Application of the analytical hierarchy process to evaluate hype AI technologies

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Abstract

The current topic of research on the implementation of hype technologies in the field of Artificial Intelligence (AI) is considered. An overview of the prospects for the intensive development of the AI field is presented. The article shows the growing attention to the introduction of AI technologies by business structures that invest more and more money in this industry. The essence of the maturity curve of Hype Cycle technologies developed by the Gartner consulting company is revealed. A comparative analysis of Hype Cycles for Artificial Intelligence for 2016 and from 2019 to 2023 is carried out. The application of the analytical hierarchy process for the selection of promising hype AI technologies in the activities of domestic companies is substantiated.

Keywords

Artificial Intelligence, innovation, company, business processes, development prospects, hype technologies, fuzzy systems, analytical hierarchy process.

1. Analysis of prospects for the development of AI technologies

Globally, there is an explosive interest in the growing impact of AI. The emergence of new AI technologies affects individual consumers and companies as well as countries in general. Today, AI technologies have become a driving force of innovation, and therefore companies are forced to invest and implement new AI technologies to remain competitive. The development and active use of AI technologies allow organizations to realize potential opportunities that can become objects for improvement and implementation in their activities and ensure their success in a dynamic business environment. The relevance of the problem is confirmed by the fact that the world is witnessing rapid growth in AI spending, the transformation of IT services, and the convergence of various AI technologies. According to the data of well-known analytical agencies, the average annual growth of the global AI market in 2023 is within 20-38% (Table 1). Other studies demonstrate that from 2018 to 2025, the market of AI technologies is expected to grow from \$21.46 billion to \$190.61 billion, and the cumulative annual growth rate will make up 36.62 percent [1].

The consulting company UBS predicts that the AI industry will have grown to a \$225 billion market by 2027 and expenditures on the AI infrastructure are expected to grow from \$25.8 billion in 2022 to \$195 billion in 2027 [3].

The IDC Company published a forecast on the European AI market. According to the estimates, spending on AI in Europe has reached \$34.2 billion according to the results of 2023, which has made up approximately 20.6% of the global volume. The CAGR Indicator (Compound

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Annual Growth Rate) from 2022 to 2027 in the European market is forecast at 29.6% against 26.9% globally. As a result, in 2027 AI expenses in Europe will exceed \$96.1 billion per year [4].

Table 1

Average annual growth rate of the global AI market, forecasts for 2023

Consulting company	Average annual growth						
Precedence Research	38%						
Statista	38%						
IDC	27%						
Fortune Business Insights	20%						
1 of tune Dusiness misignes	2070						

Source: News Analytics, 2023 [2]

Bill Gates [5] said a personal digital agent could kill Google Search and Amazon. The first company to develop it will have a leg up on competitors. There is a 50-50 chance that this future AI winner will be either a startup or a tech giant. "Whoever wins the personal agent, that's the big thing, because you will never go to a search site again, you will never go to a productivity site; you'll never go to Amazon again", he said during a Goldman Sachs and SV Angel event.

Al encompasses a wide range of methods and disciplines, including vision, perception, language and dialogue, decision-making and planning, problem-solving, robotics, and other areas of application where self-learning is possible. Al is optimally considered as a set of technologies and methods used to supplement traditional human qualities, such as intelligence, analytical, and other abilities. The results of the research made it possible to distinguish the following main types of AI:

• Artificial Narrow Intelligence (ANI) is aimed at very good performance of a certain task (for example, based on Natural Language Processing (NLP): Google Assistant, Google Translate, Siri, Cortana).

• Artificial General Intelligence (AGI) represents the behavior of a human specialist. These technologies are now intensively developing, but the real achievement of the level of a high professional will not happen relatively soon.

• Artificial Super Intelligence (ASI) is a superintelligence that can be applied to solve any problem. Currently, this is a distant prospect for at least several decades (according to experts, not earlier than 2050).

Achieving the level of AGI in practice is the first ambitious task of today, but it also requires huge resources. Therefore, regardless of how close existing AI solutions have reached the embodiment of the highest levels of AI, they fulfill the very cutting-edge of engineering thought. Modern AI requires high-performance computing, powerful IT infrastructure, advanced scientific developments, and appropriate personnel. And this de facto reflects the degree of technological maturity of companies, industries, and states.

In many sectors, AI offers innovative services; in particular, it is used for statistical and big data analysis. AI is also used to analyze trends and identify crisis threats, optimize the business model, and develop regulatory approaches.

