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FINANCIAL MARKET'S ROLE IN DETERMINING THE VALUE OF INTERNATIONAL BUSINESS INTANGIBLE ASSETS

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Abstract. As humanity moves into the era of digital technologies and the knowledge economy, the importance of intangible assets in the global economy and international business has been increasingly recognised. Amid the forced virtual communication resulting from the lingering effects of the COVID-19 pandemic, as well as the social conflicts and cyber-attacks associated with Russia's hybrid war in Ukraine, the value of intangible assets such as reputation, investor and customer loyalty, consumer data, branding, intellectual expertise and copyrights has taken on new importance and relevance. The *purpose of the research* is to improve the conceptual and methodological foundations for determining the nature and value of intangible assets of leading international companies, in particular, their undisclosed components, based on the use of financial market data. *Research methodology*. The study is based on systems analysis, analysis and synthesis, statistical and graphical methods. These methods were used primarily to identify the structure of the intangible assets of leading international companies, highlighting the interrelationships between the formation of the gap between the external (financial market) and internal (balance sheet) value of companies' shares and the value of their intangible assets. The publication supports the assumption that the identified gap between the market capitalisation and shareholder's equity of an individual company represents the undisclosed part of intangible assets that is not available in the company's official statements. This gap includes such components as reputation, trust and loyalty of customers and investors, brand strength, etc. Given the dynamic development of the international business sphere, the critical importance of flexibility, speed of decision-making, and the need for investors to obtain the most up-to-date information about the company's potential, including the value of its intangible assets, the proposed approach can serve as an effective decision-making tool and an alternative means of determining the real value of a company's intangible assets.

Keywords: financial market, global value chains, intangible assets, international business, multinational corporations.

JEL Classification: G15, F61, M41, F23

1. Introduction

Today's world is undergoing rapid and dramatic changes, characterised by dematerialisation, digitalisation and the increasing complexity of global value chains (GVCs). The current phenomenon, described as "the rise of abstract and intangible forms of capital" (Bryan, Rafferty and Wigan, 2022) or "invisible assets" (Itami and Roehl, 1991), is becoming a critical factor for competitiveness in the global marketplace. Scholars refer to this transformation as the "learning economy" or "dematerialised economy" (Hazan et al., 2021) and note that "intangible assets have become a prominent feature of the modern business world and are accumulating at a faster rate than tangible assets due to their scalability" (OECD, 2020).

The role of intangibles in the global economy and international business has been extensively studied by contemporary scholars. Nevertheless, most of the focus has been on estimating the returns to intangible capital within global value chains and the principles

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of value allocation across countries, industries and firms. However, the valuation of intangibles within the international business system and within individual firms remains unresolved. The purpose of this study is to determine the value of the intangible assets of leading modern companies worldwide, particularly their undisclosed components. To achieve this, the study will:

1. Examine current conceptual approaches and research directions in this field.
2. Outline key trends in the formation of intangible capital in the global economy and international business.
3. Identify the world's leading or "Most Intangible" companies based on key criteria of intangible capital concentration, such as "Brand Value" and "R&D and Innovative Capacity".
4. Analyse data on the value of their goodwill, intangible assets, and research and development expenses.
5. Identify potential correlations between indicators of goodwill and intangible assets and net income.
6. Calculate the proportion of goodwill and intangible assets in total assets.
7. Perform a comparative analysis between market share prices and the book value of company shares to identify the real undiscovered portion of the companies' intangible assets.

2. Analysis of Recent Research and Publications

The importance of intangibles in the global economy and international business has been extensively studied by many scholars. However, this concept cannot be clearly separated from the field of global value chain research. The term "commodity chain" was first introduced by Hopkins and Wallerstein (1977) and defined as "a network of work and production processes whose end result is a finished product". Subsequently, Porter (1990) developed the concept of the "firm's value chain", which refers to the interdependent types of firm activities that are linked in such a way that "the way one activity is carried out affects the cost or effectiveness of other activities".

The global value chain (GVC) framework introduced by Gereffi and Fernandez-Stark (2010) focused primarily on firm-level analysis to identify the different stages involved in producing a product or service and the costs associated with each component. GVCs can also be described as fragmented, step-by-step production processes that involve the international distribution of tasks and activities aimed at the effective transfer of core competencies, economies of scale and location economies (Mykhaylyna and Saienko, 2017).

Within the framework of global commodity chains (GCCs), Gereffi (1994) identified two different types: 1) "producer-driven commodity chains" (where the production process is controlled by large international corporations, typical of capital and technology-intensive industries such as automobiles, computers, aircraft, and electrical machinery); and 2) "buyer-driven commodity chains" (where large retailers and trading companies play a key role in creating decentralised production networks, characteristic of labour-intensive consumer goods industries such as apparel, footwear, toys, consumer electronics, household goods, and handicrafts).

