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ANALYZING THE FACTORS OF FORMATION AND POSITIONING OF BRAND IN INTERNATIONAL MARKETS BY THE ATTRIBUTE OF INNOVATIVENESS

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Podorozhna M. R. Analyzing the Factors of Formation and Positioning of Brand in International Markets by the Attribute of Innovativeness

In the study of world development along with scientific and technological processes, analysts' attention is focused on the cause-and-effect relationships between global changes at the macroeconomic level (international economic integration, economic growth and crises, competition, maturation and emergence of new markets) and innovations, technical changes. This necessitates consideration of the impact of technological, systemically integrating, market, political and cultural changes on business systems, their consequences regarding the emergence of new forms and methods of organization, management, interaction, cooperation at the global, interregional and national levels. The results of the analysis of global brand ratings confirm that companies that give preference to innovation, digitalization and smartization of business processes, development and implementation of new business models, create new markets and new revenue sources, lead the competition in international markets, and widen the gap with less successful competitors. The article develops methodical support for the analysis of global brands by stages-tasks: the common attributes of global brands are defined; a system of indicators for calculating an integral indicator for assessing the company's brand has been formed; models of dependence between the integral indicator and the ratings of the global brand and the company's innovativeness have been built. To calculate the integral indicator of globality and innovativeness of the company's brand, the following indicators were used: value of equity, current assets, operating and net profit, share price, sales income, goodwill.

Keywords: *global brands, innovativeness, digitalization, sustainability trends, analysis, rating, attribute, integral indicator.*
Fig.: *9.* ***Tabl.:*** *6.* ***Formulae:*** *6.* ***Bibl.:*** *19.*

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Подорожна М. Р. Аналіз факторів формування та позиціонування бренду на міжнародних ринках за атрибутом інноваційності

У дослідженні світового розвитку та науково-технічних процесів увага аналітиків фокусується на причинно-наслідкових взаємозв'язках між глобальними змінами на макроекономічному рівні (міжнародна економічна інтеграція, економічні зростання та кризи, конкуренція, дозрівання та поява нових ринків) та інноваціями, технічними змінами. Це обумовлює необхідність розгляду впливу технологічних, системно інтеграційних, ринкових, політичних і культурних змін на бізнес-системи, їх наслідків щодо появи нових форм і способів організації, управління, взаємодії, співпраці на глобальному, міжрегіональному та національному рівнях. Результати аналізу рейтингів глобальних брендів підтверджують, що компанії, які віддають переваги інноваціям, цифровізації та смартизації бізнес-процесів, розробці та реалізації нових бізнес-моделей, формують нові ринки та створюють нові джерела доходу, займають лідерські конкурентні позиції на міжнародних ринках і збільшують розрив із менш здатними до успіху конкурентами. У статті розроблено методичне забезпечення аналізу глобальних брендів за етапами-завданнями: визначено спільні атрибути глобальних брендів; сформовано систему показників для розрахунку інтегрального показника для оцінювання бренду компанії; побудовано моделі залежності між інтегральним показником і рейтингами глобальності бренду та інноваційності компанії. Для розрахунку інтегрального показника глобальності та інноваційності бренду компанії використано показники: вартості власного капіталу, оборотні активи, операційний і чистий прибуток, вартість акцій, дохід від продажу, гудвіл.

Ключові слова: *глобальні бренди, інноваційність, цифровіація, тенденції сталого розвитку, аналіз, рейтинг, атрибут, інтегральний показник.*
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Scientific and technological progress is an objective phenomenon caused by a number of reasons: the growth of the culture of society and the increase in consumer requirements for the quality and variety of goods and services; competition of producers in order to maintain their positions in the market and obtain rent; both the resource and ecological constraints associated with the depletion of traditional resources and the need to preserve the environment; the imbalance of development and the progress in related industries; the countries with which this economic system cooperates; the

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development of science according to the internal laws of cognition of both the natural and social phenomena. Its consequences lead to the emergence of new ideas and approaches in management, necessitate the formation of adequate mechanisms and growth strategies. The solution of the mentioned problems is impossible without taking into account the results of research of well-known consulting agencies (BCG, Forbes, Interbrand), studying the experience of advanced practices in the formation and positioning of their own brands by global companies.

The *aim* of the article is to develop methodological support for the analysis and modeling of factors of formation and positioning of brand on the example of the world's leading companies in international markets by the attribute of innovativeness.

The analysis of global brands is carried out on the example of the world leading companies that have its own history, name and a high level of ratings with regard to innovation and globality. The ranking of companies by innovativeness was compiled by the Boston consulting group (BCG), specializing in management consulting, one of the «big three» management consulting companies. The globality ranking was compiled by the consulting agency Interbrand, which is recognized in the field of branding (rebranding, naming) and is known for its annual studies [1].

