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THE IMPORTANCE OF INTANGIBLE ASSETS IN TODAY'S DIGITAL ECONOMY*

Alina Butnaru Ciobotar ^{1*}, Veronica Grosu ²

^{1*,2} Stefan cel Mare University of Suceava, 720229, Romania

¹Academy of Economic Studies of Moldova, Moldova

E-mails:^{1*} alinabutaru91@yahoo.com (Corresponding author); ² veronica.grosu@usm.ro

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Abstract. The right perspective on intangibles can change the views of management, accounting professionals and clients alike. The changes will continue to evolve, so it is very important to understand the conditions and factors that have shaped the current economy: the internet, globalisation, and consumer preferences. The knowledge and digital economies are closely intertwined; intellectual capital is now no less important than technology. Thus, intangible assets are driven by both human resources and artificial intelligence because the digital economy was designed by people, for people, and built on knowledge. The paper approaches intangibles from different perspectives, for example, the accounting perspective looks at their classification, valuation and reporting in financial statements; the psychology perspective looks at the perception of value and the impact on behaviour in decision making; the marketing perspective looks at brands, customers, and the ethics perspective focuses on the relationship between intangibles and social life. The shift in focus from physical production to knowledge generation is a key benchmark in the evolution of intangibles within enterprises' asset structures. Creativity, through the development of patents, know-how or technological performance, is increasingly contributing to the creation of more value. Regulating the recording of intangibles is complex. Still, because intangibles are present in all areas of activity, the rules need to be as clear as possible so that companies' financial positions are presented as transparently as possible.

Keywords: intangible assets; digital economy; artificial intelligence; intellectual capital

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1. Introduction

Since some processes rely primarily on intangibles as their main resource, their role in today's economy is growing. It has been found that, due to entities' desire to occupy a leading position in rankings generated by the competitive market, they invest more in intangible than in tangible assets, because the latter are easy to copy and implement (Ocak & Findik, 2019). The increasing use of the concept of intangible assets is justified by the finding of differences between an organisation's market value and its net book value. Specialists in the field considered it necessary to study the causes that led entities to record different results, despite having the same financial, physical, and human resources.

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The most commonly used categorisation of intangible assets is that of intellectual capital, namely human, relational, and structural capital. Some authors argue that a clear distinction between the concepts of intellectual capital and intangible assets is necessary, with the former being divided into realised potential that leads to increased economic value added. At the same time, the latter emphasises that intangible assets are only a part of intellectual capital (Caloghirou, Piekkola & Bounfour, 2025). It must be recognised that competition for natural resources has not stagnated; countries are still fighting for the most valuable resources. In recent years, however, the fight for the most valuable employees has also intensified: football, medicine, and IT. Ownership of tangible and intangible assets can affect the balance of power, the direction and level of investment, prices, and the production of goods and services, thereby contributing to economic growth.

The intangibility of assets is a current topic of great interest to both large companies and small and medium-sized organisations. The issue of their valuation is the subject of many conferences and articles, all the more so as the emphasis on knowledge combined with the use of artificial intelligence (AI) is one way for organisations to adapt to today's economy.

The purpose of the present research is to bring together the scattered theoretical approaches to intangible assets found in accounting, marketing, ethics and healthcare literature, and to outline the path through which intangible assets are traced from the knowledge economy to the digital economy, supported by recent statistical evidence at the European Union level.

To achieve this, the paper relies on a review of recent academic literature on intangible assets and intellectual capital, complemented by statistical data published by Eurostat. The literature review is used to identify the conceptual milestones in the recognition and evolution of intangible assets. At the same time, Eurostat data illustrate the determinants driving the transition from the knowledge economy to the digital economy.

2. Intangible assets - concept and perspectives

Given the major changes in the global economy, companies are continually seeking innovative solutions that respond as quickly and effectively as possible to the needs and requirements set by regulatory bodies. Because the pace of change is fast, competitive advantage goes to those who not only adapt but also propose reliable, compelling solutions that maintain customer attention and loyalty. One of the most widely used concepts in recent years is intangible assets. The focus on intangible assets has increased, as their contribution to the company's performance is considered to be much greater, and methods are being sought to reflect them as transparently as possible in the financial statements. Intangible assets are a modern concept, though the term has been used in specialised literature for a long time, with intangible assets (IA) being used most frequently.

The explanatory dictionary of the Romanian language defines an asset, in the context of economic operations, as a concrete element of a patrimony that is an integrated part of the balance sheet, and an intangible as something that cannot be touched and must be kept intact.

The Accounting Dictionary defines an intangible asset as a non-physical asset with a life span of more than one year, without physical substance, and important to business activity, such as a franchise contract, software, customer list, trademark, or artistic goods (movies, videos). It also states that the defensive asset is that intangible acquired by a firm so that competitors will not use it; leasehold improvement is that improvement to a leased property, and amortisation is made over the shorter of the useful life or the lease term, and the initial recognition of intangibles purchased by the firm should be at fair value. The marketing dictionary emphasises that intangible assets cannot be touched in kind; they generate revenue or other financial benefits and include trademarks, patents, and customer lists.

One of the definitions of intangibles frequently encountered in the literature is the dynamic intangible investment, which comprises a predominant knowledge component that makes a characteristic contribution to the entity's value and competitiveness. Through his work, Polanyi (1958) piqued the interest of other researchers in the concept of tacit knowledge, and later Nonaka and Takeuchi (1995) wrote about the knowledge-creating entity, inspiring the subsequent formulation of intangible asset principles.

Intangible assets are items without physical form that have a substantial input in the production of goods or provision of services and from which the firm seeks to derive future productive benefits. Intangibles are assets other than tangible assets that are identifiable by their physical form but can be acquired by the entity, including intellectual property, patents, and goodwill (Firmansyah, Umar & Musa, 2024). From the same author's perspective, the brand name is considered indefinite, while the legal agreement or contract is considered a definite intangible asset. Other scholarly sources define intangible assets as sources of an organisation's value creation, based on employee capabilities, resources, operating strategy, and shareholder relations (Gutierrez & Villavicencio, 2024; Anderson, Mendoza & Mongold, 2025).

