (quantity)
1	**International applied research**	Membership in international organizations	3	6
		Media abroad	4	10
		Membership in editorial board abroad	2	5
		Internship abroad	17	20
		International awards	1	3
		Practical implementation of conducted research at the international level	0	5
2	**International theoretical research**	Research international grants	6	6
		International grant application	4	4
		Publications abroad	28	56
		Conferences abroad	19	20
3	**National applied research**	Practical implementation of conducted research at the national / regional level	8	20
		Membership in Ukrainian organizations and coordinating bodies	4	10
		Media in Ukraine	5	20
		Membership in editorial board in Ukraine	8	10
		Educational activity	62	100
		Internship in Ukraine	17	20
		Ukrainian awards	9	12
		Expert materials, published in open sources	0	5
		Publications about the Department's events and employees	0	3
		Research works, financed from private sector	0	2
4	**National theoretical research**	Research works, financed from the state budget	3	3
		Publications in Ukraine	33	66
		Conferences in Ukraine	29	30

Source: Developed by the author

Thus, using the proposed methodology the management receive a roadmap for further development of their research divisions that has determined strategic directions and concrete indicators for monitoring achievement of goals.

CONCLUSIONS

The research provides the strategizing methodology that is based on qualitative and quantitative analysis, that permits to determine not only strategic goals (ESFRI, 2021; Academy of Finland, 2020; University of Turku, 2020), but also key performance indicators for better monitoring and progress determination. The methodology is adoptable to the institutes' specificity that should be considered.

If the methodology will achieve a widespread usage, it give the basis for comparison among institutions and their divisions and related management decisions.

The proposed methodology doesn't determine scientific directions of the research; it is based on their practical implementation. Usually scientific directions are determined by the Department's specialization, Institute's Development Strategy, national research and innovation priorities, and also by requirements of stakeholders and current challenges. One more aspect for strategy development – types of research, such as applied, fundamental and disruptive research, – that have different key performance indicators. It is an issue for further discussions.

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