# Globalization and the Trending insights of Sustainable Business, Energy and Artificial intelligence for companies: Trends and Values

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#### **Abstract**

This paper investigates and presents Globalization and the trending insights and values of sustainable business, energy and artificial intelligence for companies and business. The set research questions are "Has Globalization been a possible global phenomenon for sustainable business, energy satisfaction and the insights of artificial intelligence?" and "what possible trends and values may companies and business reach in times of sustainability and globalization?" The research method began with an initial literature review then in order to go further with the research; a qualitative descriptive approach together with a quantitative approach based on statistics and data interpretation and analysis were followed. The results demonstrated that sustainability is really one of the main challenging strategic opportunities of many companies and businesses. Companies and businesses need to reach values. Applying and focusing on business sustainability in times of globalization is highly important for a sustainable profit and a safe planet. Artificial intelligence has become the new ally of companies, a large number of companies and businesses are very clear that AI is the next step in their digital transformation. Traditional energy and fuels remain always the best and most used energy resources even if they used to be controversial and sources of conflicts To sum up, companies need sustainability for their competitive advantage and long life in the markets that is why energy satisfaction and the incorporation of AI together with sustainable business models may lead to sustainable business values and more satisfaction between the customers, products and services.

**Key words:** globalization, business, companies, AI, energy, sustainability, trends, values **J.E.L. classification:** F20, F60, N70, O14, P28, Q1

## 1. Introduction

A successful company has to focus on an efficient strategy for its core competency that might be a general course of set and controlled actions to determine what is the future state of what it wants to achieve. Given its core competency and position in the marketplace, the company may fix the best overall general course of action to take in order to balance its needs and profits. A core competency is the ability and level that gives the company such a competitive advantage so that it cannot be matched by competitors. The company has to seek such a strategy to create a suite of services and products, by following some tactics it may make them happen.

Globalization has brought the markets and economies together at the global level, the thing that makes it easier for companies to think about moving from an area to another to avoid product substitution, local markets and in order to gain more profit that should last for long periods so that the company and business survive in the global market if they internationalize. Moreover, moving towards the future is not easy for business no matter the size of the company that is why being sustainable may help creating business values for the business and share it with customers in times of globalization where conflicts, differences and inequalities appear at the global level may from

time to time to create gaps for business and companies. Incorporating artificial intelligence has become a competition between companies and the question of energy satisfaction is still a question for many businesses, companies and economies.

## 2. Literature review

Some recent research and studies have offered finding ways to combine the traditional aspects of sustainability with technology in business models (Alt *et al*, 2020), and understanding how ecommerce platforms impact consumers' value perceptions and future behavior (Mileros *et al.*, 2019). A sustainable business model needs to focus on economic, social, environmental, and technological dimensions (Xue et al., 2022). In fact, some studies in the literature have considered the sustainability of e-marketplaces and focused on that from the economic and social dimensions and by addressing eco-efficiency and environmental perspectives. Zhao et al. (2009) examined and tested Business to Business (B2B) e-marketplaces, investigating the ownership structures and market competition's impact on sustainability by going through an analysis of different related costs to the economic dimension and social welfare effects within the social dimension. Ghonaim et al. (2013) focused on market dynamics, strategic rules, and smart exchanges for generalized second-price auctions in e-marketplaces to boost access to economic dimension and inventory, as well as to promote transparency, self-sufficiency, and social dimension. (Ghonaim *et al.*, 2013).

According to Gaertner and Ramnarayan, (1983) firms may address latent and existing customer needs by trading off a higher profitability in the short term, in other words. By investing in long-term endeavours such production or distribution of their services. (Gaertner and Ramnarayan, 1983). The intention and desire captured in market effectiveness aim to generate and sustain measurable business growth in global value chains. Hence, the firm's aspiration is linked to market effectiveness just to design and embrace a unique model of business opportunities that emerge in global value chains (Gaertner and Ramnarayan, 1983). The resources that enable firms to gain a competitive advantage and grow their business have been a central construct in theories of the growth of the firm (Barney, 1991). If firms wants to address customer needs, they should focus on their resources effectively, for instance, by offering solutions to customer problems and then firms may see their business size, sales revenues, and market shares growing. (Barney, 1991).