In 2001, the International Accounting Standards Board adopted IAS 38, which defines intangible assets as resources that have arisen from past events, for which control is vested in the organisation, and from which economic benefits are expected to flow to the organisation in the next period (IAS 38, 2001). IAS 38 exemplifies identifiable, non-monetary intangible assets without physical substance, such as licenses, patents, software, intellectual property rights, and trademarks. The two categories covered under the Standard are goodwill and research and development expenditure. In support of the concept, some authors have supplemented this definition with similar qualifying conditions: intangible assets are not physical in nature, have the capacity to generate future net economic benefits, and are legally protected by a de facto right (Dong & Doukas, 2025). Intangible assets are fixed assets without a tangible form, such as legal or commercial acts that give the entity certain freedoms, namely: research and development expenditure, concessions, patents, manufacturing licenses, trademarks, goodwill, and computer software. Representative categories of intangible assets are illustrated in Figure 1.

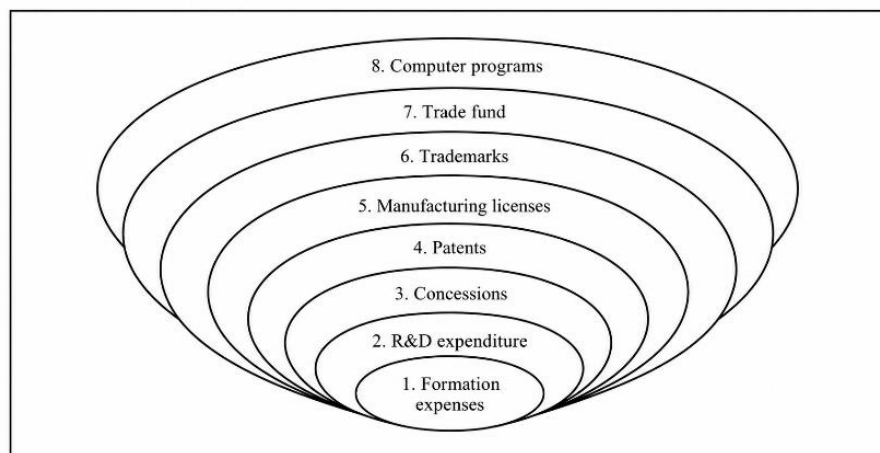


Figure 1. Representative categories of intangible assets
Source: authors' own processing

The cost of intangible assets can be reliably measured if firms report them as assets. In Romania, firms listed on the Bucharest Stock Exchange must prepare their financial statements in accordance with IASB guidelines. Thus, intangible investments made by firms are recognised as assets in their financial statements if they comply with the IASB's reporting criteria (Ionita, 2020).

The specialised literature identifies a wide range of intangible asset components, including patents, copyrights, trademarks, software, formulas, trade secrets, capitalised research and development, goodwill, databases, human capital, customer lists, customer loyalty, licenses, market share, and marketing rights (Wyatt, 2005; Penman, 2023). Brands can only attract customers and increase demand if they are coupled with innovation and change, ensuring future gains. It plays an important role in today's economy through consumer loyalty, innovation, and branding skills. To differentiate their products and services from those of other companies, to expand into new markets, and to protect their goodwill, firms use trademarks, which are considered the most valuable intangible assets generated and diversified through people's perseverance and approach (Bongaerts, Kang & van Dijk,

2026). Loyalty, level of knowledge, quality and consumer interest are intangibles with direct implications for the company's future performance. Tangible assets differ from intangibles in their degree of utilisation. The more often fixed assets are used, and the longer the period, the lower the marginal benefit. On the other hand, the more often we use intangibles, and here we mean knowledge, the higher the return. A medical device can only be used at the same time in one place, whereas knowledge can be used over the same period of time in different locations.

Goodwill is another intangible at the centre of research studies. Its impairment affects the entity's expenses and performance, reducing the predictability of profitability (Li et al., 2011) and resulting in lower cash flow (Bostwick, Krieger & Lambert, 2016). According to accounting classifications, intangible assets rank second in size after property, plant and equipment (PP&E). They are generally divided into two categories: identifiable (trade secrets, patents, software, intellectual property) and non-identifiable (brand, reputation, goodwill). Goodwill represents the future economic benefits arising from assets that cannot be individually identified and recognised separately, indicating the difference between the cost of acquiring a business and the fair value of the identifiable assets and liabilities acquired.

Research and development expenditure addresses the issue of recognising it as an expense when it arises as an asset, with the mandatory condition requiring both a probability of future economic benefits and a reliable measurement of the cost. IAS 38 includes in the category of research expenditure activities that cannot be recognised as an asset, such as the pursuit of new knowledge, the search for and evaluation of product or process alternatives, and the formulation and design of new alternatives to existing products or processes.

In the literature, we find many terms used to describe intangible assets: intangible assets, intellectual assets, invisible assets, knowledge assets, and digital assets. Intangible assets is the term used in the accounting literature; knowledge assets is a term largely used by economists; and intellectual capital is used in the management and law literature. Knowledge in all its forms is the most valuable intangible resource (Bratianu & Bejinaru, 2019; Roth & Mitra, 2025).

The idea of non-material assets, whose trump card is long-lasting benefits (formulas, technology, special privileges). Regardless of the syntagma, the idea is the same: tangible benefits are not materially realised; they represent valuable non-physical sources, unique organisational models, or human resource practices. Referring to the group of assets with no real form, records that these are components of intellectual, even industrial property, that are provided by legislation and are found in the balance. The advantages of intangible assets for competitiveness and their impressive capacity to improve products and services offered to the market (Intara & Suwansin, 2024).

