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KYIV NATIONAL ECONOMIC UNIVERSITY
NAMED AFTER VADYM HETMAN

Faculty of International Economics and Management
Department of International Economics

BACHELOR DEGREE PROGRAM	**«INTERNATIONAL ECONOMICS»**
FIELD OF KNOWLEDGE	**05 Social and behavioral sciences**
SPECIALTY	**051 «Economy»**

Form of education *full-time*

BACHELOR THESIS

Title: Innovative activity of the corporation in the context of globalization (on the example of Intel)

By: Oleksii Khomchak
(Student's name, surname) (Signature)

Academic Supervisor Doctor of Economics
(Scientific degree, academic status)
Oleh Shvydanenko
(Signature) (Name, Surname)

Bachelor Thesis has been approved for defense at Attestation Examination Commission (EC)

Head of the Department of International Economics
Doctor of Science, Professor
Y. Stoliarchuk
(Signature)

KYIV 2023

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AGREED
Head of the project group (guarantor) of the educational-professional program

Y. Stoliarchuk

_____ 2023

APPROVED
Head of the Department

Y. Stoliarchuk

_____ 2023

INDIVIDUAL TASK
higher education applicant: Homchak Oleksii

full-time forms of education

Bachelor Thesis
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Deadline for submitting the final version of Bachelor's Thesis to the Academic Supervisor
(Deadline -)

Plan of Bachelor Thesis and the terms of it submission to the Academic Supervisor

Chapter 1 METHODOLOGICAL PRINCIPLES OF RESEARCH ON INNOVATIVE DEVELOPMENT OF ENTERPRISES IN THE GLOBAL ECONOMY

Chapter 2 WAYS TO IMPROVE THE INNOVATIVE ACTIVITY OF INTEL CORPORATION IN THE CONDITIONS OF GLOBALIZATION

Object of research:	The object of the thesis is the processes of innovative development of modern corporations in the global economic space.
Subject of research:	The subject of the study is the conditions, factors and mechanisms of the innovative activity of the Intel company in the conditions of globalization
The purpose of the Thesis:	The purpose of this work is to substantiate recommendations for improving the innovative activities of the Intel Corporation in the context of globalization, based on the generalization of the theoretical foundations of the development of modern companies and the study of corporate mechanisms of innovative development

Specific tasks applicant has to accomplish to meet the objective:

In Chapter 1: • to explore the concepts of innovative development of companies on world markets

• determine the determinants of the formation of the innovative potential of corporations in the global economy

• to systematize methodical approaches to evaluating the effectiveness of the innovative development of TNCs in the conditions of globalization

In Chapter 2: • describe the development of the Intel company in terms of globalization

• carry out a diagnosis of the efficiency of using the scientific and technological potential of the corporation in the conditions of globalization

• to substantiate the strategic directions of increasing the innovative leadership of the Intel company in the world economy

• develop proposals for ways to improve the innovative activities of the Intel Corporation in the context of globalization

The task has been set
by the Academic Supervisor _____ _____

"___" 01. 2023

The task has been given to
Applicant _____ _____

"___" 01. 20

ABSTRACT

Bachelor`s Thesis for a bachelor`s degree on contains 107 pages, 3 tables, 18 figures. The Bibliography includes 39 items and 8 Appendixes.

«Innovative activity of the corporation in the context of globalisation (on the example of Intel)»

The object of research is the processes of innovative development of modern corporations in the global economic space.

The subject of the study is the conditions, factors and mechanisms of the innovative activity of the Intel company in the conditions of globalization

The purpose of the qualifying bachelor's thesis is to substantiate recommendations for improving the innovative activities of the Intel Corporation in the context of globalization, based on the generalization of the theoretical foundations of the development of modern companies and the study of corporate mechanisms of innovative development.

In accordance with the set goal, the following tasks were defined:

• to explore the concepts of innovative development of companies on world markets

• determine the determinants of the formation of the innovative potential of corporations in the global economy

• to systematize methodical approaches to evaluating the effectiveness of the innovative development of TNCs in the conditions of globalization

• describe the development of the Intel company in terms of globalization

• carry out a diagnosis of the efficiency of using the scientific and technological potential of the corporation in the conditions of globalization

• to substantiate the strategic directions of increasing the innovative leadership of the Intel company in the world economy

• develop proposals for ways to improve the innovative activities of the Intel Corporation in the context of globalization

Practical significance of the obtained results.

The year of completion of the qualifying master's thesis is 2023.

The year of job protection is 2023.

Keywords: globalization, innovative development, leadership, strategies, innovations

Academic supervisor's review
of Bachelor Thesis
by the applicantof Kyiv National Economic University
named after Vadym Hetman
bachelor degree program "International economy"

Applicant's name Khomchak Oleksii
(Name, Surname)
«Innovative activity of corporations in the context of globalization (on the example of the Intel company)» *(Thesis title)*

1. **Relevance of the research topic:** growing global competition in the economy and the need for modern corporations to increase their potential in the field of innovation are essential for strengthening the company's competitive advantages and ensuring its high status in the market. In this context, effective innovation activities of TNCs are becoming a key factor that allows companies to differentiate themselves from competitors, offer innovative solutions and products, as well as adapt to rapidly changing conditions and meet changing consumer needs. Thus, ensuring effective innovation activity of TNCs is becoming a necessary element of the development strategy of corporations in the modern competitive environment, which determines the relevance of the study.
2. **Positive aspects of the bachelor thesis:** are a comprehensive analysis based on scientific sources and factual material of the scale of Intel's activities in the context of global competition; diagnostics of the efficiency of using the scientific and technological potential of the corporation in the context of globalisation.
3. **The author's independent ideas and conclusions, scientific novelty:** the determinants of the formation of the innovative potential of corporations in the world economy are characterised; strategic directions of increasing the innovative leadership of Intel in the context of globalisation are substantiated.
4. **Significance of theoretical conclusions and practical recommendations:** the theoretical conclusions and recommendations presented in the bachelor's thesis can be used in the practical activities of domestic corporations to improve their own innovation strategies and identify strategic directions for improving innovation leadership.
5. **Negative aspects of the paper**: there are stylistic flaws in the work; the author should have paid more attention to the analysis of the impact of the external environment on the innovative development of Intel.
6. **Total result of the bachelor thesis and its approval for defense at Attestation Examination Commission:** In general, the qualifying bachelor's thesis meets all the requirements, is performed at a high theoretical level, is complete and independent, and testifies to the author's ability to research complex scientific issues. The work is recommended for defence before the Attestation Examination Commission with a score of 46 points.

Academic Supervisor Doctor of Economics, Professor
(position, academic degree)

(Signature) O.Shvydanenko
(Name, Surname)

"05" June 2023

INTRODUCTION

In the modern era of corporate development, innovations play a decisive role in ensuring growth and sustainable development. International experience confirms that in the long term, successful production and its competitiveness of an international company are impossible without the constant introduction of innovations.

Modern innovative corporations that develop new scientific and technical solutions and produce qualitatively new products using high technologies have begun to play a significant role in global economic development. Many innovative developments created by the research divisions of such corporations have brought these companies both significant profit and leadership in certain areas of the world economy, and led to a qualitative global breakthrough in various directions of scientific and technological progress.

As the global development of the modern economy shows, innovative technologies are currently a key factor in the competitiveness of enterprises on the world market, so they are becoming more and more in demand. Also, innovative developments can contribute to improving the quality of people's lives, solving social and environmental problems. In this regard, the development and support of innovative enterprises is one of the priority tasks in various countries of the world.

Many scientists conducted research in the field of introducing innovations into the activities of modern corporations and their development on the world market. The works of K. Clayton, P. Drucker, A. Osterwalder, D. March, G. Hamel, D. Diver, K. Christiansen, E. Rogers, P. Burrows, A. Diaz, M. Morrison. I.Y. Maly, I.F. Radionova, T.F. Kutsenko Among the domestic scientists who paid attention to the general problems of the formation and development of the innovative potential of modern corporations, the scientific works of such scientists as O. V. Warsaw, Yu. O. Golovchuk, T. V. Danko, N. V. Didyk, M. Dubina, I. Yu. Yepifanova, N. A. Karasyova, K. M. Sinyakova, O. V. Smaglo, T. M. Panevnyk, L. M. Pobochenko, G. O. Pchelyanska, Yu. V. Ushkarenko , O. H. Zvyk, A. V. Chmut, N.V. Fedirko, etc.

However, in the foreign and domestic literature, the problems of assessing the effectiveness of using the scientific and technological potential of the corporation in the conditions of globalization remain insufficiently disclosed. The mechanisms of increasing the innovative potential of modern corporations, the ways of increasing the innovative leadership of companies in the world economy require a complex analysis.

The purpose of this work is to substantiate recommendations for improving the innovative activities of the Intel Corporation in the context of globalization, based on the generalization of the theoretical foundations of the development of modern companies and the study of corporate mechanisms of innovative development

The task of this work is:

• to explore the concepts of innovative development of companies on world markets

• determine the determinants of the formation of the innovative potential of corporations in the global economy

• to systematize methodical approaches to evaluating the effectiveness of the innovative development of TNCs in the conditions of globalization

• describe the development of the Intel company in terms of globalization

• carry out a diagnosis of the efficiency of using the scientific and technological potential of the corporation in the conditions of globalization

• to substantiate the strategic directions of increasing the innovative leadership of the Intel company in the world economy

• develop proposals for ways to improve the innovative activities of the Intel Corporation in the context of globalization

The object of the thesis is the processes of innovative development of modern corporations in the global economic space.

The subject of the study is the conditions, factors and mechanisms of the innovative activity of the Intel company in the conditions of globalization

The following methods were used to write the thesis: logical, comparative and retrospective analysis, synthesis, and classification, with the help of which the material was divided into component parts, researched and classified by groups.

The theoretical basis for the research is the modern theoretical foundations of innovative development using scientific concepts, monographs and periodical publications of both Ukrainian and foreign publications on the functioning of modern international corporations.

Sources of economic literature and periodicals, analytical data from various areas of innovative activity, statistical materials of international agencies and organizations served as the research information base for this work.

Structure of work. The thesis consists of an introduction, two chapters, each of which has three subsections, conclusions, a list of used sources and appendices. The work contains 3 tables, 18 figures, 39 used sources. The volume of the thesis is 107 pages.

CHAPTER 1. METHODOLOGICAL PRINCIPLES OF RESEARCH ON INNOVATIVE DEVELOPMENT OF ENTERPRISES IN THE GLOBAL ECONOMY

1.1 Concepts of innovative development of companies on world markets

One of the key elements of modern business is innovation. An innovation is an innovation that improves production efficiency in various areas of enterprise activity, including equipment, technology, labor conditions and organization, management, finance, accounting and reporting. Innovations can give not only an economic, but also a social effect, such as improving the social environment in the team and improving the qualifications of personnel.

Innovation can be considered as a process of updating the output and/or production with the aim of increasing its efficiency and practical application of the latest achievements of science and technology. It can also be considered as a product that can be sold on the market thanks to the introduction of innovations in various spheres of the enterprise. However, an innovation becomes a product only if it has significant advantages compared to already existing products, if there is an opportunity to commercialize the idea, and if there are areas of its application.

Innovation is also a social phenomenon that determines society's attitude to innovations and changes in existing foundations.

Innovation is an important factor in the success of companies, as it allows the creation of new opportunities and ensures economic growth. This includes the development of new concepts and ideas that can become the basis for new business projects. Successful companies are able to create an organizational culture that supports innovation and allows them to find new ways to solve problems [1, 3].

Many companies have processes in place to generate new ideas, but often fail to harness the potential of the collective intelligence of their employees. Ideas are usually transformed into value propositions and new products, which are then brought to market.

However, successful companies view innovation as an organization-wide process and actively work to ensure a steady flow of new ideas and their implementation.

In general, innovation is an important element of companies' success and can help them achieve significant business results. However, their implementation requires certain efforts from companies, which may include the creation of a favorable organizational culture, the involvement of employees in the innovation process, the development of a strategy and resources for the implementation of innovations, and a thorough analysis of risks and opportunities.

Innovative activity is usually associated with scientific research and development, and the transformation of results into new or improved products, technologies, and methods of organization and management. Such activity includes all stages, starting from the moment of the idea and ending with the commercialization of the innovation.

The modern concept of "innovative activity" is considered as a systemic and structural approach that covers all innovative processes and their interaction in the economy, based on innovations, innovative products (including innovative production) and innovative forms of services (management, promotion and use of innovative products).

According to our opinion, innovative activity should be a response to the challenges of the external and internal environment of the enterprise. Any activity, especially innovative, requires the presence of certain capabilities, such as the formation and maintenance of innovative potential, which includes production, technical, personnel and other aspects. However, the response to the challenges itself is the enterprise's activity in the field of innovation, which manifests itself in the efficiency and effectiveness of actions.

From the point of view of a comprehensive approach and taking into account the features of the modern business environment and strategic planning, research on innovation activity was carried out by such scientists as: Peter Drucker - a researcher who proposed the concept of "innovation entrepreneurship", focusing on the creation of new products, services and processes as the basis of the company's long-term success; Christensen Clayton is the author of the concept of "disruptive innovation" (disruptive

innovation), which describes the process by which new technologies or approaches can completely change the market and lead to shifts in the industry; Alex Osterwalder - the author of the concept of "business models" (business models), which emphasizes the importance of innovation in the business models of companies, including both the creation of new models and innovations in existing models; Everett Rogers is a famous sociologist who developed the theory of "diffusion of innovations", which studies the process of introducing new ideas, products or technologies in society and the business environment. He studied the processes of adoption of innovations and the principles of their dissemination in organizations and society [2, 10].

There are a number of researchers and practitioners who have also made a significant contribution to the theoretical understanding of the innovative development of corporations and continue to develop new ideas and concepts to better understand and explain the innovative activities of modern companies. Among them, such scientists and practitioners as: Michael Porter - a well-known strategic manager, who proposed the concept of "clusters" (clusters), emphasizing the relationship between companies, institutions and institutes in a certain geographical area, and how these connections can contribute to innovative development, should be noted. In his research, he emphasizes the importance of creating innovative clusters and networks in which companies can interact, exchange knowledge and resources, and promote mutual development; Henry Chesbro is the author of the concept of "open innovation", which calls on companies to actively interact with the external environment, including customers, partners, universities and other companies, to create innovations. He proposes a model of "internal and external search" for determining the best ideas and their implementation; James March developed the concept of "the art and science of decision-making", in which he studied decision-making processes in organizations and emphasized the importance of a balance between intuition and analysis when making innovative decisions; Jeffrey Dyer (Jeffrey Dyer) and Clayton Christensen (Clayton Christensen) proposed the concept of "innovation dilemmas" (innovation dilemmas), in which they investigated various challenges and contradictions that companies face in the process of innovative development, and proposed strategies for overcoming them; John Kotter developed the "8 stages of change"

model, in which he emphasized the importance of effective change management in the organization for the successful implementation of innovative ideas and projects; Gary Hamel proposed the concept of "core innovation", "game changers" and "new rules", in which he emphasized the importance of developing innovative strategies that change the basis of business and create new market opportunities; Chris Christensen proposed the theory of "disruptive innovations", in which he studied the processes of development and implementation of innovations that change traditional business models and create new market dynamics [5, 6].

The works and ideas of these scientists and researchers had a significant impact on the theoretical understanding of innovations and their role in the development of companies. It is important to note that the concepts of innovative activity of companies continue to evolve, and new research and ideas constantly appear in this area.

Thus, based on the analysis of the above-mentioned studies, it is possible to state that the innovative activity of the company covers a set of activities aimed at the use of scientific, scientific-technical and intellectual knowledge and opportunities for the creation of new or improved products and services, as well as new methods of their production.

The choice of a specific method and variant of technical and technological renewal depends on a number of factors, such as the nature of the innovation, compliance with the profile of the enterprise, scientific and technical potential, market requirements and the stage of the product life cycle.

Subjects of innovative activity are innovative enterprises of various forms of ownership, their investors, owners of intellectual property, mediators of the innovation process, state and municipal bodies, as well as various public organizations.

The innovative activity of the enterprise includes a number of activities, such as [2, 3]:

- Research and development of new structures, products and products.
- Selection of necessary materials and raw materials for production of new products.
- Development of the technological process of production of new production.
- Designing, manufacturing, testing and development of samples of new technology [19].

- Introduction of new organizational and management solutions aimed at the implementation of innovations.
- Research and acquisition of information resources and information support of innovations.
- Licensing, patenting and acquisition of know-how.
- Organization and implementation of marketing research to promote innovations.

Other aspects of the enterprise's innovative activity may include [1, 3]:

- Creation and development of an innovative culture within the enterprise, including support and stimulation of employee initiatives.
- Search and attraction of investments for financing and implementation of innovative projects.
- Establishment of partnership relations with other enterprises, universities, scientific research institutes for joint work on innovative projects.
- Constant analysis of the competitive environment and updating of the enterprise's innovative strategy in accordance with changing market requirements.
- Assessment and management of risks associated with innovative activities [23].
- Development and implementation of a program for scaling innovative projects to increase their commercial success and profitability. In general, the innovative activity of the enterprise includes a comprehensive approach to the creation and implementation of new ideas, products and technologies with the aim of ensuring the competitiveness and sustainable development of the enterprise in the long term.

Methods of innovative activity are a set of activities that eventually lead to the development and implementation of new ideas and knowledge in the entrepreneurial structure with the purpose of their practical use to meet the demands of consumers of products using the resources of innovative development.

The innovative activity of the company also includes changes in the direction of activities, the structure of the production organization, the performance of functions and the improvement of work efficiency. This development of enterprises implies the continuation of their functioning and the desire for progress. When forming competitive

advantages, enterprises need to take into account the influence of innovation environment factors on their innovation development (see Figure 1.1).

As shown by research on success in innovation, it is also necessary to have an open and creative environment that promotes the generation of new ideas and experiments. Companies must be prepared for risk and possible failure, but at the same time carefully analyze and improve their innovation projects. In addition, it is important to have the ability to quickly adapt to changes in market conditions and technological trends [6].

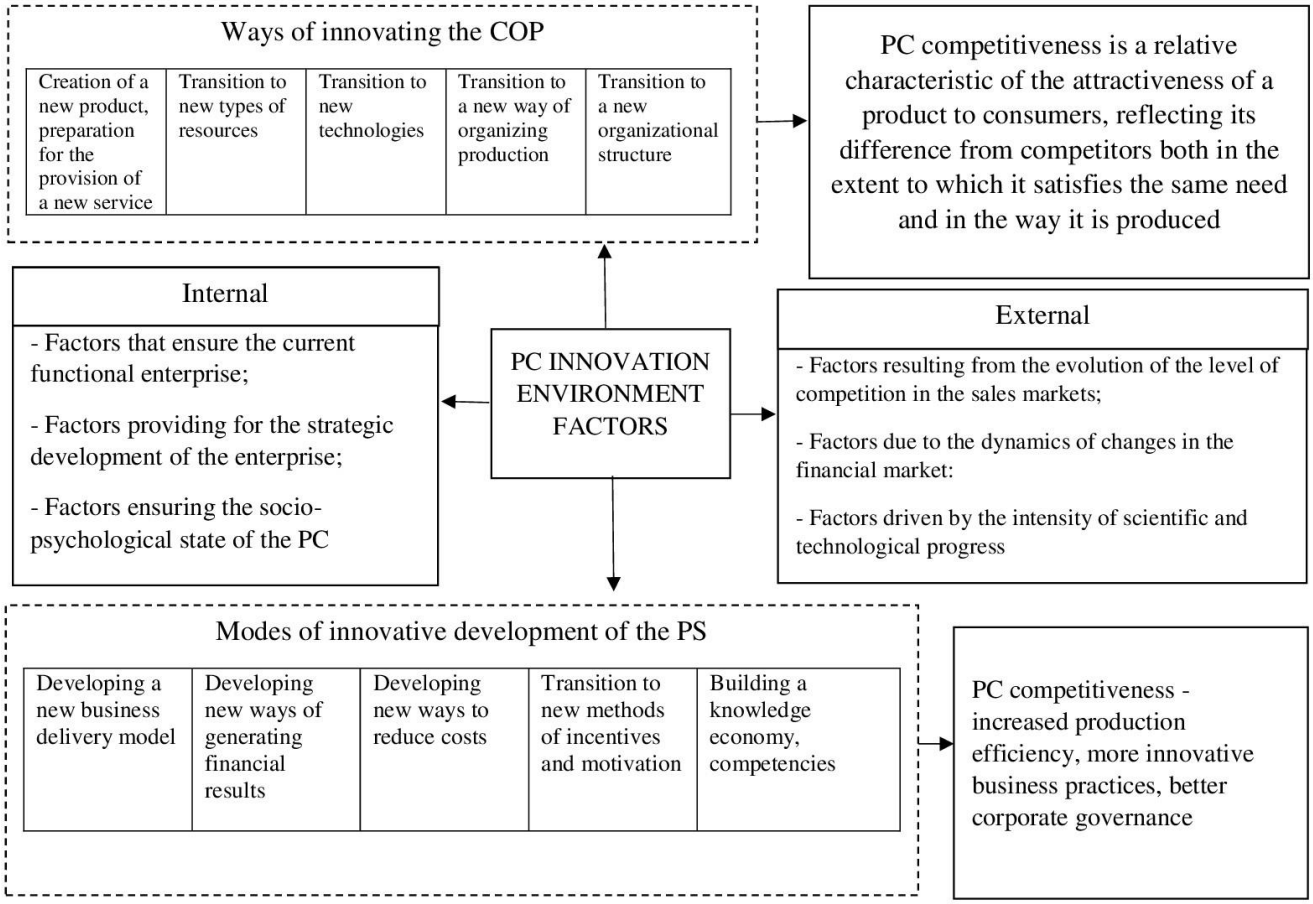

Fig. 1.1 Impact of factors of the innovative environment on the innovative development of the entrepreneurial structure.

Source: *compiled by the author based on* [2, 3]

The practice of modern corporate development shows that for effective innovative activity it is also important to have qualified employees who have skills and knowledge in the field where the company operates and can ensure the implementation of innovative projects.

Finally, companies should be open to collaboration with external parties, such as partners, customers, universities and startups, to gain access to new technologies and innovative ideas and help in the execution of their projects.

For effective innovation planning, it is necessary to pay attention to several key factors.

First, companies should focus on identifying their core goals and consumer needs, and identify their competitive advantages.

Secondly, it is necessary to conduct market research and identify potential opportunities for innovation.

Thirdly, companies should create a team of professionals who will work on innovative projects and ensure their financing.

Fourth, it is necessary to create an action plan that includes the processes of development, testing and implementation of new ideas.

Fifth, companies must remember the importance of constantly improving and updating their innovation strategies, as technological and market conditions are constantly changing [7].

Therefore, for successful innovation planning, it is necessary to pay attention to key factors and create a consistent plan of action that will allow the company to implement new ideas and develop in the face of increasing competition. All this is the result of building and implementing an effective innovation strategy.

That is, the innovative development strategy covers a set of goals, tasks, decision-making rules and methods that allow the company to move from an old position to a new one through the introduction of various innovations (technological, product, organizational, managerial, economic, social) and to occupy a favorable position in the competitive market [1, 5].

All innovative strategies can be conditionally divided into four categories:

1. Offensive strategies involving the development of new technologies to achieve strategic growth through market penetration or diversification. This approach is typical for companies competing in the market. It is associated with high risk, but can have high profitability. Company leaders must have the ability for scientific and technical

innovations, create new opportunities and changes in the market, and quickly implement them in goods and services. For the successful implementation of such strategies, in most cases, it is necessary to combine research with the use of new technologies [8,10].

Companies that use it (tech startups): Uber, Spotify

2. Adaptation strategies, which involve the adaptation of already existing technologies and other innovations to improve the efficiency of the company's activities. This type of strategy is less risky, but may have a lower potential payoff. It involves applying innovations to solve problems and improve the company's work.

3. The defensive strategy in business is aimed at preserving the competitive position of the company in the existing markets. The main goal of such a strategy is the efficient use of resources to create innovative products and services. This type of strategy involves high risk and is suitable for firms that can make a profit in a competitive environment. To achieve this, it is necessary to occupy a significant share of the market and maintain the profit margin by reducing production costs. The experience of large companies shows that success depends on strong positions in production and marketing, as well as the availability of sufficient scientific and technical potential to quickly respond to the latest technologies introduced by competitors [13].

Companies that use it: medium and large technology companies such as Apple, Google.

4. The imitation strategy is used by companies that have a strong position in the market and in the technological field, but are not the first to launch new products. Such companies copy the main characteristics of innovations launched by smaller innovative firms or leading players in the market, without necessarily completely copying their technical features. In addition, they can gain access to new technologies through licensing, which can be faster, cheaper and more reliable than developing their own products and inventions. This strategy is quite effective, but to achieve a monopoly position in the market requires high specialized knowledge and constant work to maintain the achieved level [5,9].

Companies using it: companies with strong market positions: Sony, Samsung, Xiaomi.

