

# Sustainable Entrepreneurship in the Age of Digital Transformation

Hamed Vares<sup>1</sup>, Mohammad Kargar Shouraki<sup>2</sup> & Naji Yazdi<sup>3</sup>

<sup>1</sup> Assistant Professor and President of Center for Business Sustainability, University of Tehran, Iran

<sup>2</sup> PhD. & Postdoc, Vice President of Center for Business Sustainability, University of Teheran, Iran

<sup>3</sup> Assistant Professor, Department of Marketing, Strategy and Entrepreneurship, University Canada West, Vancouver, Canada

Correspondence: Naji Yazdi, Department of Marketing, Strategy and Entrepreneurship, University Canada West, Vancouver, Canada.

Received: September 9, 2024      Accepted: November 10, 2024      Online Published: November 26, 2024

doi:10.5539/jms.v14n2p155      URL: <https://doi.org/10.5539/jms.v14n2p155>

## Abstract

Entrepreneurship is widely recognized as a driver of innovation and economic growth, supported by nations globally. It is an efficient and effective activity leveraging available resources, driven by creativity and innovation, to achieve specific business outcomes. This involves producing and offering new and innovative products and services, aligning with market needs, while embracing risk and flexibility. However, the concepts of entrepreneurship have undergone significant changes in recent years. The world has been grappling with major environmental and social challenges over the past few decades. Despite technical, economic, and social advancements, these challenges persist and continue to have destructive impacts over time. Can entrepreneurship help address these grand challenges? Traditionally, entrepreneurship has been studied as a mechanism to stimulate economic development and create financial value. However, growing awareness of global social and environmental challenges has led many scholars to reconsider entrepreneurship, viewing it not merely as a profit-generating activity but as an effort that should also incorporate elements fostering social and environmental development. Accordingly, traditional entrepreneurship, focusing solely on economic profitability, is increasingly evolving into sustainable entrepreneurship, aiming to tackle social and environmental challenges in the digital age. The analysis of the role of sustainability in the digital age on new entrepreneurship is a significant topic that requires a more detailed and profound examination. This research has been conducted using a systematic review methodology. Initially, relevant articles were selected from four reputable databases: Science Direct, Scopus, Web of Science, and MPDI, using the keywords “sustainable entrepreneurship” and “digital entrepreneurship.” After several screening stages, including reviewing titles, abstracts, and content, a total of 42 articles from reputable journals ranked Q1 and Q2 were chosen as the final selected papers. Upon thorough examination of these articles, new entrepreneurship based on sustainability in the digital age was described. The conclusion drawn is that in new entrepreneurship, in addition to the economic sustainability emphasized in traditional entrepreneurship, it is essential to focus on two important aspects: environmental sustainability and social sustainability. Furthermore, it is suggested that digital transformation technologies should be utilized to accelerate the implementation of these sustainability aspects.

**Keywords:** sustainable entrepreneurship, digital entrepreneurship, economic entrepreneurship, environmental entrepreneurship, social entrepreneurship

## 1. Introduction

Entrepreneurship is widely regarded as a catalyst for innovation and economic growth, which is why entrepreneurs receive substantial support (Fernandes, Ferreira, Veiga, Kraus, & Dabić, 2022). However, sustainability has now become one of the greatest challenges organizations face in achieving economic growth. Consequently, their competitiveness is directly influenced by environmental sustainability factors (Mendes, Ferreira, Kannan, Ferreira, & Correia, 2022). In recent years, the limitations of conventional businesses solely focusing on profit have become apparent. This has led to growing interest among researchers in the potential and capacity of sustainable entrepreneurship (Matzembacher, Raudsaar, Barcellos, & Mets, 2020). Entrepreneurship, recognized for its capacity to drive economic growth and development through adaptability, has become a central theme in business research. The most recent approach, sustainable entrepreneurship, combines traditional entrepreneurial practices

with the principles of the triple bottom line, focusing on economic, social, and environmental sustainability. Since the United Nations adopted the “2030 Development Agenda,” this approach has received substantial legal and formal backing (Avelar, Borges-Tiago, Almeida, & Tiago, 2024). Sustainability aims to tackle critical social and environmental issues, such as climate change and increasing inequalities, which are becoming more prominent and are highlighted in initiatives like the United Nations’ Sustainable Development Goals (SDGs) and the 2021 United Nations Climate Change Conference (COP26) (Holzmann & Gregori, 2023). Sustainable entrepreneurship involves creating and managing a business in a way that considers the social, economic, and environmental impacts of its operations. This includes identifying and developing opportunities meeting current needs without compromising the ability of future generations to meet their own needs (Avelar, Borges-Tiago, Almeida, & Tiago 2024). In this regard, research has increasingly recognized sustainable entrepreneurship (SE) as a crucial source for advancing sustainable development efforts by creating positive social and environmental impacts through economically viable businesses (Holzmann & Gregori, 2023). Intentions are identified as one of the main drivers for recognizing sustainable entrepreneurial opportunities and subsequently engaging in such activities (Thelken & de Jong, 2020). SE literature is rapidly growing and characterized by entrepreneurial activities encompassing broader environmental, social, and governance (ESG) goals beyond non-financial gains (Mansouri & Momtaz, 2022). Nevertheless, research has yet to provide a comprehensive explanation of how to balance the inherent complexities of simultaneously generating social, environmental, and economic value while considering the needs of future generations (Thelken & de Jong, 2020). This gap underscores the ongoing growth of research in SE (Carolina, Gabriela, & Ismael, 2024).

Digital transformation is a new opportunity for sustainable entrepreneurship. The creation of value propositions that combine economic, social, and environmental benefits is facilitated by digital technologies. Additionally, digital technologies offer distinctive configurations for value creation elements, enabling co-creation, community development, and wider stakeholder integration practices. Because digital technologies allow for impact complementarities, the scalability of social and environmental value, and value spillover, they can also result in multidimensional value capture. Additionally, the results shed light on possible conflicts arising from logic both within and between the various components of the business model (Gregori & Holzmann, 2020).

One of the most significant gaps in new entrepreneurship aimed at sustainability is understanding its dimensions and the role each dimension plays in ensuring long-term success. On the other hand, given the challenges posed by digital transformation and its impact on businesses and entrepreneurship, it is essential to clearly examine its effects as well. The number of credible articles that thoroughly explore both the topics of sustainability in entrepreneurship and the impact of digital transformation together is very limited. Therefore, this chapter emphasizes the study of sustainable entrepreneurship in the era of digital transformation as the primary objective.