The intangibles perspective covers several fields: accounting, information technology, sociology, psychology, human resource management, education and development (Yue & Zhao, 2026). Some of the basic ideas are summarised in Figure 2 below.

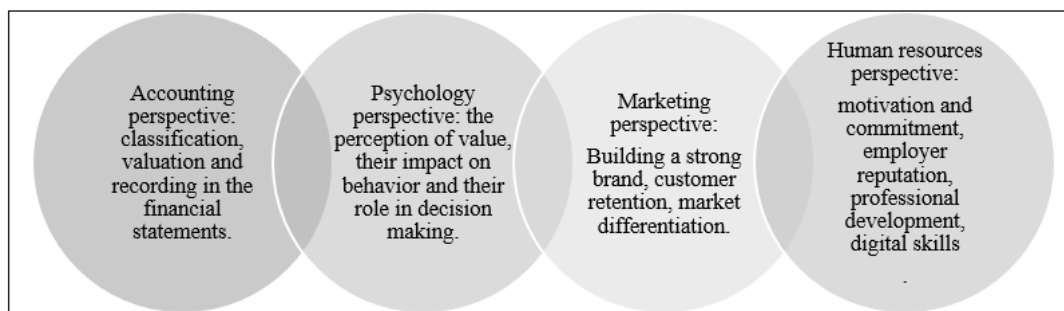


Figure 2. Different fields' perspectives on intangible assets

Source: authors' own processing

The accounting perspective aims to refine the criteria for recognition on the balance sheet and to conduct a comprehensive analysis of the conditions that intangible assets must meet to be reliably measured at fair value. Current accounting records investments in intangible assets under current expenses, treating current income gains as a component of investments (Barker et al., 2021), and the balance sheet needs to be consistent with the income statement because it increases the investment's added value in the balance sheet. Another situation at the centre of regulators' attention is the development of precise rules for intangibles that the company produces or constructs. Quantifying the initial price that centres on the expenses directly attributable to creation, acquisition, and development; selecting an amortisation schedule that covers the period during which economic benefits are expected; and ensuring transparency in identifying intangible assets of interest to investors and management are among the concerns of experts in the field. Their subjective nature, influenced by the specific context of their use, makes it difficult to apply the same calculation to all entities. At present, the market, revenue and cost comparison methods are the most widely accepted in specialised practice (ANEVAR, 2022). The challenge is all the greater, as there is a need for a distinct valuation of intellectual capital and the assets generated by artificial intelligence, to determine the net impact of the new technology.

From a marketing perspective, intellectual capital as an intangible asset is perceived as a company's ability to understand information from both inside and outside the firm, to establish professional partnerships with business influencers, to apply market opportunities and potential faster than competing firms, to enhance its intellectual productivity and to increase its intangible assets. A company's reputation is based not only on intellectual capital but also on the image of its management team, which lends the entity prestige. It implies a set of intangible assets, both quantitative and qualitative. The organisation's future activities should include training, R&D, and marketing. Intangible assets in the marketing context refer to brands, brand names, and customer-related assets. The company's ability to adapt to strict rules while maintaining its identity provides a real competitive advantage. Similar assets may be critical in one hypothetical situation, but insignificant in another. The increased level of competition has emphasised the need for companies to develop customer knowledge and build customer loyalty. The rigorous rules of the market require generating value through innovation, design, utility, and unique experiences. Marketing strategy, by including elements of novelty and added value in products, matters as much as production facilities or material capital. At present, there are limited opportunities for managers to record these intangible assets, which diminishes the quality of the balance sheet and the information available to investors (Xiong et al., 2022).

In the literature, the relationship between intangible assets and ethics is of particular interest. From this point of view, emphasis is placed on social construction, permanent dialogue, collaboration between the institution and the actors involved, and the cultural relationship between intangibles and ethical resources. Identity, brand and reputation can generate competitive advantage. Still, the circumstances and conditions must be established in such a way that they do not contravene the moral principles of the parties. Vision, goals, mission, culture, communication systems, organisational structures, and strategies are some of the attributes of identity (Melewar, 2003). Brand can be defined as the aspirations collaborators have as a result of the other party's peremptory commitments (Song, 2025).

In corporate asset management, to maximise results, the evaluation of the firm's reputation should be conducted with ethical sensitivity (Leitter, Koonce & White, 2025). Firms that deliver products and/or services that meet their promises will gain an advantage in their reputational ranking. The credibility of the ethical management of intangibles may affect the business environment, and firms that pursue profit as their sole goal in the shortest possible time may make decisions without adhering to moral or ethical principles. Intangible capital can lead to inequality, difficulties in achieving performance, reduced employee input, and, especially, loss of trust (Uribe, 2025). It is imperative to maintain a balance among profit growth, value generation, and the execution of social commitments.

A study by Gambetti et al. (2017) presents different international rankings and indexes such as the Reputation Coefficient ranking the most reputable companies, Fortune's ranking of the most admired firms, Millward-Brown's ranking of the most highly regarded brands. Each company on these lists has among its main objectives environmental sustainability, diversity management, transparency of company behaviour, social responsibility, quality/work-life balance, talent acquisition/management, corporate citizenship. In the field of medicine,

intangible assets are increasingly influencing the financial statements of medical institutions. Human, relational, and structural capital are representative elements of entities that provide healthcare services (Rider et al., 2019).

In all activities in this field, human capital is a driver of innovation, contributing to the distribution of technical and organisational evolution. Relational capital refers to a company's connections with the external environment. Formalities, the strategy for creating new partnerships, and associations related to brand reputation are important pillars in a medical establishment. According to Aramburu and Saenz (2011), structural capital refers to the practices of analysing data, strategising, and setting policies. Competitive advantage can be achieved by leveraging interactions and knowledge sharing through digital platforms. Constant and interconnected management of intangibles stimulates innovation and organisational restructuring (Park et al., 2024). Strategic market access visions have a significant influence on healthcare development and management, especially in the introduction of new pharmaceuticals, drugs or medical devices.

