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MANAGERIAL AND FINANCIAL ASPECTS OF INNOVATIVE ACTIVITIES OF INTERNATIONAL COMPANIES: CASE ANALYSIS OF APPLE, GOOGLE, SAMSUNG, AND TESLA

Background. The relevance of this study lies in the analysis of innovations as a key factor for competitiveness under globalization, the examination of modern approaches to organizing innovation activities, and the specific features of implementing innovation strategies in leading transnational corporations. The aim of the study is to offer both a theoretical foundation and a practical analysis of the specific aspects of innovation management in international companies. The object of the study is the processes of managing innovation activities in international companies, while the subject of the study comprises the approaches and tools used to manage innovations in transnational corporations and other international business entities.

Methods. To achieve the stated aim, general scientific and specialized methods were employed, including generalization and systematization, case studies, comparative analysis, and content analysis.

Results. Based on open analytical sources, an assessment of the level of innovation activity of Apple, Google, Samsung, and Tesla revealed both commonalities and distinctions in their innovation models.

Conclusions. The guidelines for enhancing innovation management systems in international companies have been substantiated, with particular focus on proposing methods to improve adaptability, openness to change, and the integration of digital technologies into innovation development processes.

Keywords: innovations, international company, AI, innovation model, efficiency, innovation management.

Background

In today's context of globalization and digital transformation, innovation has become a key factor in the competitiveness of international companies. The rapid advancement of technology, shifting consumer demands, rising competition, and global market instability compel multinational corporations to introduce new products, processes, and business models continually. Innovation management is not just a tool for growth – it is a means of survival in an increasingly complex and ever-changing environment. At the same time, effective management of innovation activities requires consideration of numerous factors – cultural, organizational, economic, and legal – especially when operating across diverse markets. Given this, research on innovation management mechanisms in international companies is highly relevant. Analyzing the successful practices of leading global firms, identifying barriers, and developing efficient innovation strategies can form the basis for improving the performance not only of multinational corporations but also of national companies aspiring to enter global markets. Thus, exploring this topic holds both theoretical and practical significance for the modern economy.

The purpose of the research is to provide a theoretical foundation and practical analysis of the specific characteristics of innovation management in international companies, as well as to develop recommendations for enhancing the efficiency of innovation activities within the global business environment.

The object of the research is the processes of managing innovation activities within international companies.

The subject of the research includes the approaches and toolkits for innovation management in transnational corporations and other international business structures, as well as the factors influencing the effectiveness of innovation management in the context of globalization.

Literature review. Innovation, knowledge, and technology are key concepts in the field of international business (Aldeanueva, 2023). Cantwell (2017) highlights that innovation and internationalization processes are increasingly interconnected, becoming major drivers of development. Innovation is the cornerstone of growth and ensures organizations' resilience to market fluctuations. Business model innovations can serve as a pathway to competitive advantage, especially when the model is sufficiently differentiated and complex, making it difficult for existing and new players to replicate (Aldeanueva, 2023; Mishra, 2023; Mazur, Boguslavskyy, & Moroz, 2025). Emerging models of innovation development have encouraged many companies to change the way they source ideas, shifting towards open search strategies that involve a wide range of external contributors and sources (Kozlovskyi et al., 2025).

Innovation refers to the introduction of new or significantly improved products, services, processes, organizational methods, or marketing approaches that create added value or increase operational efficiency

(Pereira et al., 2022; Dluhopolskyi, Katola, & Dluhopolska, 2023). In other words, innovation represents novel practices with practical applications that bring benefits, be they economic, social, technological, or otherwise.

The main types of innovations are presented in Table 1, among which product, process, organizational, marketing, and social innovations can be distinguished.

In historical retrospect, the key innovation breakthroughs can be summarized in Table 2. This evolutionary chain illustrates how innovations, from mechanics to artificial intelligence, have transformed not only production but also social structures, the economy, and approaches to labor.

Table 1

Types and examples of innovations		
Type	Characteristic	Example
Product innovations	Creation or significant improvement of goods or services	A new smartphone with unique features
Process innovations	Changes in production technologies or service delivery methods	Warehouse automation using robots
Organizational innovations	New management methods, structures, or business models	Transition to a remote work model
Marketing innovations	Novel approaches to promotion, branding, or pricing	Use of neuromarketing in advertising campaigns
Social innovations	Solutions that improve the quality of life or address social issues	Platforms providing support for people with disabilities

Source: developed by the authors based on (Aldeanueva Fernández, 2023; Mishra, 2023; Potecea, & Cebuc, 2010; Vergeles, & Baiura, 2024).