Main Objective:

- To explain sustainable entrepreneurship with a focus on the era of digital transformation.

Sub-objectives:

- To examine the role of sustainable development and sustainability in entrepreneurship.
- To explore sustainable entrepreneurship in the digital age.
- To introduce and explain the dimensions of sustainable entrepreneurship.

## 2. Theoretical Framework

As shown in Figure 1, new definition of entrepreneurship, known as sustainable entrepreneurship, is expanding day by day. It encompasses both traditional entrepreneurship and sustainability. In traditional entrepreneurship, the emphasis is on short-term profitability and efficient use of resources for economic gain. Additionally, it considers current customer needs with the goal of profitability. In sustainable entrepreneurship, the aim is to create long-term value for three stakeholders: long-term profitability for the organization, consideration for people, and ultimately, a focus on the planet (Earth).

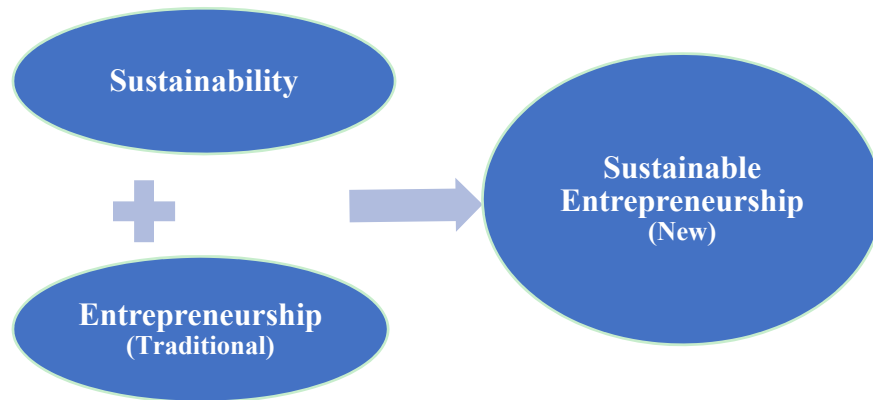


Figure 1. Sustainable Entrepreneurship

Entrepreneurship is acknowledged as a potential solution to major social and environmental challenges like climate change and social inequality (Gregori & Holzmann, 2020). Therefore, sustainable entrepreneurship can contribute to sustainable development by seeking synergies between social, environmental, and economic outcomes, transforming market failures into business opportunities (Watson, Nielsen, Wilson, Macdonald, Mera, & Reisch, 2023). Sustainable entrepreneurs are thus seen as key players (Gregori & Holzmann, 2020; Watson et al., 2023), because they advance sustainable development through implementing durable and innovative business models that create positive social and environmental impacts (Gregori & Holzmann, 2020). They play a crucial role in environmental innovation and accelerating sustainability transitions (Fichter, Lüdeke-Freund, Schaltegger & Schillebeeckx, 2023).

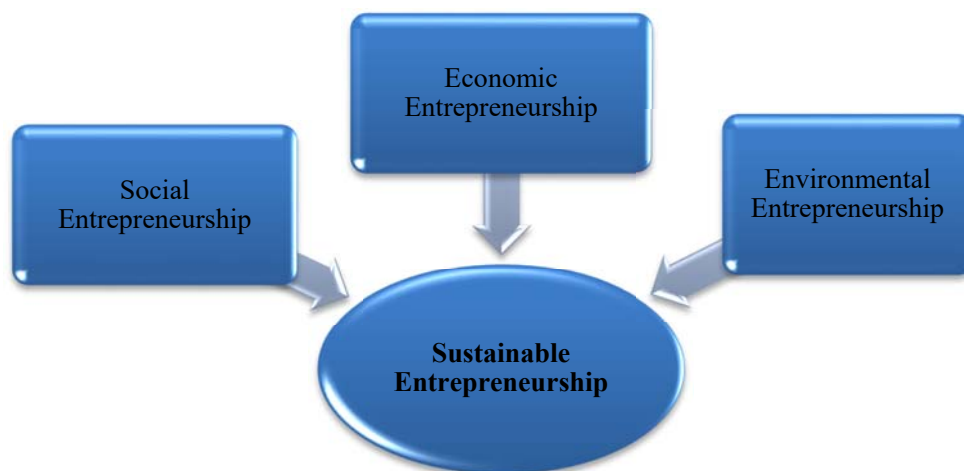


Figure 2. Dimensions of Sustainable Entrepreneurship

As seen in Figure 2, sustainable entrepreneurship, which is a new version of traditional entrepreneurship, combines the theme of sustainability. It includes three main dimensions: economic entrepreneurship, social entrepreneurship, and environmental entrepreneurship.

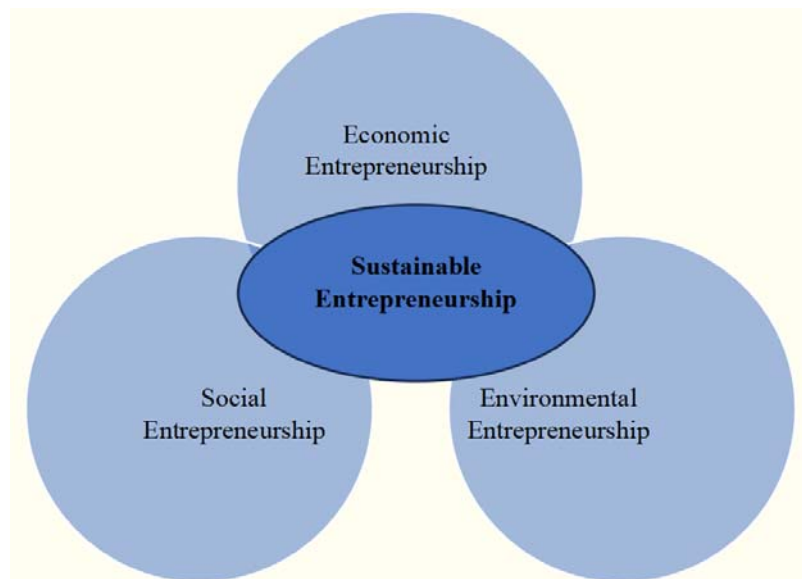


Figure 3. Balancing the Dimensions of Sustainable Entrepreneurship

An important point to consider in sustainable entrepreneurship is the need for balance among its three dimensions. As depicted in Figure 3, successful sustainable entrepreneurship encompasses three dimensions: economic entrepreneurship, social entrepreneurship, and environmental entrepreneurship. While it is necessary for sustainable entrepreneurship to include all three dimensions, achieving a balance among them is the sufficient condition for success.