The typology and structure of value chains was further developed within the well-known "Smiling Curve" concept introduced by Acer founder Shih (1996). Using Taiwan's IT industry as an example, Shih showed that "the system assembly business, which used to have the highest value added, has become the part with the lowest value added", shifting from the manufacturing stages to pre- and post-manufacturing services. This introduced the idea of the advantage of intangibles in value chains.

This concept spurred further research into the role of intangible assets within the "Smiling Curve" framework, highlighting their increasing importance at the beginning and end of the value chain and implying a shift in value added from high-technology, high-wage countries to low-technology, low-wage countries (Baldwin, Ito, and Sato, 2014).

The growing importance of intangibles in the global economy is reflected in a significant number of recent publications by international organisations and analytical centres. These publications address the returns to intangible capital in global value chains at the level of countries and industries (WTO, 2021; OECD, 2020; WIPO, 2017), assess the size of intangible assets at both the macro- and micro-levels (Ocean Tomo, 2020; Ponemon Institute, 2019), and explore the issues related to the accounting and reporting of intangible assets in international business (ACCA, 2023; Brand Finance. GIFT, 2023).

Contemporary authors extensively examine global value chains (GVCs) as mechanisms linking firms, networks and states. In the context of the growing importance of intangibles at the macro level, these discussions often focus on the principles of value-added distribution between developed and developing economies (Baldwin, Ito, and Sato, 2014) and the regulation of trade, investment, and intellectual property to enhance countries' returns to intangibles (Durand and Milberg, 2020).

Equally compelling is the micro-level approach, which emphasises the importance of a firm's "invisible assets" in developing successful strategies (Itami and Roehl, 1991). This approach introduces the concept

of "factoryless goods-producing firms" (Bernard and Fort, 2015), which design the products they sell and manage production activities globally. Much attention has been paid to assessing the role of intangible assets in increasing the value of certain firms, including fast-moving consumer goods (FMCG) firms (Kashkinbayev, Jaxybekova, Rustamov, and Zhaishylyk, 2023). In addition, the contribution of intangibles to the value chain, which ultimately generates revenue for the firm, is illustrated by well-known companies such as Apple (Xing and Detert, 2010), Sony, Honda, IBM and Volkswagen (Itami et al., 1991). The role of intangible capital in specific industries such as coffee, photovoltaics and smartphones is also examined (WIPO, 2017).

In the context of modern digital transformation, where "the productivity effect of GVCs is evident in capital-intensive and technology-intensive enterprises" (Ge, Fu, Xie, Liu, and Mo, 2018), particular importance is attached to attracting intangible assets related to R&D and closely linked to Industry 4.0 (AI, IoT), leveraging technological resources and capabilities (Castelo-Branco, Oliveira, Simoes-Coelho, and Portugal, 2022), and increasing the use of data, especially proprietary big data (Corrado, Haskel, Iommi, Jona-Lasinio, and Bontadini, 2023). In addition, the measurement of intangible assets, such as goodwill and firm reputation (Edi and Wati, 2022), is of particular research interest.

The **purpose of the study** is to improve the existing conceptual and methodological framework for determining the nature and value of intangible assets of leading international companies, in particular their undisclosed components, using financial market instruments.

3. Materials and Methodology

To clarify the role and significance of intangible assets in the activities of modern corporations in the field of international business, the following research areas and methods were used: analysis and synthesis – to systematise methodological approaches to defining corporate intangible assets and to identify the world's leading companies by the main categories of intangible assets. Economic-mathematical, statistical and graphical methods were used to select companies by certain indicators, in particular, by the amount of intangible assets reflected in official documents. These methods were also used to rank the companies studied by the share of goodwill and intangible assets in total assets, to compare the share of goodwill and intangible assets in total assets with the book and market value of the company's shares, and to identify trends in the persistence of the gap between the book and market value of the company's shares over time. At the last stage, a hypothesis was formulated about the suitability of intangible assets valuation through the company's market capitalisation.

In the current global context, where "trade is increasingly intangible" (WTO, 2021), the dominance of intangible assets in the global economy "increasingly shapes the distribution of income in GVCs" (OECD, 2020) and "changes the way market economy works" (Haskel and Westlake, 2018), laying the foundations for what has been called "intellectual monopoly capitalism" (Durand and Milberg, 2020). Among scholars, the growth of intangible capital is seen as "perhaps the most significant development in the industrial asset structure of the last quarter-century" (Bryan et al., 2022).