Companies in the global brands ranking are evaluated according to the following criteria: trade or provision of services by the company on at least three continents; receiving at least a third of the company's revenue outside its home country; financial results – growth of capitalization, growth of profit, stability of financial position, increase in share price, etc.; increasing the attractiveness of goods or services for customers and buyers; strengthening the competitiveness of the company's brand. These criteria are mandatory for brands that have global status according to the S&P 1200 Global index. However, in addition to the defined elements, there are a number of other restrictions: the brand must have a significant presence in Asia, Europe and North America, as well as geographically cover the emerging markets; economic profit in the long run should provide income that exceeds the cost of capital of the brand; the brand must have a public profile and sufficient popularity in the world's largest economies; the brand strength score must be 50 or higher. These requirements are necessary for the brand to be global, profitable, visible, and relatively transparent in terms of financial performance information. This provision explains the exclusion of some well-known brands that could otherwise appear in the ranking [6].

The competitive strength of brand or the brand competitiveness is a company's ability to sell products and services in a market that is filled with similar products and services. The competitiveness of a company's brand determines its ability to withstand competition in the market. To assess the competitive strength of the brand, methods of strategic, marketing, financial and economic analysis of the company are used, in particular: SWOT-analysis, BCG matrix, McKinsey matrix, PEST-analysis, analysis of Porter's 5 forces.

Of the top ten positions, five companies represent the IT industry. According to the research of the consulting company Fast Company in 2021, ratings of the most innovative companies in the world were determined [3] (*Tbl. 1*). Based on the results of the analysis of the ranked global and innovative positions of companies, it is determined that the primacy of the position in both rankings belongs to companies in the IT industry sector. These companies are presented and operated in high-tech areas, the signs of their leadership are as follows: a high level of quality of services and products, compliance with global environmental and social standards, active digitalization of all business processes, innovativeness of business models, applied forms of cooperation, partnership, introduction of new technologies.

According to the above data, it can be concluded that the rankings of innovative and global ones include companies that are able to compete with each other, have a similar set of characteristics, which allows researchers to identify brands that are «established and can keep up with the times», «meet the requirements of sustainable development», or «created for the future». Such characteristics reflect «excellent performance», «resilience to shocks», «the ability to use innovation for company's growth and value creation» [9]. An important stage for the analysis is the selection of indicators [16–18] (*Tbl. 2*).

Equity is one of the indicators of financial condition, which is represented by the totality of funds invested in an organization by its owners or shareholders. The cost of equity capital of an enterprise depends on the factors that affect the risk and return on investment:

- increasing the cost of equity reduces investment risks – during periods of economic downturn and volatility, investors may demand higher returns for investments, which can increase the cost of equity. In contrast, during periods of economic growth and stability, the cost of equity may be lower;
- a company's capital structure and financial performance indicators can also affect the cost of equity – if the level of debt obligations is high, investors may consider the company riskier and demand higher returns;
- financial sustainability also affects the cost of equity.

Current assets are an important part of the company's resources, significantly affecting the volume of production, profitability and solvency. The condition for the rational management of current assets is the liquidation of inventories of materials; improvement of the rationing system; improving the organization of supplies.

Table 1

Leaders in the ranking among innovative companies in the world according to Fast Company (2021)

Company by rating	Industry/Market
1. Moderna – a biotechnology company that develops vaccines and medicines. Known for development of an easily transportable vaccine against COVID-19	Pharmaceuticals, biotechnology market
2. Pfizer (in partnership with BioNTech) – the pharmaceutical company that developed the world's first vaccine against COVID-19	Pharmaceuticals
3. Shopify – the service that helped small stores to go online and work during quarantine. In 2020, the company's revenue increased by 86%	ICT technologies in the service industry
4. SpaceX – a space transport services company, also provider of Starlink high-speed internet service. The first private company to send NASA astronauts to the International Space Station (the first US crew in the last 10 years)	Aerospace
5. SpringHill Company – the film and series production company that promotes content with a message of social justice. In particular, the company works with artists who are ignored by the film industry	Entertainment industry based on the principles of social responsibility
6. Epic Games – a developer of mobile games in which there is an autonomous currency, own economy and culture. The company sees the future of social media not in traditional platforms, but in the gaming environment. One of the most famous games by the company is Fortnite	ICT technologies in the entertainment industry
7. Netflix – the world's largest streaming service, with over 200 million subscribers. In particular, the company highlights the problems of black people and support them through their products, especially after the George Floyd protests	ICT technologies in the service industry
8. Tock – delivery service and pickup of orders from restaurants. The company started a platform that helped restaurants and coffee shops do business under quarantine conditions	ICT technologies in the restaurant business
9. Microsoft – a software and hardware development company, one of the largest corporations in the world. The company helped create an emergency and disaster response system	ICT technologies
10. Graphika – a research company that, among other things, tracks fake information. Among other achievements, Graphika helped prevent russian influence on US elections and expose global disinformation related to COVID-19	Consulting, analytics