As evidenced by the analysis of the economic literature, each enterprise has gone through different stages of development, including creation, growth, stability and decline, which can be characterized by the amount and structure of costs, financial indicators and the rate of change of cost and financial indicators. Institutional units can take different measures to develop and implement innovations. To do this, resources can be allocated and policies, processes and procedures can be involved. Such activities may include research and development, engineering, design and other creative activities, marketing and equity raising activities, intellectual property activities, employee training, software development and database activities, acquisitions and leases of tangible assets, and innovation management activities.

Involvement in innovation activities can contribute to increased organizational and individual capabilities, even if most of these activities do not have an explicit innovation goal. Users of information about innovations are interested in the scale of efforts aimed at innovation activities. Knowledge for use in innovation can be exchanged through market transactions and non-market means.

The US is currently the global leader in technological innovation, and technology continues to evolve in various US cities. China ranks second in the ranking of global technology leaders, thanks to the success of Chinese technology companies that develop products and services for advanced Chinese consumers. Technology market leaders recognize India as the country with the greatest potential for technological breakthroughs, as the state actively supports entrepreneurship and a culture of innovation [10, 11].

In addition, innovations can be involved in various industries and spheres of activity, such as medicine, education, energy, transport, etc. This can help improve the efficiency and quality of services, as well as create new markets and opportunities for development. For the successful implementation of innovative projects, it is also important to attract qualified specialists, conduct scientific research, cooperate with business incubators and investors, as well as stimulate and support the culture of innovation in the organization.

Each of the leading countries in the field of innovation, such as the USA, China and India, supports entrepreneurship and innovation culture through government programs. Each country has its own concept of digital transformation: in Japan it is "Society 5.0",

in Germany - "Industry 4.0", in China - "Internet +", and in the USA - "Industrial Internet Consortium" [19, 20].

In addition to state support, each of these countries also has its own innovation centers and an active scientific community, which creates conditions for the development of new technologies and the promotion of innovative projects.

In the US, for example, a lot of innovation takes place in Silicon Valley, which is a kind of "Mecca" for technological startups and investments. China has big tech companies like Alibaba, Huawei, and Tencent that are setting up their own innovation centers and investing in new technologies [24].

In turn, India has seen many startups in the field of software, information technology, and biotechnology. The country is also actively promoting the development of robotics, artificial intelligence and machine learning.

In Germany, research institutes and universities are developing new technologies such as 3D printing and smart grids. The country also has a fairly conservative industrial base, making innovation important to its economy.

Therefore, each of these countries has its own advantages and challenges in the development of innovation, and this allows them to occupy leading positions in the field of technology and innovation.

Thus, it can be argued that innovative and investment activity are inextricably linked concepts. Innovations can be considered as a form of investment activity, since their implementation requires significant investments in various values and knowledge. These investments are usually made through borrowing or government financing. Innovation can bring significant economic benefits, such as reducing production costs, improving product quality, and increasing a company's capital and profits. Maintaining innovative activity helps enterprises to constantly improve their work and increase the efficiency of the entire business.

However, it is important to remember that innovative activities can be risky and do not always bring the expected results. Therefore, companies should have a clear plan and strategy for implementing innovations and be prepared for possible losses. Innovations are always associated with risks, and the ability of corporations to effectively manage

risks affects their innovative potential. Corporations that have risk management systems and methods, analyze potential risks and develop strategies and measures to minimize and manage them, can boldly invest in innovations and make bold decisions that contribute to the development of their innovative potential. It is also important to consider social responsibility and the impact of innovation on the environment and society as a whole.

Thus, one can agree with the majority of scientists and scholars who believe that innovative activity is an integral part of the effective functioning of enterprises, as it allows them to implement various innovative solutions, such as changes in the organization, technologies, information systems, financial management and mergers. This can lead to lower production costs, increased productivity, improved product quality and higher profits [2, 22].

The implementation of innovative solutions allows enterprises to reduce costs of materials and wages, increase production efficiency and realize new markets. In addition, it allows businesses to be competitive and provide a continuous flow of innovation, which in turn ensures consumer satisfaction and ensures successful competition in the market.

Innovativeness and systematic management of innovations are the key elements of a successful strategy for the development of modern business. The use of the latest technologies and innovative solutions helps enterprises maintain their positions in the market, expand the range of products and services, attract new customers and increase profits. Also, the introduction of innovations allows enterprises to improve the quality of products and services, optimize costs, reduce the impact on the environment and ensure sustainable business growth in the future. In this context, innovation becomes a key tool for ensuring competitive advantage and market success [19, 25].

During the last decade, large companies are moving from the traditional "closed" model of conducting research and development (R&D) to the model of open innovation, which involves active interaction with the external environment. This model also changes ideas about the protection of rights to the results of intellectual activity, the formation of key competencies that are difficult to reproduce, and other aspects. This problem is reflected in scientific publications, both foreign and domestic. The concept of open

innovation, proposed by Henry Chesbrough and Vandana Piscarella, has become widely used in the field of international corporations [13, 18, 26].

The model of open innovation assumes that the innovative activity of researchers is considered as a non-linear and interactive process between the firm and the external environment. Non-linearity means that incentives for innovation are formed under the influence of many participants and sources of information, both inside and outside the company. Doubts arise regarding the effectiveness of protecting R&D results by patenting. In the traditional approach, the possibility of effective protection of innovations through patents serves as an incentive for the creation and implementation of innovations. Open innovations assume that the innovative potential of the corporation is not limited to its internal resources, but depends on its ability to learn and involve external innovative assets.

In recent years, the practice of competition in the field of research and development has been widely spread not only among individual innovative firms, including global companies, but also among their strategic alliances. This means that companies are moving from conducting closed in-house research and development to combining their efforts within the framework of such alliances to achieve innovative results. When assessing these new trends and developing innovative strategies, including Russian companies, it is important to consider that in the 1990s more than 14,000 institutional agreements in the field of research and development in the form of strategic alliances were concluded [21].

1.2 Determinants of the formation of innovative potential of corporations in the global economy

The innovative activity of the enterprise plays a key role in its long-term success and survival in the market. The use of innovations allows the enterprise to adapt to changing market requirements, improve its efficiency and create new opportunities for growth and development. Such an innovative type of enterprise development provides for the

complex use of all innovative factors, such as technical, organizational, managerial, informational, motivational, entrepreneurial and others. It is based on constant updating of products and services, which allows the enterprise to maintain competitive advantages. According to the researches of V. Kim and R. Mayborn, approximately 60% of the profits of modern corporations are generated thanks to innovations [14, 28].

According to most studies, innovative activity means a chain of implemented innovations and works successfully when covering several areas of activity, including management, marketing, personnel training, finance, sales, and others. It allows the enterprise to increase its economic potential and achieve its goals through strategic system changes.

Research conducted by A. Hamilton, A. Frenkel, L. Branscomb and J. Keller and A.V. Kotarev, confirm that the positive growth of profitability and capitalization of enterprises is connected with the development of science-intensive and high-tech industries [1, 11].

According to the researches of K. Franken, P. Balland and R. Bosch, innovative activity has moved to a new stage, where individual enterprises have begun to apply competitive cooperation in the field of innovations [17, 18]. This is manifested in joint research and development projects, where companies choose partners, taking into account geographical, organizational and social proximity. Thus, "coexisting" innovative systems uniting regional and branch enterprises are formed.

According to I. Meyer, K. Rupietta and U. Backes-Gellner, new spatial architectures of innovations are being formed. This means that changes in innovative activity lead to the rethinking and restructuring of spatial relations between enterprises and the formation of new network-type structures, where innovations will be the result of the successful implementation of the innovative potential of all participants who are part of the "global value chain". According to most scientists, the success of such a system depends on the innovative potential of the corporate structure itself [2].

Innovative potential is a key factor for the successful functioning of corporations in the modern world. In this section of the thesis, we will consider the essence and

significance of the innovative potential of modern corporations in the global economy, as well as analyze the main determinants influencing its formation and development.

Based on the analysis of domestic and foreign approaches to the definition of the concept of "potential", it is possible to conclude that the potential of the enterprise represents objective opportunities for the maximum use of available resources in order to achieve the established goals. The potential of the corporate structure is understood as a set of various resources that are at the disposal of this company and are used by it in the process of implementing production activities.

In economic literature, the innovative potential of a corporation is defined in most cases as the organization's ability to generate, attract, adapt, and use new ideas, knowledge, and technologies to create competitive advantages and ensure sustainable growth. It includes such elements as scientific and technical potential, intellectual capital, an innovation management system, organizational culture and the ability for collective creativity [2, 7, 14].

Thus, it is possible to state that the innovative potential of the enterprise covers various resources, such as intellectual, financial, technological and human resources, which, with effective management, contribute to the innovative growth and development of the enterprise as a whole. The significance of innovative potential lies in the ability and opportunity of the enterprise to effectively use these resources. Therefore, to study the innovative potential of the enterprise, it is recommended to conduct an analysis of the internal environment using traditional tools for the diagnosis of the resource component.

As follows from the conducted research, the formation of the innovative potential of corporations in the global economy is a complex and multifaceted process that depends on a number of determinants. A culture of innovation, investment in research and development, interaction with external structures, development of human capital, flexible organizational structure, market orientation, government support, global cooperation, flexible adaptation and sustainability - all these factors are interconnected and affect the ability of corporations to innovate [1, 19].

Corporations striving to develop and strengthen their innovative potential should pay attention to all the specified determinants. They must create an innovative culture, invest

in research and development, actively interact with external partners, develop their human capital, create a flexible organizational structure, focus on the market and satisfy consumer needs. Cooperation with the government and other regulatory bodies, international cooperation, the ability to flexibly adapt and take into account aspects of sustainable development are also important.

The innovative potential of corporations is a key factor for their long-term competitiveness and success on the world market. Understanding and effective management of the determinants of the formation of innovative potential will allow corporations to develop, succeed and remain relevant in the rapidly changing world economy. Innovative potential is one of the main sources of competitive advantages of corporations in the conditions of globalization and rapid development of technologies. The ability to create new products, services and business models allows corporations to adapt to changing market conditions, meet customer needs and ensure stable profit growth. Innovative potential also contributes to strengthening the positions of corporations on the international market and provides them with sustainable development in the long term [15].

The conducted research allows us to identify a number of determinants for the formation of the innovative potential of corporations in the global economy.

Among them, the following should be noted: a culture of innovation, investment in research and development, interaction with external structures, development of human capital, flexible organizational structure and market orientation play a decisive role in the successful creation and retention of competitive advantages. They should be considered in more detail:

1. Culture of innovation. Culture of innovation is a fundamental aspect for the development of the innovative potential of corporations. Organizational culture that supports creative thinking, openness to new ideas, stimulates employees to generate and implement innovations. Corporations with an active culture of innovation create a favorable environment for research and experiments, which contributes to the formation of innovative potential [19].

2. Investments in research and development. High investments in research and development are one of the main factors determining the innovative potential of corporations. Enterprises that allocate significant resources for scientific research, development of new products and technologies have a greater opportunity to create and maintain competitive advantages in the market.

3. Interaction with external structures and formation of an innovation network. Cooperation with external structures, such as universities, research centers, startups and other corporations, contributes to the expansion of innovation potential. The exchange of knowledge, technologies and experience with partners from various sectors of the economy stimulates the development of new ideas and provides access to modern trends and best practices. The concept of the innovation network emphasizes the importance of cooperation and partnership for the development of innovations in international corporations [4, 7, 13]. The innovation network is a set of connections between the corporation and its partners, including suppliers, clients, universities, research institutes and other organizations. Interaction with network partners allows you to exchange knowledge, experience and resources, accelerates the process of development and commercialization of innovations.

4. Development of human capital. Corporations that actively invest in the development of their employees contribute to the formation of innovative potential. Training and development of personnel in the field of innovation, strengthening of competencies in the field of technology and creative thinking, help to create a team of highly qualified specialists capable of generating and implementing new ideas.

5. Flexible and innovative organizational structure based on the knowledge management system [8, 20]. Creating a flexible and innovative organizational structure allows corporations to effectively manage innovative potential. The elimination of bureaucratic obstacles, the establishment of horizontal communications and flexibility in decision-making contribute to the rapid and effective implementation of innovations. The concept of knowledge management is important for understanding how international corporations can effectively use and disseminate knowledge within the organization. Knowledge management includes the processes of creation, collection, organization,

analysis and transfer of knowledge by employees of the corporation. A well-organized knowledge management system promotes the development of innovations by sharing experience, learning lessons from previous projects, and providing access to up-to-date knowledge and information.

6. Support of the government and regulatory bodies. The role of the government and regulatory bodies in the formation of the innovative potential of corporations should not be underestimated. The creation of a favorable innovation ecosystem, the provision of tax benefits and subsidies, the simplification of licensing and patenting procedures, as well as the development of innovation policies and strategies contribute to the development of innovative enterprises and increase their competitiveness [19, 21].

7. Global cooperation and international expansion. International cooperation and global expansion allow corporations to expand their capabilities in the field of innovation. Interaction with international partners, including companies from different countries and cultures, facilitates the exchange of knowledge, best practices and access to new markets. This strengthens the innovative potential of corporations and promotes their growth and development.

8. Flexible adaptation to changes. Corporations capable of flexibly adapting to rapidly changing market conditions and technological innovations have a strong innovative potential. Flexibility in changing strategies, business models and processes allows corporations to quickly respond to new opportunities and challenges, creating new products and services, and maintaining their competitiveness [22, 24].

9. Sustainability and responsibility. In the modern world economy, sustainability and responsibility are becoming increasingly important factors in the formation of the innovative potential of corporations. Taking into account environmental and social aspects in innovative activities, developing environmentally friendly technologies and products, as well as social responsibility allow corporations not only to create innovations, but also to meet the needs of society for sustainable development.

10. Innovation management system. It includes innovation management processes and methods, such as innovation planning, risk assessment, knowledge

management and commercialization of innovations. An effective innovation management system promotes optimal use of innovation potential [9].

It is possible to agree with the statement of the American scientist Michael Porter that modern corporations, aware of the importance of innovation, must actively work on the development of these determinants in order to become leaders in their industry and effectively cope with the challenges of modern business [28]. However, in the majority of scientific literature, it is noted that one of the main factors in the formation of the innovative potential of modern corporations is technological achievements and research, namely scientific and technical potential. It includes scientific research, development of new technologies, intellectual property and scientific and technical resources that provide the basis for innovation. That is, corporations that actively invest in research and development of new technologies have greater potential for innovative growth. This may include the development of new products, improvement of production processes and introduction of new management methods. Corporations that allocate significant funds for research and development, creation of innovation centers and acquisition of new technologies have great potential for development and implementation of new ideas [28]. It is also possible to agree with the opinion of scientists and practitioners that investments in innovations can be successfully implemented only based on the development of intellectual capital in the company. It includes the knowledge, skills and experience of employees, the level of education, the culture of innovation and the ability to think creatively. The development and attraction of highly qualified employees is an important factor in the formation of innovative potential.

All this can be implemented exclusively based on the formed innovative strategy and management system. Thus, the effective development and implementation of innovative strategies and management processes play a key role in the formation of the innovative potential of corporations. Companies that have a clear vision and strategy for the development of innovations know how to effectively manage innovative projects and processes, establish mechanisms for evaluating and improving innovations, and ensure stable and systematic development of innovative activities [1,3,7].

It should be noted separately the role of cooperation with external partners, including universities, scientific institutes, startups and other companies, which contributes to the formation of innovative potential. Partnerships make it possible to exchange knowledge, experience and resources, which contributes to the development of new ideas and technologies. Corporations that actively enter into partnership relations expand their innovative potential and increase their competitiveness.

An analysis of the economic literature allows us to identify a number of factors related to the innovative potential of the company but which are external to the company, namely, globalization, regulatory support and innovation policy, market competition, consumer needs and expectations [26]. Thus, the globalization of the economy provides corporations with access to world markets and the ability to compete on a global level. This creates an incentive to develop and innovate as companies strive to create unique products and services that can be competitive in the international market. Globalization also facilitates the exchange of ideas and the transfer of knowledge between different regions and cultures, which can stimulate innovative growth. Support from the state and the development of an effective innovation policy are factors influencing the formation of the innovative potential of corporations. Regulatory measures, such as tax incentives, grants and subsidies for research and development, the creation of innovation ecosystems and specialized technology parks, contribute to the growth of innovation in the business environment [1, 27]. State support creates favorable conditions for innovation and attracts investment in the innovation sector. In turn, competition in the market stimulates corporations to develop and implement new innovations. Intensely competitive corporations are constantly looking for new ways to improve their products and services, as well as streamline their business processes. The competitive environment requires corporations to be innovative and ready for continuous improvement.

Separately, it should be noted the needs and expectations of consumers, which are important factors that form the innovative potential of corporations. Corporations that actively study and analyze the needs of their customers are able to develop innovative products and services that meet their expectations. Consumers become the engine of innovation, and corporations that successfully meet their needs gain a competitive edge.

All these factors are interconnected and influence the formation of the innovative potential of modern corporations in the world economy. At the same time, each corporation may have its own characteristics and unique factors that affect its innovative potential, and therefore it is important to conduct detailed research and analysis within a particular organization.

An analysis of the economic literature makes it possible to assert that the implementation of innovative potential depends on the correctness of the company's assessment of modern technological trends, the level of infrastructure development, access to resources, the ability to manage risks and the level of competitiveness of the industry in which the corporation itself operates. Therefore, the analysis of market prospects and technological trends allows corporations to identify new opportunities for innovation. Tracking changes in consumer demand, the development of new technologies, the emergence of new market segments and trends can be an incentive for corporations to implement innovative solutions, create new products and services, adapt to a changing market environment and maintain a competitive advantage [24, 27, 28]. The presence of a developed infrastructure, access to the necessary resources and the innovation ecosystem also influence the formation of the innovative potential of corporations. The presence of laboratories, research centers, high-speed Internet, access to funding and expertise create favorable conditions for the development and implementation of innovative projects. The industry context also influences the innovative capacity of corporations. Some industries are more prone to innovation and continuous development, while in other industries, innovation may be less significant. The degree of competition in an industry can encourage or hinder corporate innovation, as high competition usually requires the constant introduction of new ideas and technologies to survive in the market.

The combination of all these factors and their interaction influence the formation of the innovative potential of modern corporations in a world economy that is undergoing rapid technological progress, and poses increasingly complex challenges for companies and requires them to constantly innovate [11].

Successful corporations strive to constantly develop their innovative potential to ensure competitiveness and sustainable growth in a rapidly changing world.

One of the main advantages of innovative capacity is the ability of corporations to adapt to changing market conditions. Rapid technological progress and the constant emergence of new competitors require companies to constantly update and innovate. Corporations with a strong innovative potential are able to quickly analyze market changes, anticipate customer needs and develop new products and services that meet current market requirements.

In conclusion, the innovative potential of modern corporations plays an important role in the global economy. It enables companies to adapt to changing market conditions, create competitive advantages and achieve sustainable growth. Factors such as scientific and technical potential, intellectual capital, innovation management system, organizational culture and cooperation with external partners play an important role in the formation and development of innovative potential. Understanding and leveraging these factors helps corporations be successful and competitive in a rapidly changing world.

Additionally, mention should be made of the role of innovative potential in ensuring the sustainable development of corporations. In today's world economy, where the challenges of environmental sustainability, social responsibility and energy efficiency collide, innovation plays an important role in creating solutions that contribute to sustainable development [6, 7, 12].

The innovative potential allows corporations to develop and implement environmentally friendly technologies, reduce the negative impact on the environment and improve the energy efficiency of production. Such innovations not only reduce the negative environmental footprint, but can also create new opportunities for growth and development associated with the growing demand for environmentally friendly products and services.

In addition, corporations with strong innovation potential can develop products and services that meet social challenges such as health, education, sustainability, and

accessibility for all segments of the population. Such innovations contribute to improving the quality of life of people and can create a significant social effect.

Finally, it is important to note that the innovative potential of modern corporations affects not only their own success, but also the development of the world economy as a whole [1, 11]. Corporations that are able to create and innovate become the driving force behind economic growth, create new jobs, attract investment and contribute to the development of industries and regions. Their innovations can cross borders and have an international impact, contributing to the development of the world economy and contributing to the process of globalization.

Thus, the innovative potential of modern corporations is a key factor in their success in the global economy. It enables companies to adapt to change, create competitive advantage, drive sustainable growth, contribute to environmental and social sustainability, and drive the global economy forward. International corporations with significant innovation potential (which is determined by their scale, resources, technological expertise and global presence) are actively investing in research and development, technology transfer and applying the concept of open innovation [ ]. All this helps to stimulate innovation and the development of new products and services, and contributes to the development of innovative capacity in various countries and regions of the world.

1.3 Determinants of the formation of the innovative potential of corporations in the world state

The innovative activity of an enterprise plays a key role in its long-term success and survival in the market. The application of innovations allows the company to adapt to changing market requirements, improve its efficiency and create new opportunities for growth and development. Such an innovative type of enterprise development provides for the integrated use of all innovative factors, such as technical, organizational, managerial, informational, motivational, entrepreneurial and others. It is based on the constant

updating of products and services, which allows the company to maintain a competitive advantage. According to research by W. Kim and R. Maiborn, approximately 60% of the profits of modern corporations are generated through innovation [1, 10, 19].

According to most studies, innovative activity means a chain of implemented innovations and successfully works in covering several areas of activity, including management, marketing, staff training, finance, sales, and others. It allows the enterprise to increase its economic potential and achieve its goals through strategic changes in the system.

Research by A. Frenkel, A. Hamilton, L. Branscombe and J. Keller and A.V. Kotarev, confirm that the positive growth of profitability and capitalization of enterprises is associated with the development of science-intensive and high-tech industries [18, 20, 23].

According to the studies of K. Frenken, P. Balland and R. Boschm, innovation activity has moved to a new stage, where individual enterprises have begun to apply competitive cooperation in the field of innovation. This manifests itself in joint research and development projects, where companies choose partners based on geographic, organizational and social proximity [27]. Thus, "coexisting" innovation systems are being formed that unite regional and sectoral enterprises.

According to K. Rupyette, I. Mayer and W. Backes-Gellner, new spatial innovation architectures are being formed. This means that changes in innovation activity lead to a rethinking and restructuring of spatial relations between enterprises and the formation of new network-type structures where innovation will be the result of the successful implementation of the innovative potential of all participants that are part of the "global value chain". According to most scientists, the success of such a system depends on the innovative potential of the corporate structure itself [2, 4, 7, 13].

Innovation potential is a key factor for the successful functioning of corporations in the modern world. In this section of the thesis, we will consider the essence and significance of the innovative potential of modern corporations in the world economy, as well as analyze the main determinants influencing its formation and development.

Based on the analysis of domestic and foreign approaches to the definition of "potential", we can conclude that the potential of an enterprise is an objective opportunity for maximizing the use of available resources in order to achieve established goals. The potential of a corporate structure is understood as a set of various resources that are at the disposal of a given company and are used by it in the process of carrying out production activities.

In the economic literature, the innovative potential of a corporation in most cases is defined as the ability of an organization to generate, attract, adapt and use new ideas, knowledge and technologies to create competitive advantages and ensure sustainable growth. It includes such elements as scientific and technical potential, intellectual capital, innovation management system, organizational culture and the ability to collective creativity (see Figure 1.2).

FACTORS* INFLUENCING THE LEVEL OF INNOVATION POTENTIAL *DEVELOPMENT	
Factors contributing to the development of innovations:	**Factors that do not contribute to the development of innovations:**
1. Maintaining and expanding the production base	1. High costs associated with the development and implementation of innovations.
2. Cost reduction	2. Long periods between the development of an innovation and the launch of a product
3. Implementation of customer needs and suggestions	3. Great uncertainty about success
4. Improving the scientific and technical potential of specialists	4. Incompatibility of the innovation
	5. Difficulties in maintaining market share
5. Corporate image	6. Lack of resources and qualified personnel

Fig. 1.2 Factors affecting the level of innovation potential development

Source: *compiled by the author based on* [2, 27]

Thus, it can be stated that the innovative potential of an enterprise covers various resources, such as intellectual, financial, technological and human, which, with effective

management, contribute to the innovative growth and development of the enterprise as a whole. The significance of the innovative potential lies in the ability and ability of the enterprise to effectively use these resources. Therefore, in order to study the innovative potential of an enterprise, it is recommended to analyze the internal environment using traditional tools for diagnosing the resource component.

As follows from the study, the formation of the innovative potential of corporations in the world economy is a complex and multifaceted process that depends on a number of determinants. A culture of innovation, investment in research and development, engagement with external entities, human capital development, agile organizational structure, market orientation, government support, global collaboration, agility and resilience are all interconnected and influence the ability of corporations to innovate [27].

Corporations seeking to develop and strengthen their innovative potential should pay attention to all of these determinants. They must create an innovation culture, invest in research and development, actively interact with external partners, develop their human capital, create an agile organizational structure, market-oriented and meet customer needs. It is also important to cooperate with the government and other regulatory bodies, international cooperation, the ability to adapt flexibly and take into account aspects of sustainable development.

The innovative potential of corporations is a key factor for their long-term competitiveness and success in the global market. Understanding and effectively managing the determinants of the formation of innovative potential will allow corporations to develop, succeed and remain relevant in a rapidly changing global economy [25]. Innovation potential is one of the main sources of corporate competitive advantage in the context of globalization and rapid technological development. The ability to create new products, services, and business models enables corporations to adapt to changing market conditions, meet customer needs, and generate sustainable profit growth. The innovative potential also contributes to strengthening the position of corporations in the international market and ensures their sustainable development in the long term.