It is estimated that the share of total global investment in intangibles has increased by 29% over the past 25 years, showing resilience despite global economic uncertainty (Hazan et al., 2021). About 27% of income in manufacturing GVCs in OECD countries is attributable to intangible capital (OECD, 2020). The value of intangibles owned by the world's largest companies will increase by 8% to 61.9 trillion USD by 2023, almost three times the GDP of the United States, while the value of global tangible net assets remains stable (Brand Finance. GIFT, 2023). It is no surprise that intangible capital plays such a central role in modern international business, as it "accounts for a large part of what consumers pay for a product and determines which companies succeed in the marketplace" (WIPO, 2017). As a result, innovation has become a top business priority in 2023, with 79% of companies including it in their top three objectives (BCG, 2023). Major technological breakthroughs, including widespread digitisation and the development of artificial intelligence, continue to transform global business models and have a significant impact on these processes.

Conceptually, a notable shift occurred with the emergence of the "Smiling Curve" concept, where the importance of "pre- and post-production stages" (Shih, 1996) was increasingly recognised, shifting the focus to the intangible components of production. Originally developed to describe the Acer business model, the Smiling Curve framework reflects the processes of value distribution along the global value chain (GVC) typical of most international corporations. These companies secure monopolistic advantages and develop core competencies primarily through substantial capital investment in research and development (R&D) and design at the beginning of the value chain, and marketing and branding at the end.

This dynamic is rapidly changing the global economic landscape, effectively realising "the rise of intangible capital as the frontier form of global capital and source of accumulation" (Bryan et al., 2022) and ushering in a new era of "capitalism based on learning, knowledge

and intellectual capital" (Hazan et al., 2021), which is "increasingly shaping the distribution of income in GVCs" (OECD, 2020). In general, intangible capital or "invisible assets" are characterised as firm-specific and different from other factors of production in that they cannot be easily ordered or hired by the firm. They have been described as "the 'yeast' that creates value from labour and market-mediated investments in assets" (Cummins, 2005) or as "a single organising concept for discussing the appropriateness of strategy in any field" (Itami and Roehl, 1991).

According to IFRS (International Financial Reporting Standards), "an intangible asset is an identifiable non-monetary asset without physical substance" (KPMG, 2023). Initially a small and residual category on corporate balance sheets known as "goodwill", intangible assets now dominate the valuations of the world's leading companies (Bryan et al., 2022). Today, intangible capital encompasses a wide range of information and knowledge-based resources, including technological know-how, computer software, databases, product and service designs, marketing research, advertising, brand names, organisational capital, organisational skills and training, and certain types of business organisational structures (Itami and Roehl, 1991; Cummins, 2005; Haskel and Westlake, 2018; Hazan et al., 2021). Despite their essentially "invisible" nature (Itami and Roehl, 1991), intangible assets are always linked to key visible components, with company logos playing a special role as integral parts of the brand, corporate style and corporate image (Mykhaylyna and Rogovska-Ischuk, 2017).

The first formal classification of intangible capital provided by Corrado, Hulten and Sichel (2009) divides it into three basic groups: 1) computerised information (including computer software, databases and related activities); 2) innovative property (including R&D, mineral exploration, entertainment, design, copyrights and licences); 3) economic competencies (including branding, advertising and market research, training, human capital and organisational structure). According to another modern classification approach, intangible assets can be grouped into different categories. Chen et al. (2017) divide them into: 1) knowledge assets (including technological and design, organisational, logistical, managerial and related know-how); 2) reputation assets (including goodwill, extended to a firm's brand). Hazan et al. (2021) categorise them as: 1) innovation capital (including R&D, design, and innovative business models); 2) data and analytics capital; 3) human and relationship capital; 4) brand capital (including personalised consumer targeting, tailored pricing, and promotions). Brand Finance's GIFT (2023) further divides these into: 1) rights (including leases, agreements, contracts); 2) relationships (including a skilled workforce); 3) intellectual property (including brands, patents, copyrights).

Intangibles are critical to the competitiveness of firms in today's global marketplace. As a result, leading firms concentrate on the most knowledge-intensive activities within global value chains (GVCs) (Cadestin et al., 2022). Experts estimate that the capital stock of MNEs from advanced economies consists mainly of intellectual property (e.g., brands, trademarks, patents, proprietary knowledge) and that their main contributions to GVCs are services based on these intangible assets (WTO, 2021). Recent analysis shows that intangible assets account for 90% of the market value of S&P 500 companies, an increase of 22% since 1995 (Ocean Tomo, 2020). This shift towards valuing intangibles is particularly evident when looking at the largest global companies by market capitalisation. In the 1970s, these included industrial conglomerates and mining companies with intangibles accounting for less than 20% of their enterprise value, such as IBM, Exxon Mobil, P&G, GE and 3M. However, by 2018, the top companies by market capitalisation included companies where tangible capital accounted for 20% or less of their value, such as Apple, Alphabet, Microsoft, Amazon and Facebook (Ponemon Institute, 2019).