We observe a convergence of two seemingly different challenges in business with significant implications for entrepreneurship. The first challenge pertains to the increasing attention to the climate emergency and the need for social actors to take broader roles in generating environmental and social value (George, Merrill, & Schillebeeckx, 2021). Consequently, sustainable entrepreneurs are aimed at creating environmental and social value (Gregori, Wdowiak, Schwarz, & Holzmann, 2019). Although traditionally associated with the economic and business sphere, entrepreneurship is now viewed as a key goal for ensuring social, cultural, and economic development in any region (Prendes-Espinosa, Solano-Fernández, & García-Tudela, 2021). The second challenge involves the rapid digitalization of the economy. Various new technologies form a digital toolbox of solutions that challenge the status quo (George, Merrill, & Schillebeeckx, 2021). Therefore, while this chapter addresses sustainability in entrepreneurship, it emphasizes the digital age. The main objective is to accelerate the process of sustainability in economic, and particularly social and environmental, sectors through entrepreneurship. With the onset of the digital transformation era, related non-disruptive technologies can facilitate this process of sustainability.

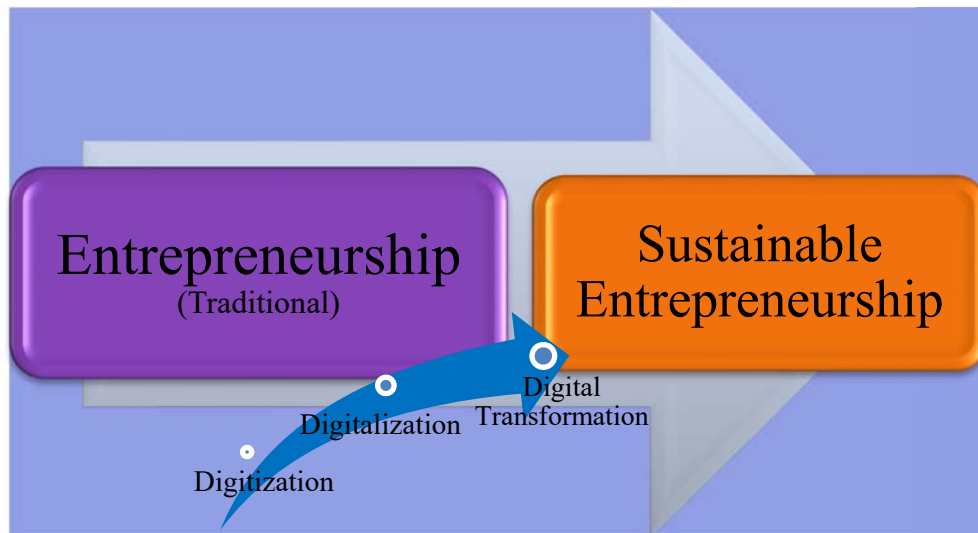


Figure 4. Digital Transformation and Sustainable Entrepreneurship

Therefore, one of the important factors and drivers for achieving sustainable entrepreneurship in today's conditions is the focus on the digital domain. According to Figure 4, the movement has started from digitization and progressed to digitalization, ultimately reaching the stage of digital transformation. Positive technologies in the field of digital transformation can have a significant impact on sustainability and sustainable entrepreneurship. For this reason, we will continue to explore sustainable entrepreneurship in the era of digital transformation.

### 3. Research Methodology

This research has been conducted using a systematic review methodology. Initially, relevant articles were selected from four reputable databases: Science Direct, Scopus, Web of Science, and MDPI, using the keywords "Sustainable Entrepreneurship" and "Digital Entrepreneurship."

Table 1. Inclusion and exclusion criteria of the research

Criteria	Inclusion	Exclusion
Language	English	Non-English
Date of Publication	01/01/2010 - 01/08/2024	Before 01/01/2010 or after 01/08/2024
Research Subject	Sustainable Entrepreneurship in Digital age	Other
Research Type	Article	Other (news, reports, etc.)

Based on the inclusion and exclusion criteria (Table 1), the keywords of interest were selected concurring to the subject (Sustainable Entrepreneurship & Digital entrepreneurship).

### 4. Results

After several screening stages, including reviewing titles, abstracts, and content, a total of 42 of 158 articles from reputable journals ranked Q1 and Q2 were chosen as the final selected papers.

Table 2. The number of final articles

No.	Subject	Number
1	Sustainable Entrepreneurship	24
2	Digital Entrepreneurship	3
3	Digital & Sustainable Entrepreneurship	15
Total		42

Table 3. Selected articles by year

Year	2019	2020	2021	2022	2023	2024
Number	2	6	3	14	10	7

#### 4.1 Sustainable Entrepreneurship in the Digital Age

The development of digital technologies in recent years has profoundly impacted the entrepreneurial process (Fernandes et al., 2022; Holzmann & Gregori, 2023). Digitalization has introduced transformative and rapid changes, making it essential for researchers and entrepreneurs to leverage related technologies to identify evolving business opportunities (Baig, Hussain, Meidute-Kavaliauskiene, & Davidavicius, 2022). Entrepreneurial actors are leveraging digital technologies to tackle key sustainability challenges. They achieve this not only by driving technological innovations but also by crafting business models that embed new objectives into these innovations. They define digital sustainability as the set of organizational actions focused on promoting sustainable development goals through the innovative use, generation, transfer, or sourcing of electronic data (George, Merrill, & Schillebeeckx, 2021). The growth of the digital economy is significantly driven by entrepreneurial activities supported by digital technologies. The performance of the digital economy is a strategic issue for achieving economic development and socio-environmental growth (Fernandes, Pires, & Gaspar Alves, 2022). Entrepreneurship has widely been considered a catalyst for innovation and economic growth. With the advent of the digital transformation era and today's technological and digital challenges, the concept of digital entrepreneurship is also on the rise. This is evident both in the digitalization of existing businesses and the creation of new digital enterprises (Fernandes et al., 2022). These transformations are crucial, as how entrepreneurs adapt to digital environments will determine the future of companies (Nicolau, Nichifor, Munteanu, & Bărbulescu, 2022). The development and use of digital technologies create new opportunities for entrepreneurs, enabling the development and improvement of businesses ensuring economic, environmental, and social sustainability (Fernandes et al., 2022). Digitalization has provided entrepreneurs with new prospects, necessitating their readiness for sustainable advancements. Albeit, digital entrepreneurs differ from traditional entrepreneurs as digital entrepreneurship pertains to leveraging technology to create and operate businesses in innovative ways (Baig et al., 2022). Sustainable entrepreneurs integrate digital technologies into their business models to enhance the creation of social and environmental value (Gregori & Holzmann, 2020).