Table 2

Historical progression of innovation from industry 1.0 to industry 5.0			
Industry era	Key innovations	Key changes	Effects
Industry 1.0 – Age of steam 1760–1840	Steam engine (James Watt)	Shift from manual labor to mechanized production; growth of textile, coal, and iron industries	Urbanization, expansion of the working class, new sales markets, poor working conditions, and pollution
Industry 2.0 – Rise of electricity and mass production 1870–1914	Electricity, internal combustion engine, assembly line (Henry Ford), telephone, radio	Creation of factories with conveyor production; development of transport and communications	Industrial growth, demand for skilled labor, emergence of labor unions
Industry 3.0 – Digital era 1960s–2000s	Computers, microprocessors, automation, CAD/CAM systems	Automated production, use of IT in manufacturing processes, and globalization of supply chains	Increased precision, reduced costs, and productivity growth
Industry 4.0 – Smart technologies 2010s–present	Internet of Things (IoT), Artificial Intelligence (AI), Big Data analytics, IIoT	Smart factories, autonomous systems, telemedicine, driverless vehicles	Real-time monitoring, data-driven decision-making, and reduced downtime
Industry 5.0 – Human-centered manufacturing From 2020s onward	Human–robot collaboration, product personalization, ethical production, sustainability	Enhanced employee well-being, a balance between productivity and environmental responsibility	Fatigue sensors, resource reuse, flexible communication technologies (IO-Link Wireless)

Source: developed by the authors based on (Levi, 2024; Gander, 2023; OECD, 2023).

Many contemporary scholars (Cherep, & Markova, 2012; Polishchuk, 2009; Likhota, 2025; Yazlyuk, Butov, & Kostetskyi, 2012; Shestakovska et al., 2025; Syhyda et al., 2023) unanimously regard Joseph Schumpeter as the founder of innovation theory, referencing his seminal work "The Theory of Economic Development" (1912). This Austrian-American economist was the first to introduce the concept of "innovation" into scientific discourse, defining it as an independent, original, and essential component of the economic system. He also classified types of innovation and explored their impact on enterprises' production activities, laying the foundation for the emergence of innovation studies as an academic discipline. In the context of international business, Schumpeter's ideas evolve into a pressing need for constant renewal of products, processes, and business models in response to the dynamic changes of the global environment.

Under current conditions, the Open Innovation Model, proposed by Henry Chesbrough, has gained significant importance. This approach involves leveraging both internal and external ideas for the development of new products and solutions. International companies with access to global markets and networks actively engage startups, universities, research centers, and consumers in co-creating

innovations. Equally important is the Resource-Based View (RBV), which posits that a company's innovation capacity is determined by its internal resources and competencies. In the international context, this implies the effective utilization of intellectual capital, cross-cultural knowledge, technological platforms, and network connections.

There are numerous innovation models globally, classified according to various criteria, such as chronological stages, sources of origin, complexity level, and actors involved in the process (Severyna, Fyliuk, & Skopenko, 2024). These models emerge from the ongoing development of innovation theory and practice, reflecting technological progress, changing societal needs, and the evolution of economic systems. They serve both descriptive and analytical functions, helping to better understand the mechanisms of innovative activity in organizations, regions, and countries.

Among the earliest contributions to innovation theory were linear models, which describe the innovation process as a sequential flow from idea to market. In the technology push model, innovations are initiated by scientific discoveries, which subsequently advance through applied research, product development, and commercialization. In contrast, the market pull model suggests that innovations

are driven by consumer or market needs, prompting companies to seek solutions through research and development. Despite their simplicity, these approaches are often criticized for overlooking the complex interactions among various factors influencing the innovation process (Potecea, & Cebuc, 2010).

More complex and realistic models have emerged to replace linear approaches – among them, the chain-linked model, which emphasizes the presence of feedback loops between the stages of the innovation process, as well as the need to integrate knowledge from diverse sources such as the market, science, and production. This perspective allows for consideration of the unpredictability of innovations and the role of iterative refinement.

In today's innovation landscape, the open innovation model, based on the idea that organizations can no longer rely solely on internal resources and knowledge, has gained significant traction. Instead, they must actively engage external ideas, technologies, and partnerships (Polishchuk, 2009). This approach accelerates the innovation process, reduces development costs, and enhances organizational flexibility.

Another crucial theoretical framework is the systemic model of innovation, which views innovation as the result of interaction among multiple actors within an innovation ecosystem – universities, governments, businesses, financial institutions, and others. Depending on the scale of such interaction, one can distinguish national, regional, or sectoral innovation systems. This model places primary emphasis on the role of institutional environments and coordination among participants.

An extension of the systemic approach is the triple helix model, which emphasizes close interaction among three key spheres: universities (knowledge generators), business (sources of investment and commercialization), and government (regulator and policy actor). This collaboration creates conditions for synergy and the formation of new organizational forms of innovation activity (Cherep, & Markova, 2012; Polishchuk, 2009). In later adaptations, the model evolves into the quadruple helix (including civil society) and the quintuple helix, which adds an environmental dimension.