In the contemporary literature, such firms are referred to as "factoryless manufacturers" (Bernard and Fort, 2015; WTO, 2021; Fu and Ghauri, 2020; Bryan et al., 2022). These firms specialise in high value-added tasks such as research and development, product design, branding, marketing and retailing. They are formally part of the wholesale sector, but unlike traditional wholesalers, they design the goods they sell and oversee production activities. With relatively limited production capacity, they use design and marketing tools strategically and maintain detailed control over outsourcing, subcontracting and supply chains, mainly through licensing and franchising. Today, companies like Apple, Nike, Google, Facebook and Amazon that provide services to consumers and businesses are valued almost entirely on the basis of their intangible capital. Companies like Booking.com, AirBnB and Uber have become major industry players with minimal tangible capital, relying mainly on their brands, platforms and networks (OECD, 2020).

Various studies show that intangible capital now accounts for a higher share of value added than tangible capital (WIPO, 2017). The productivity effects of GVCs are evident in capital-intensive and technology-intensive firms (Ge et al., 2018). Investment in intangibles is correlated with productivity and industry growth. Firms that invest more in intangibles experience higher growth, regardless of sector (Hazan et al., 2021). Modern business models also reflect this trend, viewing intangibles as a steadily growing function with an autoregressive nature (Kyfyak, 2021).

However, among the most innovative and knowledge-intensive industries today, the pharmaceutical, chemical, petroleum, machinery, electronics, computer, optical and ICT sectors stand out. These industries involve complex technologies and have experienced the fastest growth in patenting over the last three decades. The share of intangibles is also relatively high in the food, automotive and textile industries (WIPO, 2017; WTO, 2021). Emerging sectors with significant intangible gains include the tobacco and e-cigarette sectors, as well as transforming industries such as commercial services, media, and insurance, mainly due to the active integration of innovative technologies such as AI into their service offerings (Brand Finance. GIFT., 2023). Thus, today's leading global companies are adapting to Industry 4.0 by developing value chains based on technological resources and capabilities (Castelo-Branco et al., 2022).

Despite the undeniably important role of intangibles in GVCs and international business, there are currently no clear methodological approaches for defining them as a category or for calculating their value. Current trade statistics do not capture international trade in intangible services through GVCs (WIPO, 2017; OECD, 2020; WTO, 2021). The System of National Accounts (2008) limits the definition of intangible assets to four categories of "intellectual property products": 1) "research and development"; 2) "mineral exploration and evaluation"; 3) "computer software and databases"; and 4) "entertainment, literary or artistic originals". This definition excludes, for example, brands and human or organisational capital, making it difficult for national accountants to value such assets and include them in growth accounting (OECD, 2020). In addition, accounting standards under IFRS (International Financial Reporting Standards) do not recognise intangible assets unless there has been a transaction to support their value on the balance sheet (KPMG, 2023). The urgency of this issue is highlighted by the increasing number of discussions in international forums, including the recent symposium of the Association of Chartered Certified Accountants, which focused on exploring whether the accounting and reporting of intangibles – in particular goodwill and R&D – can be further improved (ACCA, 2023). The key issue is that, despite the importance of intangible resources, some are not recognised as assets on the balance sheet, even though investors and other users of company accounts have actively called for greater transparency in the accounting and reporting of intangibles, which is currently identified as a high priority.

Despite numerous attempts and approaches to determine the value of intangible assets, including the methodology first proposed by Chen et al. (2017) for estimating the return on investment in intangible assets in global value chain production, which is now used to assess the return on intangible capital in individual countries and industries (WIPO, 2017; OECD, 2020; WTO, 2021), and the estimation of the value of intangible assets as components of the S&P500 market value (Ponemon Institute, 2019; Ocean Tomo, 2020), the question of a reliable method for estimating the value of intangible assets at the firm level remains unresolved.

Therefore, it is reasonable to try to determine the current value of intangible capital for the largest non-financial international companies based on the available data on the volume and structure of their intangible assets.

4. Results

First and foremost, it is essential to highlight the most influential companies in the world according to the main categories of intangible assets described in the Smiling Curve concept, specifically "R&D and design" and "branding and after-sales services" (WIPO, 2017). To do this, the most powerful companies in terms of brand value and R&D and innovation capacity were identified by consulting several authoritative publications that compile global rankings in these areas (Table 1).

Brand value indices cover such criteria as: the financial performance of branded products or services; the role the brand plays in purchasing decisions; the competitive strength of the brand and its ability to generate loyalty, thereby ensuring sustainable demand and profits in the future (Interbrand, 2023); marketing investments aimed at building brand loyalty and market share; brand perception by different stakeholder groups (consumers, employees and investors), with consumer perception being of paramount importance; quantitative market and financial metrics that reflect the brand's success in achieving price and volume premiums (Brand Finance, 2023); effective marketing investments that establish strong emotional connections with consumers (Kantar, 2023); and market value, brand revenue and total sales (European Brand Institute, 2023).