In business, as a whole sustainability is about doing business without any negative impacts to the society or environment. (Spiliakos, 2018). The purpose of a sustainable business strategy is to make a positive impact by addressing the environment and society as main categories. (Spiliakos, 2018). In case the business or company fails to take over responsibility the opposite may occur leading to environmental and social issues. Sustainable business focuses on a wide array of economic, environmental and social factors during making decisions by considering and monitoring the impact of their operations to make sure that short term profits do not turn to burdens or liabilities. (Spiliakos, 2018). In its broadest sense, globalization is defined as the interconnectedness and inter-relationship of all aspects of society' (Jones, 2010). More obviously than jobs created, there are jobs destroyed and the growth in the era of globalization is slower than decades before. As a result of globalization, all the growth has belonged to others, in other words globalization is much more attractive to them, but more little attractive to the rest of society. (Stiglitz, 2002). The global challenges associated with sustainability, viewed thought the appropriate set of business lenses, can help identify strategies and practices that contribute to a more sustainable world and, simultaneously, drive shareholder value. (Hart and Milstein, 2003). Artificial Intelligence (AI) has gained a lot of attention from academic scholars. The Dartmouth Research Project defined AI as the problem of "making a machine behave in ways that would be termed intelligent if a human being behaved like this. (McCarthy et al., 1955). Thus, AI has to be understood and defined as the ability of a system to act intelligently and to do so in ever wider regions (Nilsson, 1983), correctly interpreting external data and using these teachings to attain specific objectives and activities by a flexible configuration (Kaplan & Haenlein, 2019).

## 3. Research methodology

The set research questions are "Is Globalization a possible global phenomenon for sustainable business, energy satisfaction and the insights of artificial intelligence?" and "what possible trends and values would companies and business reach in times of sustainability and globalization?" The research method focused on an initial literature review of the relevant literature to research topic and study then in order to go further with research a qualitative descriptive approach and quantitative approach based on statistics and data were followed with data interpretation and analysis.

# 4. Findings

#### 4.1. Globalization and its characteristics

Globalization is an economic, social and political process that has transformed the world into a more connected place and has affected in various ways technological markets, commercialization and the form of communication, including industrial developments at the global level. Globalization has characteristics such as trade since it grows, the development and implementation of various free trade agreements for goods and services between countries encourage them with the purpose of expanding markets, economy and productivity. Another characteristic is foreign direct investments when companies from different countries invest or call for investments in their countries by showing that their economies are open to foreign direct investments.

Globalization focuses as well on financial flows and the main economic data that occur worldwide at the level of negotiations that usually occur between large nations and obviously it is about money converted into numerical data with the use of credit cards for example. Technology and the development of technologies have been keys in globalization and business, businesses need internet and global communication using social media for example to exchange knowledge together with information and technology. Regulatory frameworks are important in globalization, each country or company has its rules, laws and to enter the global market, the company has to meet the requirements that are observed to comply with or invest in that market or country. Globalization created a global financial system that bases on some of its instruments such as the World Bank and the International Monetary Fund that analyze the forms of financial policies at the global level.

# 4.2. Industrial revolutions and globalization

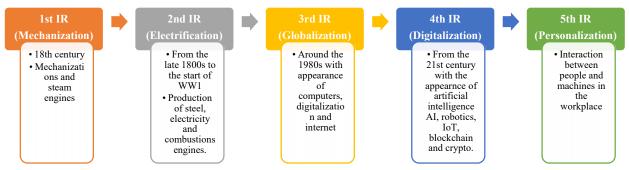
The term revolution refers to a series of profound political changes that can occur in the political, economic and social fields with changes that can occur violently and result in a new order in societies. Until the 18th century, production was mostly agricultural and artisanal, it was carried out by peasants and artisans. This situation began to change with the industrial revolution in England that came up with an increase in labor production.