#### 4.2 Sustainability and Sustainable Development

In response to the environmental impacts of today's lifestyle, 193 countries established and endorsed the Sustainable Development Goals (SDGs) in 2015, a shared agenda comprising 17 goals to be reached by 2030. It is vital to link and integrate existing knowledge on sustainability and environmental issues through collaborative efforts (Diaz-Sarachaga & Ariza-Montes, 2022; Pereira, Leitão, Oliveira, & Peirone, 2023). These goals are aimed at advancing social, economic, environmental, and governance dimensions (Diaz-Sarachaga & Ariza-Montes, 2022; Popkova, Bogoviz, Lobova, Delo, Sergi, & Yankovskaya, 2023). By adopting the 2030 Development Agenda for sustainable development, the United Nations made a historic decision on "a comprehensive, broad, and people-centered set of transformative global sustainable development goals" (Constantin & Kavoura, 2022; Del-Aguila-Arcentales, Alvarez-Risco, Jaramillo-Arévalo, De-la-Cruz-Diaz, & de las Mercedes Anderson-Seminario, 2022).

Sustainable entrepreneurship addresses environmental, social, and economic issues, grounded in the Triple Bottom Line (TBL) concept (Avelar, Borges-Tiago, Almeida, & Tiago 2024; Thelken & de Jong, 2020). The "2030 Development Agenda," endorsed by the United Nations General Assembly in 2015, has prompted greater institutional support for sustainable entrepreneurial ventures by companies. This agenda provides a framework for global collaboration across various sectors and levels of governance (Avelar, Borges-Tiago, Almeida, & Tiago, 2024). This approach is aimed at economic growth to achieve social progress without harming the environment through core institutional support (Diaz-Sarachaga & Ariza-Montes, 2022).

Haanaes and Olync (2022) define sustainability in business as "business approach to creating long-term value by considering how a given organization operates in the ecological, social, and economic environment". The 26<sup>th</sup> United Nations Climate Change Conference, held in Glasgow, Scotland, in 2021, advanced the global sustainability vision by challenging businesses to align their strategies with sustainability goals (www.ukcop26.org). Consequently, in today's highly competitive business world, sustainability is of interest to every business. According to a recent Accenture report, 84% of companies plan to increase their investments in sustainability by the end of 2022, aiming to achieve net-zero emissions by 2050. Besides the primary goal of making a profit, the entrepreneurial sector emphasizes sustainability, recognizing the close link between economic

prosperity and social and environmental development (Lupoae, Wilk & Radu, 2024). The resolution “Transforming our World: the 2030 Agenda for Sustainable Development,” adopted by the United Nations General Assembly in 2015, serves as a comprehensive policy framework outlining 17 Sustainable Development Goals (SDGs) that represent global development priorities through 2030. These goals address key economic, social, and environmental challenges faced by both global and national communities. The 2030 Agenda aims to restore balance between progress and sustainability, striving to create an inclusive and sustainable world for all nations (Del-Aguila-Arcenales et al., 2022). With the adoption of the 2030 Agenda and its 17 SDGs, United Nations member states, along with the global community, have reaffirmed their commitment to sustainability. The SDGs cover a broad spectrum of economic, environmental, and social issues, posing new and significant challenges for all societal actors. Researchers and practitioners alike recognize the specific impact on businesses, as companies must now adapt their strategies and operations not only to meet the SDGs but also to address the expectations of environmentally and socially conscious consumers (Herman, 2022). Hence, without transforming the existing businesses, future economic and environmental challenges cannot be sustainably addressed (Bican & Brem, 2020). Thus, sustainable entrepreneurship can support sustainable development by creating synergies between social, environmental, and economic outcomes, transforming market failures into profitable opportunities (Watson et al., 2023).

#### *4.3 Digital Sustainability*

Digitalization can be viewed as a mechanism linking various dimensions of the socio-economic system (technological, social, economic, and ecological). Thus, digitalization is a source of new challenges for the resilience of socio-economic systems (Satalkina & Steiner, 2020). Although digitization plays a significant role in supporting the United Nations’ SDGs (Bican & Brem, 2020), and on one hand, it presents opportunities (Satalkina & Steiner, 2020), as the field of digitization and emerging digital technologies effectively supports the implementation of the UN’s SDGs (Baranauskas & Raišienė, 2022), it also brings new risks and unpredictable consequences. Therefore, addressing such challenges in a sustainable and forward-thinking manner (also in line with the principles of the SDGs) becomes important (Satalkina & Steiner, 2020).