The conducted research makes it possible to single out a number of determinants for the formation of the innovative potential of corporations in the world economy.

Among them, the following should be noted: a culture of innovation, investment in research and development, interaction with external structures, development of human capital, flexible organizational structure and market orientation play a decisive role in the successful creation and retention of competitive advantages. You should consider them in more detail [28]:

1. Culture of innovation. A culture of innovation is a fundamental aspect for developing the innovative capacity of corporations. An organizational culture that supports creative thinking, openness to new ideas, encourages employees to generate and implement innovations. Corporations with an active culture of innovation create a favorable environment for research and experimentation, which contributes to the formation of innovative potential.

2. Investment in research and development. High investment in research and development is one of the main factors determining the innovative capacity of corporations. Enterprises that devote significant resources to research, development of new products and technologies have a greater ability to create and maintain competitive advantages in the market.

3. Interaction with external structures and formation of an innovation network [20, 22]. Cooperation with external structures, such as universities, research centers, start-ups and other corporations, contributes to the expansion of innovative potential. The exchange of knowledge, technology and experience with partners from various sectors of the economy stimulates the development of new ideas and provides access to modern trends and best practices. The concept of an innovation network emphasizes the importance of cooperation and partnership for the development of innovation in international corporations. An innovation network is a collection of links between a corporation and its partners, including suppliers, customers, universities, research institutes, and other organizations. Interaction with network partners allows the exchange of knowledge, experience and resources, accelerates the process of development and commercialization of innovations.

4. Development of human capital. Corporations that actively invest in the development of their employees contribute to the formation of innovative potential. Training and development of personnel in the field of innovation, strengthening competencies in the field of technology and creative thinking help to create a team of highly qualified specialists capable of generating and implementing new ideas[14].

5. Flexible and innovative organizational structure based on the knowledge management system [30]. Creating a flexible and innovative organizational structure allows corporations to effectively manage their innovative potential. The elimination of bureaucratic barriers, the establishment of horizontal communications and flexibility in decision-making contribute to the rapid and effective implementation of innovations. The concept of knowledge management is important for understanding how international corporations can effectively use and disseminate knowledge within an organization. Knowledge management includes the processes of creation, collection, organization, analysis and transfer of knowledge by employees of the corporation. A well-organized knowledge management system promotes innovation by sharing experiences, learning from previous projects, and providing access to up-to-date knowledge and information.

6. Government and Regulatory Support. The role of government and regulators in building the innovative capacity of corporations should not be underestimated. Creating a favorable innovation ecosystem, providing tax incentives and subsidies, simplifying licensing and patenting procedures, and developing innovation policies and strategies contribute to the development of innovative enterprises and increase their competitiveness [7, 9].

7. Global cooperation and international expansion. International cooperation and global expansion allow corporations to expand their innovation capabilities. Interaction with international partners, including companies from different countries and cultures, facilitates the exchange of knowledge, best practices and access to new markets. This enhances the innovative potential of corporations and contributes to their growth and development.

8. Agile adaptation to change. Corporations that are able to adapt flexibly to rapidly changing market conditions and technological innovations have strong innovation

potential. The flexibility to change strategies, business models and processes allows corporations to quickly respond to new opportunities and challenges by creating new products and services and maintaining their competitiveness.

9. Sustainability and Responsibility. In today's global economy, sustainability and responsibility are becoming increasingly important factors in building the innovative capacity of corporations. Taking into account environmental and social aspects in innovation, the development of environmentally friendly technologies and products, as well as social responsibility, allow corporations not only to create innovations, but also to meet the needs of society in sustainable development.

10. Innovation Management System. Includes innovation management processes and practices such as innovation planning, risk assessment, knowledge management and innovation commercialization. An effective innovation management system contributes to the optimal use of innovation potential.

We can agree with the statement of the American scientist M. Porter that modern corporations, aware of the importance of innovation, should actively work on the development of these determinants in order to become leaders in their industry and effectively cope with the challenges of modern business [3, 5]. At the same time, most of the scientific literature notes that one of the main factors in the formation of the innovative potential of modern corporations is technological achievements and research, namely, scientific and technical potential. It includes scientific research, development of new technologies, intellectual property and scientific and technical resources that provide the basis for innovation. That is, corporations that actively invest in research and development of new technologies have a greater potential for innovative growth. This may include developing new products, improving manufacturing processes, and introducing new management practices [5]. Corporations that allocate significant funds to research and development, the creation of innovation centers and the acquisition of new technologies have great potential to develop and implement new ideas. We can also agree with the opinion of practical scientists that investments in innovation can be successfully implemented only on the basis of the development of intellectual capital in the company. It includes knowledge, skills and experience of employees, level of

education, a culture of innovation and the ability to think creatively. The development and attraction of highly qualified employees is an important factor in the formation of innovative potential.

All this can be implemented solely based on the formed innovative strategy and management system. Thus, the effective development and implementation of innovative strategies and management processes play a key role in shaping the innovative potential of corporations. Companies that have a clear vision and strategy for the development of innovations are able to effectively manage innovative projects and processes, establish mechanisms for assessing and improving innovations, and ensure the stable and systematic development of innovative activities [14].

Separately, it should be noted the role of cooperation with external partners, including universities, research institutes, start-ups and other companies, which contributes to the formation of innovative potential. Partnerships allow the exchange of knowledge, experience and resources, which contributes to the development of new ideas and technologies. Corporations that actively enter into partnerships expand their innovation capacity and increase their competitiveness.

An analysis of the economic literature allows us to identify a number of factors related to the innovative potential of the company but which are external to the company, namely, globalization, regulatory support and innovation policy, market competition, consumer needs and expectations. Thus, the globalization of the economy provides corporations with access to world markets and the ability to compete on a global level. This creates an incentive to develop and innovate as companies strive to create unique products and services that can be competitive in the international market [10, 19]. Globalization also facilitates the exchange of ideas and the transfer of knowledge between different regions and cultures, which can stimulate innovative growth. Support from the state and the development of an effective innovation policy are factors influencing the formation of the innovative potential of corporations. Regulatory measures, such as tax incentives, grants and subsidies for research and development, the creation of innovation ecosystems and specialized technology parks, contribute to the growth of innovation in the business environment [10, 11]. State support creates favorable conditions for

innovation and attracts investment in the innovation sector. In turn, competition in the market stimulates corporations to develop and implement innovations. Intensely competitive corporations are constantly looking for new ways to improve their products and services, as well as streamline their business processes. The competitive environment requires corporations to be innovative and ready for continuous improvement.

Separately, it should be noted the needs and expectations of consumers, which are important factors that form the innovative potential of corporations. Corporations that actively study and analyze the needs of their customers are able to develop innovative products and services that meet their expectations. Consumers become the engine of innovation, and corporations that successfully meet their needs gain a competitive edge.

All these factors are interconnected and influence the formation of the innovative potential of modern corporations in the world economy. At the same time, each corporation may have its own characteristics and unique factors that affect its innovative potential, and therefore it is important to conduct detailed research and analysis within a particular organization [10, 11].

An analysis of the economic literature makes it possible to state that the realization of innovative potential depends on the correctness of the company's assessment of modern technological trends, the level of infrastructure development, access to resources, the ability to manage risks and the level of competitiveness of the industry in which the corporation itself operates. Therefore, the analysis of market prospects and technological trends allows corporations to identify new opportunities for innovation. Tracking changes in consumer demand, the development of new technologies, the emergence of new market segments and trends can be an incentive for corporations to implement innovative solutions, create new products and services, adapt to a changing market environment and maintain a competitive advantage. The presence of a developed infrastructure, access to the necessary resources and the innovation ecosystem also influence the formation of the innovative potential of corporations. The presence of laboratories, research centers, high-speed Internet, access to funding and expertise create favorable conditions for the development and implementation of innovative projects [7, 9, 19]. The industry context also influences the innovative capacity of corporations. Some industries are more prone

to innovation and continuous development, while in other industries, innovation may be less significant. The degree of competition in an industry can encourage or hinder corporate innovation, as high competition usually requires the constant introduction of new ideas and technologies to survive in the market.

The combination of all these factors and their interaction influence the formation of the innovative potential of modern corporations in a world economy that is undergoing rapid technological progress, and poses increasingly complex challenges for companies and requires them to constantly innovate.Successful corporations strive to constantly develop their innovative potential to ensure competitiveness and sustainable growth in a rapidly changing world.

One of the main advantages of innovative capacity is the ability of corporations to adapt to changing market conditions. Rapid technological progress and the constant emergence of new competitors require companies to constantly update and innovate. Corporations with a strong innovative potential are able to quickly analyze market changes, anticipate customer needs and develop new products and services that meet current market requirements [18].

In conclusion, the innovative potential of modern corporations plays an important role in the global economy. It enables companies to adapt to changing market conditions, create competitive advantages and achieve sustainable growth. Factors such as scientific and technical potential, intellectual capital, innovation management system, organizational culture and cooperation with external partners play an important role in the formation and development of innovative potential. Understanding and leveraging these factors helps corporations be successful and competitive in a rapidly changing world.

Additionally, mention should be made of the role of innovative potential in ensuring the sustainable development of corporations. In today's world economy, where the challenges of environmental sustainability, social responsibility and energy efficiency collide, innovation plays an important role in creating solutions that contribute to sustainable development.

The innovative potential allows corporations to develop and implement environmentally friendly technologies, reduce the negative impact on the environment and improve the energy efficiency of production. Such innovations not only reduce the negative environmental footprint, but can also create new opportunities for growth and development associated with the growing demand for environmentally friendly products and services.

In addition, corporations with strong innovation potential can develop products and services that meet social challenges such as health, education, sustainability, and accessibility for all segments of the population. Such innovations contribute to improving the quality of life of people and can create a significant social effect [18, 25].

Finally, it is important to note that the innovative potential of modern corporations affects not only their own success, but also the development of the world economy as a whole. Corporations that are able to create and innovate become the driving force behind economic growth, create new jobs, attract investment and contribute to the development of industries and regions. Their innovations can cross borders and have an international impact, contributing to the development of the world economy and contributing to the process of globalization.

Thus, the innovative potential of modern corporations is a key factor in their success in the global economy. It enables companies to adapt to change, create competitive advantage, drive sustainable growth, contribute to environmental and social sustainability, and drive the global economy forward. International corporations with significant innovation potential (which is determined by their scale, resources, technological expertise and global presence) are actively investing in research and development, technology transfer and applying the concept of open innovation [7, 12]. All this helps to stimulate innovation and the development of new products and services, and contributes to the development of innovative capacity in various countries and regions of the world.

1.4 Methodical approaches to evaluating the effectiveness of the innovative development of TNCs in the conditions of globalization

The impact of globalization on the efficiency of innovative development of transnational corporations (TNCs) is a complex and multifaceted problem. Globalization, as a process of integrating the economy, information, technology and culture on a global scale, has a significant impact on the activities of TNCs in the field of innovation.

According to most scientists, globalization creates certain challenges for the innovative development of TNCs, including increased competition, intellectual property problems, and adaptation to various cultural and market conditions. Therefore, in order to effectively use the opportunities of globalization, TNCs must develop strategies that promote innovative development, including flexibility, adaptability and the ability to manage innovation processes in the international environment [1]. Globalization provides TNCs with greater access to markets, technologies, financial resources and human capital. This allows companies to find and attract the best innovative resources, including highly qualified specialists and unique technologies, which helps to increase their efficiency in innovative development.

Globalization allows TNCs to expand their presence in the world market. This opens up new opportunities for R&D companies, allowing them to penetrate different markets and adapt their innovations to different cultural and economic conditions [3]. Expanding geographic coverage also encourages the creation of international networks and partnerships, which can facilitate knowledge sharing and technology transfer. Globalization leads to increased competition in the world market. Companies in a competitive environment are forced to constantly improve their innovation and improve their efficiency in order to remain competitive. This stimulates TNCs to innovate and create new products and services, which ultimately increases their effectiveness in innovative development. Globalization also creates new opportunities for cooperation between TNCs and other organizations in the field of innovation. Companies can collaborate with universities, research centers, government agencies and other businesses

to share knowledge, jointly research and develop new products. This contributes to the development of innovations and increase the efficiency of TNCs [5].

At the same time, scientists note that assessing the effectiveness of the innovative development of transnational corporations in the context of globalization is a complex and multifaceted task. Globalization has brought significant changes to the world economy, creating new opportunities and challenges for TNCs, including innovation.

In today's world, globalization plays a key role in the development of transnational corporations and their innovative activities. With globalization, TNCs face increased competition, rapidly changing markets, technological breakthroughs and the need to adapt to different cultures and legal systems [17]. Globalization is accompanied by increased competition in the world market and creates new opportunities and challenges for the development of companies. Evaluation of the effectiveness of innovative activities of TNCs is important for determining their competitiveness and sustainable development in the global economy.

In light of these challenges, assessing the effectiveness of TNC innovative development is critical to their success. Evaluation of the effectiveness of innovative development of TNCs in the context of globalization requires an integrated approach and taking into account many factors. It is important to take into account the specifics of the industry, the competitive environment, international trends and market needs [20, 24]. Regular monitoring and evaluation of the results of innovation activities will help TNCs adapt to changing conditions and increase their competitiveness in the global economy.

The methodology for evaluating the effectiveness of innovative development of TNCs in the context of globalization includes setting goals and indicators, assessing innovative potential, measuring the results of innovative activity, comparing with competitors, and adjusting the strategy and action plan.

The first step is to define the goals of innovative development of TNCs and develop appropriate indicators to assess the achievement of these goals. Goals may include increasing market share, improving product quality, reducing costs, expanding geographical presence, etc. Indicators may include sales of new products, number of patented technologies, share of profits invested in research and development, etc. The

next step is to assess the innovative potential of TNCs, that is, its ability to develop and implement innovations [1, 29]. To do this, an analysis of the internal environment of the company, its research base, human resources, infrastructure and technological capabilities is carried out. It is also important to take into account the external environment such as technological trends, competition, legislation, etc. To assess the effectiveness of the innovative development of TNCs, it is necessary to measure the results of its innovative activities. This may include analysis of quantitative indicators such as sales of new products, market share, profit margins, as well as qualitative indicators such as company reputation, customer satisfaction, employee engagement, etc.

To fully assess the effectiveness of the innovative development of TNCs in the context of globalization, it is necessary to conduct a comparative analysis with competitors. This allows you to determine the advantages and disadvantages of the innovation strategy of TNCs in comparison with other companies in the industry. Comparison can be carried out on various indicators, such as market share, sales volume, investment in research and development, etc.

When evaluating the effectiveness of innovative development of TNCs, it is necessary to take into account the risks and uncertainties associated with innovative projects [27]. This may include technical risks, risks of changes in the regulatory environment, competitive risks, etc. It is important to analyze and evaluate these risks in order to assess their impact on the effectiveness of innovative development and develop measures to reduce or manage them.

In addition to traditional financial and production indicators, special innovative metrics can be used to assess the effectiveness of the innovative development of TNCs. These can be indicators related to the innovation process, such as the time from an idea to commercialization of a product, the innovative activity of employees, the effectiveness of innovative processes, etc [23]. The use of such metrics makes it possible to more accurately assess the innovative potential and results of TNCs.

Evaluation of the effectiveness of innovative development of TNCs should also take into account the degree of involvement and motivation of employees in innovative processes. This may include assessing the level of participation of employees in ideas and

innovative projects, stimulating and rewarding innovative activities, creating a favorable corporate culture, etc. Employee engagement is a key success factor for the innovative development of TNCs.

Evaluation of the effectiveness of innovative development of TNCs should be a process of continuous monitoring and feedback. This allows you to track changes in the external and internal environment, respond to them and adjust the innovation strategy. Regular reports, analytics and feedback from stakeholders (customers, employees, partners, etc.) can be used to improve the innovation process and achieve the desired results.

The methodology for evaluating the effectiveness of innovative development of TNCs should be part of a continuous improvement system. This means that based on the results obtained and the analysis, it is necessary to make changes to the innovation processes and strategy in order to increase their effectiveness. Monitoring and adjustment should be carried out regularly to ensure the long-term success of the innovative development of TNCs [4, 20].

Based on the assessment of the effectiveness of the innovative development of TNCs and comparison with competitors, areas that require adjustment of the strategy and action plan can be identified. It is important to analyze the causes of failures and successes in order to make the necessary changes in the innovation strategy and improve the results.

In the field of corporate innovation, there is often a lack of a balanced picture where costs and benefits do not balance well. When assessing innovation development using a process approach, some indicators, such as the amount of innovation spending, may indicate financial participation from various sources of funding or self-financing of the organization [24]. However, the relationship between costs and results is usually not clear enough.

It is important that the system of indicators and criteria for innovative development include performance evaluation indicators. Innovation activity is seen as a process and only performance indicators can properly assess the success of this process. Comparison of results and costs (resources), that is, the evaluation of efficiency, is a key factor for making balanced and informed decisions.

Thus, in order to achieve a more balanced picture of innovation, both costs and benefits need to be taken into account and evaluated in the context of efficiency. This will help you make more informed and rational innovation decisions [23].

The existing system for assessing and managing innovative development assumes that innovations will occur within the current industries, production conditions and using available resources and services. While innovation can bring changes and upgrades to production and services, the primary source of innovation is existing structures and resources. Perhaps some services that are not subject to innovation may show resistance to innovation. Therefore, innovations should include a radical restructuring and transformation of all services and organizational systems, including production, financial, social and others. Organizational, marketing, environmental and other relevant innovations must also be taken into account when developing production and technological innovations [27]. Due to the complexity of innovation activities, decisive management measures are required, such as strengthening human resources, developing logistics, and improving the accounting and analysis system. It is also necessary to develop appropriate indicators for evaluating efficiency and effectiveness, which will reflect the balanced integrated innovative development of the enterprise.

Modern and developing innovative systems are ideologically based on the basic principles of Joseph Schumpeter, including his concept of "creative destruction". This concept involves the creation of new ideas and technologies that inevitably replace outdated approaches and products [1, 38, 39].

Schumpeter believed that old structures and habits had to be overcome in order to achieve innovation and economic growth. He argued that new ideas and technologies, replacing outdated ones, create space for progress and development. The purpose of these innovative systems is not just to maintain the status quo, but also to constantly update and find better solutions.

While there is no direct and explicit "breakdown" in these systems, the focus is on constant renewal and change to meet changing needs and requirements. New ideas, products and technologies are gradually replacing outdated ones, which leads to changes in the economy and society as a whole.

Thus, Schumpeter's concept of "creative destruction" describes the process by which new innovations and technologies replace obsolete methods and products, promoting change and progress in society and the economy [1, 38, 39].

In most innovative development assessment methodologies, the level of loss or destruction associated with the introduction of innovations is usually not taken into account. Instead, the focus is on positive indicators such as the amount of investment in research and development, the number of new products or technologies, the level of profits, and other positive factors.

However, the main challenge for innovation lies in overcoming inertia and changing established practices and processes. In this process, negative consequences can arise, such as loss of market share, competitiveness, or even the elimination of some production chains [1]. Therefore, when assessing the innovative development of an enterprise, it is necessary to take into account both positive and negative indicators, including losses and destruction associated with the process of change and the transition to new innovative solutions.

Thus, for a full assessment of the innovative development of an enterprise, it is important to take into account the balance of positive and negative factors, as well as to realize that innovations can have both positive and negative consequences. This will help the enterprise to more accurately assess the effectiveness and efficiency of its innovation efforts and take the necessary measures to minimize possible negative consequences.

To effectively assess the scientific and technical potential of an enterprise in innovation, the following indicators should be taken into account [7]:

• Infrastructure and resources: it is important to assess the availability and equipment of the experimental base, the availability of the necessary materials, instruments, computers and other equipment.

• Qualifications and number of staff: assessing the qualifications and number of staff involved in research work plays an important role.

• Access to information: the need to have access to information resources and scientific and technical information for successful innovation.

• Organization and management of projects: the effective application of methods for organizing and managing innovation projects and information flows also affects performance [8].

• The level of knowledge intensity and novelty: assessment of the level of knowledge intensity and novelty of ongoing research, as well as the availability of an intellectual product in the form of patents, licenses, know-how, rationalization proposals and inventions are of great importance.

• Competitiveness and demand: the level of competitiveness of innovations, the availability of demand and orders for research work, as well as the implementation of the necessary marketing activities to promote innovations to the market.

• Economic efficiency: an assessment of the economic efficiency of ongoing research, research costs, market value of intellectual products, the cost of patents, licenses, know-how and other types of intellectual property [5].

• Investments and sources of financing: taking into account the volume of investments in research and development, the availability of intangible assets and available sources of financing, including the possibility of issuing shares and bonds, attracting foreign and private investors and other resources.

It should be noted that the effectiveness of the innovative development of TNCs is also assessed through their ability to commercialize innovative products and technologies. TNCs must have effective mechanisms in place to turn ideas into competitive products or services and to scale them up globally. Marketing, sales and distribution strategies play an important role in this process [20].

As noted in the previous section, in the context of globalization, TNCs have the opportunity to cooperate with other companies and organizations in different countries. This cooperation may include technology exchange, research and development partnerships, joint innovation projects, etc. This approach allows TNCs to access new ideas and resources and expand their global reach. At the same time, the effectiveness of the innovative development of TNCs largely depends on their ability to invest in research and development [20]. TNCs must create strong research and development departments that are capable of generating new ideas, products and technologies. In addition,

collaboration with external research organizations and universities can promote knowledge sharing and innovation. According to a number of scientists, the assessment of the effectiveness of the innovative development of TNCs should take into account the long-term perspective. This includes an analysis of the ability of TNCs to create innovative advantages, maintain leadership in innovative solutions, and build long-term partnerships and networks to support innovation [8].

The traditional centralized scheme for the maintenance and distribution of transnational corporations has lost its popularity for a number of reasons. Many TNCs have come to conclusion, which they need more victorious work with international specialization in the field of science and technology [8]. For example, for rich TNCs, such as Control Data, Motorola and others, it is more important to locate their previous laboratories in the USA, the center of computer programming in India, the center of industrial design in Italy and other regions.

However, there are problems associated with the significant participation of TNCs in the international and national media, as well as possible risks and benefits for specific economies and other affected parties. The main method of this work is to understand how, in such a manner, the process of promoting transnational corporations in the business environment can contribute to the international economic system with social and economic development [20]. To reach the goal, there are such methods as matching, analysis, synthesis and logical visualization.

Today's multinational corporations are key factors that contribute to economic development, technology transfer, and deepening globalization around the world. These companies are real engines of growth thanks to several main factors.

The first factor is the accumulation of sufficient funds for expansion into new markets. Transnational corporations have significant financial resources that allow them to expand and enter new markets, in particular economically developed countries and countries with great development potential [7, 8].

The second factor is effective global horizontal and vertical diversification. Multinational corporations use horizontal and vertical diversification strategies to expand

into different industries and markets. This allows them to reduce risks and dependence on certain sectors and countries, as well as to obtain advantages of scale and synergies.

The third factor is the flexible transformation of business models. TNCs quickly adapt to changes in the international business environment and transform their business models using new approaches and technologies. This allows them to remain competitive and occupy leading positions in the market.

The fourth factor is the optimization of subsidiaries in view of the economic and political conditions in the country. Transnational corporations carefully analyze the market conditions of the countries where they operate and optimize their subsidiaries to maximize profitability and adapt to local conditions.

The fifth factor is the possibility of extending the life cycle of outdated technologies, goods and services by transferring them to subsidiaries. Transnational corporations can redistribute outdated technologies and products to their subsidiaries operating in countries with less developed infrastructure or lower costs, enabling them to profit from such resources [1].

The sixth factor is the use of the latest innovation strategies to take advantage of access to resources, capital, research and development in the parent company's country. MNCs actively implement innovative strategies, such as internal research and development centers, partnerships with universities and other research organizations, which allow them to gain access to advanced technologies and knowledge.

In general, transnational corporations play an important role in promoting economic development, technology transfer and globalization. They stimulate innovation, provide growth in production and employment, contribute to the spread of knowledge and influence the economic stability of various countries around the world.

In the modern business environment, which is constantly changing, the success of a corporation depends on its innovation and efficiency [11, 12]. Growing demand, increasing supply, fierce market competition, technological development and globalization require enterprises to actively use innovations to maintain and expand their market share. The evaluation of the effectiveness of innovative activity is aimed at identifying and researching factors that influence the creation, development and

implementation of innovations in the enterprise. It helps to determine the extent to which the enterprise uses innovative opportunities and draw appropriate conclusions.

The evaluation of the innovative potential and innovative activity of the enterprise includes the analysis of material, human and financial resources necessary for the implementation of innovations. This makes it possible to reveal the enterprise's readiness for innovative development and reveal its innovative strategy.