## 4.3. The evolution of industrial revolution and the appearance of Globalization

The first industrial revolution (1st IR) used water and steam power to mechanize production and it was from the late 18th century and the early 19th century and began in Britain then spread throughout the world. The second industrial revolution was relatively from the late of the 1800s to the start of the First World War and it revolutionized and came up with the production of steel and used electric power to create mass production. The second industrial revolution (2nd IR) was another great leap forward on technology and society with new innovations in steel production, petroleum and electricity, it led even to the introduction of public automobiles and airplanes. The third industrial revolution came with sweeping changes based on computing and communication technology starting from approximately the 1980s with the creation and appearance of the first electronic computers. (See figure no.1). The third industrial revolution (3rd IR) used electronic and information technology to automate production with a lateral power in transforming energy, economy and the world characterized the appearance of globalization that started in a parallel way with it. The fourth industrial revolution continued to develop what started in the 3rd IR with a full digital revolution and

it has been characterized by the fusion of technologies that are blurring the lines between the physical, digital and biological areas. The 4<sup>th</sup> IR is completely distinct from the 3<sup>rd</sup> IR because it has simply based more on velocity, scope and systems impact. When compared with the fourth industrial revolution, the 4<sup>th</sup> is disrupting almost every industry at the global and national levels in the frames of globalization. Furthermore, the breadth and depth of these changes by the 4<sup>th</sup> IR herald the transformation of the entire systems of production, management and governance. (See figure no.1).

Figure no. 1 Globalization and the line of Industrial revolutions (IRs)



Source: Authors' design and research, 2023

The fourth industrial revolution (4<sup>th</sup> IR) as known industry 4.0 has been characterized by the fusion of the digital, biological and physical world's insights as well as the appearance and rise of new smart technologies such as artificial intelligence, cloud computing, robotics, 3D printing, the internet and wireless technologies. Moreover the 4<sup>th</sup> IR has ushered in a new era of economic disruption with uncertain economic consequences by focusing on new notions of production and consumption that should respect the appearance of sustainability patterns. The fifth industrial revolution (5<sup>th</sup> IR) as known industry 5.0 that is being step by step introduced by the fourth industrial revolution seems to be based more on the coexistence of artificial intelligence, robots and human at the work place with a direct interaction between them. The fifth industrial revolution seems to be focusing more on circular economy, sustainability and continuous recycling to tackle climate change and preserve the economy and business while addressing main needs. (See figure no.1).

### 4.4. Business sustainability as a key opportunity for business and companies

One of the main strategic opportunities of many companies and businesses is sustainability that is considered a big challenge and opportunity for business. Sustainability is the ability to satisfy current needs without compromising the ones of future generations. Thus, guaranteeing the balance between economic growth and care for the environment and social dimensions is essential. Therefore, sustainability refers to the progress and development in the present and in the long term. If we extrapolate this concept to a business level, we are talking about establishing a strategy with a long-term vision where business decisions have to be based not only on economic issues, but also on social issues, environmental issues and ethical issues such as climate change, gender equality and diversity in all its forms. In addition to this, this strategy has to respond not only to the objectives and interests of the business itself but also to those issues or concerns that the main stakeholders may have. Companies should prioritize responsible plans and sustainable objectives for their products or services in order to measure this concept and the value contribution of the three dimensions, which are social, environmental and economic.

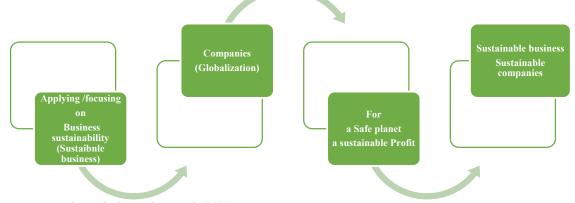
Conceptually, to be sustainable, the criteria are the same whether the business or company is a large, small or medium-sized. A company whose purpose is to generate wealth has to focus on the development or marketing of a product or service to satisfy the needs and demands of the society in a sustainable way. Therefore, any company that exists, regardless of its size, has to be sustainable in order to guarantee that wealth. Thus it will be generating the value that is expected from it. Besides, sustainability should be a backbone of the strategy of any business or any SME, not only because of an ethical or responsibility commitment but also because of the opportunities that make clear that

being sustainable can bring, such a reduction of costs, taxes, improving reputation together with trust and improving competitiveness so that the company may have even better access to financing. It is true that there are different ways of dealing with sustainable transformation and mainly SMEs. On the one hand, in a proactive way because there are companies that detect the need or see the opportunity by taking actions or acting accordingly. On the other hand, there are companies that act reactively and see sustainable business more as a risk than an opportunity. Those companies that are waiting will do nothing because it is like a fad and waiting to see if the crisis ends is not a good solution. So companies that understand the concept of sustainability and apply it know how to measure well with the corresponding metrics and results. So, they communicate it in a transparent way to the society. Sustainable companies may be truly competitive if they generate and create values towards a sustainable future no matter their size. (See figures no. 2 and 3).