Table 2

The indicators for analyzing and evaluating the competitiveness of brands of the world's leading companies

Indicator	Explanation
Equity	Attractiveness for investors and creditors of the company.
Current assets	Advantage over competitors in terms of assortment. Diversification of activities in international markets
Operating profit	An increase in money flows indicates an advantage over competitors in the popularity of the brand. Shortening the period from development to market launch of a new product
Net profit	Sustainable financial position of the company in international markets. Increase in market share
Stock price	Testifies to the quality of corporate governance of the company. Advantage over competitors in terms of customer service and product quality
Sales revenue	Efficiency of management, managerial business processes. An increase in diversification of revenue generation indicates leadership in the company's technology and innovation
Goodwill	An indicator of the company's business reputation, the level of management competence of the company. Goodwill belongs to the sphere of intangible assets

Operating profit shows how much of a company's turnover will eventually become profit. For investors, a company that generates a growing operating profit is considered favorable because it means that the company's management generates more revenue by controlling costs, production costs, and overhead.

Net profit is the funds received as a result of commercial and economic activities that remain on the company's account being the results of all expenses, payment of debt obligations and taxes. Depending on the size of the net profit, the company can count on attracting investors and obtaining loans. The proceeds can be used

to expand the business, develop new markets, introduce innovative technologies, maintain and modernize production, and attract valuable specialists to projects. The amount of net profit is used to assess the company's prospects for its development and growth, its solvency, increase in the value of shares and dividends.

The functions of estimating net profit [13] in a company are:

- *estimating or control function* – it can be used to determine the profitability of the organization;
- *capital-forming function* – the proceeds replenish the capital, the company can reduce the need for loans and third-party investments;
- *compensatory and guarantee function* – the company creates its reserves and funds, thanks to which it can work reliably;
- *stimulating function* – an increase in the indicator motivates to increase the rationality of the distribution and use of resources, to minimize costs;
- *image function* – the net profit of the company is evaluated by third-party experts in terms of attractiveness as an object of investment;
- *innovative function* – having free cash resources on the account, the company can improve the production fund, change for the better the staff, increase the salaries of employees, introduce new services and technologies.

Shares of a company are securities confirming the ownership of a shared part in a joint-stock company. An investor who buys a share becomes a co-owner of the business, receives the rights to a portion of its profits and to participation in the general meeting of shareholders. Investors buy stocks to make money on their growth or on dividends. When a company needs money for development, it can take a loan from a bank or issue shares. Stocks are considered a risky tool: you can build hypotheses and forecasts, but it is difficult to accurately predict whether the company will grow or not. The stock price can be influenced by anything: news in the media, a new law, the arrival or departure of a competitor, investors' expectations, company reports, politics, and even rumors. Certainly it may turn out the opposite: the company will not receive the projected income or the project will not live up to expectations at all. Then the value of the shares will fall – investors will not make profits and may lose the money invested.

Income from the sales testifies to the success of the company, is a criterion for the quality of management for business partners, creditors, and investors. These funds are usually invested in the development of the business and maintaining its viability. The receipt of income from sales with delays leads to negative consequences: losses for the company; decrease in profits; payment of fines accrued for failure to meet the terms of credit payments; breach of contractual obligations to business partners; inability to pay bills.

Goodwill is a measure of a company's business reputation, used in trading operations to establish the company's market value (excluding the book value of its equity). Goodwill is also the total amount of potential benefit that can be obtained by combining several companies. This benefit can be expressed as: cost savings; increased market share; increase in the number of concluded transactions; access to unique resources, etc. In the field of marketing, goodwill refers directly to the brand, its trademark, business connections won by management over the years [17].

If a company is especially popular among the audience against the background of competitors, it means that its goodwill is more expensive (or stronger). The loyalty of brand users has a positive effect on the company's goodwill, increasing its level.

Like any other indicator, goodwill can be negative or positive. Positive goodwill is often seen as a premium on the cost of a goods or service paid by consumers, while negative goodwill is a discount on a company's products. Negative business reputation should be reflected in the company's profit and loss statements.

Goodwill impairment can be both real and manipulative on the part of companies. Top management can take such steps to reduce net profit without real losses.

As goodwill plays an increasingly important role in the value of companies, investors need to evaluate it not only according to financial statements, but also according to the methods presented below:

- *comparative method.* The valuation is carried out in comparison with a company of similar size and value of assets;
- *costs method.* The calculation is based on the company's costs for advertising campaigns, technology implementation, personnel training, etc.;
- *indicator method.* The indicators of business activity of the issuer of securities are taken into account;
- *additional profits.* The assessment is based on a comparison of prices of two similar products, one of which is more expensive due to the advantages of the brand.