#### *4.4 Sustainability and Entrepreneurship*

The impact of sustainability is a central theme in cleaner production and sustainable entrepreneurship research, with the latter being a relatively new but quickly growing area within the field of entrepreneurship studies (Fichter et al., 2023). The world is increasingly besieged by significant challenges affecting the political, economic, and social well-being of people. Climate change, environmental degradation, food insecurity, famine, rising poverty and homelessness, deforestation, and dwindling supplies of clean drinking water are also the issues that have plunged society into a new crisis (Shahid, Hossain, Shahid, & Anwar, 2023). As a result, sustainability and entrepreneurship have recently become hotly debated topics among academics and professionals (Baran & Berkowicz, 2021). Although entrepreneurship is a productive activity aimed at achieving specific business outcomes using available and accessible resources, characterized by novelty and innovation. Thus, the above definitions precisely indicate: creating something new, adapting to market needs, taking risks, and flexibility in activities or innovation, which are emphasized in entrepreneurship (Lis & Ptak, 2022); this can be related to addressing new sustainability challenges (Baran & Berkowicz, 2021). Accordingly, the approach to doing business has changed in recent years, and accordingly, the concepts of entrepreneurship and the entrepreneur have also evolved (Lis & Ptak, 2022). Despite technical, economic, and social advancements, major social and environmental challenges persist stubbornly and become more apparent over time. Can entrepreneurship help address these significant challenges? Traditionally, entrepreneurship has been studied as a mechanism for stimulating economic development and creating financial value (Shahid et al., 2023). In response, sustainable entrepreneurship (SE) has developed as a new field within entrepreneurship, integrating both entrepreneurial and sustainability dimensions (Salehe, Sesabo, Isaga, & Mkuna, 2024). The literature on sustainable entrepreneurship is expanding rapidly and is distinguished by entrepreneurial activities that go beyond non-financial gains to include broader environmental, social, and governance (ESG) objectives (Mansouri & Momtaz, 2022). This increased awareness of global social and environmental challenges has led many academics to rethink the concept of entrepreneurship, traditionally viewed as merely a profit-generating activity, and to consider it as an effort towards social and environmental sustainability, incorporating it into their mission and revising their objectives (Shahid et al., 2023). The mission and objectives of sustainable entrepreneurship include economic, environmental, and social goals integrated into business activities. Entrepreneurs must consider the three aspects of sustainability—economic, environmental, and social (not merely economic)—when identifying and pursuing business opportunities. Nowadays, conducting harmful business practices is neither acceptable nor effective. Therefore, sustainability in entrepreneurship requires conducting entrepreneurial activities without negatively impacting the environment

(Sieg, Posadzińska, & Józwiak, 2023). Sustainable entrepreneurship, focused on tackling inequality and environmental degradation, has drawn growing interest from researchers, entrepreneurs, and policymakers. According to the sustainable entrepreneurship ecosystem theory, analyzing the economic, social, and environmental preconditions can lead to highly sustainable entrepreneurial practices. This analysis utilizes data from the Global Entrepreneurship Monitor (GEM) 2022, the World Bank, the World Development Index (WDI), and the Sustainable Development Goals (SDGs) Index (Huang, Li, Bu, & Zhao, 2023). Sustainability has become a crucial issue in all aspects of human and organizational routines. The concept of sustainability involves integrating economic, environmental, and social goals. In business, sustainability entails finding solutions and making decisions based on the relationships between profit, planet, and people (3 Ps). Sustainable business models go beyond simple financial profit to include environmental and social values and goals. Entrepreneurs are now seen as change agents committed to seeking a balance between the three pillars of sustainability (Fernandes et al., 2022).

#### *4.5 Sustainable Entrepreneurship*

Sustainable entrepreneurship connects sustainable development with entrepreneurial endeavors. Early research in this field primarily concentrated on entrepreneurial activities and their connections to environmental issues and solutions (Mendes et al., 2022). Sustainable entrepreneurial (SE) efforts are often discussed as hybrid businesses because they face tensions in aligning their social and environmental goals with economic success. Hybrid businesses are defined as those pursuing social and/or environmental goals while being driven by a distinct business mindset and a type of business orientation adhering to shared sustainability values and principles (Matzembacher et al., 2020). Sustainable entrepreneurs leverage entrepreneurial opportunities arising from overlooked social and environmental issues to create value (Gregori et al., 2019; Xu, Hou, & Zhang, 2022). In recent years, SE has attracted considerable academic attention as it promises to address social and environmental challenges (Jha & Pande, 2024). Entrepreneurs must be aware of the current and future social and environmental impacts of their investments. Sustainable development underpins the creation of new, sustainable investments—those maintained in the long term without affecting future generations (Carolina, Gabriela, & Ismael, 2024). Sustainable entrepreneurship involves creating and managing a business venture in an environmentally and socially responsible manner while maintaining financial profitability (Gupta, Gaurav, Arya, & Chui, 2024). Entrepreneurial ventures explicitly addressing social and environmental issues have expanded, alongside diverse but highly relevant research streams and academic discussions around social and sustainable entrepreneurship phenomena (Bonfanti, De Crescenzo, Simeoni, & Adai, 2024). Sustainable entrepreneurship has emerged as a key driver of positive social, environmental, and economic transformation, with sustainable development now a critical global priority. It is becoming increasingly significant for a range of stakeholders, including universities, businesses, and international organizations. The “United Nations 2030 Agenda for Development” has provided a framework for international collaboration across different sectors and levels of governance, fostering the growth of organizational support programs aimed at promoting environmentally responsible entrepreneurial initiatives by businesses (Sreenivasan & Suresh, 2023).

#### *4.6 Economic Entrepreneurship*

Economic sustainability is linked to resource efficiency to achieve long-term profitability (Fernandes et al., 2022). In classical entrepreneurship literature, significant attention is given to essential factors for achieving economic and financial success, such as leadership, new product development, innovation and creativity, risk financing, and idea protection. Recently, new forms of economic thinking have emerged, often starting from the understanding that unlimited growth is impossible on a planet with finite resources. Consequently, economics finds a new goal. For instance, British economist Kate Raworth defines this new goal as achieving “human prosperity in a flourishing web of life”. Forms of entrepreneurship aligned with these principles are called sustainable entrepreneurship (Hogenstijn & Cuypers, 2023). The economic factor is crucial in the formation and growth of ventures, significantly impacting their sustainability. This factor is linked to macroeconomic variables like GDP, inflation, and FDI. A region’s economic growth influences the long-term sustainability of investments by creating a favorable environment for entrepreneurs (Carolina, Gabriela, & Ismael, 2024). Entrepreneurship creates various opportunities for people, enabling economic gains supporting survival and providing employment for others involved in a country’s production processes (Del-Aguila-Arcentales et al., 2022).

#### *4.7 Environmental Entrepreneurship*

Concerns about environmental problems have resulted in increased focus on SDGs (Méndez-Picazo, Galindo-Martín, & Castaño-Martínez, 2021). Entrepreneurs are key players in implementing environmental innovations and new approaches to cleaner production (Fichter & Tiemann, 2020). Entrepreneurship is increasingly promoted,



and it has been observed to rise during the COVID-19 pandemic, even diversifying into environmental entrepreneurship (Del-Aguila-Arcenales et al., 2022). In the final quarter of the 20th century, the world experienced a rise in environmental disasters and resource shortages. The traditional one-way, linear economy, which has prevailed for years, is increasingly seen as inadequate. Empirical evidence indicates that with rapid urbanization, accelerated population growth, heightened resource consumption, and negative environmental impacts, the linear economy is not viable for a sustainable future. Consequently, in the current century, management researchers and practitioners are increasingly focusing on environmentally sustainable production methods (Dantas, Ilyas, Martins, & Rita, 2022). Environmental sustainability means that natural resources must be managed at a sustainable rate (such as saving materials, reducing energy consumption, and increasing waste recycling) since these resources are scarce and generally non-renewable (Fernandes et al., 2022).