IDC's Future Scape predictions provide valuable insights into the future of the IT industry and the pivotal role of artificial intelligence. IDC predicts significant changes in the global business ecosystem caused by the development of the IT industry. In the world, the network information infrastructure will be significantly rebuilt, satellite-based Internet connectivity will be developed, Big Data processing will be intensified, and the use of AI will also expand. The convergence of new IT capabilities will primarily contribute to the transformation of management tools [7]. Because of this, new requirements for updating personnel's IT skills will be formed [8]. IDC predicts that by 2025, the world's 2,000 largest companies (G2000) will have allocated more than 40% of IT spending to AI [9].

By 2025, 75% of customer interactions will consist of AI contacts. Already now, analytical robots calculate a business development plan for the next 10 years in a matter of seconds and chatbots solve typical customer problems at any time of the day [1].



Figure 1: Top Ways Business Owners Use Artificial Intelligence [6]. Source: <u>Forbes Advisor</u> <u>Embed</u>

In Ukraine, the following most significant areas of the application of AI technologies can be distinguished [10-18, 19, 20]:

- 1. Logistics:
 - vehicle autopilot;
 - tracking the movement of goods;
 - formation of cargo flow traffic;
 - management and optimization of stocks.
- 2. Finances:
 - diagnosis of the company's local financial system;
 - automatic management of portfolios;
 - analysis of financial risks;
 - prevention of fraud and other cyber threats.
- 3. Management of production processes:
 - diagnosis and support of technological processes;
 - automation of the assembly and packaging of a product,
 - warning about equipment breakdowns in production.
 - automation of reporting;
 - guaranteeing safety at work.
 - 4. Organizational management system:
 - support for making management decisions;
 - speech recognition and command execution;
 - processing and creation of graphic images and video objects;
 - generation of texts, programs, images, and video plots on a given topic;
 - automation of work with personnel (creating vacancies, selection of resumes, etc.);
 - prototyping and personalization of users' interfaces
 - 5. Marketing:
 - selection and recommendation of content on a certain topic (social networks, online stores, etc.);
 - analysis of big data, their segmentation, and search optimization;
 - testing and optimization of advertising campaigns;
 - demand forecasting;
 - smart technologies for communication with customers.
 - planning publication in social networks;
 - personalization of customer service;
 - development of animation, video, and visual solutions.
 - 6. Medicine [19]:

- diagnosis and prognosis of diseases;
- personalized treatment;
- automatic analysis of medical images, such as radiography, CT, MRI, etc., to detect anomalies and pathologies;
- patient monitoring and health forecasting;
- medical documentation and information processing

AI changes not only the IT industry but also takes business development to a qualitatively new higher level. In particular, experts claim that after 2014, the most significant developments in the IT field are carried out by commercial structures, not academic institutions (non-commercial and scientific organizations). This is because the creation of modern AI systems requires huge volumes of data, as well as large computing and financial resources.

In general, AI is not a separate factor in solving specific tasks, but through convergence plays the role of a catalyst and amplifier of existing technologies, transferring them to a qualitatively higher level of utility for the consumer. The practical aspects of using AI technologies are expanding rapidly. This is confirmed by the research of scientists [21] who offer a comprehensive review of approaches to the analysis of failure in industrial systems using artificial intelligence with sufficient or insufficient data and unbalanced problems. The scientists have presented AI algorithms and classified the scenarios of industrial system applications into homogeneous and heterogeneous ones based on data. The authors also summarize the solved problems, challenges, and promising directions. This can become a new direction for the practical application of AI technologies.

2. Summary analysis of Hype Cycles for Artificial Intelligence for 2016, 2019-2023.

To make the most of new possibilities of hype AI technologies, it is extremely important to see the ways of their mass implementation and cases of potential use. Individual AI technologies are at an early stage and there is great uncertainty regarding their development. Their introduction to the market can last up to 10 years. It is clear that focusing on hype AI technologies is associated with great risks during deployment, but potentially has more benefits for early adopters.

In 1995, the consulting company Gartner proposed the term Hype Cycle for planning, which became the name for the maturity curve of technologies. Gartner presents research materials in annual analytical reports [22-27], which show about 30 new technologies that can greatly affect consumers, businesses, society, and people over the next 5-10 years.