In the context of utilising relational capital, market access managers of pharmaceutical firms have expanded their knowledge and strategies in pricing and reimbursement, public affairs, and supply clauses to optimise the launch of drugs or medical devices. On the other hand, the value of a product increases with the use of integrated digital services, and digital transformation is a prerequisite for information sharing, increasing the number of end-users and removing obsolescence between providers and knowledge sharing. The transmission of real-time information and the large-scale use of information technology in health have often led to improved statistics on the number of service recipients, especially since, in this sector, the timing of intervention or action with a specific type of product is decisive in solving a problem. We are referring not only to doctor-patient and patient-drug interaction, but also to the context and speed of information transmission between specialists. Rogers (2003) emphasised the role of knowledge and innovation in the medical field by proposing 5 stages in the decision-making process: knowledge, persuasion, decision, implementation and confirmation. Research, innovation and performance are based on the best possible management of knowledge, because in medicine, all those involved, including patients, through their ability to manage information, contribute to the orientation towards effective treatment practices and schemes. An institution with an organised knowledge management system will manage much more effectively and, as a result, be more operational and productive. Even if innovation theories have often intersected with economic or political factors, this is not necessarily a negative thing, especially since no field has a perfect balance and constant profit. We point to the creation of new business models during periods of intense telemedicine use. The delivery of certain drugs or medical products during the COVID-19 period was not only a health issue but also a global political, economic, and social issue. Intellectual capital becomes an intangible asset that makes a considerable contribution to the evolution of a healthcare organisation, with complex implications for both research and innovation processes and for future economic benefits derived from establishing commercial relationships among system collaborators. All the more so, as digitisation of the healthcare system offers new opportunities to create added value and economic benefits. Patients can often suffer due to organisational management and system gaps. For this reason, regulatory processes need to be established in collaboration with all stakeholders, including international, national, and regional agencies, as well as collaborators, providers, and patients.

One of the challenges in recognising and recording intangible assets is the risk: tangible assets are considered lower-risk and easier to value. Their impact on the various sectors of the economy gives them a much greater role in financial statements than they have hitherto had. Today's definitions of these items are therefore much more complex and require updated regulations.

3. Milestones in the evolution of intangible assets in companies' balance sheet structure

It is easy to see how much our routines have changed compared with those of the same age groups 20 years ago. Even if the stages of life are almost unchanged, in our everyday life, we use different techniques, new tools, and new models of household appliances. Our professional activity adheres to fundamental principles, but we are always operating with new technology; we are constantly looking for ways to facilitate task completion, and we are much more competitive. Companies cannot ensure success or performance if they fail to meet expectations or impress. In an economy where the battle for performance is fierce, identifying and attributing the smallest element of novelty can offer substantial advantages. Tangible assets (buildings, equipment) remain

indispensable tools of production, but attributing business success without specifying the value and quantity of tangible resources does not ensure transparency.

It is clear that we can no longer talk only about physical, tangible assets when discussing innovation, and that a society that does not progress risks falling behind in its pace of development. The globalisation of the economy, the replacement of old regulations, the adaptation of the economy to modern needs in telecommunications, transport, and financial services, the emergence of new brands, increased competition, and the growing use of information technology are some of the factors that have increased interest in intangible assets. The increasingly frequent discussions and debates linking the company's ownership structure and intangible assets are indeed challenging. The need arises from discrepancies between market and book value caused by imperfections in the categorisation and grouping of intangible assets and related items, as well as in their quantification, recording, and reporting in financial statements. It is proposed to delimit the sub-account for accounting directly with software, with a sub-account for accounting for firmware for software devices, fixing current intangible assets in a separate account, monitoring internal goodwill for the purpose of highlighting the entity's assets throughout its current activity, as well as their presentation for sale, depending on the circumstances. The same author proposes initiating analytical accounts for internal goodwill, allowing for the separation of intellectual assets by type (human, customer, organisational, environmental, social, personal internal goodwill, and intangible assets associated with contracts).

The research on this topic is useful for identifying gaps and shortcomings, and for identifying possible rules and principles that would ensure proper valuation and clear delineation of resources. Intangible assets have evolved with the changing world, and their distinct role in the enterprise capital structure is becoming increasingly evident.

One of the important milestones in this context is globalisation and intensifying competition, which have provided the prerequisites for accounting for intangible assets. The harmonisation of Accounting Standards and the adoption of the International Financial Reporting Standards (IFRS) by most countries have provided important support for the valuation of patents, trademarks, goodwill, and other intellectual property. Financial comparability enables global data analysis, technology transfer, and innovation; supports the use of intangibles by both large and small firms; and advances the idea of clear and fair reporting through access to capital markets. Accurate data and accurate reporting of asset positions boost investor confidence and make it easier to raise finance. Globalisation offers advanced methods for valuing this category, enabling firms to manage associated risks better and influence cultural and social perceptions of the importance of intangible assets. Their accounting and reporting should be done regardless of the degree of appreciation in particular regions.

Another important benchmark concerns the shift of emphasis from physical production to knowledge creation and exploitation. Innovation cannot happen without research and hypothesis testing. This is why education and intellectual capital are critical to the economy. The development of patents, know-how, and advanced technology is a response to the stimulation of creativity. Presenting and analysing collected data correctly leads to the refinement of services and products that are not necessarily physical, such as software, online platforms, and cloud-based services. The digital economy has prompted companies to focus more on leasing solutions, maintenance, and support services than on selling equipment. The labour market is seeking advanced cognitive skills, such as creative thinking and programming. The discouragement of repetitive activities in favour of innovative solutions that make it easier to perform job-related tasks is common. The use of artificial intelligence and advanced technology enables remote working for online content creators, floral stylists, film directors, journalists, tax consultants, accountants, insolvency specialists, and lawyers. The accounting recognition of intangible assets under International Accounting Standard (IAS) 38 is a key landmark in companies' capital structures. Allocating more and more resources to R&D creates the conditions for innovation and a growing portfolio of intangible assets. Employees' experience and the ability to apply skills in executing activities have become important strategic resources, and the brand can influence consumers' purchasing decisions. Knowing customers and working hard to deliver on promises can generate long-lasting future economic benefits.