#### *4.8 Social Entrepreneurship*

Social entrepreneurship, which was initially confined to the nonprofit sector, can now be undertaken by communities, public organizations, or for-profit businesses (Bonfanti et al., 2024). Social entrepreneurship is increasingly being promoted, and it can be observed that during the COVID-19 pandemic, it has surged and even diversified into social entrepreneurship (Del-Aguila-Arcenales et al., 2022). The challenge of achieving sustainable development goals lies in the fact that the current social environment is imperfect. However, for specific reasons, communities cannot fully abstain from a particular segment of economic interests to enhance social justice, reduce global inequality, and protect their environment. Thus, unfortunately, the social and environmental costs of economic growth remain high and need to be reduced. Certainly, social entrepreneurship helps ensure the full acceptance and widespread implementation of SDGs (Popkova et al., 2023). Despite the efforts made by the United Nations to engage all public and private actors in achieving the 2030 Agenda, the participation of traditional businesses has so far been inadequate. Therefore, social enterprises have emerged as an efficient alternative to address social needs through entrepreneurial opportunities (Diaz-Sarachaga & Ariza-Montes, 2022). The goal of social entrepreneurship is to create multiple values. Social enterprises are businesses whose primary objective is to create a positive social impact. A social entrepreneur has many similarities with a commercial entrepreneur; however, there are some significant differences. A social entrepreneur utilizes opportunities to tackle social problems (such as hunger or poverty) and, therefore, does not necessarily seek gaps in the market; rather, they look for “gaps in society” (Hogenstijn & Cuypers, 2023). While social entrepreneurs are concerned with creating economic value for survival, innovation, and prosperity; generating economic value is a means for them to achieve their goals, not an end in itself (Hogenstijn & Cuypers, 2023). Social entrepreneurship is directly related to SDGs primarily due to the activities undertaken by entrepreneurs in developing new products, seeking new markets, and introducing innovations (Méndez-Picazo et al., 2021). Social entrepreneurship emphasizes the social aspect of the triple (or double) bottom line theory. Consequently, many researchers contend that sustainable entrepreneurship has a wider scope than social entrepreneurship. Therefore, sustainable entrepreneurship encompasses social entrepreneurship within its framework (Bonfanti et al., 2024). Social sustainability involves social capital, equal opportunities, community development, improved living conditions, and social responsibility (Fernandes et al., 2022). Given that sustainable entrepreneurship is embedded in the relationship between individuals and opportunities, it leads to social impact by leveraging emerging sustainable development opportunities (Baran & Berkowicz, 2021).

### **5. Discussion**

Entrepreneurship can serve as a catalyst for innovation and economic growth in countries if it adapts to environmental changes. While entrepreneurship is an efficient and effective activity for achieving specific business outcomes, in the digital age with the aim of sustainability, it is essential to leverage available resources based on creativity and innovation, aligning with market needs alongside risk-taking and flexibility. This approach should involve the provision and production of new and innovative products and services that do not harm the environment while making the best and most effective use of digital technologies along this path. For this reason, the concepts of entrepreneurship and entrepreneur have fundamentally changed in recent years. The world must be more prepared to address significant environmental and social challenges that impact the economic, cultural, and social well-being of people. These challenges include climate change, air, soil, and water pollution, environmental degradation, food insecurity, famine, rising poverty and homelessness, deforestation, and the reduction of safe drinking water, all on the rise globally. Despite technical, economic, and social advancements, these major challenges persist and have intensified over time. Entrepreneurship can help solve these significant challenges if it transitions from a traditional model, which has served as a mechanism for stimulating economic development and creating financial value, to addressing global social and environmental issues. Therefore, the concept of entrepreneurship must be regenerated from merely a wealth-generating activity to an endeavor that includes

elements impacting social and environmental development in its mission. On the other hand, in the age of digital transformation, the development of digital technologies such as artificial intelligence (AI), the Internet of Things (IoT), the metaverse, blockchain, big data, and cloud computing, etc. has significantly influenced the entrepreneurial process in recent years. Consequently, successful entrepreneurs adapt themselves to new conditions. The limitations of traditional entrepreneurship, solely focusing on profit, have become evident, and the potential for sustainable entrepreneurship based on digital technologies has increasingly grown.

The two concepts of digital entrepreneurship and sustainable entrepreneurship, as well as their combination—digital sustainable entrepreneurship—have gained significant attention in today's world. Entrepreneurship has been a focal point of business research due to its ability to create positive changes and enhance resilience in the economy. Digital sustainable entrepreneurship is the latest approach connecting traditional entrepreneurship with the triple principles of economic, social, and environmental sustainability based on digital transformation. This connection enables the development and use of digital technologies to create new opportunities for entrepreneurs and facilitates the development and improvement of new businesses, ensuring the triple sustainability of economic, environmental, and social aspects. Although entrepreneurship has traditionally been associated with the economic domain of business, one of its primary objectives today is to ensure social, environmental, and economic development in any country or region. Sustainable entrepreneurs leverage the entrepreneurial opportunities arising from overlooked social and environmental issues by utilizing digital technologies to create value for all stakeholders (customers, society, shareholders, and the planet). Sustainable entrepreneurship has been promising in addressing social and environmental challenges over the past years, fostering hope that digital technologies will be used positively rather than destructively. Entrepreneurs must be aware of the current and future social and environmental impacts of their investments in providing products and services. Attention to and adherence to sustainable development requirements in any industry is the reason for creating new and sustainable investments—those maintained in the long term without affecting future generations. Undoubtedly, entrepreneurs seek profitability in the short and long term; accordingly, sustainable entrepreneurship emphasizes the performance of creating and managing a business investment in an environmentally and socially responsible manner while maintaining financial profitability and focusing on value creation for all stakeholders.