Modern innovation approaches increasingly adopt design thinking and user-driven innovation, placing the focus on a deep understanding of user needs, empathy, and iterative testing of solutions. This approach is especially prevalent in digital technologies, healthcare, and education sectors where rapid adaptability and product personalization are critical.

In contemporary fields such as education, healthcare, and information technology, diverse innovation models are actively applied. In education, for example, open innovation is implemented through collaboration with IT companies like Google and Microsoft to develop platforms such as Google Classroom and Moodle, enabling universities to deliver innovative content. The triple helix model envisions government funding of university research, later utilized by businesses to create educational products like adaptive learning tools. The systemic model of educational ecosystem development involves interaction among educational institutions, ministries, startups, and international foundations to foster innovation.

In healthcare, chain-linked models are used to develop medical technologies based on feedback loops among doctors, patients, and developers. Open innovation is also

actively applied by pharmaceutical companies that involve external researchers to create new drugs, as demonstrated during the COVID-19 pandemic. The design thinking model in healthcare focuses on developing patient-centered solutions, such as telemedicine interfaces or more user-friendly medical devices.

In the field of information technology, technology push, particularly the advancement of artificial intelligence and blockchain, drives the creation of new business models and products like ChatGPT and AWS. Open innovation is evident in open-source initiatives such as Linux, Mozilla, and TensorFlow. The systemic model in IT, especially in Silicon Valley, illustrates successful interaction among universities, venture funds, startups, and corporations in fostering innovation.

Methods

The research uses theoretical methods such as analysis, synthesis, generalization, and systematization to examine scientific approaches to innovation management. In addition, empirical methods are applied, including case studies, comparative analysis, and content analysis, to evaluate innovative practices in international companies.

Results

A defining feature of innovation-led development is its intensive nature. Within the context of innovation, the concept of "development" should be understood as economic growth based on qualitative internal transformations, driven by the integration of new knowledge into practice.

Figure 1 illustrates the relationship between innovations, represented by the Innovation Index (blue line), and global GDP growth rates (green line). As the figure shows, improvements in innovation levels correlate with an increase in GDP growth rates (% compared to the previous year), which supports the notion that innovation plays a key role as a driver of economic progress. The graph shows a positive correlation, as innovation increases over the years, GDP growth tends to increase as well. The alignment between peaks and valleys in both lines suggests a moderate to strong positive relationship. The coefficient of correlation is closer to +1, indicating that innovation and GDP growth rise together over time.

Across the globe, the highest levels of innovation activity are observed in research and development services, the pharmaceutical industry, specialized equipment manufacturing, and ICT service providers (OECD, 2023). Companies often implement multiple types of innovation simultaneously. Industries exhibit distinct innovation profiles, as firms in different sectors tend to focus more on either product innovation or business process improvement. Innovation indicators reveal that process innovations are more prevalent than product innovations (OECD, 2023). Canada demonstrates the highest proportion of companies (83%) implementing innovations during the period 2018–2020, followed by Israel at 74% (OECD, 2023). In all countries, the share of employment within innovative companies consistently exceeds the share of innovative enterprises among all businesses. On average, around 50% of companies introduced innovations between 2018–2020, whereas innovative firms accounted for 73% of total business-sector employment. This suggests that companies with higher employment levels tend to exhibit greater innovation propensity.