For the analysis and evaluation of global brands, companies with leading positions in the S&P 1200 Global Index ranking were selected, such as: Apple, Amazon, Google, IBM, Mercedes, Meta, Microsoft, Samsung, Siemens, Toyota [7]. These leading companies seek to «acquire innovative technologies, capabilities, and talents», demonstrate a willingness to rapidly innovate (products, technologies, business models) and use a wide range of strategic tools to strengthen their platforms and practices [19]. According to BCG's research, these companies are «much more aggressive in their use of M&A» due to increased access to innovative technologies and processes, the use of expert innovation analysts to select targets, leaders and employees with the ability

to innovate [9]. To carry out analyses and build models of dependence of rating indices on the integral indicator (*Tbl. 3*), data from the financial statements of companies for the period from 2010 to 2022 were used [2; 5; 11; 18].

Table 3

The functions of dependence of the innovativeness rating (I_1) and the globality index (I_2) of the company on the integral indicator of the company's brand

Company (integral indicator)	The functions of dependence
1	2
Apple, (Appl)	$I_{1appl} = (0.969 + 0.42 \cdot Appl^2)^2$ $I_{2appl} = -4.664 + \frac{2.699}{Appl}$
Amazon (Amaz)	$I_{1amaz} = (2.941 - 5.385 \cdot Amaz^2)^2$ $I_{2amaz} = \frac{1}{-0.0151143 + 1.82762 \cdot Amaz^2}$
GOOGLE (Gg)	$I_{1gg} \quad \frac{1}{0.427 + 0.64 \cdot Gg^2}$ $I_{2gg} = 2.589 + 1.539 \cdot Gg^2$
IBM (Ibm)	$I_{1ibm} = \sqrt{-27.452 + \frac{22.848}{Ibm}}$ $I_{2ibm} = \sqrt{-63.42 + \frac{34.739}{Ibm}}$
Mercedes-Benz Group AG (Mrc)	$I_{1mrc} = \left(3.197 + \frac{0.109}{Mrc}\right)^e$ $I_{2mrc} = \sqrt{113.526 - 87.174 \cdot Mrc^2}$
META (Met)	$I_{1met} = \sqrt{-797.274 + \frac{540.227}{Met}}$ $I_{2met} = \left(0.968 + \frac{0.973}{Met}\right)^e$
MICROSOFT (Mcr)	$I_{1mcr} = \left(-1.228 + \frac{1.226}{Mcr}\right)^e$ $I_{2mcr} = \left(0.583 + \frac{0.69}{Mcr}\right)^2$
SAMSUNG (Sms)	$I_{1sms} = \sqrt{-60.709 + \frac{47.24}{Sms}}$ $I_{2sms} = \sqrt{-105.704 + \frac{80.962}{Sms}}$

End of the Tbl. 3

1	2
SIEMENS (Sims)	$I_{1sims} = \sqrt{1072.67 - 2217.51 \cdot Sims^2}$ $I_{2sims} = \sqrt{2387.35 + \frac{125.545}{Sims}}$
TOYOTA (Toyt)	$I_{1toyt} = \frac{1}{-0.032 - 0.182 \cdot \ln Toyt}$ $I_{2toyt} = \sqrt{19.882 + \frac{19.098}{Toyt}}$

Microsoft is one of the representatives of the global IT sector along with the world's leading companies Apple, Google (Alphabet), and Amazon. The popularity of the Microsoft brand was ensured by the operating systems of the Windows family, as well as software for working with documents of the Microsoft Office family. Today, the company occupies the first positions in world rankings due to the implementation of the M&A strategy, partnerships and the creation of alliances to promote and intensify innovation activities. The most recent example is the company's investment in OpenAI and the integration of ChatGPT into numerous Microsoft product offerings [8].

The dynamics of the integral indicator of the Microsoft brand shows a downward trend; the profiles of the rate of change in equity and income actually coincide (*Fig. 1*); at this, the company's position in the innovation ranking is weaker in 2022 (5th position) than the Global Brand ranking position (2nd position), which has remained high since 2019 (*Tbl. 4*). This is due, first of all, to the global phenomenon of digitalization. The model of correlation between the innovation ranking index (I_{1mcr}) and the integral index (*MCR*) for Microsoft is as follows:

$$I_{1mcr} = \left(-1.228 + \frac{1.266}{Mcr}\right)^e.$$

The model is statistically qualitative, as evidenced by the coefficient of determination R^2 = 83.63% and the Fisher criterion F = 56.23, p – *Value* = 0.00. The change in Microsoft's position in the ranking of innovative companies by 83.63% is explained by the change in the integral indicator of the Microsoft brand (*MCR*) (*Fig. 2*).