The consulting company Gartner considers Hype technologies to be revolutionary technologies whose viability and competitive advantage have not been proven. The company's analysts are involved in the research, sifting through thousands of unique technologies that, in their opinion, will manifest themselves within 5-10 years and will have a strong impact on society and business. This schedule is divided into five stages, which are shown in Table 2.

Table 2

Hype Cycles content

Nº	Stage	Content					
I	A technological breakthrough in the development of Innovation technologies is advertised. The first tests of its technologies Trigger functionality are conducted. Sometimes usable products do not and commercial viability is not proven.						
II	Peak of Inflated Expectations	The first single successful implementations of hype technologies are widely advertised. Mass applications of these technologies have not yet confirmed the expectations of consumers who are waiting.					
	Trough of	of Interest in the use of new hype technologies declines, as mass					

	Disillusionment	experiments do not confirm the expected results. Investments in development continue if the manufacturers of hype technology improve it to the level that satisfies the first at least partially contented users.
IV	Slope of Enlightenment	The possibilities are clarified and the scope of the application of new hype technologies is expanded. Hype technology providers are developing second and third-generation products. More and more conservative companies that have taken a wait-and-see position introduce new hype technologies.
v	Plateau of Productivity	The market for the consumption of new hype technologies stabilizes. The criteria for assessing the viability of suppliers are more defined. The wide application and relevance of hype technologies on the market pay off. The evolution of hype technologies and their spread into new market segments is possible.

Source: [28]

Thirty points are drawn on this graph, which is tied to specific technologies and indicates the expected time of their release to mass sales. In particular, the Hype Cycle chart:

• shows the horizons of technological prospects and makes adequate decisions on the use or non-use of novelties;

• reflects the relative location of various adjacent or competing technologies, the level of their viability, and the speed of adaptation;

• provides insight into how technology will evolve, providing a reliable source of information for decision-makers;

• helps determine the optimal time for investments and reduces the risks of unsuccessful investments.

The Hype Cycle methodology helps professionals evaluate the potential opportunities of new technologies for business.

The growing attention to the development of AI is confirmed by Gartner's annual presentation on the hype analysis of AI technologies, starting in 2019.

The summarized results of Gartner's analysis of Hype Cycles for Artificial Intelligence from 2016 to 2023 by development stages are shown in Table 3 [22-27].

Table 3

Hype Cycles for Artificial Intelligence

Type Cycles I		cial inten	igei	ice							
2016		2019		2020		2021		2022		2023	
Stage I. Innov	ation T	rigger									
Smart Dust	4	AGI	4	AGI	4	AGI	4	AGI	4	Automatic Systems	3
4D Printing	④ _{Mar}	AI ketplaces	3	Small Data	3	Physics- Informed AI	3	Physics- Informed AI	2	First- Principles AI	2
G-PMI	④ Rein nt I	nforceme Learning	3	Composite AI	2	AI TRiSM	3	Causal AI	3	Multiagent Systems	3
802.11ax	³ Gov	AI vernance	3	Generative AI	2	Composite AI	2	Data-Centric AI	2	Neuro- Symbolic AI	4
Context Brokering	3 Aug Inte	gmented elligence	2	AI Marketplaces	3	Model Compression	3	AI Engineerings	3	Causal AI	2
NC	4	NC	3	Responsible AI	3	Small and Wide Data	3	Decision Intelligence	2	AI Simulation	3
dbrPaaS	3 D Inte	ecision elligence	3	Things as Customers	4	AIO&AP	2	Composite AI	2	AI Engineering	3
Quantum Computing	(4) A Se	l Cloud ervices	3	NC	3	Machine Customers	4	AI TRiSM	2	Data-Centric AI	2
Human	4	DL&A	2	Augmented	2	ModelOps	3	Operational	3	Composite AI	2