Research shows that entrepreneurs are key players in implementing environmental innovations and new approaches to cleaner production, besides in community development. With this new approach, the entrepreneurs are aimed at creating multiple values. Businesses with a digital sustainability focus are companies whose primary goal is to create a positive environmental and social impact. Sustainable entrepreneurs share many similarities with traditional entrepreneurs, but there are also significant differences between them. They leverage opportunities to address social and environmental issues, and therefore, they are not necessarily seeking gaps in consumer markets; rather, they are looking for “gaps in society and the environment”. Ultimately, they offer products and services aligning with sustainability requirements while also benefiting from the positive aspects of digital technologies.

## 6. Limitations and Suggestions for Further Studies

One of the limitations of this research is the limited number of credible sources that address both concepts of sustainable entrepreneurship and digital entrepreneurship simultaneously. Additionally, only reputable articles were selected, and the research was conducted exclusively in English. Finally, it is recommended that a digital sustainable entrepreneurship model be designed and tested in practice.

## References

- Avelar, S., Borges-Tiago, T., Almeida, A., & Tiago, F. (2024). Confluence of sustainable entrepreneurship, innovation, and digitalization in SMEs. *Journal of Business Research*, *170*, 114346. <https://doi.org/10.1016/j.jbusres.2023.114346>
- Baig, U., Hussain, B. M., Meidute-Kavaliauskiene, I., & Davidavicius, S. (2022). RETRACTED: Digital Entrepreneurship: Future Research Directions and Opportunities for New Business Model. *Sustainability*, *14*(9), 5004. <https://doi.org/10.3390/su14095004>
- Baran, G., & Berkowicz, A. (2021). Digital platform ecosystems as living labs for sustainable entrepreneurship and innovation: A conceptual model proposal. *Sustainability*, *13*(11), 6494. <https://doi.org/10.3390/su13116494>
- Baranauskas, G., & Raišienė, A. G. (2022). Transition to digital entrepreneurship with a quest of sustainability: Development of a new conceptual framework. *Sustainability*, *14*(3), 1104. <https://doi.org/10.3390/su14031104>
- Bican, P. M., & Brem, A. (2020). Digital business model, digital transformation, digital entrepreneurship: Is there

- a sustainable “digital”? *Sustainability*, 12(13), 5239. <https://doi.org/10.3390/su12135239>
- Bonfanti, A., De Crescenzo, V., Simeoni, F., & Adai, C. R. L. (2024). Convergences and divergences in sustainable entrepreneurship and social entrepreneurship research: A systematic review and research agenda. *Journal of Business Research*, 170, 114336. <https://doi.org/10.1016/j.jbusres.2023.114336>
- Carolina, C. V. J., Gabriela, R. G., & Ismael, M. C. (2024). Effect of the economic, social and technological factors on sustainable entrepreneurship over time. *Journal of Business Research*, 173, 114457. <https://doi.org/10.1016/j.jbusres.2023.114457>
- Constantin, F., & Kavoura, A. (2022). Digital entrepreneurship via sustainable online communication of dentistry profession, Oradea, Romania: a longitudinal analysis. *Sustainability*, 14(2), 802. <https://doi.org/10.3390/su14020802>
- Dantas, R. M., Ilyas, A., Martins, J. M., & Rita, J. X. (2022). Circular entrepreneurship in emerging markets through the lens of sustainability. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(4), 211. <https://doi.org/10.3390/joitmc8040211>
- Del-Aguila-Arcentales, S., Alvarez-Risco, A., Jaramillo-Arévalo, M., De-la-Cruz-Diaz, M., & de las Mercedes Anderson-Seminario, M. (2022). Influence of social, environmental and economic sustainable development goals (SDGs) over continuation of entrepreneurship and competitiveness. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(2), 73. <https://doi.org/10.3390/joitmc8020073>
- Diaz-Sarachaga, J. M., & Ariza-Montes, A. (2022). The role of social entrepreneurship in the attainment of the sustainable development goals. *Journal of Business Research*, 152, 242–250. <https://doi.org/10.1016/j.jbusres.2022.07.061>
- Fernandes, C., Ferreira, J. J., Veiga, P. M., Kraus, S., & Dabić, M. (2022). Digital entrepreneurship platforms: Mapping the field and looking towards a holistic approach. *Technology in Society*, 70, 101979. <https://doi.org/10.1016/j.techsoc.2022.101979>
- Fernandes, C., Pires, R., & Gaspar Alves, M. C. (2022). Digital Entrepreneurship and Sustainability: The State of the Art and Research Agenda. *Economies*, 11(1), 3. <https://doi.org/10.3390/economies11010003>
- Fichter, K., Lüdeke-Freund, F., Schaltegger, S., & Schillebeeckx, S. J. (2023). Sustainability impact assessment of new ventures: An emerging field of research. *Journal of Cleaner Production*, 384, 135452. <https://doi.org/10.1016/j.jclepro.2022.135452>
- Fichter, K., & Tiemann, I. (2020). Impacts of promoting sustainable entrepreneurship in generic business plan competitions. *Journal of Cleaner Production*, 267, 122076. <https://doi.org/10.1016/j.jclepro.2020.122076>
- George, G., Merrill, R. K., & Schillebeeckx, S. J. (2021). Digital sustainability and entrepreneurship: How digital innovations are helping tackle climate change and sustainable development. *Entrepreneurship Theory and Practice*, 45(5), 999–1027. <https://doi.org/10.1177/1042258719899425>
- Gregori, P., & Holzmann, P. (2020). Digital sustainable entrepreneurship: A business model perspective on embedding digital technologies for social and environmental value creation. *Journal of Cleaner Production*, 272, 122817. <https://doi.org/10.1016/j.jclepro.2020.122817>
- Gregori, P., Wdowiak, M. A., Schwarz, E. J., & Holzmann, P. (2019). Exploring value creation in sustainable entrepreneurship: Insights from the institutional logics perspective and the business model lens. *Sustainability*, 11(9), 2505. <https://doi.org/10.3390/su11092505>
- Gupta, B. B., Gaurav, A., Arya, V., & Chui, K. T. (2024). Fintech advancements in the digital economy: Leveraging social media and personal computing for sustainable entrepreneurship. *Journal of Innovation & Knowledge*, 9(1), 100471. <https://doi.org/10.1016/j.jik.2024.100471>
- Herman, E. (2022). The interplay between digital entrepreneurship and sustainable development in the context of the EU digital economy: A multivariate analysis. *Mathematics*, 10(10), 1682. <https://doi.org/10.3390/math10101682>
- Hogenstijn, M., & Cuypers, C. (2023). The effects of an education program on social and sustainable entrepreneurship for primary school children. *International Journal of Educational Research Open*, 5, 100266. <https://doi.org/10.1016/j.ijedro.2023.100266>
- Holzmann, P., & Gregori, P. (2023). The promise of digital technologies for sustainable entrepreneurship: A systematic literature review and research agenda. *International Journal of Information Management*, 68, 102593. <https://doi.org/10.1016/j.ijinfomgt.2022.102593>