Ranking indicators of innovativeness and commitment to R&D include criteria such as: the ability of superior innovation to drive performance (BCG, 2023); R&D investment (European Commission, 2023); market capitalisation, liquidity, domicile, public float, representation of industries in the global economy, financial viability, duration of public trading and stock exchange presence (CEOWorld magazine, 2023); number of US patents filed, R&D expenditure in the last 12 months and most recently reported intangible assets (EMSNow, 2023).

Based on the data presented in Table 1, the undisputed top five leaders in all categories, or "most intangible"

Table 1

Top-10 world's most valuable companies in terms of branding, R&D and innovative capacity, 2023

Ranking	Brand Value				R&D and Innovative Capacity			
	Interbrand	Brand Finance	Kantar	European Brand Institute	BCG	The EU Industrial R&D Investment Scoreboard	CEOWORLD magazine	EMSNow
1	Apple	Amazon	Apple	Apple	Apple	Alphabet	Microsoft	Samsung
2	Microsoft	Apple	Google	Alphabet	Tesla	Meta	Apple	Apple
3	Amazon	Google	Microsoft	Microsoft	Amazon	Microsoft	Saudi Aramco	IBM
4	Google	Microsoft	Amazon	Amazon	Alphabet	Apple	Bank of America	Johnson& Johnson
5	Samsung	Walmart	Mc Donald's	Louis Vuitton	Microsoft	Huawei	Exxon Mobil	Toyota
6	Toyota	Samsung	Visa	Alibaba Group	Moderna	Volkswagen	JPMorgan Chase & Co	Amazon
7	Mercedes	ICBC	Tencent	Johnson& Johnson	Samsung	Samsung	Samsung	Microsoft
8	Coca-Cola	Verizon	Louis Vuitton	Facebook	Huawei	Intel	ICBC	Sony
9	Nike	Tesla	Master Card	Walmart	BYD Company	Roche	Chevron	Intel
10	BMW	TikTok	Coca-Cola	Coca-Cola	Siemens	Johnson& Johnson	Toyota	RTX Corporation

Sources: (Interbrand, 2023; Brand Finance, 2023, Kantar, 2023; European Brand Institute, 2023; BCG, 2023; European Commission, 2023; CEOWORLD magazine, 2024; EMSNow, 2023)

companies, include Apple, Microsoft, Samsung, Amazon and Google/Alphabet. Companies that appear in at least two top 10 rankings also stand out, including Toyota, Coca-Cola, Johnson & Johnson, Intel, Louis Vuitton, Walmart, ICBC and Tesla. This latter group can be further divided into two sub-groups: companies that focus primarily on developing intangibles in R&D and innovation capacity, such as Johnson & Johnson and Intel, and companies that focus primarily on developing intangibles in brand equity, such as Coca-Cola, Louis Vuitton and Walmart.

As mentioned above, the growing importance of intangible assets within a company's total assets is a topic frequently addressed by researchers and analysts, as evidenced by numerous articles, analytical reports and company rankings on the subject. The category of "intangible assets" is defined by IFRS (International Financial Reporting Standards); however, these standards do not provide clear guidelines for disclosing information on the value of internally generated intangible assets. Instead, information on intangible assets is generally only disclosed when acquired through a merger or acquisition (KPMG, 2023).

An analysis of the income statements and balance sheets of the top 10 companies from 2019 to 2022 (Table 2) shows that some companies do not report information on goodwill and intangible assets (e.g., Apple, Toyota) or R&D expenses (e.g., Toyota, Coca-Cola, Walmart). The absence of such information could be due to a lack of relevant expenditure or assets, a desire to conceal them, or shortcomings in reporting standards.

Most companies experienced increases in net income, R&D expenses, goodwill and intangible assets, with a few exceptions. For example, Amazon experienced a loss in 2022, despite an increase in R&D expenses and goodwill and intangible assets. Coca-Cola experienced a decrease in goodwill and intangible assets in 2022, accompanied by a decrease in net income. For Johnson & Johnson and Intel, there was no direct relationship between goodwill and intangibles and net income.

Thus, the analysis based on the financial statements of companies shows that there is no strong correlation between the studied indicators. It is still premature to draw conclusions about how the amount of goodwill and intangible assets affects the net profit of companies based on their official financial statements alone.

The share of goodwill and intangible assets in the total assets of each individual company has remained relatively constant over the years under review, as shown in Figure 1 at the end of 2022.