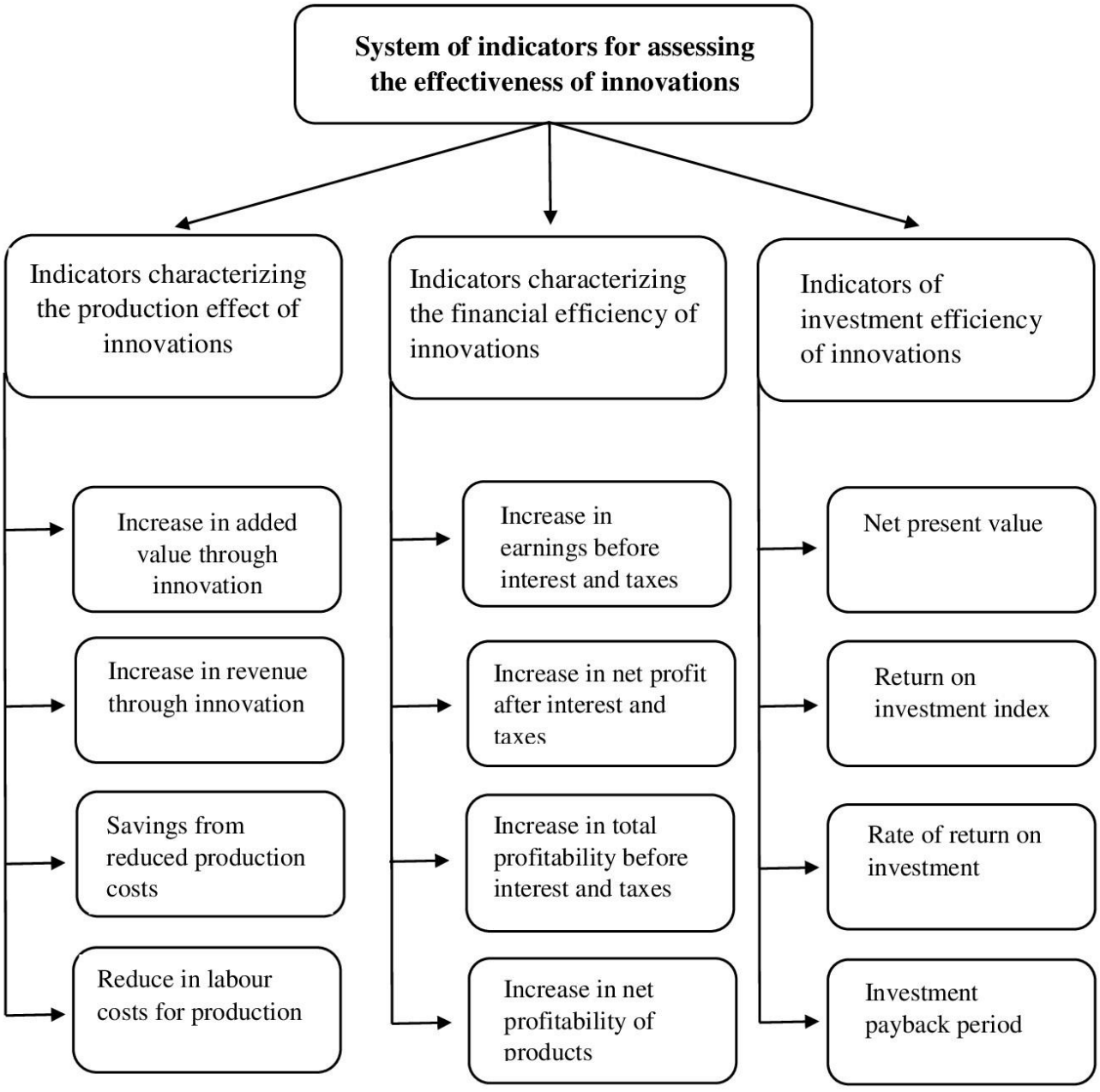

Fig. 1.3 System of indicators for assessing the effectiveness of innovations

Source: *compiled by the author based on* [17, 20]

The comprehensive analysis of the innovative activity of the enterprise aims to confirm the most effective areas of innovative activity, innovative plans and projects of the enterprise (see Figure 1.3). This is achieved by using a set of indicators that allow evaluating the effectiveness and success of the enterprise's innovative efforts [17].

The main tasks of complex analysis are the following:

1. Determining the compliance of the company's financial situation with the target parameters of its innovation and development: A comprehensive analysis helps to assess the extent to which the company's financial situation supports its innovation and development goals. This includes the analysis of financial indicators, such as profit, profitability, liquidity, financial stability and others, to determine the company's opportunities to invest in innovative projects.

2. Evaluation of the ability to innovate and develop: Comprehensive analysis helps determine the company's potential for innovation and development. This includes an analysis of organizational culture, available resources, technological capabilities, research and development efforts, and the ability to adapt to change [5, 14, 19]. An assessment of the ability to innovate helps to determine the extent to which a company can successfully implement innovative ideas and develop in a changing market environment.

3. Selection of innovative projects: Comprehensive analysis helps to identify potential innovative projects that best meet the goals and needs of the company. This includes assessing the potential benefits, risks, costs and expected outcomes of each project. Such an analysis helps the company make informed decisions about investing in specific innovative projects [19].

4. Evaluation of innovation performance indicators: Comprehensive analysis helps to measure the effectiveness of innovation projects and initiatives. This includes evaluating financial metrics such as revenue, return on investment, market share growth, as well as evaluating non-financial metrics such as increased customer satisfaction, improved product quality, process innovation, and more.

5. Evaluation of the financial impact of innovative solutions: Comprehensive analysis helps to evaluate the impact of innovative solutions on the company's financial

results. This includes analyzing potential profits, increasing stock value, reducing costs or increasing the efficiency of production processes through the introduction of innovations [20]. The assessment of financial impact helps to make informed decisions about investing resources in the development of innovations in the company.

The first group of indicators refers to the production effect that arises because of the application of innovations. These indicators include:

Value Added Growth (ΔVA): This indicator measures the change in value added after the introduction of an innovation. It is calculated as the difference between the benefit after and before the application of the innovation.

$$\Delta VA = VA1 - VA0, \quad (17, 20)$$ were VA1, VA0,

- додана вартість відповідно після і до застосування нововведення.

Revenue growth (ΔR): This measure measures the change in total revenue, including profit and depreciation, after the innovation is implemented. It is calculated as the difference between the income after and before the application of the innovation.

$\Delta R=R1–R0$, (2) where R1, R0, - income containing profit and depreciation, respectively, after and before the application of the innovation.

Savings (S) from reducing the cost of production: This indicator measures the savings that occur because of reducing the cost of a unit of production after the introduction of innovations. It is calculated as the difference between the cost of production before and after the innovation, multiplied by the annual volume of production after the introduction of the innovation.

$S = Q1 (C0 – C1)$, where C0, C1 are the cost per unit of production before and after the innovation,

Q1 is the annual volume of production in physical form after the application of the innovation.

Reduction of labor costs for the manufacture of goods/products. $S = Q1(Tm0 –Tm1)$

The second group of indicators concerns the financial efficiency of innovations. These indicators include relative savings in labor costs (Tm0, Tm1), which can be obtained because of the use of innovations. If this saving is divided by the annual fund of working hours of one employee, we get an indicator that characterizes the relative

reduction in the number of employees that can be achieved thanks to the introduction of innovations. [52]

Profit growth before interest and taxes (ΔPGd)

$$\Delta PGd = PGd1 - PGd0 \qquad (2, 17, 20)$$

The increase in net profit after interest and taxes (ΔNP) can be described as the difference between the amount of profit from operating activities after the payment of interest and taxes (PoI1) and the amount of profit from operating activities before the application of innovations (PoI0).

$$\Delta NP = NP1 - NP0 \quad (2)$$

ΔGRP reflects the increase in the total rate of return on products, which is calculated as the difference between the total profit from the sale of products and the amount of interest and taxes paid to net revenue.

$$\Delta GRP = GRP1 - GRP0 \qquad (17, 20)$$

ΔChNP reflects the increase in the net rate of return on products, which is calculated as the difference between the net return on sales of products after interest and taxes and net revenue.

$$\Delta ChNP = ChNP1 - ChNP0 \qquad (8)$$

Чиста теперішня вартість (NPV) входить до третьої групи показників інвестиційної ефективності інновацій.

$$T_o = \sum_{n=1}^{n} P_n \geq IC, \quad T_o = \min\ n$$

Figure 1.8 – Net present value (formula)

Source: [52]

Where Pn is Cash flow for n years. r - discount rate;

The index of return on investment (IR) determines the degree of profitability of a unit of costs. This indicator is calculated by dividing the net present value (NPV) by the initial investment amount (IS). The return on investment index allows you to assess how efficiently project costs are used.

The formula for calculating the index of return on investment (IR) looks like this:

IR = NPV / IS (17, 20)

If the ROI value is greater than one (IR > 1), it means that the net present value exceeds the initial investment amount and the project is considered profitable. In this case, investment in the project is appropriate.

If the value of the return on investment index is less than one (IR < 1), it means that the net present value is less than the initial amount of investment, and the project is considered unprofitable. In this case, it is not recommended to invest in the project.

If the value of the return on investment index is equal to one (IR = 1), it means that the net present value is equal to the initial investment amount. In this case, the project will bring neither profit nor loss.

$$IR = \sum_{i=1}^{n} \frac{P_n}{(1+r)^n} \Big/ IC; \text{ тобто } IR = \frac{NPV}{ІІІ}$$

Fig. 1.9. Investment profitability index

Source: [2]

When the cash flow is not a constant value, a formula that takes into account the variability of this flow is used to calculate the rate of return of the project. One of these approaches is the internal rate of return (IRR) or the level of profitability of the project. The formula for calculating GNI takes into account cash flows that change over time and includes the income and expenditure components of the project. It is defined as follows:

GNI = (Amount of cash flows / Cost of the project)^(1/number of years) - 1

In this formula, "Amount of Cash Flows" represents the sum of all profits expected from the project over its life, "Project Cost" represents the total amount of investment in the project, and "Number of Years" represents the duration of the project in years.

If the GNI calculated by this formula is greater than 1, it means that the profitability of the project is greater than 1, and investment in the project may be justified. If the GNI is less than 1, this indicates that the project is unprofitable, and the investment may not be justified.

$$HIR = r_1 + \frac{NPV_1}{NPV_2 - NPV_1} \times (r_2 - r_1)$$

Fig. 1.10. Calculation of the rate of profitability of the project **Source:** [2]

Where r1 is the value of the tabulated discount factor for which NPV1 > 0;

r2 - the value of the tabulated discount factor for which NPV < 0.

The accuracy of the calculation according to this formula will be greater, the smaller the difference between r1 and r2. In this case, the necessary condition is min NPV1 > 0 at r1 and max NPV2 < 0 at r2. The investment payback period (To) is the time during which the cash flow received by the investor during the operation of the project equals the investment amount (measured in years, months).

The investment payback period (RO) can be calculated according to the following formula:

$$T_o = \sum_{n=1}^{n} P_n \geq IC, \quad T_o = \min\ n$$

Fig. 1.11. Investment payback period (formula) **Source:** [2]

Where Pn is the cash flow for n years;

IC - the amount of initial investment.

The effectiveness of innovations can be evaluated using a system of indicators that take into account the final results of project implementation and the ratio of results to costs associated with the development, production and operation of innovations. For this, it is necessary to compare investments with cash flows arising during the project period. If the cash flow is stable during this period, the payback can be calculated by dividing the investment amount by the annual amount of cash flows. It is important to use not only one indicator, even if it is the most important from an economic point of view, but a system of indicators to more fully and objectively evaluate the effectiveness of innovations.

CHAPTER 2. WAYS TO IMPROVE THE INNOVATIVE ACTIVITY OF INTEL CORPORATION IN THE CONDITIONS OF GLOBALIZATION

2.1 Characteristics of the development of Intel e in the conditions of globalization

Gordon Moore and Robert Noyce, with PhDs in chemistry and physics respectively, decided to start their own company and turned to venture capitalist Arthur Rock for help. At that time, their business plan was presented on just one page. The Rock trusted Noyce and Moore and provided them with $3 million in seed capital. On July 18, 1968, the founders registered their company under the name N M Electronics, but they soon changed it to Intel, which meant, "integrated electronics" in English. Before Intel went public in 1971, they raised another $2 million in investment [29].

Noyce and Moore played a key role in shaping the distinct corporate culture in Silicon Valley that spread over time. They promoted the concept of abandoning rigid hierarchies and encouraged creative thinking among employees. However, despite this, the third most important in Intel was Andrew Grove, who was able to successfully organize work and maintain discipline within the organization. In fact, thanks to his efforts, it became possible to comply with the so-called "Moore's Law" - a pattern according to which the number of transistors placed on an integrated circuit doubled approximately every 18 or 24 months.

In 1992, Intel achieved a significant milestone: its annual net income surpassed the $1 billion mark for the first time. During this period, the company began to expand its activities, developing not only the development of microcircuits, but also components for computers. With the release of the Pentium line of processors, Intel began producing chipsets and motherboards. This has led many computer manufacturers to build systems based on the Pentium processor.

In the mid-1990s, computer sales skyrocketed, and Intel continued to develop ever more microprocessors that are powerful. In 1995, the company introduced the Pentium

Pro, which contained 5.5 million transistors and was capable of performing up to 300 million operations per second [36]. Later, Intel added multimedia enhancement technology to the Pentium line, which improved the performance of computers.

By 1996, Intel's revenue had reached $20.85 billion and net income had risen to $5.16 billion. In recognition of its success, in November 1999, Intel was included in the Dow Jones Industrial Average. This testified to the importance and success of the company in the market [36].

In the late 1990s, Intel acquired several companies that helped it enter the wireless, networking, and embedded control chip markets. What's more, the company has also entered the e-commerce space by creating the world's largest enterprise marketplace. By mid-1999, monthly Internet sales reached $1 billion.

Despite the expansion of its operations, Intel did not forget about its core specialization. In 1999, the company held a massive launch, introducing 15 Pentium III and Pentium III Xeon processors simultaneously. The growth of the company was impressive: if in 1968 only 12 employees worked in Intel, by 1980 their number had increased to 15,000 [35].

Today, Intel Corporation has been one of the leading developers of new technologies for many decades, which has significantly accelerated the development of computing systems and the Internet. Since its inception in 1968, Intel has specialized in the production of semiconductor storage devices and has quickly become one of the leaders in the industry. In 1971, Intel created the world's first microprocessor, and since then, the corporation has continued to innovate in the production of next-generation multi-core processors [33].

For the past 40 years, Intel has been the world's largest manufacturer of integrated circuits and offers a wide range of high-performance computing, networking and telecommunications products (see Table 2.1).. Intel is a leader in the development of next-generation multi-core processors and the world's largest manufacturer of integrated circuits. The company is known for its reliable and high-performance products in the field of computing systems, network technologies and telecommunications.

More than 12 thousand employees of the corporation work in Europe, the Middle East and Africa (EMEA region), and this region generates approximately 20% of its income [31]. All in all, Intel's innovation is changing the way people around the world live and work.

Table 2.1

Key performance indicators of Intel for 2017-2021 years

Year	Income, $	Profit, $	Assets, $	Capitalization, $	Number of employees, persons
2017	62 761 000 000	9 601 000 000	123 249 000 000	219 000 000 000	102 700
2018	70 848 000 000	21 053 000 000	127 963 000 000	255 000 000 000	107 400
2019	71 965 000 000	21 048 000 000	136 524 000 000	254 000 000 000	110 800
2020	77 867 000 000	20 899 000 000	153 091 000 000	263 700 000 000	110 600
2021	79 024 000 000	19 868 000 000	168 406 000 000	210 000 000 000	121 100

Source: *compiled by the author based on* [35, 36]

Intel continues to actively engage in innovation and development of new technologies in order to remain at the head of the industry and meet the needs of the growing information technology market. Intel is a company that has marketing and sales offices in 30 different countries around the world [37, 38]. In addition, it closely cooperates with universities and finances about 600 projects in various fields (see Figure 2.1).

Fig. 2.1 The main countries and locations where Intel operates in 2023 year.

Source: *compiled by the author based on* [29, 30]

As part of the new collaboration model, the company's four laboratories, located in Berkeley, Cambridge, Pittsburgh, and Seattle, operate in the so-called open mode, fully funded by Intel. In this mode, the majority of research results are openly published [31]. Each of the laboratories includes about 20 specialists, including Intel scientists and students.

In order to effectively interact with universities, Intel has created a special interaction group that maintains direct communication with university leaders and professors. Thanks to these close relations, Intel has the opportunity to identify areas of interest for research and attract young talented specialists [30].

Intel is actively working on the development of innovative technologies that make positive changes in the way people work, live and relax. The company has five main areas of activity, namely:

1. Computers and processors: Intel develops high-performance computer systems and processors that provide improved data processing capabilities, increased productivity and efficiency [29].

2. Internet of Things (IoT): The Corporation is working on the development of technologies that allow devices to interact with each other and with the Internet, providing new opportunities in the field of automation, smart home, transport and much more [29].
3. Artificial intelligence (AI) and machine learning: Intel is actively involved in the development of artificial intelligence and machine learning technologies. These innovations are applied in various fields, including autonomous cars, medicine, and finance and data analytics [30].
4. Security and confidentiality: Intel attaches great importance to data protection and user privacy. The company develops technologies and solutions that ensure the security of computer systems and protection against cyberattacks.
5. Innovations in the field of memory and data storage: Intel is working on the development of new data storage technologies, such as flash memory and 3D XPoint, which provide faster data access and greater storage capacity [29].

These areas of activity are implemented in the following consumer areas:

Mobile systems. One of the main directions of Intel's activities is the development of technologies for mobile systems that change people's work, life and leisure style for the better. The company is actively working on the development of laptops and mobile devices.

In the field of laptops, Intel focuses on growing demand and adapts its products to meet the needs of various user groups, from fashionistas and students to gamers and mobile workers. Laptops are becoming more and more popular, and it is expected that by 2012, the share of laptops will exceed half of the world's PC output [32].

In the category of mobile devices, Intel introduces a new category called netbooks. Netbooks are inexpensive and ultra-mobile Internet devices with basic functionality that run on an Intel Atom processor with low power consumption. These devices open up new opportunities for the development of the high-tech systems market.

In addition, Intel develops Intel Atom processors, which increase the performance of pocket systems of a new category - mobile Internet devices (Mobile Internet Device, MID) [32]. MID is a compact device that allows you to use all Internet resources even on the road. Production of some MID models in the EMEA region has already started, such

as in Italy (TIM/BenQ) and France (SFR/Compal). The number of netbook users is expected to grow rapidly in the EMEA region [34].

In addition to mobile systems, Intel continues to develop energy-efficient computing technologies and promote the development of Wi-Fi and WiMAX broadband wireless networks [32]. These efforts are aimed at ensuring more efficient operation of mobile systems and expanding access to high-speed Internet.

Digital office and digital enterprise. Modern companies are increasingly faced with the need to strengthen the security of their networks, manage energy consumption, and increase the overall efficiency of their IT infrastructure. In this context, Intel solutions offer a wide range of products, starting from servers equipped with Intel® Xeon® processors, ending with laptops with Intel® Centrino® processor technology and vPro™ technology, as well as desktop PCs with Intel® vPro™ technology [32]. These solutions contribute to the development of organizations and help them optimize the management of their activities, using IT as a strategic tool to achieve maximum business efficiency and maintain competitiveness.

Thanks to the innovative functions of intelligent energy management and automation of maintenance, Intel technologies bring significant benefits to users in terms of increasing productivity and efficiency, strengthening security and reducing costs. These advantages allow companies to use IT solutions in the most optimal and beneficial way for them, contributing to the successful development and improvement of their business indicators.

Server technologies and products. Intel's technologies and products for servers, including Intel® Xeon® and Intel® Itanium® processors, are constantly expanding the possibilities in the field of high-performance computing (HPC). Currently, two thirds of the 500 most powerful supercomputers in the world run on Intel® processors. Organizations such as NASA, CERN, BMW, Credit Suisse and Disney use Intel® technologies to perform professional research, engineering, production and analytical tasks [32].

Digital house. In the modern digital home, a traditional home computer turns into a multimedia platform that allows users to store and play video, music, and images. Intel is

actively promoting the convergence of computers and consumer electronics to make entertainment in the digital home more attractive.

Digital healthcare. One of the areas in which Intel pays attention is digital healthcare. Intel conducts research and develops technologies that help improve the availability and efficiency of medical care. In November 2008, Intel introduced the Intel® Health Guide personal system in the UK, which is designed to care for sick or elderly people at home [31]. Medical professionals who monitor patients suffering from chronic diseases design this system for use. In 2024, Intel plans to release additional localized versions of this system in other European languages.

In order to meet the growing needs of users, the industry strives to increase the speed of development of innovative platforms and products. In this context, Intel has developed a tick-tock strategy aimed at accelerating innovation. According to this model, the introduction of production technologies of the next generation and the development of new architectures of microprocessors alternate every year. As a result, advanced technologies such as the Intel® Core™ microarchitecture are created, and their implementation is fast and predictable. Intel customers and computer users around the world can rely on Intel's high intellectual potential and manufacturing capabilities, which ensure the development of advanced high-performance systems that quickly become widespread [29].

Intel continues to occupy leading positions in the organization of production, promptly introducing new technologies and launching serial production based on them. Currently, the company already has four factories working on the 45-nm production process. One of these plants is located in Israel. In 2008, Intel invested about 13 billion US dollars in the development of production in the EMEA region, and further growth of investments is planned [30]. Intel's production complex in Ireland is currently the fourth largest in the world and the largest outside the United States. Intel plants in Ireland and Israel are excellent enterprises that manufacture microprocessors and semiconductor chips for communication devices. These products became the driving force of the modern revolution in the field of computing and telecommunication systems.

Thus, it can be stated that Intel is an innovative company that constantly produces advanced products using modern silicon technologies. It takes into account the needs of different groups of users, including individual consumers, entrepreneurs and IT specialists. Intel strives to create new technologies that will improve people's lifestyles and change their work and leisure for the better [32].

Thanks to its successful development, Intel has a significant amount of revenue, which is one of the main indicators of the company's activity. The company's revenue depends on the sale of semiconductors, processors and other products, as well as on services and intellectual property licensing. In recent years, Intel has demonstrated stable revenue growth, although there is competition in the market for computer components.

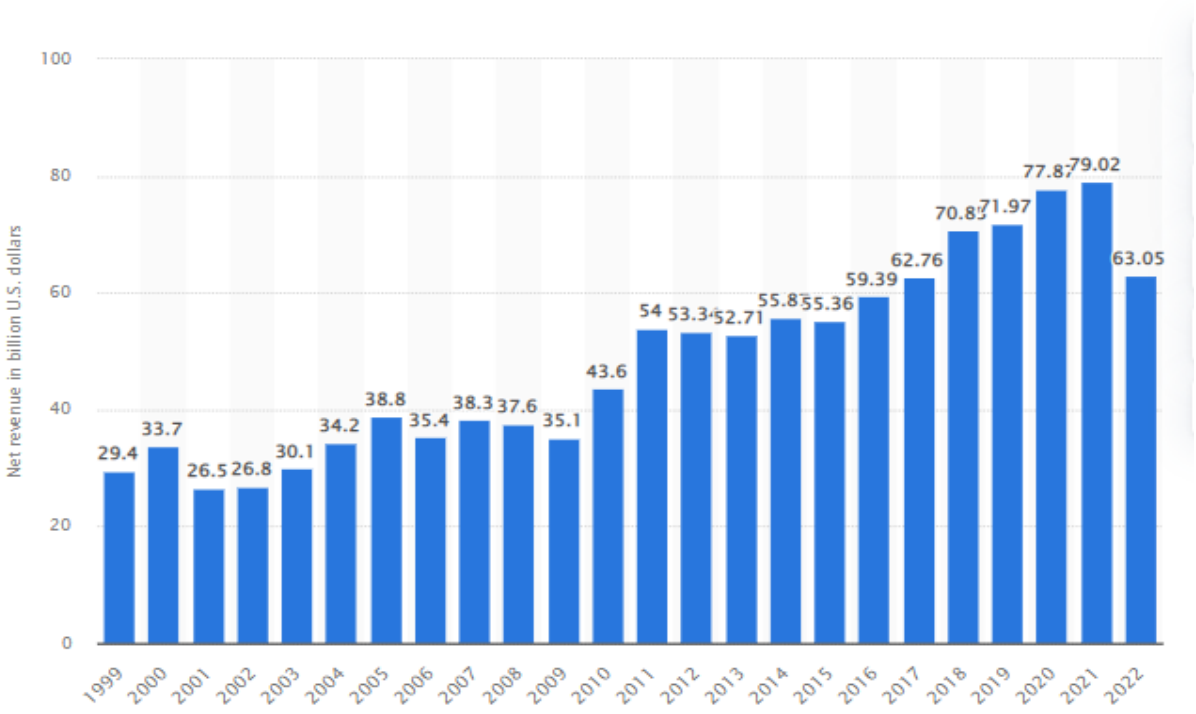

Fig. 2.2 Intel's net revenue from 1999 to 2022 years (in billions of US dollars)

Source: *compiled by the author based on* [37].