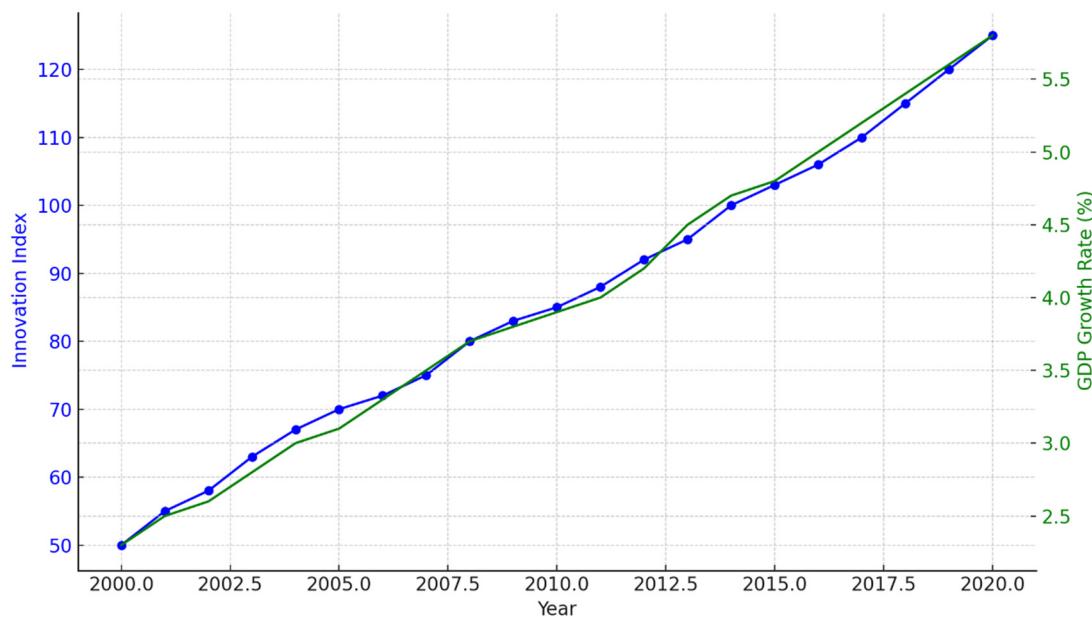


Fig. 1. Correlation between innovative growth and global GDP

Source: developed by the authors based on (WIPO, 2024; International Monetary Fund, 2024).

Innovation activity refers to the set of actions and processes aimed at the creation, implementation, and commercialization of new products, technologies, services, organizational or marketing solutions. It reflects the degree of companies' involvement in innovation and their capacity to renew products and processes to enhance competitiveness.

Key characteristics of innovation activity in international companies:

1. Development of new products and technologies, reflected in investments in research and development (R&D).
2. Implementation of innovations through the integration of new solutions into management activities.
3. Investments in innovation via funding for technical upgrades, equipment modernization, and acquisition of licenses and patents.
4. Collaboration with research institutions or other companies.
5. Protection of intellectual property through patenting new developments and technologies.
6. Innovation marketing – promoting new products to market.

We will analyze the innovation strategies and innovation activity of several international companies, leaders in innovation, including Apple, Google, Samsung, and Tesla.

The innovation activity of the international company Apple Inc. is one of the key characteristics that defines its global success, market strength, and reputation as a technological leader. In particular, the company is a leader in the following areas:

1. *Technological innovations in products.* Apple is renowned not only for creating new products but also for radically transforming the markets in which it operates. The most notable examples include:
 - iPhone (2007): a revolution in mobile phones, combining a touchscreen interface, an intuitive user experience, and mobile internet access;
 - iPad (2010): the creation of a new segment in consumer electronics – the tablet market;
 - Apple Watch (2015): a major push into wearable technology, with a focus on health and fitness tracking;

- AirPods and AirPods Pro: wireless earbuds that have become a symbol of convenience, design excellence, and seamless integration within the Apple ecosystem;

- Apple Silicon (2020): a strategic shift from Intel processors to Apple's own M1/M2/M3 chips, delivering higher performance and energy efficiency across Mac devices.

- *Innovative business model and ecosystem.* Apple has developed a closed and interconnected ecosystem of devices, software, and services, which includes:

- integration of macOS, iOS, iPadOS, watchOS, and tvOS, ensuring a seamless user experience across all platforms;
- services such as iCloud, Apple Music, Apple Pay, Apple TV+, and the App Store, which provide a stable source of revenue and foster customer retention;
- control over the entire value creation chain, from design and hardware to software and customer service, enabling Apple to maintain high quality and brand consistency.

- 3. *Design and user experience (UX).* Apple is one of the pioneers in design, where interface and device form-factor innovations play a leading role. The company emphasizes simplicity, minimalism, ergonomics, and attention to detail. Continuous interface enhancements, such as Face ID, gesture-based navigation, and the Dynamic Island on iPhone, demonstrate Apple's commitment to intuitive user interaction. The Apple design language has had a significant influence on the entire industry, setting benchmarks for aesthetic and functional excellence.

- 4. *Innovations in privacy and security.* Apple actively advances innovative approaches to data protection, including: implementation of App Tracking Transparency (ATT); on-device user data processing; use of Secure Enclave, Touch ID, and Face ID.

- 5. *Investment in research and development (R&D).* Apple consistently increases its R&D spending: in 2023, expenditures exceeded \$30 billion, setting a record for the company. These investments support innovations in areas such as augmented reality (AR), artificial intelligence (AI), health technologies, and autonomous transportation.

- 6. *Development of artificial intelligence and AR/VR.* Apple is developing the Apple Vision Pro, a spatial computing headset that combines virtual and augmented

reality. The company is also integrating AI/ML into its products: Siri, automation in iOS, photo enhancement, and content personalization.

7. *Innovations in sustainability.* Apple is actively investing in environmentally sustainable solutions: using recycled materials in its devices, committing to becoming carbon neutral by 2030, developing carbon-free aluminum, and energy-efficient manufacturing processes.

8. *Patent activity.* Apple is among the leading companies in terms of the number of patents filed each year: it files thousands of patents annually in areas such as hardware, UX, AR/VR, artificial intelligence, and more. The company actively protects its intellectual property, which reflects a strategic approach to innovation.