#### 4.5. Trending sustainability for sustainable business and companies in Globalization

Companies and business should consider the fact that applying and focusing on business sustainability in times of globalization is highly important for a sustainable profit and safe planet so that the possibility of sustainable companies and sustainable business will be real. (See figure no.2).

Figure no.2 Applying sustainability for sustainable business and companies in Globalization



Source: Author's design and research, 2023

# 4.6. Business, sustainability and the movement from plan to action

Sustainability has to be integrated into the leadership, culture and processes of business to be part of the company's results. Especially, by moving towards innovation, competitiveness and value creation, if taking actions in the right time is highly important, business sustainability and sustainable companies should consolidate the incorporation of environmental, social and good governance criteria in their activities. On the one hand, by at least increasing dialogue and cooperation with interest groups. On the other hand, by improving transparency with society. Companies should begin to have more action and more ambition in certain aspects that are critical for the evolution of people and the planet, such as, climate change. In addition to this, there should be more involvement in the fight against inequalities and much more involvement in the well-being and talents of employees. Companies need to have leaders who understand this new way of doing business, leaders who may incorporate these values into the business operations. In short, for companies to achieve more sustainability, there should be leaders who are enthusiastic, energetic to inspire or motivate all employees and the entire value chain that is part of the company's activity and to incorporate sustainability in their projects. (See figures no. 2 and 3).

Sustainability is a business opportunity if the company or business is able to create values for the company itself and for the society in a transparent manner. Not only those companies that are obliged to make sustainability reports have to tell what they do, any company no matter its size better knows how to explain the value that its product or service provides moving to more sustainable products.

So, it will be more competitive and will be in the market longer and its brand or services will be appreciated and trusted more by the entire society. (See figures no. 2 and 3).

## 4.7. Applying sustainability in business for business values (A business sustainable model)

The multidimensional model of shareholder creation by Hart and Milstein (2003) from the executive management review (2003) demonstrates how through appropriate business strategies and practices, challenges may be converted by companies into initiative to increase shareholder value. (Hart and Milstein, 2003). By creating the sustainable business model illustrated in figure no.3 after applying the model key dimension of shareholder value of Hart and Milstein (2003) for sustainable value in business to reach business sustainable values. We observe as illustrated below in the upperleft quadrant that by developing sustainable competency and identifying new products and services, the company and business will be able to boost innovation and reposition business as business sustainable values. In the left-lower quadrant as suggested, engaging employees will help the company and business reduce waste and use resources more efficiently. The upper right quadrant makes clear that defining competitive imagination means creating a future trajectory for the company and business, whereas, by extending the value of products the company and business may enhance legitimacy and business. (See figure no.3).



Figure no.3 a suggested sustainable business framework and model for a sustainable business value

Source: Author's design and research, 2023 (Following Hart and Milstein sustainable framework, 2003)

# 4.8. Energy management, industry and business sustainability for industrial companies

The importance of doing more with less to industrial companies is extremely important, energy may represent up to one third of operating costs. So reducing energy consumption may be a key to remaining competitive but identifying when and where to cut energy can be difficult and may result in compromising production targets or even worse product quality. However, reducing or cutting energy costs may help increase productivity

#### 4.9. Energy sources and globalization

All sources of energy have limits that cannot be exceeded, the maximum rate at which the sun's photons can be converted to electrons is about 33%. Wind and solar energies work when the wind bows and the sun shines. But energy is needed all the time, that's why batteries are used even if they are made and transported from a place to another. In fact, wind and solar energies still supply less than 3% of the world's energy. Putting aside the economy, if the goal is to protect the environment, there should be always the idea of rethinking wind, solar and batteries because all machines are built from nonrenewable materials. Then there is the waste, wind turbines, solar panels and batteries have a relatively short life about twenty years. Mining itself requires massive amounts of conventional energy, as do the energy intensive industrial processes that are needed to refine the materials and then build the wind, solar and battery hardware. However, conventional energy machines like gas turbines last twice as long.