Based on this, it is possible to identify the leaders in this metric: Johnson & Johnson and Coca-Cola (consumer goods) are the highest scorers, followed by Microsoft and Intel (hardware and computer software) with fairly high scores. Alphabet, Amazon and Walmart (internet services, e-commerce and retail) have moderate values, while Toyota and Tesla (automotive manufacturers) have very low shares. These variations

Table 2
Annual income statement and balance sheet data, million USD

Company	R&D expenditure				Net income				Goodwill and intangible assets			
	2019	2020	2021	2022	2019	2020	2021	2022	2019	2020	2021	2022
Apple	16217	18752	21914	26251	55256	57411	94680	99803	-	-	-	-
Microsoft	16876	19269	20716	24512	39240	44281	61271	72738	49776	50389	57511	78822
Alphabet	26018	27573	31562	39500	34343	40269	76033	59972	22603	22620	24373	31044
Amazon	35931	42740	56052	73213	11588	21331	33364	-2722	14754	15017	15371	20288
Toyota	-	-	-	-	169456	19101	21105	25366	-	-	10421	10609
Coca Cola	-	-	-	-	8920	7747	9771	9542	26766	28550	34613	33631
Johnson &Johnson	11355	12159	14714	14603	15119	14714	20878	17941	81282	89795	81638	93556
Intel	13362	13556	15190	17528	21048	20899	19868	8014	37103	35997	34233	33609
Walmart	-	-	-	-	6670	14881	13510	13673	31181	31073	28983	29014
Tesla	1343	1491	2593	3075	-862	690	5524	12583	537	520	457	409

Sources: (Apple Financial Statements, 2009-2023; Microsoft Financial Statements, 2009-2023; Alphabet Financial Statements, 2009-2022; Amazon Financial Statements, 2009-2023; Toyota Financial Statements, 2009-2023; CocaCola Financial Statements, 2009-2022; Johnson & Johnson Financial Statements, 2009-2022; Intel Financial Statements, 2009-2022; Walmart Financial Statements, 2009-2023; Tesla Financial Statements, 2009-2022)

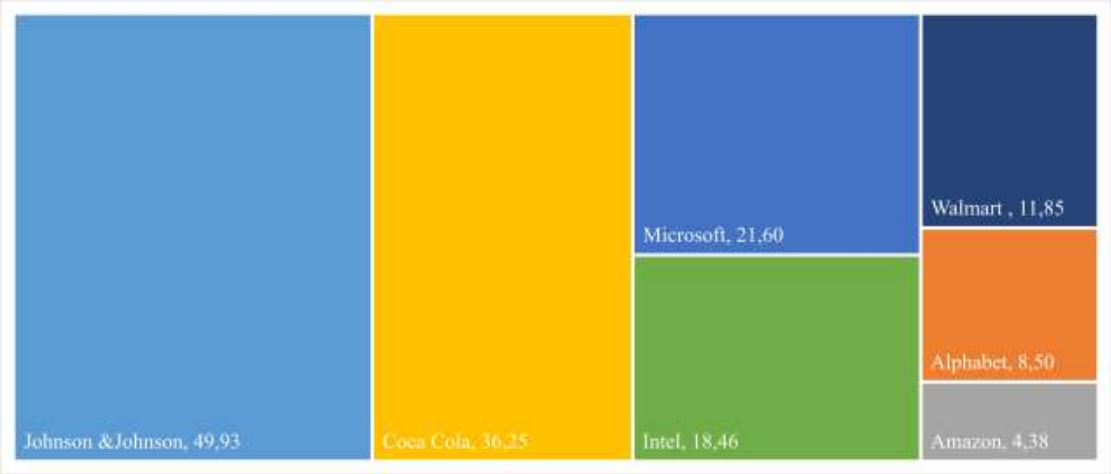

Figure 1. Share of goodwill and intangible assets in total assets in 2022, %
Sources: (Johnson & Johnson Annual Report, 2022; Coca Cola Annual Report, 2022; Microsoft Annual Report, 2022; Intel Annual Report, 2022; Walmart Annual Report, 2022; Alphabet Annual Report, 2022; Amazon Annual Report, 2022)

can be explained by the specifics of each company's business models and operations. However, due to the incomplete information in the reports, it is not possible to draw definitive conclusions about the relationship between the share of intangible assets and market success.

Looking at the dynamics of market share prices and the book value of shares of companies with a high share of intangibles in 2022, there is a significant disparity between these values (Figure 2). In general, shares appear to be overvalued, particularly for Microsoft, Apple, Johnson & Johnson and Walmart. In all cases, market prices exceed book values. This discrepancy is due to high demand for the companies' shares, reflecting investors' high valuation of the companies' performance and future prospects.

5. Discussion

Traditionally, financial market analysts use this information to perform fundamental analysis and make decisions about the purchase of specific assets. The underlying logic of such analysis is as follows: if a stock is overvalued, its market price will eventually fall, while the price of an undervalued stock will rise to approach the true value of the asset (Sokhatska, Panasiuk, Rogovska-Ischuk and Vinnytskyi, 2022). However, there are cases where the gap between the market price and the true value persists for a long time, sometimes for years. To fully understand this gap, it is useful to examine market capitalisation and shareholders' equity, which reveal the real difference between a company's equity and its market valuation (Table 3).