Analysis of Apple Inc.'s financial indicators over the last five years (Table 3) illustrates key trends in revenue, profit, margins, and other important financial metrics. In 2023, Apple recorded its first annual revenue decline since 2019,

dropping by 3%. However, in 2024, the company resumed growth, reaching \$391.04 billion in revenue. After peaking in 2022 at \$99.80 billion, Apple's net income decreased in 2023-2024, which may indicate market saturation and rising competition. Net profit margin remained stable, exceeding 25% from 2021 to 2023, but fell to 23.97% in 2024, potentially pointing to rising costs or reduced efficiency.

Although the iPhone remains Apple's primary source of revenue, the share of services (such as Apple Music, iCloud, App Store, etc.) continues to grow, providing more stable and profitable income streams. The company's spending on research and development rose from \$16.22 billion in 2019 to \$29.92 billion in 2023, underscoring its focus on innovation and emerging technologies. Despite the decline in net income in 2023–2024, Apple maintains high profitability and a strong balance sheet, allowing it to invest confidently in future growth.

Table 3

Key financial indicators of Apple Inc., in billions of dollars				
Years	Revenue	Net Income	Gross Profit	Net Income Margin, %
2019	260.17	55.26
2020	274.52	57.41	104.96	20.91
2021	365.82	94.68	152.84	25.88
2022	394.33	99.80	170.78	25.31
2023	383.29	96.99	169.15	25.31
2024	391.04	93.74	180.68	23.97

Source: developed by authors based on (Macrotrends LLC, 2025; Bullfincher, 2025; Associated Press, 2023).

Apple's financial indicators over the past few years demonstrate stability and the ability to adapt to changing market conditions. Growth in revenue from services and investments in innovation positions the company for continued success, despite challenges such as smartphone market saturation and global economic fluctuations.

Apple manages its innovation through (Table 4): centralized leadership, vertical integration, large investments in R&D, strict process control, a strong focus on user experience, and high product quality. These factors enable

the company to maintain a sustainable competitive advantage and deliver breakthrough products that reshape markets.

Overall, Apple's innovation activity is not just about creating new devices. It's a systematic strategy that encompasses product innovation, design, services, privacy, sustainability, intellectual property, and user experience. It is precisely through ongoing innovation that Apple maintains its leading position in the tech world, setting the pace for the entire industry.

Table 4

Managerial aspects	Apple Inc.'s innovation management
1. Centralized management and visionary leadership	Strategic vision: innovative ideas are directed from the very top. Apple doesn't merely respond to the market – it creates it. Customer focus: the company invests in understanding user needs even before users themselves become aware of them.
2. Robust R&D (research and development) sector	Apple invests tens of billions of dollars annually in research and development, over \$29 billion in 2023. The company operates its R&D centers in the United States, Europe, Israel, India, and China. Apple aims to maintain control over critical technologies within the company, including chips (Apple Silicon), software, display technologies, and more.
3. Vertical integration	Apple controls nearly the entire product creation chain – from design and engineering to manufacturing and sales. This allows the company to implement innovations quickly, synchronously, and without compromising quality. For example, developing its processors enables deep integration of hardware and operating systems.
4. Closed management and innovation protection	Apple operates in a high-security environment. Teams often don't know what other departments are working on, which helps prevent leaks but complicates cross-functional collaboration. Innovation is protected by an aggressive patent strategy – Apple files thousands of patents every year.
5. Cross-functional teams	Apple structures its innovative activities not by products, but by functions (such as design, hardware, software, etc.). Teams from various departments (including engineers, designers, and marketers) collaborate closely to develop new solutions.
6. User feedback and data	Apple collects data from millions of devices, helping to identify trends, improve user experience (UX), and uncover new opportunities for innovation. The company actively implements machine learning to analyze user behavior and personalize products.
7. Focus on long-term innovation	Apple doesn't rush to implement "raw" technologies but introduces innovations only when they reach maturity and readiness for the mass market. For example, the development of the Vision headset took over 7 years.

Source: developed by authors.

Google, as one of the world's leading international technology companies, demonstrates strong innovation activity – a key factor behind its global success. Founded in 1998, the company quickly evolved from a search engine into a diversified tech giant that actively develops new products, services, and technologies across various fields.

The foundation of Google's innovation lies in substantial investments in R&D (research and development). Every year, the company pours billions of dollars into advancing

areas such as artificial intelligence, machine learning, cloud computing, quantum technologies, and autonomous systems. For example, through its development of AI, Google has created innovative products like Google Assistant, Google Translate, based on neural networks, and enhanced its search engine ranking algorithms.

The financial performance indicators of Alphabet Inc. (Google's parent company) for the period 2021–2024 are presented in Table 5.