Over the past 20 years, the company has been constantly increasing the amount of net income, if in 1999 it was 29.4 billion US dollars, then in 2021 it will be 79.02 billion US dollars (see Figure 2.2). The same trend can be seen in the company's net profit indicators. If in 2004 it was 7.524 billion US dollars, then in 2021 it will be 19.87 billion US dollars [37].

Therefore, Intel continues to break revenue records for the fifth time in a row. In 2020, the company earned $77.87 billion, which is 8% more than the previous year (see Figure 2.2).

Most of the revenue went to the division engaged in the production of computer processors. Client Computing Group's revenue in 2020 amounted to $40.06 billion, which means an increase of 8% compared to 2019 [35].

In the field of server solutions (Data Center Group), annual revenue grew by 11% and reached $26.1 billion. Although the number of delivered chips for servers increased by 11%, the average cost of such products decreased by 3%.

The Non-Volatile Memory Solutions Group also showed impressive growth of 23%. The revenue of this division in 2020 was $5.36 billion [36].

Table 2.2

Intel's 2019-2020 years Consolidated Revenue Statement (in billions of US dollars)

	Three Months Ended		Twelve Months Ended	
(In Millions, Except Per Share Amounts)	**Dec 26, 2020**	**Dec 28, 2019**	**Dec 26, 2020**	**Dec 28, 2019**
Net revenue	**$ 19,978**	**$ 20,209**	**$ 77,867**	**$ 71,965**
Cost of sales	8,630	8,331	34,255	29,825
Gross margin	**11,348**	**11,878**	**43,612**	**42,140**
Research and development	3,655	3,384	13,556	13,362
Marketing, general and administrative	1,757	1,592	6,180	6,350
Restructuring and other charges	52	105	198	393
Operating expenses	**5,464**	**5,081**	**19,934**	**20,105**
Operating income	**5,884**	**6,797**	**23,678**	**22,035**
Gains (losses) on equity investments, net	1,692	617	1,904	1,539
Interest and other, net	(88)	654	(504)	484
Income before taxes	**7,488**	**8,068**	**25,078**	**24,058**
Provision for taxes	1,631	1,163	4,179	3,010
Net income	**$ 5,857**	**$ 6,905**	**$ 20,899**	**$ 21,048**

Source: *compiled by the author based on* [35].

The net profit indicator is an important indicator of the company's efficiency. Intel strives to increase its net profit by optimizing operations, product innovation and cost

management. A high net profit indicates the successful operation of the company and its ability to generate profit. Intel invests significant funds in research and development of new technologies and products. This allows the company to stay at the forefront of innovation and develop new products that meet the needs of the market. Investments in research and development are an important indicator of Intel's strategic development.

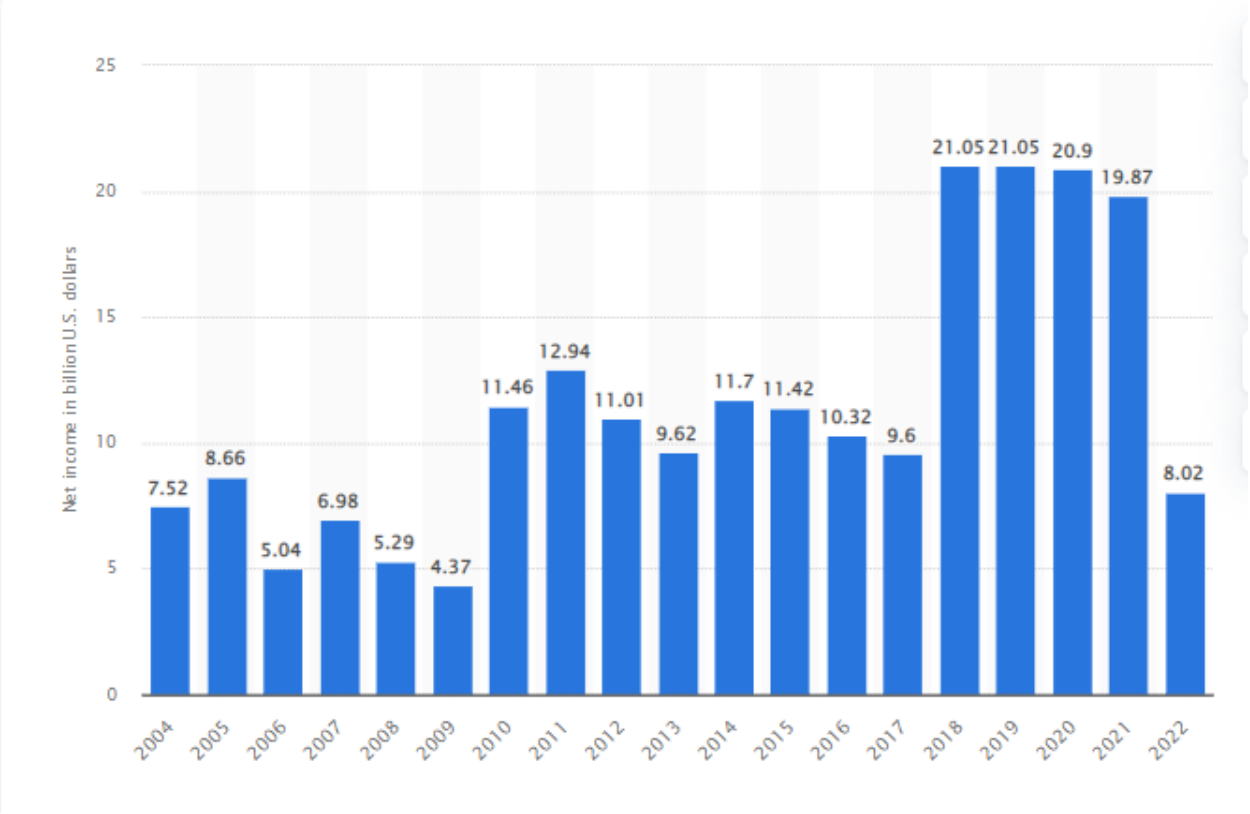

Fig. 2.3 Intel's net income from 2004 to 2022 years (in billions of US dollars)

Source: *compiled by the author based on* [35].

At the same time, it should be noted that in January 2023, Intel announced a decline in its financial results. The company's sales in 2022 decreased by 20%, which led to a drop in the value of the corporation by approximately $8 billion in one day [35].

In accordance with generally accepted accounting principles (GAAP), Intel's revenue in 2022 was about $63.1 billion, which is significantly less than the $79 billion received in 2021 (see Figure 2.3). Net profit was $8 billion versus $19.9 billion in 2021, which means a 60% decrease [31, 36].

Intel's revenue in 2022 fell by 20%. In 2022, the Client Computing division, which is responsible for products for the consumer market, reduced its revenue to about $31.7 billion. This is a significant drop compared to the previous year, when the revenue was

about $41.1 billion. Within this division, sales of desktop computers fell from $12.4 billion in 2021 to $10.7 billion in 2022, and laptop sales decreased from $25.4 billion to $18.8 billion. In other product segments of the Client Computing division, revenue amounted to $2.3 billion in 2022, in compared with $3.2 billion in 2021 [32, 34].

Table 2.3

Intel's 2021-2022 Consolidated Revenue Statement 2021-2022 years (in billions of US dollars)

	GAAP			Non-GAAP		
	2022	2021	vs. 2021	2022	2021	vs. 2021
Revenue ($B)	$63.1	$79.0	down 20%	$63.1^	$74.7	down 16%
Gross margin	42.6%	55.4%	down 12.8 ppts	47.3%	58.1%	down 10.8 ppts
R&D and MG&A ($B)	$24.5	$21.7	up 13%	$21.9	$19.2	up 14%
Operating margin	3.7%	24.6%	down 20.9 ppts	12.6%	32.4%	down 19.9 ppts
Tax rate	(3.2)%	8.5%	down 11.7 ppts	4.1%	8.7%	down 4.6 ppts
Net income ($B)	$8.0	$19.9	down 60%	$7.6	$21.7	down 65%
Earnings per share	$1.94	$4.86	down 60%	$1.84	$5.30	down 65%

Source: *compiled by the author based on* [35]

The Data Center and AI division, which develops solutions for data centers and artificial intelligence systems, showed revenue of $19.2 billion in 2022, which is slightly lower than the previous year, when revenue amounted to $22.7 billion (see Table 2.3). In the Network group and Edge, which is responsible for network products and peripheral computing, sales increased: from $8 billion in 2021 to $8.9 billion in 2022. The Mobileye division, which specializes in developing advanced driver assistance systems to reduce the risk of collisions, increased its revenue to $1.9 billion in 2022, compared to $1.4 billion in 2021. The Intel Foundry Service business, engaged in contract manufacturing of chips, also showed revenue growth: about $895 million in 2022, compared to $786 million the previous year [31, 37].

One of Intel's key products is their processor line, which includes the Intel Core, Xeon, and Atom series. These processors provide a wide range of functionality and performance for different types of tasks.

In addition to processors, Intel also develops other technologies such as semiconductor chips, flash memory, network components and software for additional features and integration.

Intel is a global competitive leader in its industry and their products are widely used around the world. The company is actively engaged in research and development of new technologies such as artificial intelligence, machine learning, pattern recognition and quantum computing. These directions allow Intel to remain at the forefront of technological innovation and contribute to the development of the information technology industry.

In its competition, Intel competes with other big players in the industry such as AMD, NVIDIA, Qualcomm and Samsung. Competition occurs in various market segments, including personal computers, servers, mobile devices and others.

Overall, Intel is an influential and competitive company that plays an important role in the development of information society technologies and continues to push the industry forward into the future.

The company is one of the leading companies in the information technology and semiconductor industry, but it also competes with other major players in these industries. Here are some comparative aspects between Intel and some of its global competitors:

• AMD (Advanced Micro Devices): AMD is one of Intel's main competitors in the field of processors for personal computers and servers. Both companies compete for market share by providing high-performance processors with different functionality. While Intel typically has the larger market share, AMD has seen significant success in recent years with its Ryzen processors [29].

• NVIDIA: NVIDIA specializes in graphics processing units (GPUs) and solutions for graphics, machine learning and artificial intelligence. While Intel also produces its own graphics solutions, NVIDIA is one of the biggest players in the high-performance

GPU segment. Both companies are competing for leadership in computing, including artificial intelligence and graphics [29, 30].

• Qualcomm: Qualcomm is a leading player in the field of mobile devices and specializes in the development of processors and modems for smartphones, tablets and other mobile devices. Intel is also active in this field, but Qualcomm has a strong position, especially in the segment of mobile communications and network technologies.

These are just a few examples of Intel's global competitors, and there are other companies in the market as well, such as Samsung, IBM, Apple, etc (see Figure 2.4).

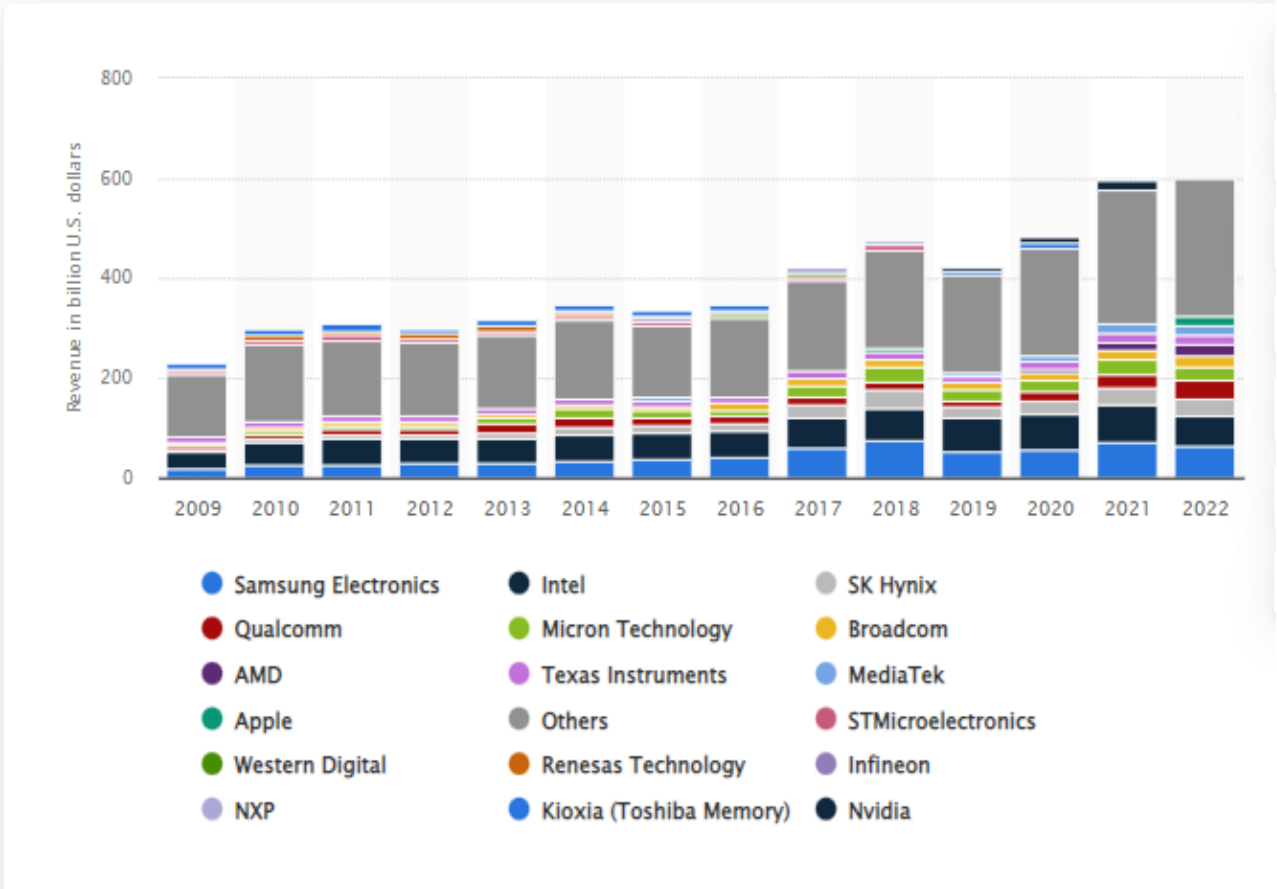

Fig. 2.4 Market revenue of semiconductor companies worldwide from 2009 to 2022 years (in billions of US dollars)

Source: *compiled by the author based on* [35, 36]

In 2022, Samsung was the leading semiconductor supplier with revenue of US$65.6 billion, while Intel ranked second among suppliers with revenue of US$58.4 billion [37].

Some of the leading companies in the semiconductor industry include integrated device manufacturers (IDMs) such as Intel, Samsung Electronics, SK Hynix, and Micron Technology. Also in the global semiconductor industry, there are well-known non-

processor companies, such as Qualcomm and Nvidia, which work closely with foundries such as Taiwan Semiconductor Manufacturing Company (TSMC), the largest foundry in the world, which produces microcircuits in its own factories [29]. Each of these global competitors has its own unique characteristics and advantages that affect their competitive position.

One aspect of the comparison between Intel and their competitors is, **first, technological innovation**. Intel has extensive experience in the development of processors and semiconductor technologies, which allows them to produce products with high performance and reliability. In addition, AMD also develops powerful processors and is gaining popularity in the gamer segment. NVIDIA is known for its high-performance graphics processing units (GPUs) used in graphics and computing tasks [29, 30]. Qualcomm specializes in the development of processors for mobile devices and wireless technologies. Each of these companies focuses on their strengths and provides competitive products in their respective market segments.

In January 2023, the Intel Core i9-13900KF processor showed the best average result in Geekbench single-core performance benchmarks, reaching 2,222 points [33, 37]. Overall, among the ten processors with the highest scores for single-core performance, four of them belonged to Intel, while AMD introduced six processors (see Figure 2.5).

2. Market presence: Intel has a significant customer base and a strong presence in the personal computer and server markets. AMD has achieved success in the segment of processors for gamers and competes with Intel in the server market [31]. NVIDIA is a leading player in the field of graphics processors and the computing market. Qualcomm has a strong position in the market of mobile devices and is one of the leading suppliers of chipsets and modems for smartphones.

3. Market segments: Each of these companies has its own specialization in different market segments. Intel operates in a wide range of manufacturing sectors, including computers, servers and the Internet of Things. AMD focuses on consumer and enterprise processors, particularly in the gaming markets. NVIDIA specializes in graphics solutions and computing platforms for artificial intelligence, scientific computing and data

visualization [31]. Qualcomm is particularly focused on mobile devices and wireless communications.

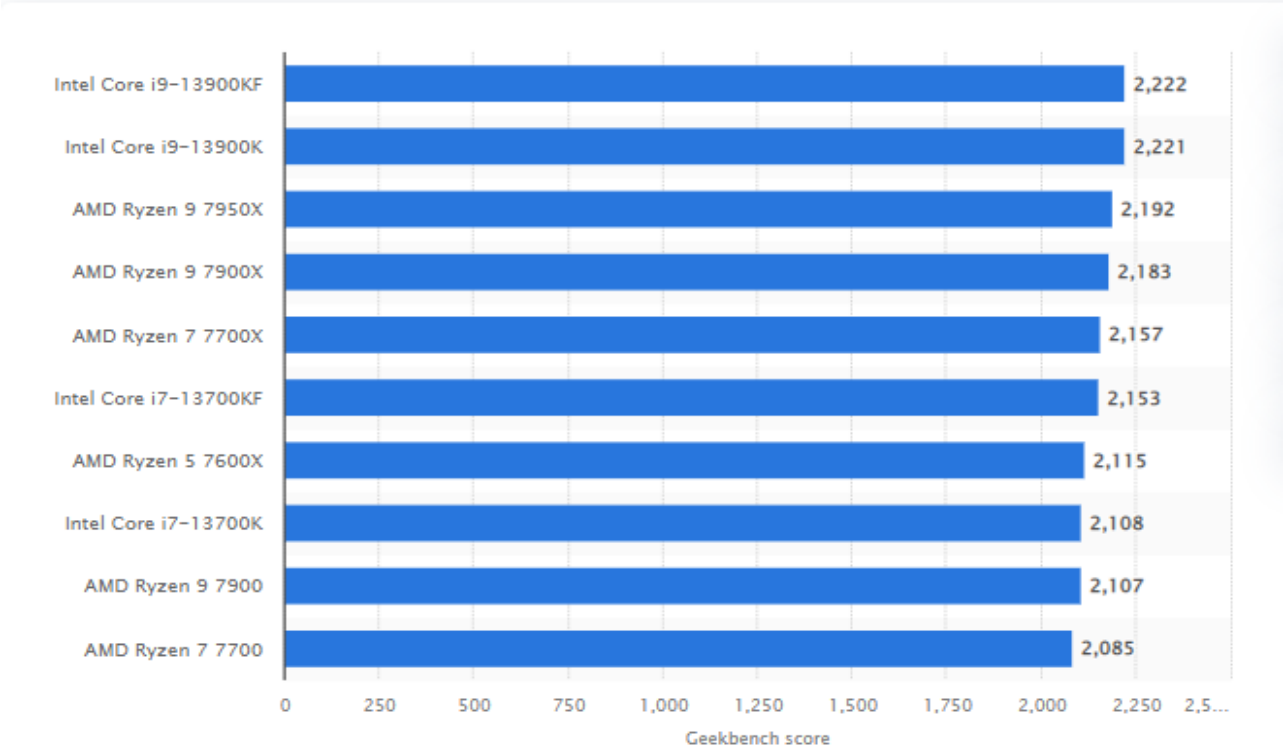

Fig. 2.5 Geekbench ranking of the top single-core processors worldwide as of January 2023

Source: *compiled by the author based on* [35, 36]

4. Standards and ecosystems: Intel is widely supported by software developers and hardware manufacturers. AMD also ensures compatibility with standards and ecosystems, which facilitates the integration of their products into various systems. NVIDIA offers its own technological solutions and software for graphic computing [34]. Qualcomm has experience in the development of mobile standards and communication protocols.

5. Investments in research and development: Each of these companies actively invests in research and development of new technologies. Intel, which has significant financial resources and research laboratories, is focused on finding innovative solutions. AMD is also actively working on the development of new processors and technologies.

NVIDIA is investing in graphics computing and the development of artificial intelligence. Qualcomm is focusing on wireless technology and mobile innovation.

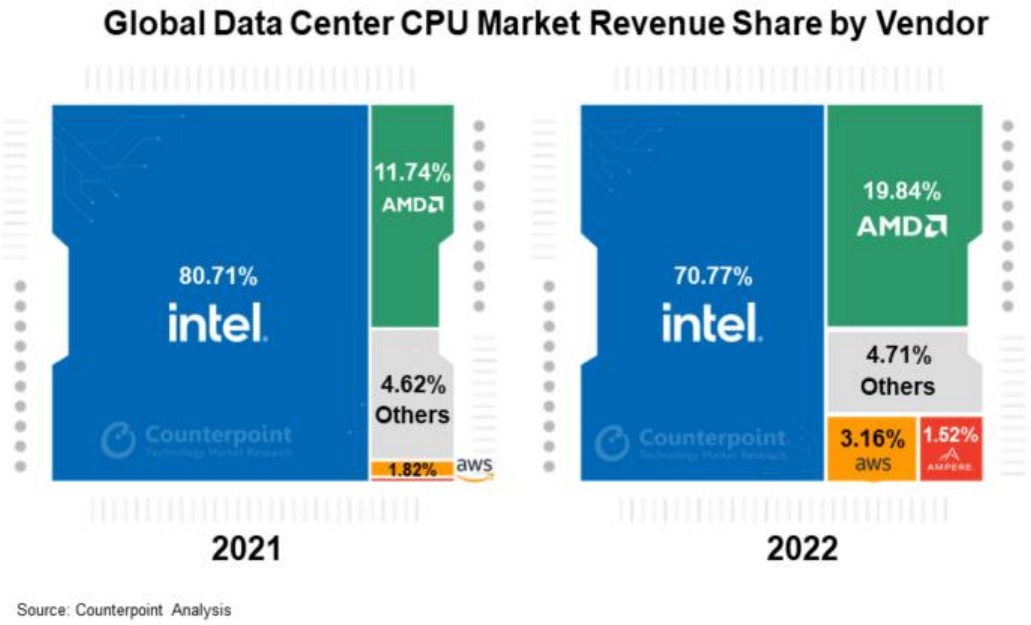

Fig. 2.6 Global Data Center CPU Market revenue Share by Vendor

Source: *compiled by the author based on* [30, 31]

Undoubtedly, the competition between these global companies leads to the constant development and improvement of technologies. It stimulates them to implement innovative solutions, increase productivity and provide consumers with more choice.

In addition, competition promotes a rapid pace of innovation and lower prices on the market. Companies strive to attract more customers by offering competitive products and services at attractive prices [32]. This can be beneficial for consumers who get access to high-quality products at more affordable prices .

Competition can also encourage companies to cooperate more actively with other players on the market (see Figure 2.6). For example, companies can conclude partnership agreements or create standards that promote interaction between different devices and platforms.

In conclusion, competition between Intel and its global competitors is a driver of innovation, technology development and product improvement. Thanks to this, consumers receive the best products and services, and the field of information technology

continues to move forward. Competition stimulates companies to constantly improve and improve their products, which ultimately benefits all market participants.

2.2 Diagnostics of the effectiveness of using the scientific and technological potential of the corporation in the conditions of globalization

In the modern world, scientific and technological progress and globalization are two important factors that have a significant impact on the development of the economy and society. One of the leading companies in the field of high technologies is Intel, which develops and manufactures processors, chips and other components for computers and electronics. The assessment of the effectiveness of the use of Intel's scientific and technological potential in the context of globalization is an important analytical tool for studying the company's contribution to world science and technology, as well as its ability to adapt to global challenges and competition [29, 33].

Diagnostics of the effectiveness of the use of Intel's scientific and technological potential in the conditions of globalization is a complex task that requires a complex analysis of various indicators and data sources. Evaluation of innovations, technological progress, global presence and competitiveness of Intel will allow a better understanding of the company's contribution to world science and technology, as well as its ability to adapt to global challenges.

In order to diagnose the effectiveness of using the scientific and technological potential of Intel in the conditions of globalization, it is necessary to determine the key indicators that will be evaluated. In our opinion, the main indicators can be used [1, 28, 38]:

- innovations and research. Assessment of the quantity and quality of scientific research and innovative development carried out by Intel. This may include the number of patents, scientific publications, participation in scientific conferences and cooperation with universities and scientific organizations;
- innovative culture and knowledge management. Study of innovation culture at Intel, including support of creativity and entrepreneurship, stimulation of idea

generation and commercialization of scientific and technical developments, as well as effective management of knowledge and intellectual property [25];

- technological progress. Analysis of the level of technological progress achieved by Intel, including the development of new processor architectures, improvements in chip performance and energy efficiency, and the development of new technologies such as artificial intelligence, machine learning, and the Internet of Things (IoT) [29].
- global presence and influence on the world economy. Assessment of Intel's geographical coverage and activity in various countries and regions of the world. This may include the number and location of research and development centers, factories for the production of components, as well as partnerships with international companies. This may include assessing job creation, attracting investment, influencing the development of local technological communities and infrastructure;
- cooperation and partnership, including technology transfer. Study of Intel's cooperation with universities, scientific organizations, other companies and state structures to assess the level of interaction and exchange of scientific and technological knowledge and resources. Analysis of Intel's collaboration with other companies, startups and innovation ecosystems to share technological knowledge, develop new products and services, and stimulate innovation in the industry [34];
- adaptation to a changing global environment. Assessment of Intel's ability to adapt to changes in the global economic, political and technological environment. This may include an analysis of the company's response to trade disputes, regulatory requirements, changes in consumer demand, and technological trends.