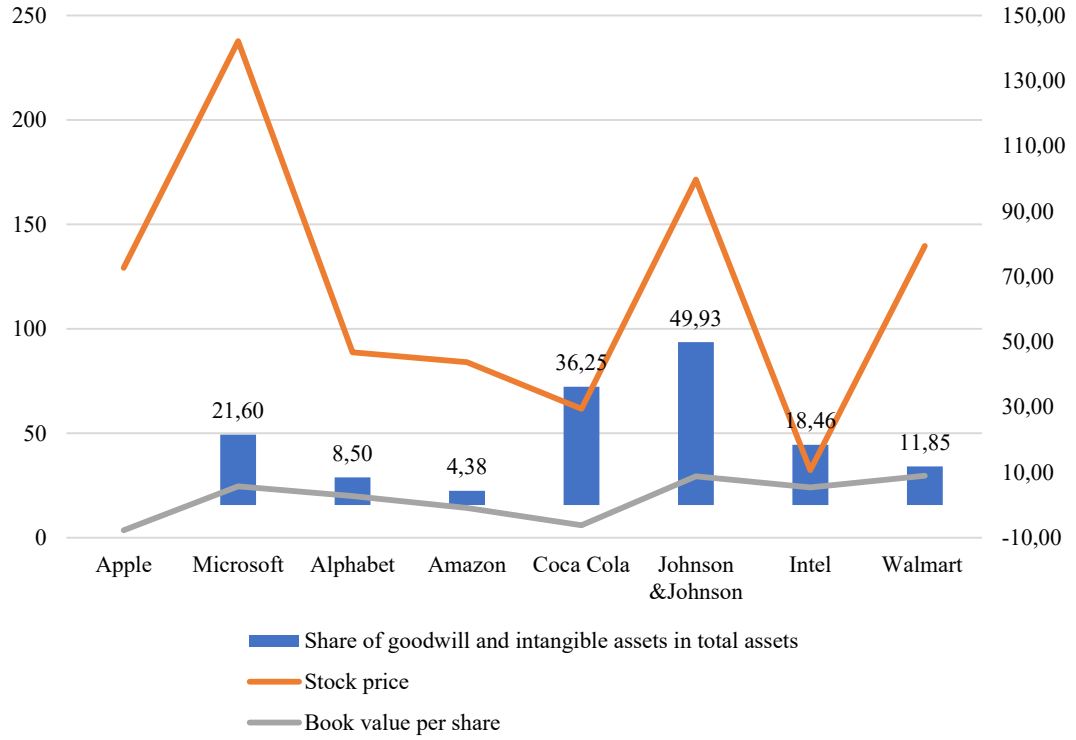

Figure 2. Dynamics of market prices and book value of shares, 2022
Sources: (Johnson & Johnson Annual Report, 2022; Johnson & Johnson PE Ratio 2010-2023; Coca Cola Annual Report, 2022; Coca Cola PE Ratio 2010-2023;Microsoft Annual Report, 2022; Microsoft PE Ratio 2010-2023; Intel Annual Report, 2022; Intel PE Ratio 2010-2023; Walmart Annual Report, 2022; Walmart PE Ratio 2010-2023; Alphabet Annual Report, 2022; Alphabet PE Ratio 2010-2023;Amazon Annual Report, 2022; Amazon PE Ratio 2010-2023; Toyota Annual Report, 2022; Toyota PE Ratio 2010-2023; Tesla Annual Report, 2022; Tesla PE Ratio 2010-2023)

Table 3
Comparative analysis, billions USD

Company	Goodwill and intangible assets	Shareholder equity	Market capitalisation	Gap between market capitalisation and shareholder equity	Gap between market capitalisation and goodwill and intangible assets
Apple	-	50.67	2900.00	+2849.33	+2900.00
Microsoft	49.78	166.54	2550.00	+2383.46	+2500.22
Alphabet	22.60	251.64	1888.24	+1636.6	+1865.64
Amazon	14.75	138.25	1675.91	+1537.66	+1661.16
Coca Cola	26.77	25.83	263.56	+237.73	+236.79
Johnson &Johnson	81.28	74.02	457.35	+383.33	+376.07
Intel	37.10	103.29	227.20	+123.91	+190.10
Walmart	31.18	91.89	404.53	+312.64	+373.35

Sources: (Apple Annual Report 2022; Microsoft Annual Report, 2022; Alphabet Annual Report, 2022; Amazon Annual Report, 2022; Coca Cola Annual Report, 2022; Johnson & Johnson Annual Report, 2022; Intel Annual Report, 2022; Walmart Annual Report, 2022)

This discrepancy between market capitalisation and equity is thought to arise from a mismatch between the true valuation of the company and its market valuation. Ideally, in the case of true overvaluation, the market price should eventually equal the book price, but this does not always happen. This suggests that the market may be correctly valuing assets, taking into account factors such as brand strength, reputation and confidence in the company. Large differences between market capitalisation and equity are an indirect indication of the value of intangible assets, which are effectively valued by investors.