The literature highlights three variables that may be important elements in the dynamics of intangibles: organisational learning and potential that is focused on the particular firm's resources needed to build the intangibles portfolio (Penrose, 1959), technological synergies, which with the achievement of advantages can create inequalities and fair distribution influenced by heterogeneity, the possibility of large companies to invest more in R&D, patents can create barriers to entry for new competitors. The third is the signalling of the business environment and the economic sector, which emphasises the urgency of expanding methods and approaches to building intangibles to narrow the information gap between suppliers and customers, sellers and buyers.

It is worth noting that when intangible investments were first quantified at an accepted level in the US, the term "intangibles" included specific categories such as human capital, copyright, trademark, software, organisational transformation, and research and development. Despite this, a large part of these items is currently not presented as investments, is not included in gross value added (GVA), and is included in the current expenditure category. The inclusion of expenditure in GVA is justified because it is treated as an investment rather than as intermediate consumption. Companies in countries around the world have found intangible assets to be a catalyst for economic growth, but at the same time, their attribution to profit is not transparent. The study of intangible assets and the value they bring to the entity has arisen from practical situations that have challenged employers, employees, investors, and regulatory institutions. The contribution of intangibles is repressed in total factor returns and capital asset relevance.

Explaining productivity and exploring the most effective ways to boost it have been constant preoccupations in both the pre-World War and post-World War periods. Countries' economic contexts have undergone complex, dynamic developments, with some experiencing rapid, profound transformations while political, social, and technological crises and challenges have slowed others. In recent years, the struggle for the greatest competitive advantage has intensified, with countries exploring every resource to secure the best possible position in the financial consortium. Variables such as expenditures on advertising, product development, market research, and labour market training are assets created from the company's current resources and contribute directly to the subsequent increase in output. Intangibles have a substantial contribution to output and productivity growth; alas, investment in intangible assets has not been adequately captured by the statistical indicators used. However, they have a multiplier effect on output per worker, both indirectly through the diffusion of information, which increases productivity, and directly through the additional capital allocated to each employee. He suggested that the share of labour decreases as intangible assets replace it, and that investment in employee training and retraining programs, and the allocation of resources for branding and the optimisation of organisational capital processes, substitute for human effort to a greater extent. New technologies are an important factor in the development of intangibles. They expand the ways of business cooperation and management by facilitating access to new assets and the exchange of ideas, even when entities are far apart. Incremental innovation, driven by a desire to be at the forefront, has highlighted the need to build intellectual capital. The connection between organisations and the accumulation of new knowledge in the research process is increasingly recognised as a strategic resource. These network relationships enable information flow, the acquisition of new knowledge, and the sourcing of cutting-edge technologies, while mitigating risks and reducing intermediation/coordination costs.

In recent years, the technology sector has been driving interest among many of the world's companies. At the European Union level, intangible assets play a determinant role in business, serving as a catalyst for efficiency by increasing labour productivity. The European Union is increasingly opting for digitisation to boost knowledge and design a new concept of growth. Government involvement is a prerequisite for directing the necessary funds to digital skills. Investing in innovation through technology is not complete if there is no human resource possessing specific skills (Mercedes & Maudos, 2022) because, among the internal resources of the firm, one of the greatest challenges of theory as well as practice is produced by human capital, which is the foundation of the economic valorisation of intangible assets. After all, intangible assets are by no means insignificant. Their formation, development, and interpretation are guided by reason. Quality formal education before the date of employment emphasises both the employee's skills and knowledge and the intangible assets they bring to the company after the date of employment, contributing to the company's development.

The presence of intangible assets in a company's balance sheet structure also entails risks, deadlocks, and pressures, primarily due to costs. Some employees may have impressive skills, and a research idea can often seem like a winning lottery ticket. Simulating its impact or testing it requires substantial financial resources, and if it fails, we cannot conclude that the employee has low skills or that they should be fired. On the other hand, even a simple new folder organisation can facilitate a department's work, enabling faster data access.

Another internal resource that has implications for the asset structure is the intangibles archive. Large firms have advantages in creating these assets, and there is a case for expressing the intention to show these items on the balance sheet. Corporations recruit the most talented employees because they can pay higher salaries, have access to economies of scale, invest much more in innovation, have access to technology that accelerates resource accumulation, have financial capacity that allows them to take risks, and have reputations and brands that drive a strong organisational culture. The interest of corporations in including them in financial statements is justified by the need for more accurate reflection of the value of the company and informed decision making; optimising transparency to creditors, investors and other stakeholders; financiers or banks may be more willing to lend to entities that have intangibles recorded on their balance sheet, providing a stronger guarantee; calculating profitability taking into account the value of these items can provide a clearer picture of long-term financial performance; the process of acquisitions or mergers can be simplified; and recording assets in line with the requirements of accounting standards. Small firms, although they lack a track record or long history of intangible assets, are also interested in recording them. Because they often borrow from investors or banks, quantification and recording could make it easier to obtain loans, and thus make it possible to finance large projects or to overcome crises; providing a more complex picture may be necessary when trying to attract partners or when selling the business; because small entities cannot afford to take large risks, allocating resources to specific profit-generating activities could help to move the business forward; compliance with applicable accounting standards is a condition that small firms must also comply with, and separate accounting could be a mandatory requirement in certain situations.