Table 5

Key financial indicators of Alphabet Inc., billions of dollars				
Years	Revenue	Net Income	R&D Expenses	Net Income Margin, %
2021	257.64	76.03	31.56	29.5
2022	282.84	59.97	39.50	21.2
2023	307.39	73.80	45.43	24.0
2024	350.02	100.12	49.33	28.6

Source: developed by authors based on (Alphabet Inc., 2024; Bullfincher, 2025).

Alphabet demonstrates steady revenue growth, with revenue reaching \$350.02 billion in 2024 – a 13.9% increase over 2023. Following a dip in 2022 to \$59.97 billion, net profit rose to \$73.80 billion in 2023 and \$100.12 billion in 2024, indicating effective cost management and improved profitability. Alphabet continuously increases its R&D spending, reaching \$49.33 billion in 2024, highlighting the company's focus on innovation and technological advancement.

Advertising remains Alphabet's primary source of revenue, accounting for approximately 87% of the company's total income through Google Ads and AdSense. In 2024, Google Cloud contributed 12% of the company's revenue, showing notable growth driven by the implementation of AI-powered solutions.

Google's innovation strategy is also built on the "20% time" philosophy, which allows employees to spend part of their working hours on personal projects. Notably, products like Gmail and Google News were created under this initiative.

Additionally, Google actively engages in mergers and acquisitions of startups with high innovation potential, enabling the company to stay at the forefront of technological advancement (Bullfincher, 2024).

Google X (now simply X) is responsible for implementing so-called "moonshot projects" – high-risk technological initiatives with potentially significant impact on the future. Among such projects are autonomous vehicles (Waymo), delivery drones (Wing), and internet-delivery balloons (Loon).

Google's innovation activity spans the globe – the company operates research centers in various countries, including the United States, the United Kingdom, Israel, India, and others. This approach allows Google to account for local market nuances and attract top talent from around the world. Therefore, Google's innovation efforts are systemic, large-scale, and strategically driven. The

company constantly seeks new ways to improve its technologies and expand its applications, allowing it to remain a leader in the digital technology space.

Samsung Electronics, part of the South Korean conglomerate Samsung Group, holds a leading global position in introducing innovations in electronics, telecommunications, information technology, and home appliances. Its innovation activity has been a key factor in long-term growth, global expansion, and competitiveness.

Samsung invests substantial resources in research and development (R&D). The company runs one of the largest private R&D programs in the world. In 2023, its R&D expenses exceeded \$21 billion, accounting for approximately 8-9% of its annual revenue. Samsung operates over 200 research centers globally, including in the United States, South Korea, Israel, India, and China. The company consistently ranks among the top three worldwide in terms of patent filings, having submitted over 10,000 international patent applications in a single year.

Table 6 presents the dynamics of Samsung Electronics' key financial indicators for the period 2020–2024. From 2020 to 2022, the company showed steady growth in revenue and profitability, from \$182 billion in 2020 to over \$232 billion in 2022. Net profit in 2022 reached \$42.1 billion, the highest figure during the period, driven by strong demand for semiconductors and electronics amid the pandemic. In 2023, profitability declined sharply – net profit dropped to \$11.13 billion, due to falling chip prices, reduced global demand for consumer electronics, and high inflation. In 2024, a recovery began: revenue rose to \$231.44 billion, and net profit increased to \$25.86 billion, indicating market stabilization, rising sales, and effective crisis management by the company.

Table 6

Key financial indicators of Samsung Electronics, billions of dollars			
Years	Revenue	Net Income	Net Income Margin, %
2020	182.16	20.07	11.02
2021	215.08	30.18	14.04
2022	232.48	42.10	18.11
2023	199.18	11.13	5.59
2024	231.44	25.86	11.01

Source: developed by authors based on (Samsung Electronics, 2024; MarketScreener, 2025).

Overall, Samsung Electronics has demonstrated the ability to quickly adapt in conditions of market instability. After a downturn in 2023, the company successfully recovered its financial performance in 2024, indicating effective strategic management and strong innovation potential.

Examples of Samsung's innovative projects include:

1. Flexible displays – Samsung pioneered the commercialization of flexible OLED displays, which are used in its Galaxy Z Fold and Z Flip smartphone lines.

2. 5G Technologies – the company is one of the global leaders in developing and deploying 5G infrastructure, offering end-to-end solutions and partnering with major telecom operators worldwide.

3. Artificial intelligence and internet of things (IoT) – through its SmartThings platform, Samsung is actively expanding a smart device ecosystem that integrates appliances, sensors, and mobile devices into a unified experience.

4. Memory chips and processors – Samsung holds a leading position in the global semiconductor market and continues to develop its own Exynos chips for mobile and wearable devices.