In the period from 2001 to 2007, Intel invested more than 69 billion US dollars in research, design and construction work, as well as in new production enterprises [32]. In 2009, the company plans to invest about 5.5 billion US dollars in research and development.

Intel still occupies a leading position in the R&D rating, having invested 15.2 billion dollars in research activities last year. Ten leading companies in this area collectively increased their spending by 18% over the same period.

In addition, statistics show that in 2021, 21 companies allocated $1 billion or more to R&D. In the future, it is predicted that the total R&D expenditures of semiconductor companies will grow by 5.5% in the period from 2022 to 2026, reaching a significant amount of $108.6 billion.

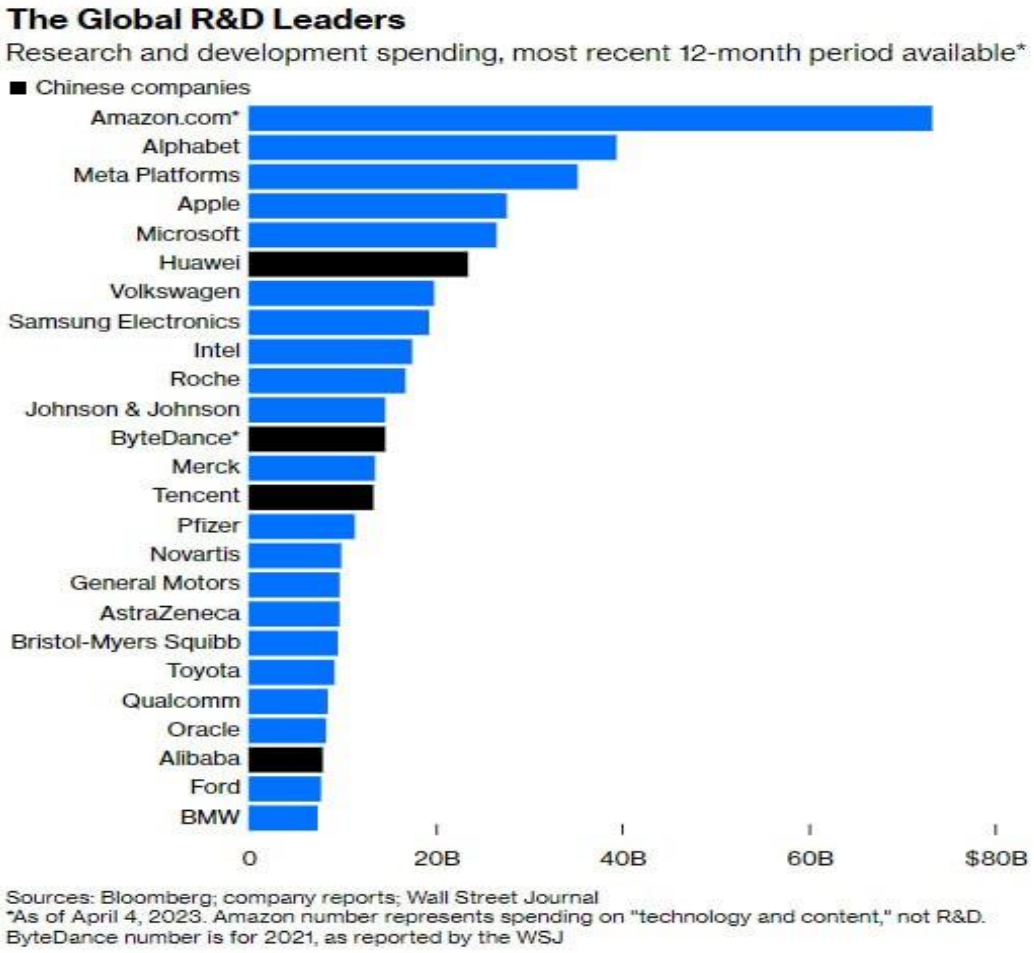

Fig. 2.7 Global companies leaders in spending on research and development in 2021 years (in billions of US dollars)

Source: *compiled by the author based on* [35, 36]

The ratio of research and development (R&D) spending in the semiconductor industry to global sales decreased to 13.1% in 2021, compared to 14.5% in 2020 and 15.1% in 2019 (see Figure 2.7). In 2019, R&D spending decreased by 1%, while overall chip market revenue decreased by 12% [29]. Figure 1 illustrates historical trends in R&D

spending levels in the semiconductor industry and the R&D/sales ratio in the industry over the past four decades. In addition, IC Insights presented a forecast for these indicators until 2026 [31, 33].

Despite the general negative trends, at the end of January 2022, Intel announced an investment of up to $100 billion in the construction of the world's largest chip manufacturing complex in Ohio. The company strives to increase capacity in the face of a global shortage of semiconductors.

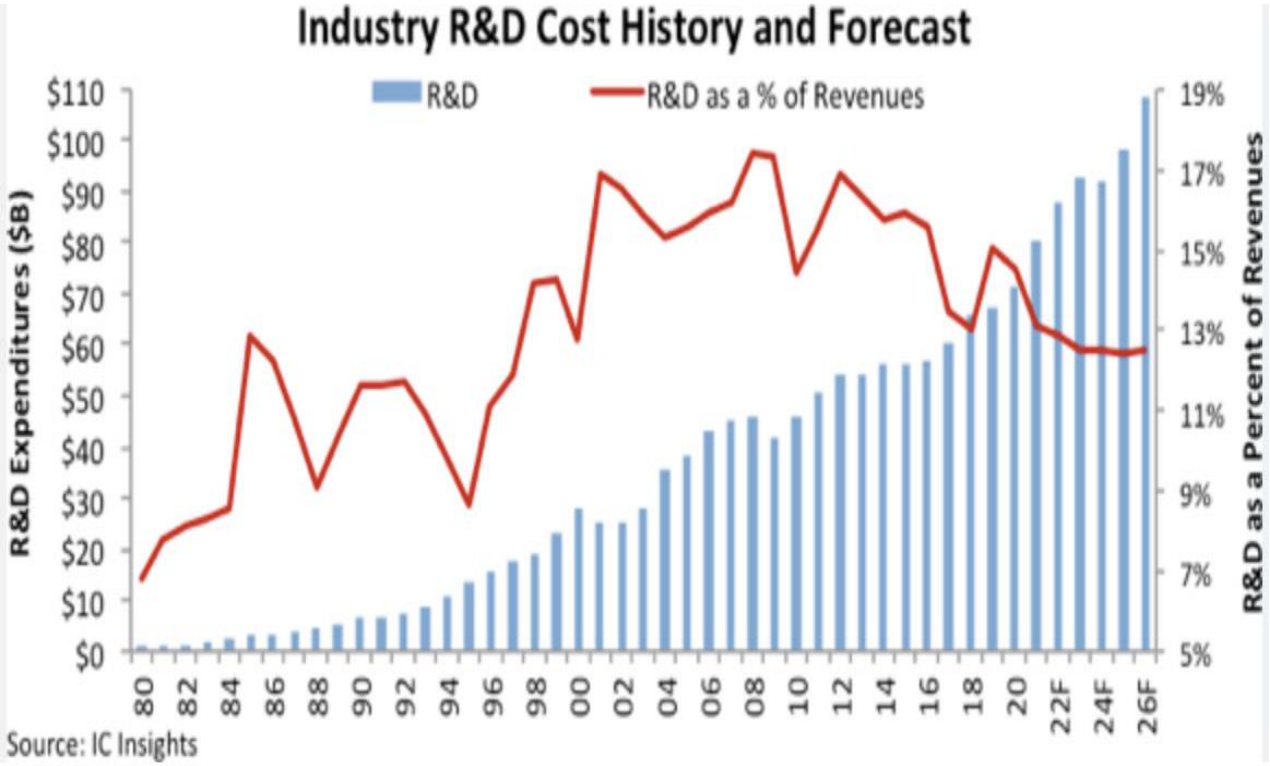

Fig. 2.8 R&D expenditures in the semiconductor industry and R&D/sales ratios in the industry 1980-2020 years (in billions of US dollars)

Source: *compiled by the author based on* [32, 35, 36]

The move is part of Chief Executive Officer Pat Gelsinger's strategy to restore Intel's dominance in chip manufacturing and reduce America's dependence on Asian manufacturing centers, which hold a firm grip on the market. This confirms the systematic increase in Intel's investment in research and development in 2018-2022, which is presented in the figure [29, 36].

The Intel Company, one of the world leaders in the field of semiconductors and computer processor technologies, plays a key role in various areas of innovative leadership in the world economy (see Figure 2.8). Intel Corporation uses a tick-tock strategy to accelerate the creation of innovations and the development of advanced technologies (see Figure 2.9).

This strategy presupposes the alternate introduction of production technologies of the next generation and the development of new architectures of microprocessors. Such an approach allows the company to quickly create advanced high-performance systems that are widely used throughout the world.

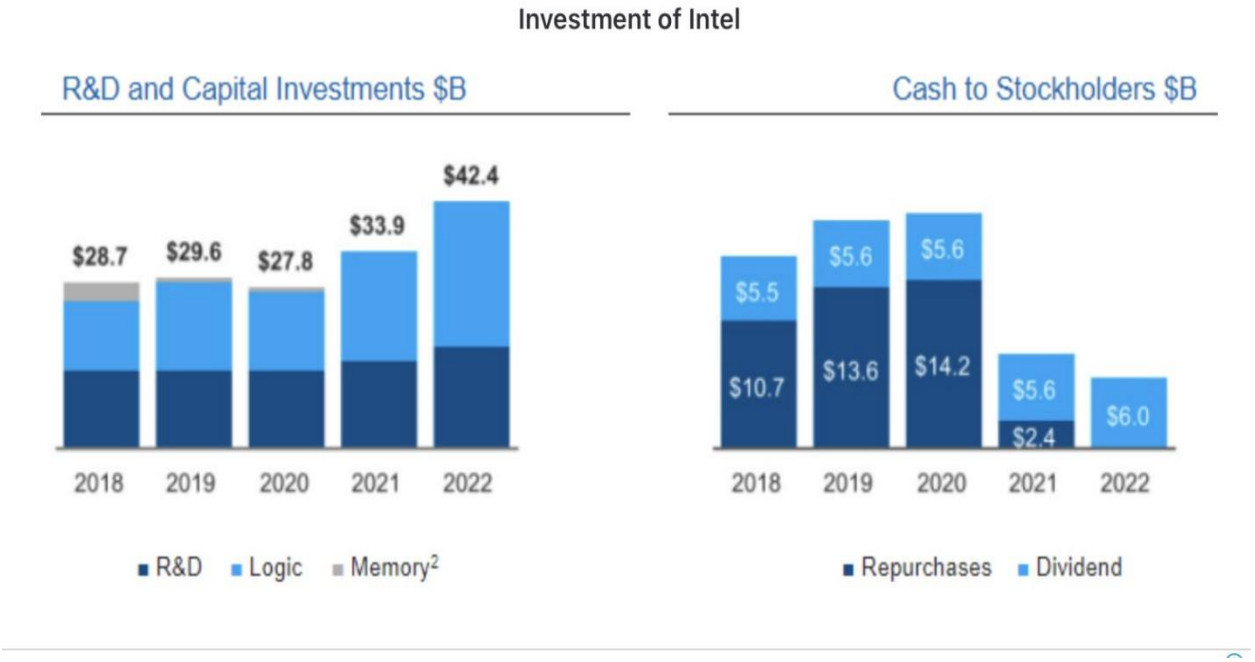

Fig. 2.9 Intel's total investment in research and development 2018-2022 years (in billions of US dollars)

Source: *compiled by the author based on* [35, 36]

Based on this strategy, Intel provides innovative leadership in the following areas of the global economy. An analysis of the economic literature allows us to distinguish several important areas in which Intel shows leadership and has a significant impact on the global economy [32]:

1. innovations in the field of semiconductors. Intel is one of the largest semiconductor manufacturers in the world. The company constantly develops new and improved technologies for the production of semiconductor chips, which contributes to

the increase in the performance of computers, servers, mobile devices and other electronic devices. Intel's innovations in the field of semiconductors have a direct impact on global computing power and the development of the digital economy.

2. artificial intelligence and machine learning. Intel is actively working in the field of artificial intelligence (AI) and machine learning (ML). The company develops and provides high-performance processors and specialized architectures for processing data and performing complex AI and MO tasks. Intel's innovations in this area help to develop autonomous cars, improve detection and prediction systems, optimize medical diagnostics and other important industries [34].

3. Internet of Things (IoT). Intel plays a key role in the development of the Internet of Things, where devices connected to networks exchange data and perform various tasks [32]. The company develops energy-efficient processors, communication modules and other solutions for IoT devices. Intel's innovations in this area contribute to the development of smart cities, intelligent homes, industrial automation and other areas where IoT is of great importance.

4. quantum calculations. Intel actively works in the field of quantum computing, which is one of the most promising research areas in modern science. The company invests in the development of quantum processors, algorithms and infrastructure to create powerful and scalable quantum computing systems [32]. Quantum computing has the potential to solve complex problems that are inaccessible to classical computers, and can lead to breakthrough discoveries in the field of pharmaceuticals, materials science, optimization of business processes, and other areas.

5. cyber security. Intel is actively working to ensure cyber security in the global economy. The company develops innovative solutions and technologies to protect computer systems and data from cyberthreats. This includes the development of hardware and software with security functions, the creation of secure technological platforms and cooperation with other organizations to exchange information and develop security standards [34].

6. autonomous systems. Intel also plays an important role in the development of autonomous systems, such as autonomous cars and robots. The company develops

high-performance processors and platforms for real-time data processing, providing autonomous systems with the ability to perceive the environment, make decisions and act without human participation. Intel's innovations in this area contribute to the development of the automotive industry, logistics, production and other areas where autonomous systems can increase efficiency and safety.

These areas of innovative leadership by Intel confirm its importance in the global economy and influence on various industries and technological developments. Intel continues to invest significant resources in research and development to stay at the forefront of technological progress and shape the future of the digital economy.

The company continues to lead in the organization of production, quickly introducing new technologies and scaling production based on them. Intel has several factories around the world that work on various production processes. For example, four Intel plants already worked on the 45-nm production process, including the plant in Israel. The company has also invested significant funds in the development of production in the EMEA region (Europe, the Middle East and Africa) and plans to further increase capital investments [32]. Intel plants in Ireland and Israel are world class and produce microprocessors and semiconductor chips for communication devices. These products play an important role in the modern revolution in the field of computing and telecommunication systems.

Intel Corporation actively supports the innovative economy and believes that education and access to information and communication technologies are key factors for people's participation in the digital economy. They also recognize that investments in research can stimulate the development of society by changing the way people live and work.

Intel uses a long-term approach aimed at the development of not only the company itself, but also the countries in which it operates. Through the implementation of strategic initiatives aimed at increasing the availability of technologies, the development of education and research, Intel contributes to the creation of an innovative economy in the region [33].

Currently, Intel focuses on the development of new electronic products and processor technologies for mobile devices, the digital enterprise, the digital home, and digital healthcare. The company invests significant resources in research and development, which allows it to remain at the forefront in these areas.

In 2021, Intel invested about $7.1 billion in the construction of a new semiconductor plant in Malaysia [35]. The goal of this project is to overcome the global shortage of chips. The plant will specialize in chip packaging, which is the final stage of processor production and plays an important, albeit subtle, role in electronics. The chip package is the physical interface between the processor and the motherboard, ensuring the transmission of electrical signals and power. The complexity of this task increases with increasing requirements for the processor.

In addition, in 2022, Intel acquired the chip manufacturer Tower Semiconductor for $5.4 billion [37]. This allowed the American corporation to expand its production capacity in the face of an acute shortage of chips. Tower Semiconductor manufactures analog chips for many companies in various industries, including automotive, medical, industrial and aerospace. The company produces chips developed by other companies and is an active competitor of Taiwan's TSMC, one of the largest semiconductor companies in the world [32, 34].

Technological and production cooperation with Tower Semiconductor significantly expands Intel's capabilities in the field of advanced processes. This will allow the combined company to provide its customers with a wider range of products and services. In 2021, Intel presented a detailed plan for introducing manufacturing technologies and chip packaging, demonstrating a series of innovative solutions that will be used in their products until 2025 and beyond. The company plans to accelerate the introduction of the latest generation of extreme ultraviolet lithography (Extreme Ultraviolet, EUV) with a high numerical aperture (High Numerical Aperture, High NA EUV), known as extreme ultraviolet lithography [33]. Intel intends to acquire High NA EUV production tools.

The traditional name of the norms of technological processes in nanometers ceased to reflect the actual dimensions of transistor gates back in 1997. To improve understanding and provide more accurate information about the topological norms of its

technological processes, the Intel Company introduced a new naming concept. This concept creates a clear and consistent structure that allows customers to get a more accurate idea of the characteristics of the processors.

This is especially relevant in connection with the launch of Intel Foundry Services (IFS) - Intel's service for providing chip-manufacturing services for third-party companies. Thanks to the new naming system, customers can better understand the capabilities of each specific technological process and make more informed decisions when developing their products.

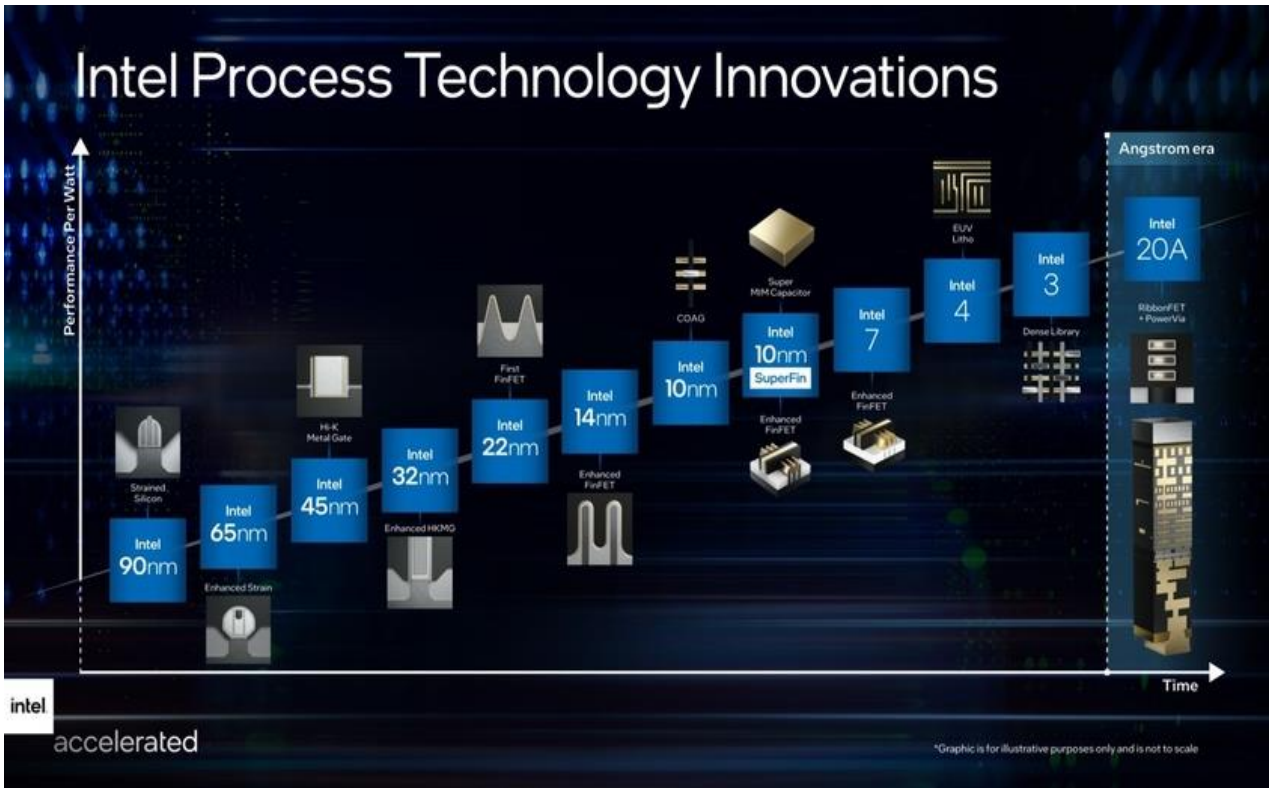

Fig. 2.10 Intel's technological innovations in 2023 year

Source: *compiled by the author based on* [29, 30, 34]

Intel presented the names of its future technological processes with innovations (see Figure 2.10). In particular, Intel 7 will provide an improvement in performance per watt of approximately 10-15% compared to the previous Intel 10nm SuperFin process, thanks to the optimization of FinFET transistors. This process will be used in products such as Alder Lake for client systems in 2021 and Sapphire Rapids for data centers, the start of production of which is scheduled for the first quarter of 2022 [34].

Intel 4 takes full advantage of the extreme ultraviolet (EUV) range to create extremely small elements. It is expected that Intel 4 will provide an improvement in performance per watt by approximately 20% and a further increase in the density of elements per unit area. The second half of 2022 will be the start of production of Intel 4 processors, and the first commercial products using this process will appear in 2023, including Meteor Lake for client systems and Granite Rapids for data centers [37].

Intel plans to implement FinFET and EUV technologies in its Intel 3 processor, which will allow achieving an 18% improvement in performance compared to the previous Intel 4 generation [37]. This will be the result of the optimization of FinFET technology and the expanded use of EUV tools. Intel 3 is expected to be ready for commercial production in the second half of 2023 [32].

The next technological process that Intel is developing is Intel 20A. It will be measured in angstroms and will include two new technologies - RibbonFET and PowerVia. Gate-All-Around RibbonFET is a new transistor architecture that will be used for the first time since the introduction of FinFET technology in 2011 [31, 32]. This architecture provides a higher switching speed of transistors with smaller sizes and a comparable channel current. PowerVia technology allows you to optimize signal transmission by supplying power from the side of the substrate, which avoids the routing of power circuits on the front side of the silicon wafer.

The launch of Intel processors based on the Intel 20A process is expected in 2024. Intel also announced plans to collaborate with Qualcomm in the use of the Intel 20A technology [33].

In 2025 and beyond, Intel is actively working on the development of Intel 18A processors, which is expected to be launched in early 2025 [33, 34]. It will use the new and improved RibbonFET technology, which will lead to a further increase in the performance of transistors. In addition, Intel is also working on defining, creating and implementing the next generation of High NA EUV technology. They hope to get production tools based on this technology to achieve a significant breakthrough in the industry. As part of this process, Intel actively cooperates with the ASML Company, which is one of the leading manufacturers of lithography equipment necessary for the

production of microchips [33]. Such close cooperation between Intel and ASML allows both companies to combine their efforts and expertise to develop and implement advanced technologies in Intel processors. This partnership helps ensure innovative growth and ensure Intel's competitiveness in the semiconductor market in the coming years and into the future.

Cooperation and partnership, including technological transfer. The company actively implements cooperation and partnership, including technology transfer. It strives to implement joint projects and alliances with other global corporations. An example of such cooperation is the establishment of a laboratory jointly with ZTE in 2017 for research in the field of the Internet of Things (IoT) based on a strategic agreement [37]. This laboratory was created for conducting experimental research, evaluation and development of accompanying technologies for integrated solutions in the field of IoT.

Intel research and development centers. Another example is the launch of an artificial intelligence (AI) research center by Intel in Haifa in 2018 [37]. This center was created jointly with the Technion Israel Institute of Technology and the Intel AI Research division. He conducts research projects in the field of artificial intelligence and computational learning theory. The Institute's employees in these areas collaborate with Intel, exploring various areas, including natural language processing, deep learning, and hardware optimization for various learning algorithms. Specialists who have completed courses and educational institutions in the field of computing, electrical design and industrial technologies are also welcome at the AI Research Center in Haifa [29, 33].

The joint laboratory of Nutanix and Intel was launched in 2020 with the purpose of research, adaptation and implementation of Intel innovations in the field of computing, networks and data storage through Nutanix software solutions. This partnership gave the lab access to Intel's engineering resources and products, facilitating joint research and development.

Nutanix offers the widest range of hardware and software technologies in the industry that support a variety of artificial intelligence applications. It strives to provide opportunities both for modern systems and for more complex projects that may arise in the future.

Nutanix's cooperation with military departments is worth noting separately. In early 2020, Intel spearheaded a Pentagon project aimed at protecting the military from cyberattacks using machine learning. This initiative, supported by DARPA, the military research wing of the US government, aims to provide cyber protection for machine learning models used in military operations [29, 37].

Thus, Nutanix actively collaborates with leading technology companies, such as Intel, and has partnerships in the field of defense, demonstrating its commitment to innovation and security in various application areas.

Intel also actively uses the strategy of alliances with other companies to jointly solve challenges, develop new products and access new markets, including technology transfer.