According to a study conducted by Statista, a global business intelligence and data platform, by 2023, there were an estimated 376.66 million companies worldwide: more than 200 million were located in Asia, in Africa, an estimated 67 million, and in Europe, the number was 34 million (Einar, 2024). The same research expert estimates that in 2000, the number was 204.42 million: over 92 million in Asia, over 40 million in Africa, and over 25 million in Europe. More companies also mean stronger competition, more patents, copyrights, etc. A large portfolio of intangibles generated at a given point in time within the entity can lead to lower costs by enabling the allocation of additional resources to concentrated, significant investments.

4. Traceability of intangible assets from the knowledge economy to the digital economy

The knowledge economy, according to the Oxford Reference economics dictionary, is an economy in which the creation and management of knowledge is a substantial component of basic production, and the digital economy is one in which business is conducted using digital technology and the internet (Hashimzade, Myles & Black, 2017). Traceability is the ability to trace the elements of a process from their perception as raw materials to the finished product. In the context of our study, the raw material is knowledge and its use. Information is the basis for the interdependence of the two concepts: the knowledge economy and the digital economy. In 2025, interest in information generated by artificial intelligence increased. Citizens from different countries are seeking answers to both their personal and professional lives. Danes, Estonians, Finns, and Maltese citizens are the biggest users of artificial intelligence, with the most requested information related to private life (25%), as shown in Figure 3.

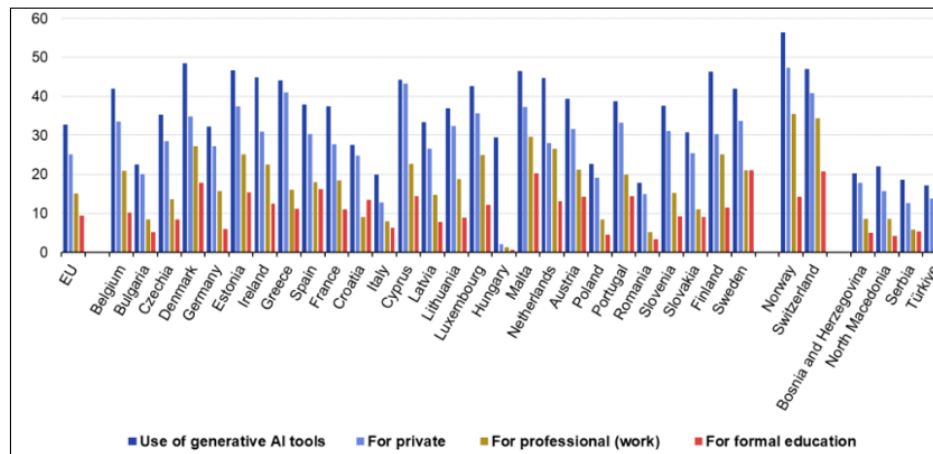


Figure 3. The purposes for which generative artificial intelligence is used, 2025

Source: Eurostat, <https://ec.europa.eu/eurostat/statistics>

Society has undergone a series of changes throughout history that have propelled economic restructuring and created the premises for today's digital economy. Society has undergone a series of transformations throughout history - from the industrial revolution driven by steam and electricity, to the era of electronics and nuclear energy - that have progressively created the premises for today's digital economy.

The 21st century is marked by the rise of the internet and, with it, digitisation. The world economy is strongly shaped by technology. Knowledge has enabled continuous process improvement. The development of technology has been a prerequisite for both physical and virtual meetings between suppliers and customers to review offers and select products and services. In general, the transition to the digital economy is preceded by streamlining. Businesses from the smallest to the largest are seeking to increase profits, reduce costs, and optimise operational efficiency through automation and digitalisation. Placing orders online is a method used by more and more people. In 2025, people in Ireland, the Low Countries, and Denmark purchased the most goods and services online. Their percentages are as follows: 95%, 94%, 91%. Romanians recorded a 22% increase compared to 2020, indicating that more and more people are using this method to meet their needs for goods and services (Figure 4).

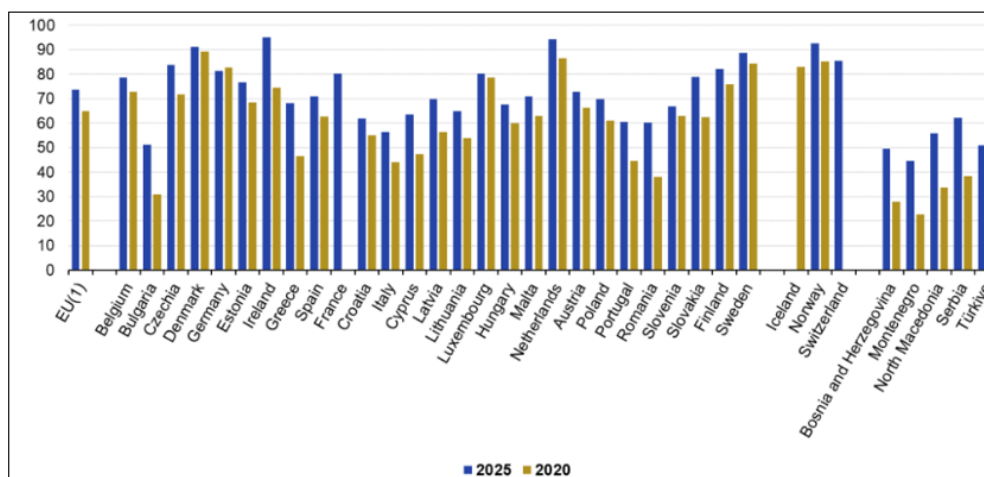


Figure 4. Percentage of internet users who ordered goods or services online in 2020, 2025

Source: Eurostat, <https://ec.europa.eu/eurostat/statistics>

Among EU countries, Finland, followed by Denmark, has the highest share of citizen-public authority interactions in 2025 at 92%. They ask for information about their pension or the opening hours of the ticket offices. Romania ranks at the bottom of the EU Statistical Commission's ranking, at 24%, as shown in Figure 5.