The impact of Microsoft 's integral indicator (MCR) on the Global Brand ranking (I_{2mcr}) is as follows:

$$I_{2mcr} = \left(0.583 + \frac{0.69}{Mcr}\right)^2.$$

The model is statistically qualitative, as evidenced by the coefficient of determination R^2 = 74.06% and the Fisher criterion F = 31.41, p – *Value* = 0.00. The 74.06% change in Microsoft's position in the Global Brand rank-

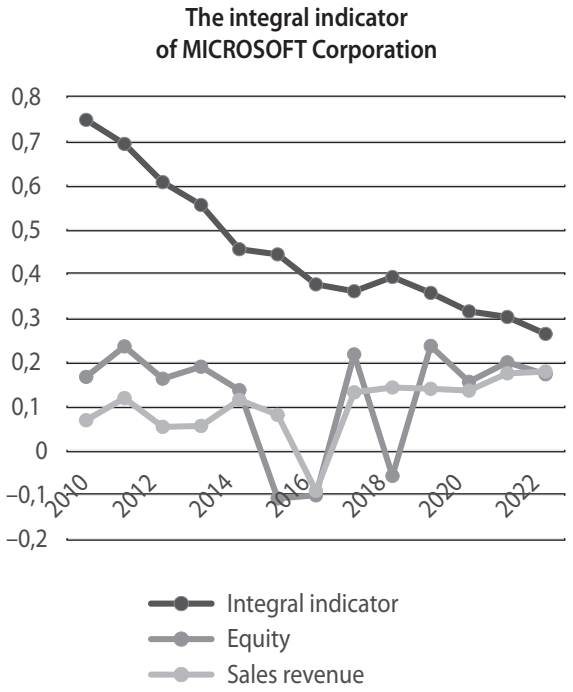

Fig. 1. The dynamics of the integral indicator, the rate of changes in equity and in revenue from the sales by Microsoft

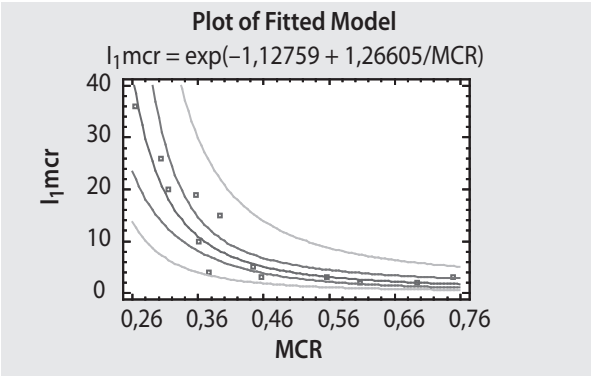

Fig. 2. Correlation between the innovation ranking indicator (I_{1mcr}) and the integral indicator for Microsoft Company (MCR)

ing is due to the change in the Microsoft brand integral indicator (*MCR*) (*Fig. 3*).

One of the representatives of companies in the IT sector is the South Korean multinational company Samsung, which is an example of leadership in commercialization, as it uses all available tools to increase productivity through innovation at many stages of the value chain [10]. Samsung regularly brings innovative technologies to markets owing to its focus on the level of innovation component plus the large-scale production. Over the years, as its core products and markets (e. g., smartphones and TVs) matured, Samsung, which has become known for its suite of innovative products, has proven to be competent in promoting adjacent markets and developing new business models. Samsung innovates in two ways: at the level of improving existing innovative technologies, such as smartphones, and the introduction of affordable innovative products through mass production, cost reduction, and technological advancements. The company is a global innovation leader in R&D, patents, and innovative vehicles such as laboratories and incubators [11]. The company invests heavily in research and development, spending more than $ 17 billion (9% of sales) [9]. In 2021 alone, about 10.000 researchers and developers were involved in the development of future technologies, developing a robust patent portfolio: 6.300 patents were granted in 2022, the largest number in the United States. As Samsung develops new products and looks for new markets, it has shifted from displays and electronic components to robotics, smart home products, car connectivity, medical equipment, virtual assistants, and 5G. The company has captured

Table 4

Microsoft's positions

Year	Position in the ranking of innovative companies	Position in the ranking of global brands
2022	5	2
2021	5	2
2020	2	3
2019	4	3
2018	4	4
2017	4	4
2016	3	3
2015	4	4
2014	4	4
2013	4	5
2012	4	5
2011	4	5
2010	3	3