As the study shows, Intel has concluded a significant number of transnational alliances with various companies around the world. The following should be noted among the main ones:

• Intel and Microsoft alliance. This alliance is aimed at joint development of innovative solutions in the field of cloud computing and artificial intelligence [33]. Both companies combine their strengths to develop new products and services that improve user experience and support digital transformation.

• Alliance Intel and Dell Technologies. This alliance is aimed at joint development and delivery of innovative solutions for data centers and corporate clients [33]. Both companies are working on optimization of hardware and software solutions to increase the productivity and efficiency of the infrastructure.

• Intel and BMW Group. This collaboration is aimed at developing technologies for autonomous driving and electric cars. Both companies combined their knowledge and experience to create innovative solutions that improve safety, performance and environmental characteristics of cars [34].

• Intel and Google. This partnership is aimed at the development of innovative products and services in the field of artificial intelligence, cloud computing and the Internet of Things. Both companies cooperate in many areas, including the development of processors, optimization of software and expansion of cloud platforms.

• Intel and Tencent. This cooperation is aimed at joint development and implementation of innovative solutions in the field of artificial intelligence, virtual reality and gaming. Both companies are working on creating new products and services that provide a more immersive user experience and improve computing efficiency.

• Intel and Cisco. This partnership aims to jointly develop infrastructure for the Internet of Things (IoT) and connected networks. Both companies are collaborating to create integrated solutions that allow you to collect, analyze and use data from IoT devices to improve the efficiency and security of networks [34].

• Intel and HP Inc. This cooperation is aimed at joint development and production of innovative computer systems and solutions for enterprises. Both companies combine their technologies and expertise to create powerful and reliable solutions that meet the needs of corporate clients.

• Intel and SAP. This partnership alliance is aimed at the joint development of integrated solutions for business, in particular in the field of data analytics, production management and other industries. Both companies have combined their technological knowledge and expertise to help businesses manage smarter and more efficiently [32].

• Intel and Mobileye. This partnership is aimed at developing technologies for autonomous cars and ensuring road safety. The two companies are working together to create products that use computer vision and artificial intelligence to improve safety and autonomous driving.

• Intel and Red Hat: This partnership alliance aims to jointly develop integrated solutions for cloud computing and containerization [34]. Both companies are working on expanding the capabilities of cloud platforms and application management in virtualized environments.

These alliances allow Intel to strengthen its position in the market and provide access to new technologies and resources through cooperation with leading companies in various industries.

The alliances in which Intel participates are based on a common desire to develop innovative solutions in various industries. For example, in cooperation with Alibaba Group, Intel is directing its efforts to the development of cloud computing, artificial

intelligence and the Internet of Things. Collectively, these alliances contribute to improving the infrastructure, platforms and technologies supporting the digital economy, autonomous driving, electric vehicles, artificial intelligence, cloud computing and other innovation areas [33]. The companies combine their knowledge, expertise and resources to create innovative products and services that improve security, productivity, environmental performance, immersive user experience and computing efficiency.

Such partner alliances allow Intel to gain access to new markets, technologies and knowledge, which is important to strengthen its global competitiveness. Intel's Transnational Partner Alliances also help create an innovation ecosystem where different companies can share ideas, resources and expertise, contributing to joint development and increased value for all involved [31].

2.3 Strategic directions of increasing innovative leadership by Intel in the world economy

In today's rapidly developing world economy, innovation has become a key success factor for companies in all industries. Intel, a world leader in semiconductor technologies and processors, recognizes the importance of innovation for its long-term success.

As the analysis of the corporation's activity shows, Intel has faced several problems in recent years, including delays in the release of the latest generation chips and increased competition from Apple, which launched its own chip production. In 2019, Intel sold its smartphone modem business to Apple, and subsequently reduced its presence in the computer memory market. Intel's share of the microprocessor market shrank, while its main competitors strengthened their positions [36].

At the beginning of 2021, Bob Swan left his position as Intel's CFO, which he had held since 2016, and in 2019, he temporarily replaced the position of CEO. Pat Gelsinger was appointed in his place [35]. He presented Intel's new strategy, which includes the launch of a model for the production of integrated devices, the creation of a vertically integrated independent business Intel Foundry Services for the production of

semiconductors, as well as an increase in the production of chips and the fulfillment of orders for other brands to compete with Asian manufacturers. This plan received the support of such large companies as Microsoft, Amazon, Google, IBM, Cisco, and Qualcomm.

It should be noted that despite the existing challenges and competition in the market, Intel continues to be a leading manufacturer of microprocessors and constantly strives to improve its products and technologies. Company has the potential and resources to overcome obstacles and develop successfully in the future.

Analysis of activities in the context of globalization allows us to say that Intel and its founders had a huge impact on the technological industry. The founders of the company played an important role in the development of computers and made innovative discoveries in the field of semiconductor technology. Their influence extends not only to the production of chips, but also to other areas, such as artificial intelligence, cloud computing and the Internet of Things [32, 33].

Forecasting the direction in which the company will develop in the future is a difficult task. However, Intel has already demonstrated its ability to adapt and search for new opportunities.

In our opinion, one of the key strategic initiatives to ensure Intel's innovative leadership will be the development and implementation of 5G technology. The company aims to become a leading supplier of chips for 5G infrastructure, which will allow it to remain competitive in the field of communication and data transmission [33].

It is also worth noting that Intel should actively invest in research and development of new technologies, such as quantum computing and autonomous vehicles. The company must remain at the forefront of innovation and ensure future growth and success.

To increase its innovative leadership in the world economy, Intel defines several strategic directions that will allow it to remain at the forefront of technological achievements and meet the needs of the growing market.

The conducted research allows you to justify the following directions for increasing the innovative leadership of Intel in the world economy:

1. Investments in research and development. Intel should continue to increase its investment in research and development, especially in areas related to future technologies, such as artificial intelligence, quantum computing, autonomous systems and the Internet of Things. Increased efforts in this area will allow Intel to remain at the forefront of innovative development and development of new products [29, 30].

2. Strategic partnerships and cooperation. Intel should actively seek strategic partnerships and cooperation with other companies, universities and research institutes [33]. This will allow to combine efforts, exchange experience and resources, and create synergy in innovative activity. Such partnerships may include joint research, product development, exchange of technical expertise and access to new markets.

3. Focus on key technological trends: Intel must actively monitor key technological trends and adapt to them. Some of these trends include cloud computing, big data, the Internet of Things, cyber security and autonomous systems. By adapting and integrating these technologies into its products and solutions, Intel will be able to remain competitive and dictate market demands.

4. Strengthening the culture of innovation: Creating and supporting a culture of innovation is a key factor in increasing the innovative leadership of Intel. The company should encourage and support its employees in initiative, creativity and experimentation. It is also important to develop internal communication and cooperation mechanisms to stimulate the exchange of ideas and innovative solutions.

5. Global presence and expansion of markets: Intel should continue to expand its global presence and seek new markets for its products and services. This may include the development of strategies for entering new geographic regions, as well as the adaptation of products to the needs of local markets. Market expansion will help the company increase its market share and ensure sustainable growth.

6. Sustainable innovation ecosystem: Intel should actively work on creating a sustainable innovation ecosystem that includes partners, developers, startups and the community. Support for startups and innovative projects, providing access to resources and expertise, as well as organizing events and programs for the development of

innovations will contribute to the growth of innovations around the company and strengthening its leadership.

In general, to increase innovative leadership in the world economy, Intel should continue to invest in research and development, establish strategic partnerships, focus on key technological trends, strengthen the culture of innovation, expand markets and develop a sustainable innovation ecosystem.

It should be noted separately the need for the company to continue its activity in - diversification of the product portfolio; participation in open innovations; development of the developer ecosystem; protection of intellectual property:

In order to strengthen its innovative leadership, Intel must strive to diversify its product portfolio. This means the development and offering of new products and solutions in various market segments. For example, Intel can expand its activities in the field of mobile devices, autonomous systems, smart cities or healthcare. Diversification will help the company to increase its competitiveness, reach new customers and expand its global industry position.

Corporations need to actively participate in open innovation, interacting with external ecosystems, universities, startups and developer communities. This may include joint projects, platforms for joint development, startup acceleration programs, and participation in open standards. Participating in open innovation will allow Intel to gain access to new ideas, technologies and talent, as well as strengthen its reputation as an innovative company.

Intel must continue to develop the developer ecosystem by providing tools, resources and support to create applications and solutions based on their technologies. This may include developer programs, educational resources, competitions, and incubation programs. The development of the developer ecosystem will help expand the use of Intel technologies and stimulate innovation inside and outside the company. Companies should actively develop the so-called oneAPI Centers of Excellence. OneAPI is an existing network of partners that provides developers with strategic resources, additional hardware support, new technologies and services, and develops training programs for introducing oneAPI into the ecosystem. In 2022, 11 new partners have

already been announced, including such organizations as the University of California at Berkeley, Oak Ridge National Laboratory, Durham University and the University of Tennessee. In addition, the Intel Graphics Visualization Institutes of Excellence were expanded to the level of oneAPI Centers of Excellence.

The development of oneAPI Centers of Excellence will allow the company to create conditions for facilitating the work of developers and expanding opportunities for creating software optimized for the Intel architecture. OneAPI partners already provide access to key resources and expert support, which helps developers to more effectively use the capabilities of Intel hardware when creating and optimizing their applications.

Separately, it should be noted that the Intel Research Group on Components (CRG) is recommended to focus on combining silicon and advanced packaging technologies in two-dimensional and three-dimensional execution, developing ferroelectric components and increasing energy efficiency in order to achieve the goal of a trillion transistors by 2030 (see Figure 2.11).

Earlier, CRG Intel was responsible for the introduction of FinFet technologies, stressed silicon and Hi-K metal gates.

To support its innovative leadership, Intel must actively protect its intellectual property. This includes patent registration, protection of commercial information, and taking measures to prevent copyright infringement. Protecting intellectual property will provide the company with a competitive advantage and protect its innovative achievements from unauthorized use or copying.

As the analysis of the efficiency of the company's activity shows, Intel should continue to apply a strategy of high prices in the field of processors based on the x86 architecture, which will help the company to cover significant costs of research and development, as well as the construction of new plants.

Fig. 2. 11 Intel Process Roadmap.

Source: *compiled by the author based on* [33]

Such a strategy will ensure Intel a leading position in the market of processors for desktop PCs during the next period and allows maintaining competitive advantages. It will also allow the company to successfully scale its processor production, offering flexible solutions and ensuring high-quality production, as well as innovative technologies.

These strategic directions allow Intel to strengthen its innovative leadership in the global economy. The combination of active research and development, cooperation and partnership, integration of vertical solutions, focus on key markets, as well as talent development and a culture of innovation allows the company to continue to make a significant contribution to technological progress and be at the forefront of innovative achievements.

CONCLUSION

Based on the synthesis of the theoretical and methodological foundations of innovative development and the analysis of Intel Corporation's activities in the context of globalization, after examining its scientific and technological potential and innovative impact on the world economy, the following conclusions can be distinguished:

- Innovation is a key factor in the success of companies, as it opens up new opportunities and contributes to economic growth. This means the development of new concepts and ideas that can serve as the basis for the creation of new business projects. Successful companies are able to create an organizational culture that promotes innovation and perceives it as a means of solving problems.
- A number of researchers and practitioners made a significant contribution to the development of the theory of innovations and innovative development of modern corporations. They not only contribute to improving the understanding of the innovative activities of modern companies, but also continue to develop new ideas and concepts in this area. Their work is aimed at expanding knowledge about how companies can achieve and maintain competitive advantage through innovation. They actively research the factors influencing the success of innovations, as well as research strategies, processes and organizational structures that contribute to innovative development within companies.
- In recent years, the practice of cooperation and competition in the sphere of innovative development of modern corporations has been spreading. Companies understand that joint participation in innovative projects and the creation of strategic alliances can be beneficial for all participants. Instead of conducting closed in-house research and development, they choose partners with compatible competencies and resources to join their efforts in achieving innovative results. This approach allows modern corporations to speed up the development process, reduce costs and risks, and gain access to new knowledge and technologies. Companies realize that cooperation and competition can lead to faster progress and success in the market.

- Innovative activity, according to most studies, is a process of introduction and successful application of innovative ideas in various aspects of the enterprise. This activity covers several areas of activity, including management, marketing, personnel training, finance, sales, and others. Through strategic changes in the system, innovative activity allows the enterprise to increase its economic potential and achieve the set goals.
- The study revealed a number of factors that have a significant impact on the formation of the innovative potential of corporations in the global economy. The following aspects are important determinants in this process: the presence of an innovative culture, significant investments in research and development, active interaction with external structures, development and strengthening of human capital, flexible organizational structure and market orientation. All these factors play a key role in the successful creation and preservation of the company's competitive advantages.
- To assess the effectiveness of the innovative development of a transnational corporation (TNC) in the conditions of globalization, it is necessary to use a complex approach and take into account many factors. It is important to take into account the specifics of the industry, the competitive environment, international trends and market needs. Regular monitoring and evaluation of the results of innovative activity will help TNCs to adapt to changing conditions and increase their competitiveness in the global economy. The methodology for evaluating the effectiveness of innovative development of TNCs in the conditions of globalization includes several stages. First, it is necessary to determine the goals and indicators that will be used for evaluation. Secondly, it is necessary to assess the innovative potential of TNCs. The third stage is the measurement of the results of innovative activity. The fourth stage is a comparison with competitors. It is important to analyze the innovative practices of other companies in the industry and compare them with our own results. Finally, at the last stage, the strategy and action plan should be adjusted based on the results. This may include revision of priorities, resource allocation, and introduction of new innovative processes or technologies.

- Globalization creates both challenges and opportunities for innovative activities of modern corporations. The rapid development of technologies and changes in the global market environment require flexibility, responsiveness and constant search for new ideas and opportunities from modern corporations. The world's leading technology corporations are successfully adapting to these challenges by leveraging their global presence, expanding their network of partners, and attracting the best innovative ideas, technologies and products from around the world. Globalization affects Intel Corporation's innovation activities, creating both challenges and opportunities. This company, which specializes in the development of technology and microprocessors, operates in an increasingly global market, where competition is increasing and customers and partners are located all over the world.
- Today, the Intel Corporation has been one of the leading developers of new technologies for many decades, which have significantly accelerated the development of computing systems and the Internet. Intel's global presence allows the company to work with different countries and markets, to adapt its products to local needs and requirements. This allows it to occupy a leading position in markets around the world. The company is also involved in international research projects and cooperation with universities and other corporations, which allows it to receive new ideas and expand its capabilities in innovation.
- For the past 40 years, Intel has held a leading position in the world as a manufacturer of integrated circuits, offering a wide range of high-performance computing, networking and telecommunications products. The company is a recognized leader in the field of development of multi-core processors of the next generation and ranks first in the world in the volume of production of integrated circuits.
- Over the past 20 years, the company has continuously increased its net income. For example, in 1999, it was 29.4 billion US dollars, and by 2021, it had grown to 79.02 billion US dollars. This positive trend is also reflected in the company's net profit. In 2004, it amounted to 7.524 billion US dollars, and in 2021, it has already reached 19.87 billion US dollars. It is important to note that Intel has set record revenue values for the fifth consecutive hour. In 2020, the company earned 77.87 billion

dollars, which is 8% more than the results of 2019. In January 2023, Intel reported a significant decline in its financial performance. As a result, the company's sales volume decreased by 20% in 2022, which led to a decrease in the value of the corporation by approximately $8 billion in just one day. • To assess the effectiveness of the innovative development of a transnational corporation (TNC) in the conditions of globalization, it is necessary to use a complex approach and take into account many factors. It is important to take into account the specifics of the industry, the competitive environment, international trends and market needs. Regular monitoring and evaluation of the results of innovative activity will help TNCs to adapt to changing conditions and increase their competitiveness in the global economy. The methodology for evaluating the effectiveness of innovative development of TNCs in the conditions of globalization includes several stages. First, it is necessary to determine the goals and indicators that will be used for evaluation. Secondly, it is necessary to assess the innovative potential of TNCs. The third stage is the measurement of the results of innovative activity. The fourth stage is a comparison with competitors. It is important to analyze the innovative practices of other companies in the industry and compare them with our own results. Finally, at the last stage, the strategy and action plan should be adjusted based on the results. This may include revision of priorities, resource allocation, and introduction of new innovative processes or technologies.

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- Intel Corporation invests significant efforts in the development of technologies that contribute to global sustainability. The company aims to develop products that use energy more efficiently, reduce waste and have a lower impact on the environment. This meets today's requirements for sustainable development and supports Intel's position as an innovative and responsible corporation.

- According to data, for the period from 2001 to 2007, the Intel Corporation invested more than 69 billion US dollars in research and development, as well as in the construction of new production facilities. In 2009, the company planned to invest about 5.5 billion US dollars in research activities. The company continued to occupy a leading position in the field of research and development, spending 15.2 billion dollars for these purposes in the previous year. At the same time, the top ten companies in this industry as a whole increased their spending on research and development by 18% over the same period. It is interesting to note that 21 companies allocated more than 1 billion dollars for research and development in 2021. Forecasts show that the total spending of semiconductor companies on research and development will grow by 5.5% in the period from 2022 to 2026, reaching a significant amount of 108.6 billion dollars.

To increase innovative leadership in the world economy, the Intel Corporation needs to develop several strategic directions. They include increased investment in research and development; establishment and expansion of strategic partnerships and collaborations; focus on key technological trends; strengthening the culture of innovation; strengthening of global presence and expansion of markets; development of a sustainable innovation ecosystem. The development of these strategic directions presupposes the implementation of the following activities:

• Intel should continue to increase its investment in research and development, especially in the areas of future technologies such as artificial intelligence, quantum computing, autonomous systems and the Internet of Things. Such efforts will help the company stay at the forefront of innovative development and create new products;

• the corporation should actively seek strategic partnerships and cooperation with other companies, universities and research institutes. This will allow combining efforts, exchange experience and resources, and create synergy in innovative activity. Joint research, product development and access to new markets will help strengthen Intel's position in the innovation sphere;

• Intel should actively monitor key technological trends and adapt to them. Cloud computing, big data, the Internet of Things, cyber security and autonomous systems are

some of these trends. Integration of these technologies into Intel products and solutions will help the company remain competitive and meet market needs;

• creating and supporting a culture of innovation are key factors for strengthening Intel's innovative leadership. The company should encourage and support initiative, creativity and experimentation among its employees. Internal mechanisms of communication and cooperation should also be developed to stimulate the exchange of ideas and innovative solutions;

• the corporation should continue to expand its global presence and seek new markets for its products and services. This may include developing strategies for entering new geographic regions and adapting products to local markets. Market expansion will help the company increase its market share and ensure sustainable growth;

• the company must actively work on creating a sustainable innovation ecosystem that includes partners, developers, startups and the community. Support for startups, providing access to resources and expertise, as well as organizing events and programs for the development of innovations will contribute to the growth of innovations around the company and strengthening its leadership.

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APPENDIX A

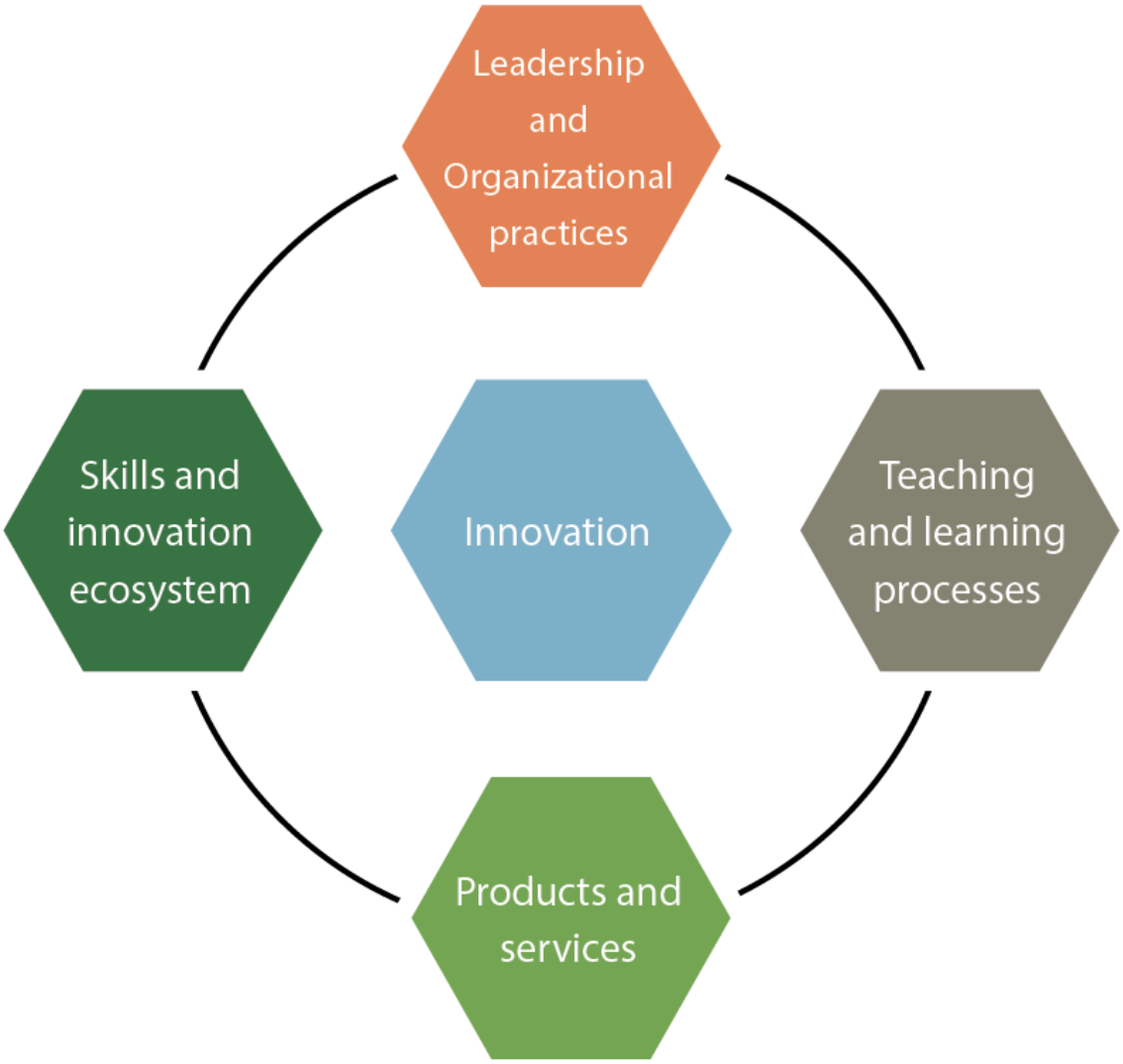


Fig E1. Company`s innovation system and elements.

APPENDIX B

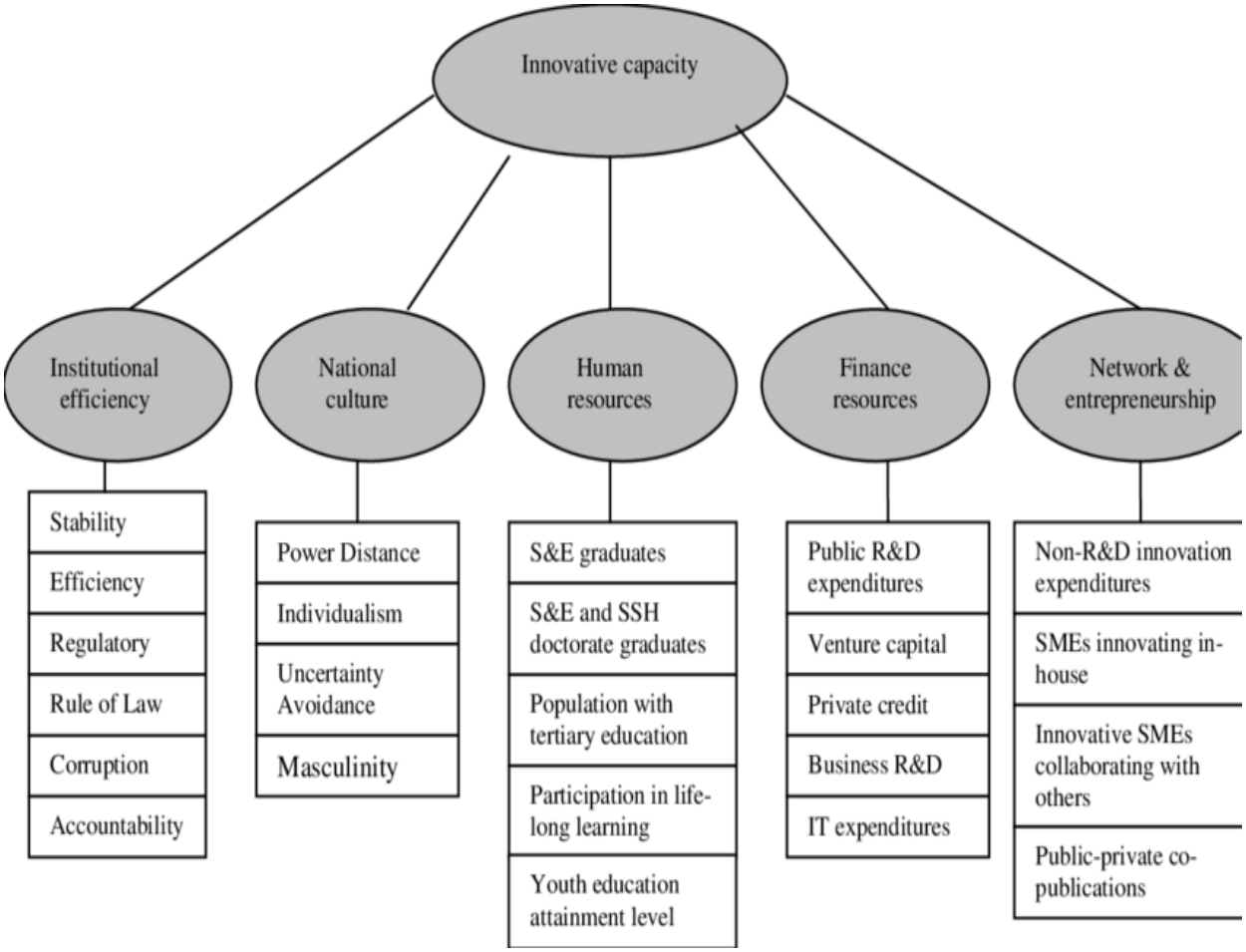


Fig B1. Innovation capacity of the company.