Samsung's innovation strategy is based on an open innovation model, which involves cooperation with universities, startups, and research centers. To support its innovation development, the company has established several internal incubators and corporate venture funds – most notably Samsung NEXT, which invests in startups in IT, artificial intelligence, and data security.

Samsung's innovation management system includes: decentralized research governance through regional innovation hubs; internal incentive programs that promote employee-driven innovation; flexible organizational structures that enable rapid market introduction of new products; proprietary innovation evaluation standards, including regular reviews of patent portfolios, innovation efficiency indexes, and innovation profitability metrics.

Samsung integrates innovation into global supply chains, adapting products to local markets. Its innovations often have multi-sectoral impact, for example, display and battery technologies are used not only in smartphones but also in TVs, laptops, and even the automotive industry via Samsung SDI.

Tesla Inc., founded by Elon Musk in 2003, is one of the world's most innovative companies. Tesla has achieved breakthroughs in electric vehicles, battery systems, solar energy, and artificial intelligence. Innovation is not only a part of Tesla's products – it's the foundation of its business model, corporate culture, and competitive advantage.

Table 7 presents the dynamics of Tesla's key financial indicators for the period 2020-2024. From 2020 to 2022, Tesla experienced rapid growth in revenue and profit. Notably, net profit increased from \$0.72 billion in 2020 to \$12.56 billion in 2022, reflecting effective production scaling and rising demand for electric vehicles. In 2023, the company achieved a record net profit of \$15.00 billion on revenue of \$96.8 billion. The net profit margin remained stable at 15.5%, indicating efficient cost management and strong product demand. Despite a slight revenue increase to \$97.7 billion in 2024, net profit dropped significantly to \$7.13 billion, and the profit margin fell to 7.3%. Key reasons included declining average vehicle prices, increased competition in the EV market, and rising R&D expenses, especially in artificial intelligence and robotics.

Table 7

Key financial indicators of Tesla, billions of dollars			
Years	Revenue	Net Income	Net Income Margin, %
2020	31.5	0.72	2.3
2021	53.8	5.52	10.3
2022	81.5	12.56	15.4
2023	96.8	15.00	15.5
2024	97.7	7.13	7.3

Source: developed by authors based on (Tesla, Inc., 2024; Electrive.com, 2025).

Tesla actively implements both technological and organizational innovations. Key areas of its innovation activity include:

- next-generation electric vehicles: Tesla was the first to bring fully electric cars to the mass market with long driving range, fast charging, and modern interfaces;
- autonomous driving: the company developed one of the most advanced autonomous driving algorithms – Tesla Autopilot and Full Self-Driving (FSD). Tesla uses neural networks and machine learning to continuously improve its software;
- innovative battery technology: Tesla has created proprietary battery packs with higher energy density, lower production cost, and improved environmental sustainability;

- integration of energy solutions: Tesla manufactures solar panels, Solar Roofs, and Powerwall home energy storage systems, forming a clean energy ecosystem that supports energy independence and grid resilience;

- Tesla Bot (Optimus) – a humanoid robot project that represents a breakthrough in artificial intelligence, robotics, and automation. Optimus is designed to perform repetitive or dangerous tasks and is being tested in Tesla factories.

Tesla uses unconventional approaches to innovation management that differ significantly from traditional corporations (Table 8).

Table 8

Tesla's innovation management	
Managerial aspects	Examples
1. Vertical integration	Tesla controls nearly all stages of development, production, and distribution, allowing it to implement innovations quickly without delays from contractors
2. Intensive culture of experimentation	The company constantly tests new technologies without fear of failure. The "fail fast" culture encourages rapid product improvement
3. Centralized knowledge management	Tesla concentrates all engineering resources within internal teams, where software, design, and mechanics interact in a unified system
4. Leadership	Elon Musk is personally involved in shaping the company's innovation strategy, often initiating risky and ambitious projects. His influence fosters a culture of high expectations and deep technological engagement
5. Investment in R&D	In 2023, Tesla spent over \$3.97 billion on research and development (R&D), which accounted for approximately 5% of its annual revenue

Source: developed by authors.

Tesla's innovations are shaping new standards in the automotive, energy, and IT industries:

- 1) Tesla has become a catalyst for the energy transition to electric transport;
- 2) The company is establishing a new business model – "transportation as a service", based on autonomous driving and on-demand mobility;
- 3) Tesla promotes its technologies through open patent licensing, stimulating development across the entire industry.

Tesla Inc. is an example of a company that systematically manages innovation, transforming breakthrough technologies into commercial success. Its approach is grounded in risk-taking, rapid scaling, deep technological integration, and a strong vision for the future. Tesla doesn't just create new products – it is reshaping the very logic of development in global industries.