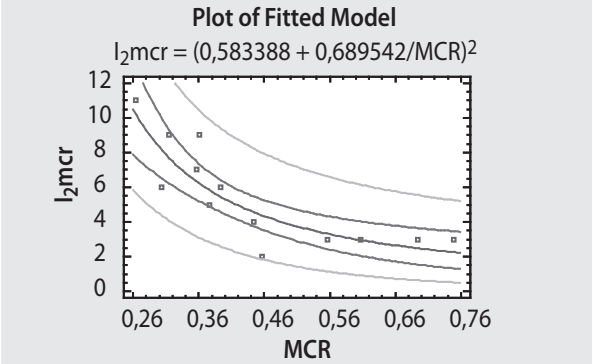

Fig. 3. Correlation between the Global Ranking indicator (I_{2mcr}) and the integral indicator for Microsoft Company (MCR)

significant market shares of smartphones, QLED TVs, and IoT products. Thus, there is a correlation between innovation and the competitive advantage of the company. «The winners have realized that it is necessary to invest in their innovative mechanisms. They will continue to increase the advantage until other lagging companies reset their own priorities and investments for the future» [9].

The dynamics of the Samsung brand indicator demonstrates a downward trend; in accordance with the trends in changes in equity capital and income, it should be noted that the rate of capitalization over the past year exceeds the rate of changes in income (*Fig. 4*), which is associated with an increase in the risks of losing competitive positions in international markets; at this, the company's position in the innovation ranking is weaker in 2022 (7th position) than the Global Brand ranking position (5th position), which has remained quite high since 2019 (*Tbl. 5*).

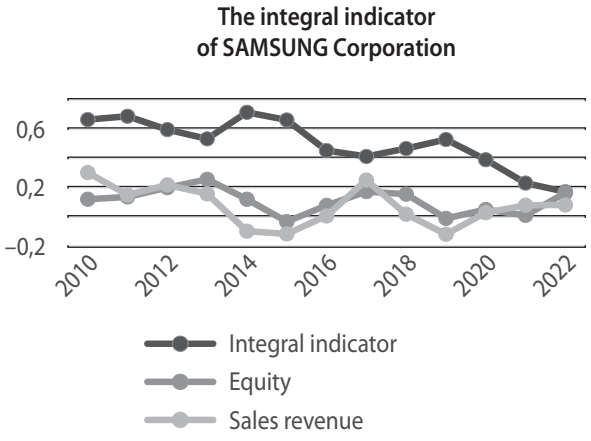

Fig. 4. The dynamics of the integral indicator, equity and sales revenue by Samsung

Table 5

Samsung's positions

Year	Position in the ranking of innovative companies	Position in the ranking of global brands
2022	7	5
2021	6	5
2020	6	5
2019	5	6
2018	5	6
2017	5	6
2016	7	7
2015	5	7
2014	3	7
2013	2	8
2012	3	9
2011	11	17
2010	16	19

The model of correlation between the innovation ranking indicator (I_{1sms}) and the brand integral indicator for Samsung (*Sms*) is as follows:

$$I_{1sms} = \sqrt{-60.709 + \frac{47.24}{Sms}}.$$

The constructed model is statistically qualitative, as evidenced by the coefficient of determination $R^2 = 81.26\%$ and the Fisher criterion $F = 47.72$, $p - Value = 0.0$. The change in Samsung's position in the ranking of innovative companies by 81.26% is explained by the change in the Samsung brand integral indicator (*Sms*) (*Fig. 5*).

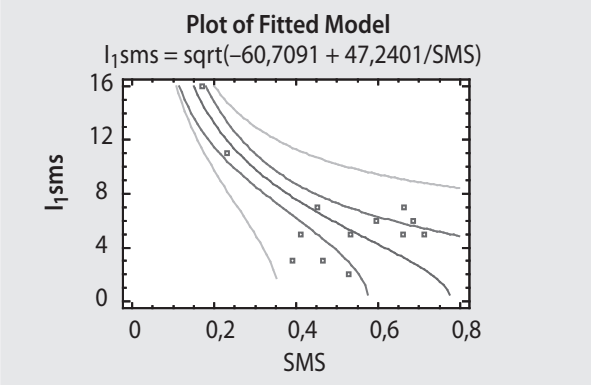

Fig. 5. Correlation between the innovation ranking indicator (I_{1sms}) and the Samsung (Sms) brand integral indicator

The impact of Samsung's (*Sms*) integrated brand indicator on the Global Brand ranking (I_{2sms}) is as follows:

$$I_{2sms} = \sqrt{-105.704 + \frac{80.962}{Sms}}.$$

The model is statistically qualitative, as evidenced by the coefficient of determination $R^2 = 95.1\%$ and the Fisher criterion $F = 213.48$, $p - Value = 0.00$. The 95.1% change in Samsung's position in the Global Brand ranking is due to a change in Samsung's (*Sms*) brand integral indicator (*Fig. 6*).