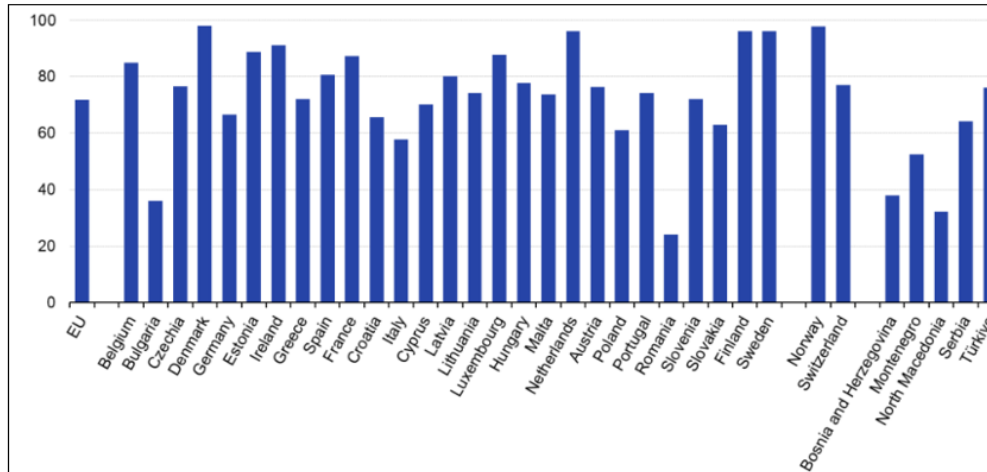


Figure 5. Internet users' interaction with public authorities, 2025

Source: Eurostat, <https://ec.europa.eu/eurostat/statistics>

The transition to the digital economy has been influenced by a multitude of interconnected social, economic and technological factors that have accelerated and shaped this fundamental change. Across the decades, there have been efforts at the country level through investments in infrastructure, tailored regulations, entrepreneurial policies, efforts at the private sector level through transformation to match consumer needs, formation of strategic alliances, allocation of resources for research and innovation, efforts at the civil society level through digital activism, online communities and collaboration, and initiatives through participation in information literacy programs.

Figure 6 illustrates the determinants that have stimulated the transition to the digital economic model and covers the following aspects:

- Internet usage, mobile networks, fibre optic networks, cloud computing platforms, software applications;
- Electronic trading markets and platforms. Virtual trading spaces include intangible services (advice and expertise, sports events, telephony services, transport services) and intangible products (licenses, shares, software, anti-virus software);
- Unconditional access by time and distance. Consumers can access information at any time and from any geographic region. The short time, methods and price of receiving data have conditioned firms to look for the fastest ways to deal with electronic markets;
- Globalisation, capital and labour mobility have influenced macroeconomic variables.

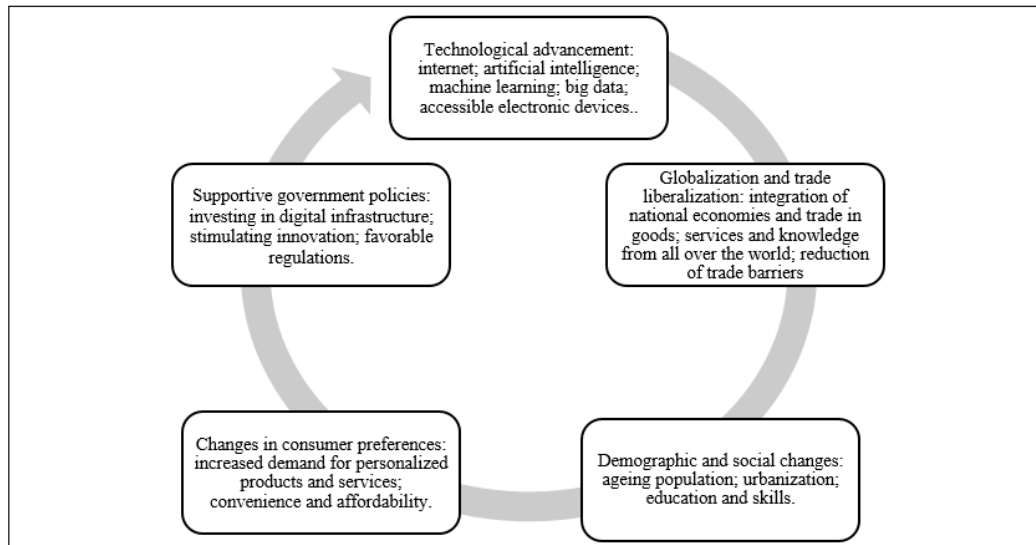


Figure 6. Key drivers of traceability from the knowledge economy to the digital economy

Source: authors' own processing

Referring to the positive arguments for digitisation, some authors argue that computers can accomplish tasks much faster than human resources and achieve a much higher level of performance. Scholars increasingly recognise a strong correlation between knowledge economics and management, viewing the optimal use of intangible resources as an essential component of organisational activity. Unlike the traditional economy, which is based on material resources, the knowledge economy emphasises the impact of intellectual capital on value creation. Entities, due to their competitive market positions, have expanded their creative horizons, striving to be as flexible as possible and to further stimulate innovation. In the evolution towards the digital economy, knowledge-based management has shifted its focus from tangible resources to innovation and intellectual potential. In the digital economy, attracting new customers is much easier thanks to expanded geographic coverage.