APPENDIX C

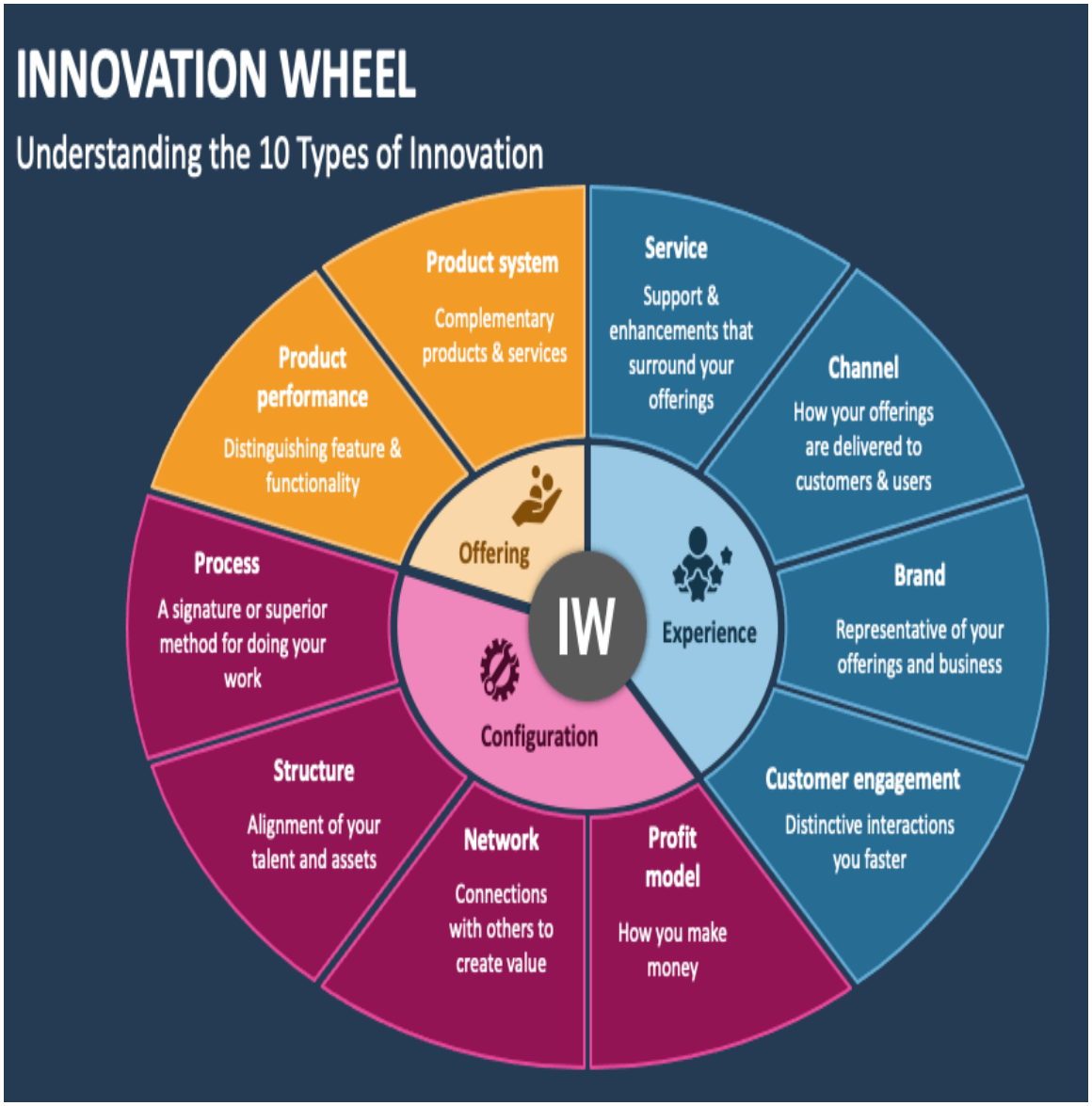


Fig C1. Innovation wheel of the company.

APPENDIX D

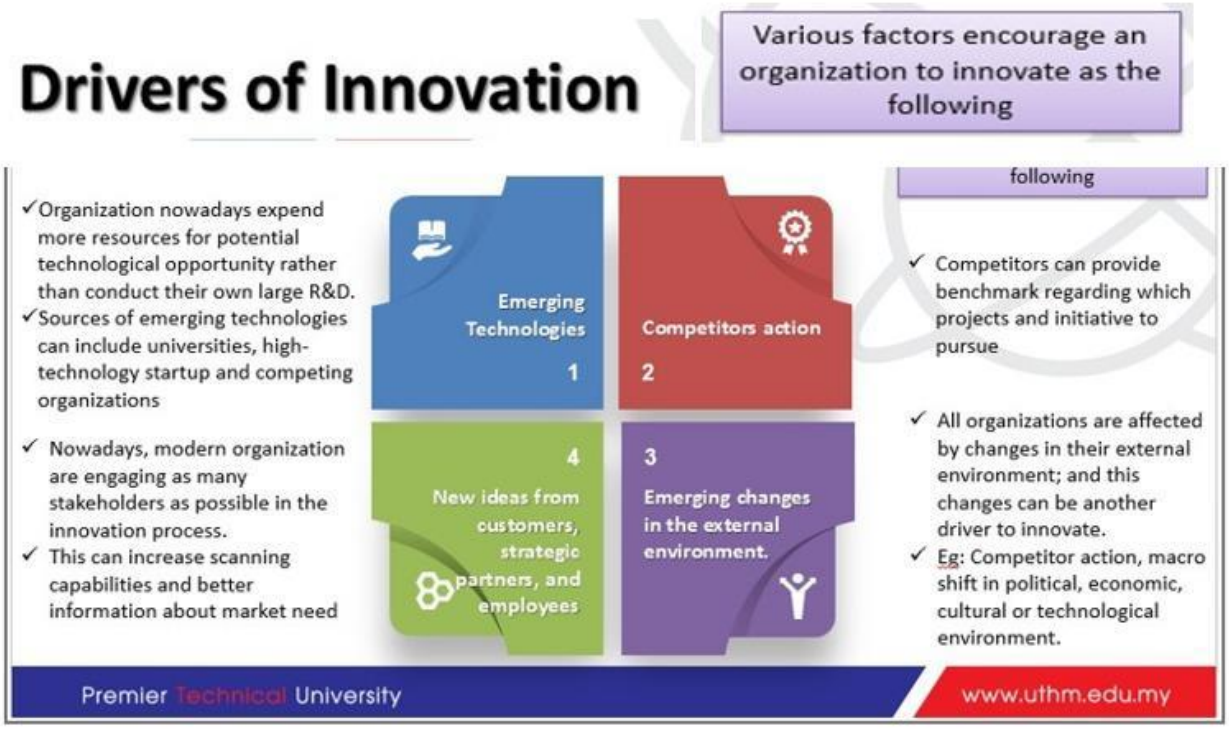


Fig D1. Drivers of Innovation activity of the company.

APPENDIX E

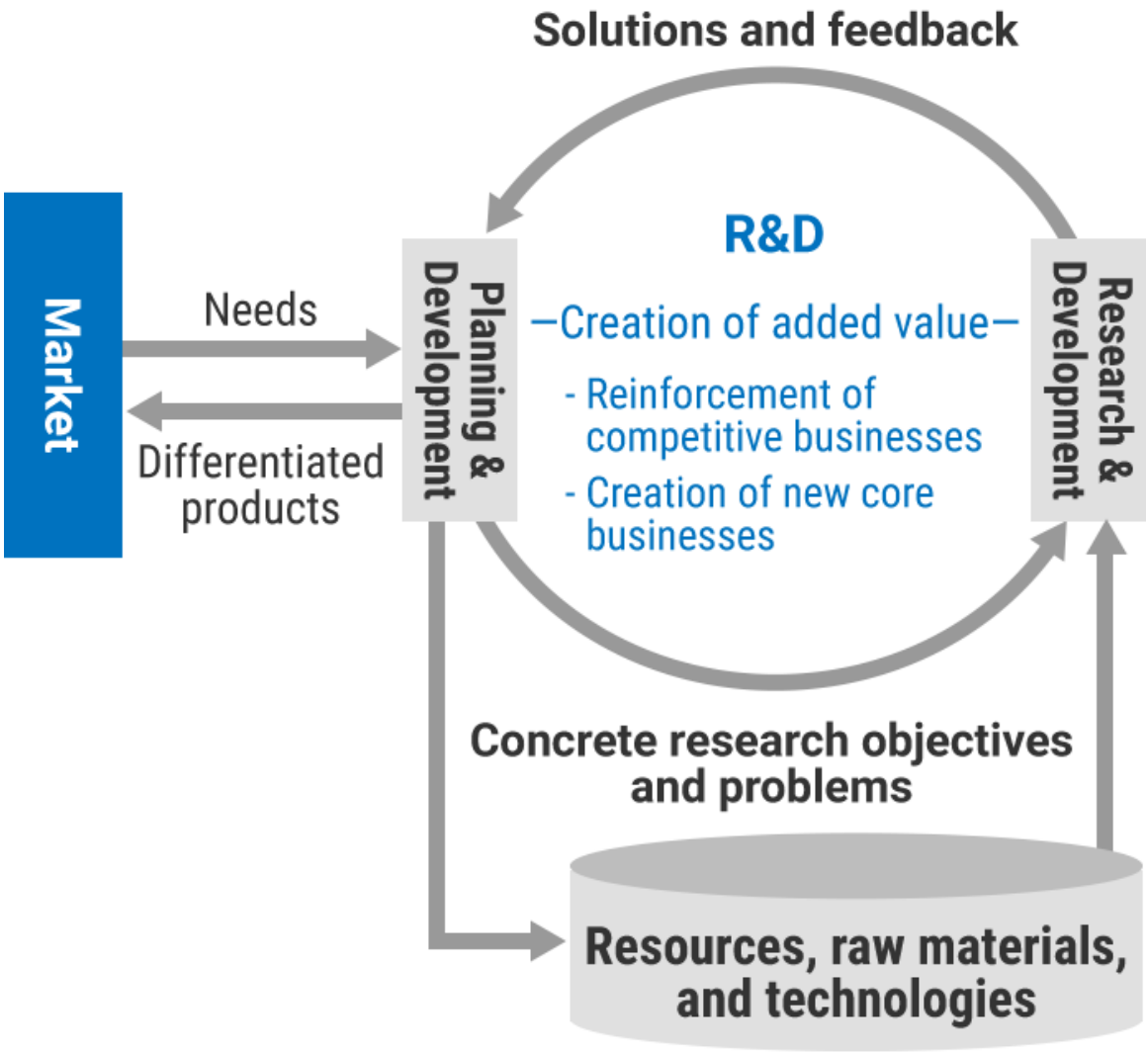


Fig E1. Innovation activity of the company and marketplace.

APPENDIX F

Fig F1. Key performance indikators of Intel activity.

APPENDIX G

Fig G1. Key elements of Intel strategy

APPENDIX K

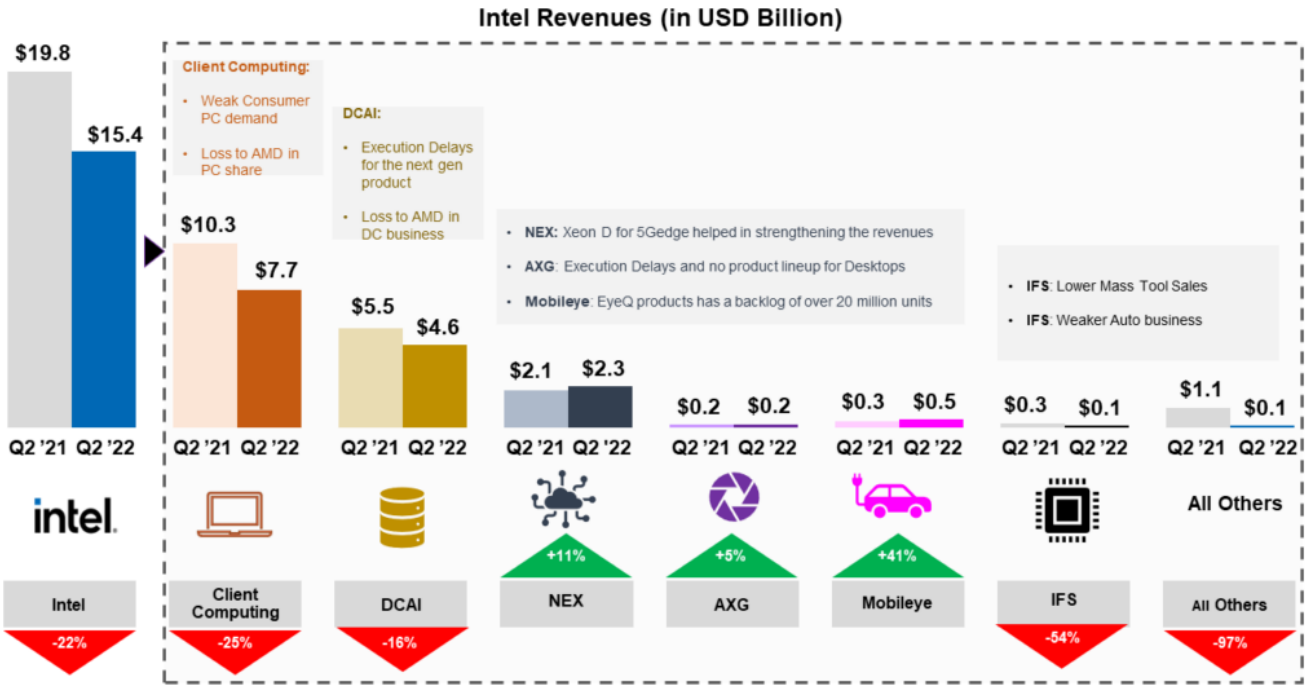
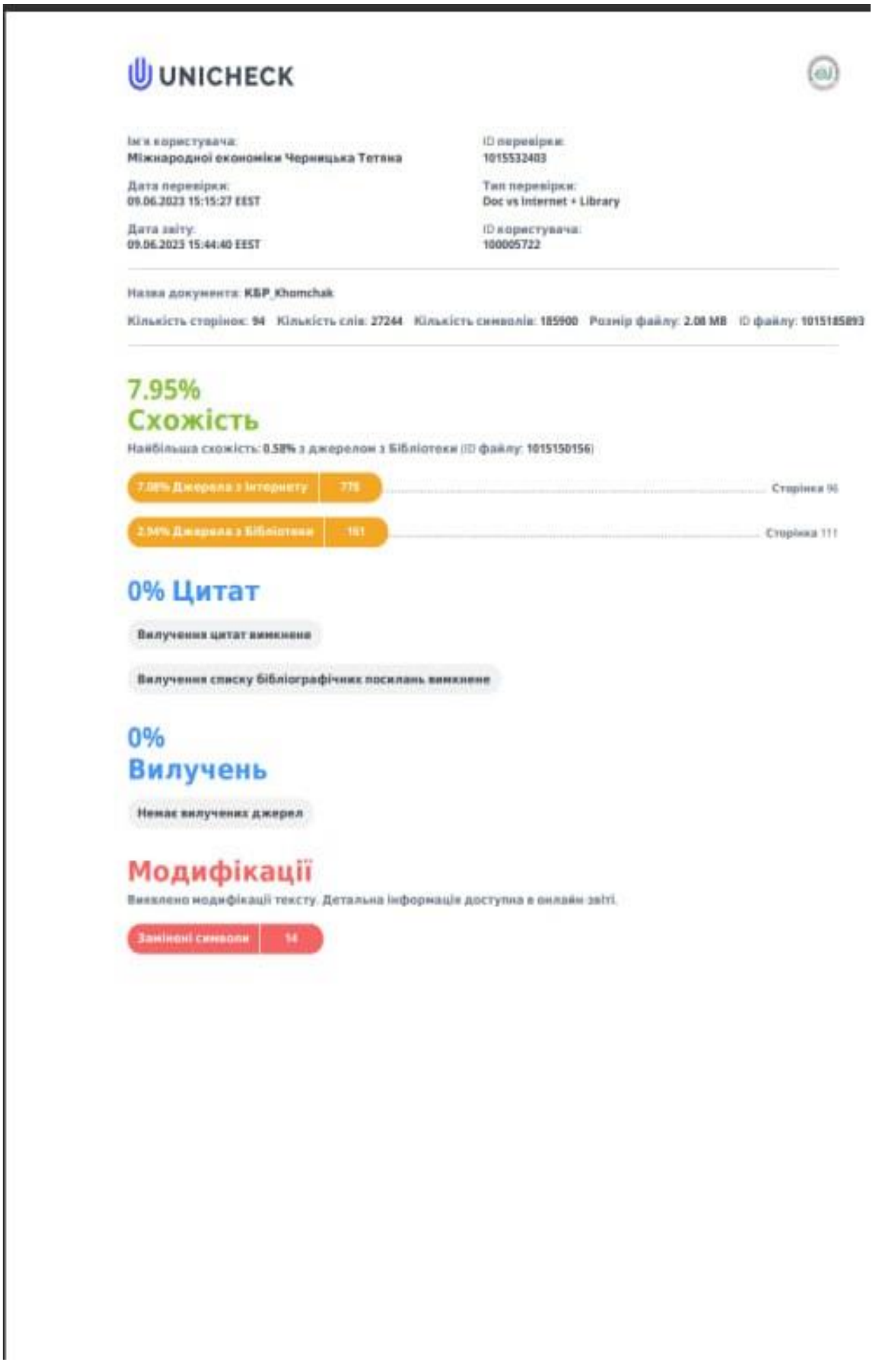


Fig K1. Intel Revenue in 2022 (in USD Billions)

REPORT OF SIMILARITY



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Замінені символи 14

Хомчак Олексій Сергійович
Khomchak O. S.
"International economy and management" 4th course
Kyiv National Economic University named after Vadym Hetman"
Scientific supervisor- ScD in Economics, professor, Shvydanenko O. A.

GREEN DEVELOPMENT STRATEGIES FOR THE COUNTRY: OBSTACLES AND WAYS TO SUCCESS

Green development of a country is an important and relevant topic nowadays, as its implementation is an imperative for the future existence of the global society. Green development is a new approach to economic development that meets the requirements of environmental sustainability. It includes the development of an economy that has a less negative impact on the environment, the use of alternative energy sources, waste reduction and improvement of people's quality of life. Overall, this is the path to sustainable development. It is important that governments pay attention to green development and use effective strategies to achieve this goal. This requires the government, business, and the public to focus on reducing their environmental impact and ensuring environmental sustainability. Green development can help a country reduce its dependence on fossil fuels and increase economic resilience. In addition, green development can be a source of new jobs and innovative technologies.

However, green development also depends on a country's capacity for change and reform. A number of economic, political, and social challenges need to be addressed to ensure the successful implementation of a country's green development concept. For example, it is necessary to ensure the availability of financial resources for green projects, open the market for green technologies, and develop a national green development strategy.

In low- and middle-income countries, green development can become an additional factor of economic growth. However, such countries usually face the challenge of ensuring sustainable development, reducing poverty, and ensuring energy accessibility for the population.

Thus, it can be stated that green development is an important economic and social factor that affects the quality of life, economic growth and health of the nation. Therefore, the formation and implementation of a green development strategy is the most important task for most countries in the world. However, according to the vast majority of scientific studies, there are many obstacles to the successful implementation of a green development strategy that need to be overcome.

A country's "green development strategy" refers to an approach to building a national economy that is aimed at achieving sustainable development with due regard for environmental aspects. This strategy involves reducing the impact of human activity on the environment and preserving its natural resources for future generations.

According to domestic and foreign scientists, the main components of the country's green development strategy are: reducing the use of natural resources and energy; application of energy efficient technologies and renewable energy sources; reduction of emissions of harmful substances into the atmosphere and water resources; rational use of soil and ensuring the preservation of biodiversity; creation of favorable conditions for a healthy lifestyle and improvement of the quality of life of the population.

It should be noted that the country's green development strategy is an important component of the global strategy for sustainable development of the state and plays an important role in ensuring a balanced and sustainable development of the national economy.

An analysis of scientific literature allows us to identify the main obstacles to the successful development and implementation of a green development strategy for a country, namely:

1. Lack of incentives for green development. Many countries do not pay due attention to green development due to the lack of incentives for it. For example, insufficient government support for the development of renewable energy sources can reduce interest in this area;

2. Insufficient financial support. Green development often requires significant investments, but insufficient financial support can delay the development process. For example, investments in renewable energy can be a big challenge for low-income countries;

3. Lack of necessary infrastructure. Green development requires not only new technology, but also appropriate infrastructure. Insufficient infrastructure can be an obstacle to green development;

4. Corruption. Corruption can be an obstacle to green development, as it can lead to insufficient support from the government and reduce interest in green development on the part of businesses;

5. Contradictions between green goals and other economic goals. Green goals may conflict with other economic goals, such as increasing exports, attracting investment, or increasing GDP. This can become an obstacle to green development if the government fails to find a balance between the different goals.

Green development is an extremely important issue for the further development of Ukraine's economy. Unfortunately, our country is in a difficult economic and political situation, especially given the war that Russia has started against us, which makes it extremely difficult to implement key areas of green development. At the same time, according to leading Ukrainian scientists, Ukraine has the potential to become a leader in green development in Central and Eastern Europe, but many problems need to be solved. One of the main tasks is to modernize the energy sector of the national economy. In particular, it is necessary to switch to the use of alternative energy sources, such as solar and wind energy, to reduce dependence on energy imports and increase the energy efficiency of the domestic economy.

Another problem is the environmental awareness of the population and business. Ukrainian society needs to recognize the need for environmental sustainability and respect for the environment. Businesses should also take an active part in green development, in particular by using environmentally friendly technologies and processes in their operations and complying with environmental standards.

Another obstacle is the lack of systemic government support and a green development strategy. The government should develop a modern strategy that would ensure the creation of favorable conditions for the development of a green economy and support projects that reduce waste and pollution (e.g., tax breaks or subsidies for renewable energy). The government can facilitate investment in green development by providing financial incentives for investors or introducing tax incentives for renewable energy companies. Green development requires appropriate infrastructure, such as transmission networks for renewable energy or water supply systems for water conservation. The government can facilitate the development of the necessary infrastructure through appropriate investment policies.

Another problem is the lack of personnel capable of implementing green development projects. Ukraine should invest in the education and training of specialists in the field of green energy and sustainable development. The Ukrainian government can also promote public education on environmental issues and sustainable development. It is also important to conduct campaigns that promote resource conservation and reduce emissions. It is important that the country's population is aware of green development and its benefits.

In addition, it is important to attract international support and cooperation to achieve success in Ukraine's green development. Ukraine should actively work with international organizations and other

countries to receive financial and technical assistance for green projects. For example, Ukraine already successfully cooperates with the European Union and receives financial and technical support for green projects. Ukraine also has the opportunity to join China's Green Belt and Road initiative and receive investments in green energy and infrastructure.

Thus, for Ukraine's successful green development, it is necessary to address the problems of energy modernization, environmental awareness of society and business, government support for green projects, and investment in education and training. Only then will Ukraine be able to become an example of green development and join global efforts to combat environmental problems.

Despite these obstacles, Ukraine has the potential to become a leader in green development. For example, Ukraine has great potential to use biomass as an alternative energy source. Also, there are great opportunities in green energy exports, which can become a source of income for the country.

Thus, green development is an important direction for countries in the modern world. Political leaders and the business sector should work together to implement green projects and reforms that will help reduce the impact of human activity on the environment and ensure sustainable development for future generations. Despite a number of obstacles, governments should use different strategies to achieve green development, but such strategies should be long-term and effective. It is important to find a balance between different goals and work to formulate and implement effective green development strategies for future generations on their path to success.

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