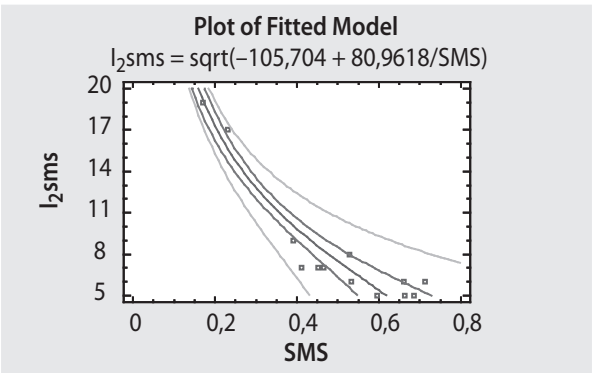

Fig. 6. Correlation between the Global Ranking indicator (I_{2sms}) and the Samsung (Sms) brand integral indicator

An another example of best practices is from Siemens company using the M&A tool to increase innovation activities. In 2018, the company implemented a business model that separated 25% of Siemens Healthineers medical business to foster entrepreneurial independence. Siemens Healthineers has taken advantage of the flexibility to make big bets on healthcare and continued this during the pandemic. In August 2020, the company announced the acquisition of long-standing partner Varian Medical Systems for $16.4 billion. The acquisition of Varian positions Siemens Healthineers as the player with the largest number of comprehensively integrated cancer care portfolios, through screening, diagnosis, treatment. This allowed the company to materialize the synergy of innovation, combining Siemens image processing technology with Varian therapeutic technology and artificial intelligence (AI) to improve existing product and create new ones. For example, a new radiotherapy product from Siemens Healthineers combines the ability of AI-assisted imaging to perform rapid assessments and real-time treatment optimization while patients receive therapy [9].

The global presence of the Siemens brand is ensured by the company's production sites, which are located mainly in the countries of the European Union and the NAFTA area. The concern's factories have repeatedly received the prestigious «Best Factory in Europe» award, which is presented by WHU – Otto Beisheim School of Management та INSEAD. The winners of the award were such factories as Siemens Healthcare, Werk Forchheim (2009), Siemens AG, Automation & Drives, Elektronikwerk Amberg (2007), and Siemens AG, Automation & Drives, Gerätewerk Erlangen (2004) [12].

The dynamics of the integral indicator of the Siemens brand in recent years (2017–2022) fluctuates in the range of 0.2–0.5; profiles of the rate of changes in equity and income actually coincide during the pandemic and afterwards, there was a significant increase in the company's capitalization and profitability (*Fig. 7*); at this, the company's position in the innovation ranking is stronger in 2022 (10^{th} position) than the Global Brand ranking position (55^{th} position), due to the company's innovations in the healthcare sector since 2019 and the implementation of an innovative business model (*Tbl. 6*).

Table 6

Siemens' positions

Year	Position in the ranking of innovative companies	Position in the ranking of global brands
2022	10	55
2021	20	60
2020	11	61
2019	21	58
2018	16	56
2017	21	50
2016	45	52
2015	30	53
2014	15	49
2013	29	45
2012	26	51
2011	34	46
2010	51	49

The model of correlation between the innovation ranking indicator (I_{1sims}) and the Siemens (*SIMS*) brand integral indicator is as follows:

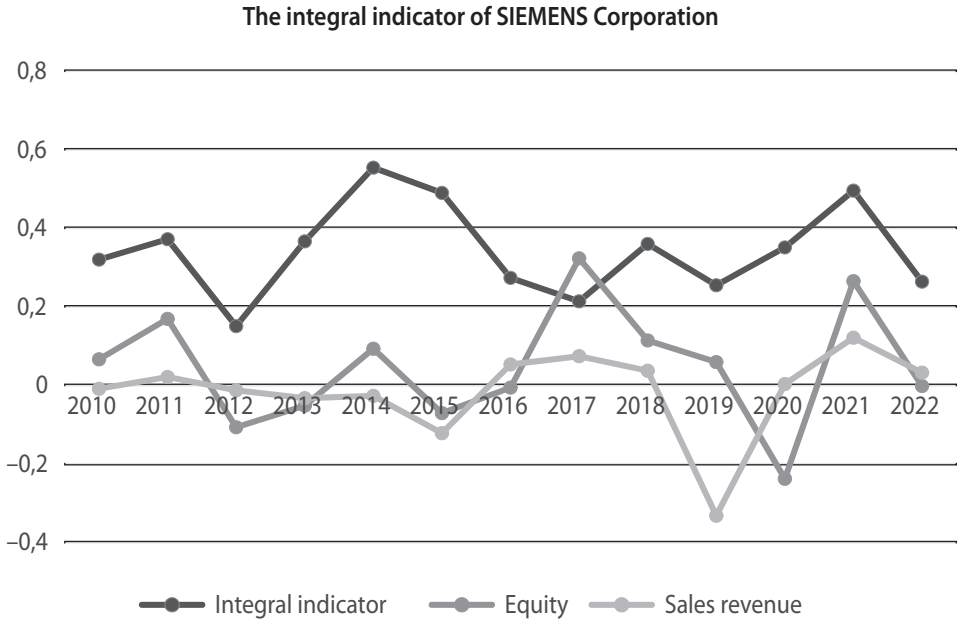

Fig. 7. The dynamics of the integral indicator, equity and sales revenue of Siemens company