Customers can access and compare more information about prices, products, and services. Because they no longer feel the need to travel to different locations, the time saved is used to access more and more information. International products are much easier to purchase; for example, you can always buy English products from a Romanian shop or order items from American sites. Firms can always see competitors' products and are continually looking for ways to improve their quality and presentation to create more brand value, thereby investing in innovation and stimulating creativity. Moore (1993) states that the organisation cannot be reduced to a single industry label; rather, it is a central node in a diverse industrial ecosystem. Thanks to specific programs and technologies, companies can check their stock levels, order products online, and estimate the average daily sales for a particular product, avoiding over- or under-purchasing. Especially for goods with a short shelf life, perishability and financial losses can be avoided.

Firms can much more easily profile buyers and consumer behaviour and identify current policies to attract new potential customers. Employers, in exchange for quality, offer employees the option to work in a hybrid system. The flexibility that today's employees are looking for is a general characteristic of today's generation, and entrepreneurs use all the technical tools as they develop their businesses.

To highlight the challenges of the digital economy, some authors argue that it is driving a shift towards dynamic rather than static optimisation, prioritising new initiatives and innovative products at the expense of productivity gains. From a philosophical perspective, the concentration of technological control in the hands of a few raises concerns about the subordination of social responsibility and quality of life to personal economic gain and market dominance. Although we live in the century of speed, not all countries have the same network performance and access to technology. Africa, India, and Pakistan are among the regions with limited digital infrastructure and relatively high service costs. Low digital literacy can prevent people from benefiting from

this economy's services. There is significant exposure to cyberattacks that can severely compromise business operations. Data privacy is a major concern in the age of technology. Protecting the privacy and security of customer data is important for building relationships with users, and failure to do so can damage the firm's reputation, erode customer trust, and cause substantial financial losses.

For firms that rely heavily on technology, there is a risk of business disruption due to technical failures or system errors. This can lead to interruptions in production processes, difficulties fulfilling orders, loss of credibility, and a negative impact on image and business relationships. Another consequence can be data loss, equipment damage and high repair costs. Long wait times to address such situations can lead to customer dissatisfaction, service or product withdrawals, and financial losses. The rapid pace of technological change also implies high costs for constantly updating software and equipment. Although the valuation of intangible assets is under-regulated, the risk of damage is high, and legal protection against unauthorised copying or use can be costly, experts are constantly seeking the best quantification methods.

Another challenge of the digital economy is information manipulation. Misinformation can influence consumers to choose the wrong products, make payments to false accounts, or provide confidential information for purposes other than those stated. This can cause market fluctuations in these regions, erode consumer confidence in the digital ecosystem, and make investors in these sectors reluctant to allocate capital.

Strong regulation is needed to protect consumers and ensure the ethical use of digital technology. Long-term internet use can affect human behaviour and how we relate to others.

Conclusions

The research set out to bring together theoretical perspectives on intangible assets and trace their evolution from the knowledge-based to the digital economy. The transition from the industrial to the knowledge-based, and then to the digital, economy has changed the relationship between labour and technology. A detailed analysis of the changes has highlighted the role of intangible assets in companies' productivity. They give companies certain freedoms and drive innovation. In a century of movement in which consumer access to products and services is much easier, firms are focusing all their efforts to gain a competitive advantage. In this context, human capital is a valuable resource because it possesses the knowledge needed for the R&D process. Moreover, it strengthens the company's connection to the external environment, brand reputation, and strategy. We can consider the IAS 38 definition as the most solid legal basis for understanding intangible assets: identifiable, non-monetary resources without physical substance that have arisen from past events, the control of which is held by the organisation and from which economic benefits are expected in the next period. The marketing, ethical, medical or accounting perspective on intangible assets highlights their strategic importance to the organisation's success. There is a common interest in developing accurate, reliable methods to measure and assess the value of intangible assets. This is essential for making informed investment decisions, reporting financial performance, and establishing a company's value.

The novelty of the paper lies in bringing together four perspectives on intangible assets — accounting, marketing, ethics and healthcare — that are rarely discussed together, and in proposing a framework, illustrated in Figure 6, that links the specific determinants of the digital economy to the broader process of traceability from the knowledge economy. Unlike previous studies, which tend to address intangible assets from a single disciplinary angle, this paper shows that accounting recognition criteria, marketing-driven brand value, ethical considerations and healthcare-specific dynamics are interconnected dimensions of the same traceability process toward the digital economy.

Globalisation, the increasing use of technology, the harmonisation of accounting standards, the shift from physical work to knowledge creation, the acceleration of digitalisation, and the contribution of innovative technologies to a company's market value are important milestones in the evolution of intangible assets within companies' asset structures. It has been found that small firms' interest in R&D projects has increased in recent years, even though they cannot afford to take large financial risks. They are banking on the fact that, unlike physical assets, which depreciate over time, investment in intangible assets can add value and long-term

competitive advantage, in inverse proportion to the degree of exploitation. Accumulating a solid portfolio of intangibles can improve valuation by investors, facilitating access to finance. Adapting to the digital economy is not a choice but a reality of today's market. The internet and communication networks have catalysed information sharing and remote collaboration. However, there is polarisation between regions with less access to digital resources and investment. The increased risk of cyber-attacks and dependence on the internet are disadvantages of the information society. Filtering information and directing the knowledge held by each citizen towards research, development and information requires time, mobility and advanced digital literacy. The research is not without limitations. The literature review does not follow a systematic protocol, and the statistical evidence supporting the proposed framework is descriptive, drawn from a single source, without further econometric testing. Future research could test the proposed framework using firm-level or country-level data.

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Alina BUTNARU CIOBOTAR is a PhD Candidate at Universitatea Ștefan cel Mare Suceava, Romania. Research interests: intellectual capital, sustainability reporting, non-financial disclosure.

ORCID: <https://orcid.org/0009-0006-8240-2194>

Veronica GROSU is a Professor at Universitatea Ștefan cel Mare Suceava, Romania. Research interests: financial accounting, intangible assets, intellectual capital, sustainability reporting, non-financial disclosure.

ORCID: <https://orcid.org/0000-0003-2465-4722>