In today's globalized world, innovation has become a key factor in the competitiveness of international companies, with Apple, Google, Samsung, and Tesla serving as prime examples. Effective innovation management enables organizations to adapt to rapid market changes, implement new technologies, and meet consumer needs.

Discussion and conclusions

In modern international business, innovation, knowledge, and technology play a pivotal role as drivers of economic growth and competitiveness. Innovation activity encompasses a wide range of transformations – from products and processes to organizational and marketing solutions. The historical evolution of innovation, from Industry 1.0 to Industry 5.0, demonstrates the profound impact of technological breakthroughs on the social and economic structures of societies (Odrekhivskyi et al., 2025; Kozlovskyi et al., 2025). Today, innovation is shaped not only within companies but also through open approaches based on collaboration with external agents such as universities, startups, and government institutions.

The success of innovation activity depends on knowledge integration, effective interaction among participants in the innovation ecosystem, and adaptation to market needs. Industry-specific factors, such as higher innovation intensity in pharmaceuticals, ICT, and knowledge-intensive services, highlight the uneven development of innovation across sectors.

At the same time, rising R&D expenditures, particularly in IT and construction, demonstrate businesses' willingness to invest in the future, reinforcing the role of innovation as a foundation for long-term growth.

The development of international innovation companies highlights several breakthrough achievements:

1. Alphabet Inc. demonstrates sustained financial growth and effective resource management. Revenue increases, especially in advertising and cloud services, along with significant investments in research and development, have strengthened the company's position in the global market. The rise in net profit reflects the successful implementation of strategic initiatives and adaptation to changes in the technological landscape.

2. Samsung exhibits exceptionally high innovation activity, combining internal development, global knowledge management, open innovation, and technological integration. This strategy ensures leadership across various sectors and enables the company to respond swiftly to changes in the technological environment and market demands.

3. Tesla Inc. showed significant financial growth between 2020 and 2023, reaching peak profitability in 2023. However, in 2024, the company faced challenges that led to a decline in profit despite stable revenue. This underscores

the importance of adapting to market conditions and managing costs effectively to maintain financial stability amid rising competition.

Among the key directions for improving the innovation development of international companies today are the following: digital transformation – using technologies such as AI, big data, IoT, and cloud computing to automate processes, accelerate the innovation cycle, and increase flexibility; open innovation ecosystem – collaboration with external partners (startups, universities) to enrich sources of ideas and accelerate innovation; innovative corporate culture – creating an environment that supports creativity, tolerance for mistakes, and initiative; investment in human capital – continuous learning, development of digital and leadership skills, and the formation of multidisciplinary teams; global innovation coordination – combining centralized strategic management with local adaptation through global R&D networks; and innovation for sustainable development – integrating environmental, social, and governance (ESG) principles into business models to create long-term value.

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УПРАВЛІНСЬКІ ТА ФІНАНСОВІ АСПЕКТИ ІННОВАЦІЙНОЇ ДІЯЛЬНОСТІ МІЖНАРОДНИХ КОМПАНІЙ: АНАЛІЗ КЕЙСІВ APPLE, GOOGLE, SAMSUNG ТА TESLA

В сту . Актуальність дослідження полягає в аналізі інновацій із позиції ключового чинника конкурентоспроможності в умовах глобалізації, розглядаючи сучасних підходів до організації інноваційної діяльності, а також особливостей реалізації інноваційної стратегії в провідних транснаціональних корпораціях. Метою дослідження є теоретичне обґрунтування та практичний аналіз особливостей управління інноваціями в міжнародних компаніях. Об'єктом дослідження виступають процеси управління інноваційною діяльністю у міжнародних компаніях. Предметом дослідження є підходи та інструменти управління інноваціями в транснаціональних корпораціях та інших міжнародних бізнес-структурках.

М е т о д и . Для досягнення поставленої мети використано загальнонаукові та спеціалізовані методи, зокрема, узагальнення та систематизація, кейс-стаді, порівняльний аналіз і контент-аналіз.

Р е з у л ь т а т и . На основі відкритих аналітичних джерел здійснено оцінювання рівня інноваційної активності компаній Apple, Google, Samsung та Tesla, що дозволило виявити спільні риси та відмінності у їхніх інноваційних моделях.

В и с н о в к и . Обґрунтовано напрями вдосконалення системи управління інноваціями в міжнародних компаніях, зокрема запропоновано шляхи підвищення адаптивності, відкритості до змін та інтеграції цифрових технологій у процеси інноваційного розвитку.

К л ю ч о в і с л о в а : інновації, міжнародна компанія, ШІ, інноваційна модель, ефективність, управління інноваційною діяльністю.

Автори заявляють про відсутність конфлікту інтересів. Спонсори не брали участі в розробленні дослідження; у зборі, аналізі чи інтерпретації даних; у написанні рукопису; в рішенні про публікацію результатів.

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