$$I_{1sims} = \sqrt{1072.67 - 2217.51 \cdot Sims^2}.$$

The model is statistically non-qualitative, as evidenced by the coefficient of determination R^2 = 6.22% and the Fisher criterion F = 00.73, p – $Value$ = 0.41. The change in Siemens' position in the ranking of innovative companies by 6.22% is explained by a change in the integral indicator of Siemens (*SIMS*) brand (*Fig. 8*).

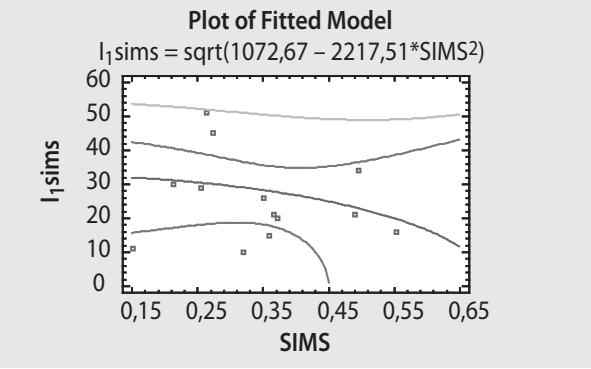

Fig. 8. Correlation between the innovation ranking indicator (I_{1sims}) and the Siemens (SIMS) brand integral indicator

The impact of the Siemens (SIMS) integrated brand indicator on the Global Brand ranking (I_{2sims}) is as follows:

$$I_{2sims} = \sqrt{2387,35 + 125,545 / Sims}.$$

The model is statistically non-qualitative, as evidenced by the coefficient of determination R^2 = 9.26% and the Fisher criterion F = 1.12, p – $Value$ = 0.31. The 9.26% change in Siemens' position in the Global Brand ranking is due to a change in the integrated brand indicator (*SIMS*) (*Fig. 9*).

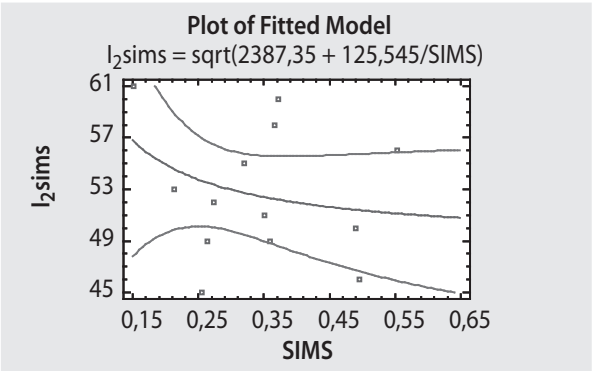

Fig. 9. Correlation between the Global Ranking indicator (I_{2sims}) and the Siemens (SIMS) brand integral indicator

According to the results of the analysis, it is determined that successful companies in international markets have a common set of innovative attributes of global brands that correspond to the signs of strategic thinking and innovation culture, high efficiency and resistance to radical changes, speed in the introduction of innovations and the creation of unique values in products and services.

CONCLUSIONS

The article proves that the potential recession of 2023 has affected the behavior of leading innovative companies, strengthened their readiness for innovative changes – to develop innovative products, processes and business models that can ensure competitiveness, influence international markets and occupy sustainable leadership positions.

Despite global economic uncertainty, innovation has become a strategic and corporate priority for companies in 2023, as evidenced by best practices in the development and implementation of innovative technologies and products by leading companies in global and international markets.

Thus, the leading companies confirmed the implementation of strategic plans regarding: recognition of innovations as a priority, investment in innovative developments, formation of readiness to transform planned investments into results. It should be noted that while all companies, on average, hope to allocate more money for incremental innovation, leading companies are willing to spend one-third of the costs of developing disruptive innovations.

Companies' willingness is evident in the use of a wide range of strategic tools to strengthen their innovation platforms and practices. They get opportunities and experience from the outside, and possess the systems to use these tools. These companies are much more aggressive in their use of M&A, focused on innovative technologies or processes, engaging leaders and employees who demonstrate the ability to innovate, and more likely to engage innovation experts to analyze and select targets. ■

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