Brand Finance conducts annual research on the increasing share of intangible assets in corporate wealth and their growing role in the global economy. The 2023 report states: "Our methodology relies on investor valuations of companies to determine the implied value of intangible assets, as most intangible asset value cannot be reported by the companies that create it. As a result, 73% of intangible asset value

is not reported in company financial reports." (Brand Finance. GIFT, 2023)

This research focuses exclusively on individual companies that have been identified as "Most Intangible" based on multiple ratings, whereas Brand Finance's analysis looks at the global market. According to Brand Finance GIFT (2023), Apple (2,681 billion USD), Microsoft (2,320 billion USD), Alphabet (1,437 billion USD) and Amazon (1,216 billion USD) will be among the leading companies in terms of goodwill and intangible assets in 2023. This suggests that Brand Finance also relies on market capitalisation to value true intangibles.

Thus, the stock market price, and hence market capitalisation, serves as an indicator for uncovering the undisclosed portion of intangible assets that companies do not report. In other words, the gap between market capitalisation and shareholders' equity can be seen as representing the amount of goodwill and intangible assets that are not reported in companies' official reports. At present, this indicator is the most accurate reflection of market trends regarding the growing role of intangible assets in the modern economy.

Thus, this indicates not only the growing importance of intangible assets in international business compared to tangible assets, but also the dominance of external (financial markets) factors over internal ones in determining the current value of intangible assets of a particular company. In addition, the company's reputation is becoming crucial, which explains, for example, the recent wave of companies leaving the Russian market despite the lack of immediate commercial benefits from such decisions. This strategic move is primarily aimed at preserving reputation, thereby protecting a key component of a company's intangible assets.

6. Conclusions

As a result of the study, the following conclusions were reached:

1. The dominance of intangible assets in the global economy has become a characteristic feature of modern international business. This dominance determines the key factors of a company's market success and emphasises the innovative, knowledge-intensive priorities of corporate strategies. These priorities include the intensive development of R&D and branding, extensive digitalisation and the development of artificial intelligence. A growing number of international specialised publications and analytical reports underline the relevance and growing importance of intangible assets in international business and the global economy.

2. Conceptually, the phenomenon of intangibles is closely linked to the GVC and Smiling Curve frameworks. These frameworks provide principles for the distribution of value added across countries, industries and firms, and guide the development of successful business strategies. This is particularly relevant in the context of the rise of "factor-less" firms, which generate a significant share of global "invisible assets" and are changing the structure of GVCs.

3. There is currently no methodological consensus on how to define the category of intangible assets and how to calculate their value. This includes the approaches of current international trade statistics, the System of National Accounts (SNA) and the International Financial Reporting Standards (IFRS). Despite the importance of intangible resources, some of them (notably goodwill and R&D) are not recorded as assets in company balance sheets. Information on these assets is usually only disclosed in the case of mergers or acquisitions.

4. By applying the principles of the "Smiling Curve" and focusing on key areas of intangible capital concentration such as "R&D and design" and "Branding and after-sales services", and by referring to several authoritative rating publications, it has been possible to identify the leading companies in the categories of "Brand Value" and "R&D and Innovation Capacity". These "Most Intangible" companies include Apple, Microsoft, Samsung, Amazon and Google/Alphabet, among others, for further research.

5. The detailed analysis of the profit and loss statements and balance sheets of the 10 largest companies for the period from 2019 to 2022 showed that some companies do not provide information on goodwill, intangible assets and research and development costs. Analysis of the available data revealed the following:

– There is no significant correlation between goodwill and intangible assets and net profit;

– there are clear leaders in terms of the share of goodwill and intangible assets in total assets, namely: Johnson & Johnson, Coca-Cola, Microsoft, Intel, Alphabet, Amazon and Walmart;

– there is a significant gap between market share prices and book values of companies with a high proportion of intangible assets in 2022, especially for Microsoft, Apple, Johnson & Johnson and Walmart. This sustained revaluation is driven by strong demand and investor confidence in their potential. Despite traditional trends in financial markets, this situation has been going on for years.

6. Based on the market capitalisation and equity data of the companies studied, it can be concluded that a significant gap between the market valuation and the company's equity is an indirect indication of the value of intangible assets as assessed by investors. Thus, the gap between market capitalisation and equity can be viewed as the amount of goodwill and

intangible assets not reflected in official accounts. This gap primarily covers key components such as reputation, investor and consumer confidence, and brand strength.

Further research should focus on the main trends in the development of the reputational and financial components of the brand as the most important element of intangible assets of international companies.

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