Augmentation		Services		Intelligence				AI Systems			
Personal Analytics	3	3 Knowledge 3 AI 3 Responsible 4 AI 4 AI 3 AI 4 AI 3 AI 4 AI 4 AI 4 AI		3	NCMOps	3	Operational Al Systems	[3			
Smart Workspace	3	AI-Related C&SI Services	2	AI D&TK	2	Multiexperie nce	3			AI TRiSM	2
Volumetric Displays	4	AI Developer Toolkits	2			AI Governance	2			Decision Intelligence	2
CUI	3	Explainable AI	3			Generative AI	2			AGI	4
B-CI	4	Edge AI	2			Human- Centered AI	2				
VPA	3	Smart Robots	3			NC	3				
Smart Data Discovery	3					Synthetic Data	2				
Stage II. Peak	of I	nflated Expe	cta	tions							
Smart Robots	3	DNN ASICs	2	Decision Intelligence	2	Decision Intelligence	2	Generative AI	2	Prompt Engineering	2
Blockchain	3	AI PaaS	3	Smart Robots	3	Transformer s	3	Responsible AI	3	NC	3
Connected Home	3	Quantum Computing	4	DL&A Services	2	Smart Robots	3	Foundation Models	3	Responsible AI	3
Cognitive Expert Advisors	3	Intelligent Applications	2	DNN ASICs	2	Knowledge Graphs	3	Smart Robots	3	Smart Robots	3
Machine Learning	2	Digital Ethics	3	Intelligent Applications	2	Edge AI	2	Synthetic Data	2	Foundation Models	2
SDS	3	AutoML	2	Knowledge Graphs	3	AIM&TK	2	Edge AI	2	Generative AI	3
Autonomous Vehicles	2	Chatbots	2	Digital Ethics	3	DNN ASICs	2	Knowledge Graphs	3	Synthetic Data	2
Nanotube Electronics	3	CUI	3	Edge AI	2	Digital Ethics	3				
SDA (SDx)	2	(Deep Learning	2	AI Cloud Services	2	AI Cloud Services	2				
		Graph Analytics	3	Deep Learning	g2)	Deep Learning	2				
		Machine Learning	2	NLP	3						
Stage III. Trou	ıgh	of Disillusion	nme	ent							
NLQA	2	NLP	3	Machine Learning	2	DL&A Services	2	NLP	3	ModelOps	3
ET&OM	4	VPA-EWS	2	FPGA Accelerators	2	NLP	3	Digital Ethics	2	EdgeAI	(1)
Augmented Reality	3	RPAS	1	Chatbots	2	Machine Learning	2	AIM&TK	2	Knowledge Graphs	2
		FPGA Accelerators	2	Computer Vision	2	Intelligent Applications	2	AI Cloud Services	2	AIM&TK	(2)
		Virtual Assistants	2	Autonomous Vehicles	4	Chatbots	1	Deep Learning	2	Autonomous Vehicles	(3)
		Computer Vision	2	Cognitive Computing	\otimes	Autonomous Vehicles	4	Autonomous Vehicles	4		
		Insight Engines	2			Computer Vision	2				
		Cognitive	3								
		Autonomous	(4)								
			\odot								

Vehicles								
Stage IV. Slope of Enlightenment								
Virtual Reality ③	Insight Engines	2	Sematic Search	2	Intelligent Applications	2	Intelligent Applications	2
					DL&A	2	Cloud AI Services	2
					Computer Vision	1	DL&A	1
							Computer Vision	1
Stage V Plateau of Productivity								

Speech Recognition	(1) GPU Accelerators (1)
GPU Accelerators	1

AGI - Artificial General Intelligence; AI D&TK - AI Developer and Teaching Kits: AIM&TK - AI Maker and Teaching Kits: AIO&AP - AI Orchestration and Automation Platform; B-Cle - Brain-Computer Interface; CUI - Conversational User Interfaces; dbrPaaS - Data Broker PaaS; DL&A - Data Labeling and Annotation; DNN ASICs - Deep Neural Netwrok ASICs; ET&O - Enterprise Tewonomy and Ontology Management; G-PMI - General-Purpose Machine Intelligence; NC - Neuromorphic Computing; NCMOps - Neuromorphic Computing ModelOps; NLP - Natural Language Processing: NLQA - Natural-Language Question Answering; RPAS - Robotic Process Automation Software; SDA (SDx) - Software-Defined Anything (SDx); SDS - Software-Defined Security: VPA - Virtual Personal Assistants; VPA-EWS - VPA-Enabled Wireless Speakers; Source: developed by the authors on the base of [22-27]. Plateau will be reached: (1) - less than 2 years; (2) - 2 to 5 years; (3) - 5 to 10 years; (4) - more than 10 years; \otimes - obsolete before plateau.