- Huang, Y., Li, P., Bu, Y., & Zhao, G. (2023). What entrepreneurial ecosystem elements promote sustainable entrepreneurship? *Journal of Cleaner Production*, 422, 138459. <https://doi.org/10.1016/j.jclepro.2023.138459>
- Jha, V. K., & Pande, A. S. (2024). Making sustainable development happen: Does sustainable entrepreneurship make nations more sustainable? *Journal of Cleaner Production*, 440, 140849. <https://doi.org/10.1016/j.jclepro.2024.140849>
- Lis, T., & Ptak, A. (2022). Information and knowledge as factors contributing to sustainable entrepreneurship. *Procedia Computer Science*, 207, 4017–4026. <https://doi.org/10.1016/j.procs.2022.09.464>
- Lupoae, O. D., Wilk, V., & Radu, R. I. (2024). Sustainable entrepreneurship in equine services. *Journal of Business Research*, 170, 114361. <https://doi.org/10.1016/j.jbusres.2023.114361>
- Mansouri, S., & Momtaz, P. P. (2022). Financing sustainable entrepreneurship: ESG measurement, valuation, and performance. *Journal of Business Venturing*, 37(6), 106258. <https://doi.org/10.1016/j.jbusvent.2022.106258>
- Matzembacher, D. E., Raudsaar, M., Barcellos, M. D. D., & Mets, T. (2020). Business models' innovations to overcome hybridity-related tensions in sustainable entrepreneurship. *Sustainability*, 12(11), 4503. <https://doi.org/10.3390/su12114503>
- Mendes, A. C., Ferreira, F. A., Kannan, D., Ferreira, N. C., & Correia, R. J. (2022). A BWM approach to determinants of sustainable entrepreneurship in small and medium-sized enterprises. *Journal of Cleaner Production*, 371, 133300. <https://doi.org/10.1016/j.jclepro.2022.133300>
- Méndez-Picazo, M. T., Galindo-Martín, M. A., & Castaño-Martínez, M. S. (2021). Effects of sociocultural and economic factors on social entrepreneurship and sustainable development. *Journal of Innovation & Knowledge*, 6(2), 69–77. <https://doi.org/10.1016/j.jik.2020.06.001>
- Nicolau, C., Nichifor, E., Munteanu, D., & Bărbulescu, O. (2022). Decoding Business Potential for Digital Sustainable Entrepreneurship: What Romanian Entrepreneurs Think and Do for the Future. *Sustainability*, 14(20), 13636. <https://doi.org/10.3390/su142013636>
- Pereira, D., Leitão, J., Oliveira, T., & Peirone, D. (2023). Proposing a holistic research framework for university strategic alliances in sustainable entrepreneurship. *Heliyon*, 9(5). <https://doi.org/10.1016/j.heliyon.2023.e16087>
- Popkova, E. G., Bogoviz, A. V., Lobova, S. V., Delo, P., Sergi, B. S., & Yankovskaya, V. V. (2023). Global transitions towards social entrepreneurship and sustainable development: A unique post-COVID-19 perspective. *Global Transitions*, 5, 182–200. <https://doi.org/10.1016/j.glt.2023.08.005>
- Prendes-Espinosa, P., Solano-Fernández, I. M., & García-Tudela, P. A. (2021). Emdigital to promote digital entrepreneurship: The relation with open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1), 63. <https://doi.org/10.3390/joitmc7010063>
- Salehe, M. A., Sesabo, J. K., Isaga, N., & Mkuna, E. J. (2024). Factors influencing sustainable entrepreneurship in fisheries small and medium-sized enterprises in Tanzania. *Social Sciences & Humanities Open*, 10, 100909. <https://doi.org/10.1016/j.ssaho.2024.100909>
- Satakina, L., & Steiner, G. (2020). Digital entrepreneurship and its role in innovation systems: A systematic literature review as a basis for future research avenues for sustainable transitions. *Sustainability*, 12(7), 2764. <https://doi.org/10.3390/su12072764>
- Shahid, M. S., Hossain, M., Shahid, S., & Anwar, T. (2023). Frugal innovation as a source of sustainable entrepreneurship to tackle social and environmental challenges. *Journal of Cleaner Production*, 406, 137050. <https://doi.org/10.1016/j.jclepro.2023.137050>
- Sieg, P., Posadzińska, I., & Józwiak, M. (2023). Academic entrepreneurship as a source of innovation for sustainable development. *Technological Forecasting and Social Change*, 194, 122695. <https://doi.org/10.1016/j.techfore.2023.122695>
- Sreenivasan, A., & Suresh, M. (2023). Exploring the contribution of sustainable entrepreneurship towards sustainable development goals: A bibliometric analysis. *Green Technologies and Sustainability*, 100038. <https://doi.org/10.1016/j.grets.2023.100038>
- Thelken, H. N., & de Jong, G. (2020). The impact of values and future orientation on intention formation within sustainable entrepreneurship. *Journal of Cleaner Production*, 266, 122052. <https://doi.org/10.1016/j.jclepro.2020.122052>

- Watson, R., Nielsen, K. R., Wilson, H. N., Macdonald, E. K., Mera, C., & Reisch, L. (2023). Policy for sustainable entrepreneurship: A crowdsourced framework. *Journal of Cleaner Production*, 383, 135234. <https://doi.org/10.1016/j.jclepro.2022.135234>
- Xu, G., Hou, G., & Zhang, J. (2022). Digital Sustainable Entrepreneurship: A digital capability perspective through digital innovation orientation for social and environmental value creation. *Sustainability*, 14(18), 11222. <https://doi.org/10.3390/su141811222>

### Copyrights

Copyright for this article is retained by the author, with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).