Perhaps, some companies, businesses and economies want to reconsider the inexhaustible supply of hydrocarbons or the fuels that make the global economy move with technology to easily use them every day but it is a bit controversial. It costs about the same to drill one oil well than building one giant wind turbine and while that turbine generates the energy equivalent of about one barrel of oil per hour, the oil rig produces 10 barrels per hour. It costs less than \$2 to store a barrel of oil or its equivalent natural gas. But at least \$200 of worth batteries to hold the energy contained in one oil barrel. So wind and solar energies are not the magical solutions and substitutes for hydrocarbons and the world's economy and energy needs, Traditional energy and fuels remain always the best and most used energy resources even if they used to be controversial and sources of conflicts. (See figure no.4).

Energy sources have been highly important for ages, staring from the first main energy source that used to be traditional biomass between the 15th and mid-19th centuries followed by the appearance of coal starting from the mid-19<sup>th</sup> century that could the main dominant energy source of that era. From the early 20th century oil started to be an energy source but less available than both biomass and coal energies But from the late 20th century oil rose to the lead with the highest the demand followed by the appearance of Natural gas as a new energy source of the era and surpassed both traditional biomass and coal energies with a slight appearance of other sources such as Nuclear energy, hydrogen and renewable energies. (See figure no.4).

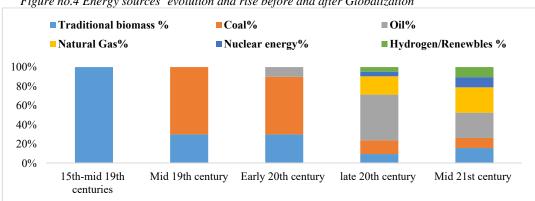


Figure no.4 Energy sources' evolution and rise before and after Globalization

Source: Authors' research and elaboration, 2023

Starting from the Mid-21st century and so far Oil and Natural gas have been the main energy source worldwide with a fluctuation in prices and demand, the thing that made them sources of conflicts and interests in business and economy. The other energy sources such as Biomass, coal, nuclear and renewable energy have continued to exist but with a low competitive advantage, high prices or less abilities compared to both fuels Oil and Natural gas. (See figure no.4).

The energy commodity price index worldwide from 2013 to 2022 was higher in 2022 compared the previous years and back to 2013. The high demand for commodities and fuels make them increase in price, other factors that might be even global such geopolitical conflict, global health crisis inflation and recession may affect the prices of commodities like what happened after the geopolitical conflict in 2022. Thus, in globalization, there is a lot of transmission, if something happens in any part of the world economically, socially of environmentally it may transmit to other parts of the world, the thing that make globalization suffer from some weaknesses that may affect the global economy and society by leading even to a crisis. (See figure no.5).

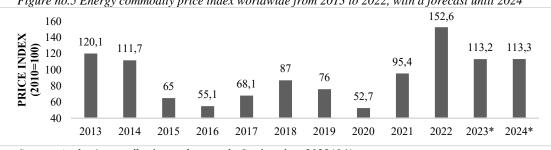


Figure no.5 Energy commodity price index worldwide from 2013 to 2022, with a forecast until 2024

Source: Author's contribution and research, Statista data 2023(Q1)

## 4.10. Artificial intelligence for business and companies

Artificial intelligence (AI) has come to change everything in business by changing the world of automation, a lot of industries are completely changing and a lot of professions have started somehow to expire. AI is concerned with building intelligent machines with the potential to perform tasks that normally require human intelligence. Systems and applications that have the ability and capability of understanding human behavior, analyzing the environment and context, reasoning and learning from experience and making decisions autonomously. Artificial intelligence has entered companies, industries, commerce and business. It has been one of the four foundations of the fourth industrial revolution along with the internet, big data, cloud computing and what is called industry 4.0.

# 4.11. Artificial intelligence in supply chains and business opportunities

Artificial intelligence is used to forecast what will be needed in the supply chain and when and what will be the optimal time to move supply. Today, artificial intelligence has become a new ally of companies, a large number of companies and businesses are very clear that artificial intelligence is the next step in their digital transformation, however there are many myths around it and high expectations.