However, despite its great advantages, the Hype Cycle chart, like any analytical tool, cannot be the final criterion of truth, as can be seen from the analysis in Table 3. For example, let the authors consider Cognitive Computing, which simulates human mental processes in computer systems, and by 2019, they occupied a fifth of the AI market. Currently, developments in this area have moved into a set of narrower problems for solving narrow business problems (for example, fraud detection and risk management, attracting customers with the help of personalized marketing, monitoring the condition of equipment or product quality, adjusting technological processes, diagnosing diseases, etc.). Currently, the cognitive computing market can be divided into four segments: natural language processing; information search; machine learning; and automated thinking. The natural language processing (NLP) segment captured the largest market share in 2022 due to the massive adoption of chatbots and voice assistant devices.

In general, the number of long-term projects of hype AI technologies is reduced, the emphasis is shifted to more specific goals and no positions are taken on the Stage V Plateau of Productivity of Hype Cycles for Artificial Intelligence (except for 2019 – GPU Accelerators).

3. Application of the analytical hierarchy process for the selection of promising hype AI technologies for the organization

In general, it can be stated that the elements of AI are increasingly penetrating the activities of all organizations since Artificial Intelligence (AI) is an evolving set of technologies used for solving a wide range of applied issues [29]. Their scope of application is increasing every year. Therefore, companies face the question of choosing the AI technologies that are most correctly integrated into their business processes. Such a choice lies in the following two areas: 1) the specifics of the organization's activity; 2) the dynamically growing capabilities of AI technologies. The choice of the company's policy in both areas can be based solely on subjective judgments. Managers and interested stakeholders understand the company's tasks best. The most complete assessment of the forecast of the analysis of the consulting company Gartner, the results of which are given in the previous part.

Scientists [30] reveal the phenomenon of business activation of AI technologies; meanwhile, the authors emphasize the importance of an original combination of two established machine learning algorithms (LDA and hierarchical clustering).

The right choice of Al technologies is crucial for every business structure. That is why the matter of choosing a method that will ensure the selection of optimal hype AI technologies for a specific business structure, taking into account its features, is becoming more relevant. Analyzing the works of scientists in the field of problems, we see that the research singles out the methods of classification [31, 32], data clustering [33], visualization [34], and other approaches of AI, ML, and DP.

The conducted research made it possible to single out the methods that should be used in practice to select promising Hype AI technologies for the organization. In particular:

- the analytic hierarchy process (AHP) – provides a systematic approach to decision-making, which allows for structuring complex problems and taking into account many criteria when evaluating alternatives;

- the Delphi method, which lies in experts giving their predictions about future technologies or trends, and then summarizing the results. It is often used to predict technology trends;

- the method of scenarios – involves the development of various scenarios of technology development, which allows the understanding of possible consequences of choosing a specific direction;

- the SWOT analysis method, which makes it possible to assess the strengths and weaknesses, opportunities, and threats associated with the implementation of specific technologies.

- the technology forecasting method (Technology Forecasting) – uses the analysis of historical data, development trends, and other methods to forecast the future development of technologies.

- the method of startup scanning (Startup Scanning) – involves researching the market of startups working in the field of artificial intelligence, which can help identify promising technologies that are developing in this direction.

These methods can be used individually or combined to obtain a more objective and complete map of promising Hype AI technologies for the organization. However, this research will use the analytic hierarchy process (AHP), taking into account its characteristics.

Companies are developing strategies for implementing modern information and communication technologies. The company's innovative strategy in the IT field is formed depending on the tasks to be solved taking into account market positioning, activity specialization, expected competitive advantages, and the depth of crisis manifestations. However, as research results [30] have shown, the use of artificial intelligence technology does not have a significant impact on the effectiveness and efficiency of innovations. The results suggest that in the era of artificial intelligence, the principle of "people-centeredness" in human

resource management and the acceptance of responsibilities by employees still play a very important positive role [21]. In developing this issue, scientists [35] have pointed out that artificial intelligence differs from other digital technologies, given its potential to become both a general-purpose technology and a method of invention, and several companies are beginning to integrate AI into their innovative processes.