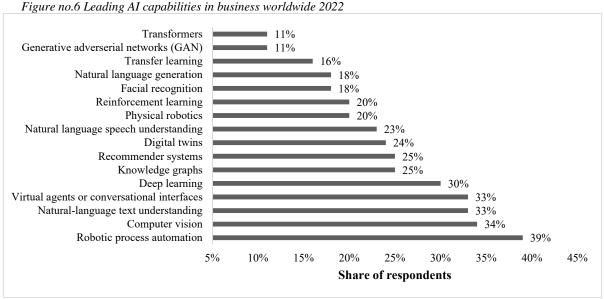
Artificial intelligence is rather about positive analysis, pattern recognition, learning systems, virtual assistants and robotics for process automation among many other things, we can say that artificial intelligence is a system that extends in their capabilities to human capabilities and in the business world is not necessarily about replacing human work. The field of artificial intelligence is very extensive and yet some of its applications and tasks can be mentioned for business and industry as the followings:

**Process automation**. Through the use of artificial intelligence there are many tasks that were previously carried out, for example, manually and can now be scheduled and carried out in less time with fewer resources and more information can be obtained than ever thought, often requiring algorithms and companies are dedicated to the management of artificial intelligence. Ai systems in business or other fields receive, organize and analyze unstructured data and convert it into useful information.

Customer service. In the e-commerce sector, artificial intelligence is becoming much more common so that several companies are now integrating it, for example, Chatbots into their web pages for a complete virtual assistance service offered in time. A large part of companies' efforts are focusing precisely on perfecting these digital tools with more innovation thanks to saving time in operational tasks and thanks to the integration of artificial intelligence platforms. Today companies are able to have more resources for other tasks such as innovation or creativity with a scenario where artificial intelligence systems are dedicated to more monotonous or routine tasks. It is important that companies have started to get involved in artificial intelligence with the first steps to prepare for the future.

Leading AI abilities in business worldwide in 2022 appeared more in Robotic process automation with 39% and computer vision with 34%, natural-language text understanding and virtual agents or conversational interfaces appear in lead of AI capabilities in business with 33%. That means that artificial intelligence appear to be quite useful for business. AI abilities in the business area in 2022

reached 25% in both knowledge graphs and recommender systems but for natural language speech understanding 23% and both reinforcement learning and physical robotics 20%. The lowest percentage of AI abilities includes generative adversarial networks (GAN) and transformer due to their ongoing development and maybe high costs or difficulties I reaching high results since artificial intelligence is still in progress for business in companies within the frames of globalization at the global level. (See figure no.6).



Source: Author's contribution and research, Statista data 2023(Q1)

#### 5. Conclusions

International negotiations differ from their domestic counterpart by involving all three environments: domestic, foreign, and international. Human interaction is multiplying and networks are becoming increasingly denser or more saturated and it is an evolution led by globalization itself, by the growing interaction of trade, by the growth of production and by the expansion of communications. In order to reach effective markets, there must be effective states and the countries that want to benefit from globalization need to develop capabilities that are both social and economic. (See figure no.8). Today, artificial intelligence has become a new ally of companies, a large number of companies and businesses are very clear that artificial intelligence is the next step in their digital transformation, however there are many myths around it and high expectations. Perhaps, some companies, businesses and economies want to reconsider the inexhaustible supply of hydrocarbons or the fuels that make the global economy move with technology to easily use them every day but it is a bit controversial. So wind and solar energies are not the magical solutions and substitutes for hydrocarbons and the world's economy and energy needs. Traditional energy and fuels remain always the best and most used energy resources even if they used to be controversial and sources of conflicts. To sum up, globalization is a possible global phenomenon for sustainable business, energy satisfaction and the insights of artificial intelligence if the possible trends and values may make companies and business reach sustainability in business and why not a move towards sustainable globalization. Sustainability for business is a key for values and a safe planet for the next generation. Companies need sustainability for their competitive advantage and long life in the markets that is why energy satisfaction and the incorporation of artificial intelligence may lead more sustainable business values and more satisfaction between the customers, products and services. (See figure no.8).

The need of Sustainability

Companies/Business towards sustainability

Energy satisfaction

Figure no.8 incorporating sustainability, energy satisfaction and AI for business and companies

Source: Author's design and research, 2023

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