To plan the company's innovative strategy, first of all, it is necessary to establish the most characteristic parameters, the value of which will determine the choice of a specific IT project. The introduction of AI technologies is conditioned by the analysis of huge volumes of data and the coordinated processing of multidirectional information flows at both technological and content levels. Currently, the introduction of generative AI technologies, which lead to the emergence of qualitatively new market opportunities due to the creation of a unique offer, has intensified. However, it is extremely difficult to assess the real prospects of the emergence of hype AI technologies. Solving this task requires a systematic approach, the necessity of which is determined by the following factors:

• complexity of implementing hype AI technologies:

• multifaceted interpretation of such an innovation (infrastructure, process, and result);

• considering hype AI technologies as a whole "man-infrastructure-innovation";

• the presence of a set of alternative innovations;

• the presence of a set of criteria for assessing the readiness of the environment through the analysis of Hype Cycles for AI;

• the presence of a set of criteria for assessing the socio-economic effect of the introduction of hype AI technologies;

• a lack of standards for the use of new hype AI technologies;

• subjective dependence of a set of innovation assessment criteria on the composition and competencies of the expert group;

• the presence of unmanaged or poorly managed technological, socio-economic, legal, and cultural factors in the system "man-infrastructure-innovation".

The evaluation of hype AI technologies can be carried out by determining the socioeconomic effect [36], quality, or commercial potential. The above methods are reduced to an expert assessment carried out by a survey or group examination through the following approaches:

• determination of the socio-economic effect is carried out to evaluate an innovative idea or a corresponding project;

• quality assessment comes down to measuring the consumer value of an idea;

• measurement of the commercial potential is carried out to assess the possibility of innovation commercialization.

Such approaches are used to compare hype AI technologies to choose the best alternative for the company. The formalization of the system includes formalization, structuring, its elements, and interactions. Thus, the set $\langle S, C \rangle$ determines the formal description of the company as a system, where $S = \{s1, s2, ., sn\}$ is a set of constituent elements of the system, $C = \{c1, c2, ., cm\}$ is a set of system connections and relationships between them. The task of implementing hype AI technologies is defined as the process of transforming the company into the desired state. Thus, the set $\langle S, C, O, R \rangle$ determines control in the system, where O is a finite set of possible operators that transfer the system from one state to another, and R is a desired state of the system.

Let the authors consider the possibility of applying the analytic hierarchy process for expert assessment of the efficiency of new hype AI technologies.

To evaluate the implementation of hype AI technologies, it is advisable to use the analytic hierarchy process, maximin convolution based on the theory of fuzzy large quantities, and the method of analytical networks. All three methods are based on the formation of matrices of pairwise comparisons of alternatives and criteria using the scale developed by T. Saati [37].

The research of the problem [38-41] made it possible to form the stages of applying the analytic hierarchy process to ensure the selection of promising Hype AI technologies for the organization

In the first stage, the authors will present a hierarchical decision-making structure regarding the choice of hype AI technologies for the company (Fig. 2).



Figure 2: Hierarchy of the influence on the socio-economic effect of the introduction of hype AI technologies in the company Source: developed by the authors

Further, based on the data of the company, the authors build matrices of pairwise comparisons taking into account the criterion of socio-economic effect. When building comparison matrices for the criteria of AI readiness, the authors take into account the results of the Hype Cycles for AI analysis in Tables 3. At the next stages of the analytic hierarchy process, the authors perform calculations for each variant of the coordination of elements of two levels of criteria. At the same time, it should be noted that in the given approach some matrices will be inconsistent. In this case, at the final stage of the hierarchy synthesis task, the homogeneity of the entire hierarchy is evaluated by summing the homogeneity indicators of all levels, brought by weighting to the first hierarchical level.

The application of this method allows for choosing the most effective project for the introduction.

4. Conclusions

A strategy for analyzing projects of the implementation of hype AI technologies and the most efficient means to ensure the effective development of domestic companies is elaborated. In general, the following provisions are disclosed in the work:

I. The average annual growth of world investments in the AI field is more than 25%;

II. AI technologies are implemented in an increasingly wide range of business processes, resulting in the formation of hype technologies;

III. The progress in the AI industry is researched by many international companies, in particular, Gartner;

IV. The consulting company Gartner from 2019 to 2023 prepares annual reports in the form of Hype Cycles for Artificial Intelligence, which show the high dynamics of changes;

V. The innovative strategy of the development of domestic companies, taking into account progress in the AI industry is developed in conditions of high uncertainty;

VI. The task of the optimal development of domestic companies can be reduced to the problem of fuzzy logic, for the solution of which a modified method of the analytic hierarchy process can be used.

This method of determining the feasibility of projects of implementing hype AI technologies can be perceived as a primary assessment. It allows for assessing the rationality of the company's measures as a whole, finding out according to which parameters it is necessary to carry out active innovations. Next, more precise economic, technological, and marketing justifications for specific innovative measures are needed, as well as the calculation of their cost, yield, profitability, and resource availability.

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