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SUSTAINABLE ENTREPRENEURSHIP GROWTH IN THE AGRICULTURE INDUSTRY: A CONCEPTUAL FRAMEWORK

Nagaraju L G[1], Dr. Shubha A[2]

[1]Research Scholar, and Assistant Professor School of Commerce REVA University Bengaluru.

[2]Pro Vice-Chancellor and Dean, REVA Business School, REVA University Bengaluru.

Corresponding Author: Nagaraju L G and email: nagarajulg@reva.edu.in

Abstract:

In recent times, the importance of sustainable entrepreneurship in socio-economic development, environmental management, and the prosperity of disadvantaged societies has been recognized by both scholars and policymakers are widely recognized. Despite this importance, there still needs to be more research on the external and internal factors that support and promote the development of sustainable agricultural enterprises. This study aims to provide a framework that suggests factors that play an important role in the development of sustainable businesses, focusing on developing countries. An extensive review and analysis of existing literature (Wang, J 2024). in the field of sustainable business and agriculture, we propose a conceptual framework that highlights internal and external factors that, when they are strategically aligned, will foster the development of sustainable agricultural businesses.

Keywords: Sustainable Entrepreneurship, Agriculture, Innovation.

Introduction

Today, problems such as environmental degradation, the gap between rich and poor, and unequal access to opportunities and resources are on the rise. These concerns have increased the need for sustainable entrepreneurship, defined as sustainable business practices. Rosário, A. T., Raimundo, R., & Cruz, S. (2022). Entrepreneurship is essential in the transition to a more sustainable future, while the alignment between social, economic, and ecological goals and green entrepreneurship plays a key role (Falco, C et al., 2008). Despite economic development on a global scale, economic, social, and environmental problems continue to worsen. threats. The depletion of natural resources and the adverse, J., Su, X. Wang, R., & Wang, R. (2023). consequences of environmental degradation, including lack of fresh water, loss of biodiversity, and drought, have become serious problems. In addition, climate change Climate change also threatens the existence and stability of modern society. More and more people are hungry and living in poverty. The gap between poor and poor is widening, and gender inequality and uneven access to opportunities and resources persist (World Bank Report 2022). These issues, among others, of varying intensity depending on the context, have increased the need for sustainable entrepreneurship. Schaltegger and Wagner define sustainable entrepreneurship as a business approach in which companies engage in sustainable business practices to achieve efficiency and competitiveness by balancing the impacts of environmental, business, and social activities. This involves discovering, creating, and exploiting business opportunities that create social and environmental benefits for

communities that promote sustainability. Sustainable entrepreneurs eliminate traditional business practices, systems, and processes and replace them with superior social and environmental products and services. In this case, market structures, production techniques, products, and consumption patterns conventionally associated with unsustainability will be destroyed to make way for more sustainable structures (Matos, S et al., 2019). Given the important role of businesses in society and the impact of their business activities, entrepreneurship plays an essential role in the transition to a sustainable future. It is associated with economic and non-economic activities aimed at creating jobs and improving products and services required by the global society (Priyadarshini et al., 2020). Therefore, the influence of entrepreneurship is huge and can be optimized to facilitate transformation towards sustainability. While old entrepreneurship promotes economic development, sustainable entrepreneurship focuses on aligning social, economic, and ecological objectives. Rodgers found that there is a development of a typology of eco-entrepreneurs, whom he defines as "a new breed of environment-conscious change agents who may be called ecological entrepreneurs." They include industries and individuals who popularize eco-friendly ideas and innovations through market or non-market strategies (Gnawable et al., 1994). Sustainable development and the future depend on sustainable entrepreneurs and their impact on other investors and the general public to adopt sustainable practices in life. This scoping literature review analyzes the concepts that constitute the field of sustainable entrepreneurship and the extent of their integration into the international business landscape. It is important that the role of sustainable entrepreneurship cannot be appreciated outside of the contextual characteristics of the operational environments—in which it innovates—including the markets and other governmental factors. Faced with different environmental constraints, entrepreneurs tend to exhibit distinct concerns about sustainability due to equally various levels of interaction with different external actors to acquire tangible and intangible assets from the external environment to keep up with competition (Whitley, E.A, 1999). Many different factors determine sustainable entrepreneurship in agriculture. According to Kibler, Kautonen, and Tornikoski (2019), growing consumer awareness and growing demand for sustainably produced food products have motivated entrepreneurs to adopt sustainable practices. Additionally, regulatory pressures, such as environmental regulations and subsidies for sustainable farming methods, encourage agricultural entrepreneurs to pursue sustainability (Bauer et al., 2019). Technological advances also play an important role in promoting sustainable entrepreneurship in the agricultural sector. For example, precision agriculture allows farmers to optimize resource use, reduce waste, and reduce environmental impact (Ghose, 2020). Likewise, the advent of blockchain technology facilitates transparency and traceability of agricultural supply chains, which is essential for sustainable practices (Malik et al., 2020). Despite the growing interest in sustainable entrepreneurship, agricultural entrepreneurs still face certain challenges. Limited access to Finance poses a significant barrier, especially for small farmers and startups wanting to implement sustainable practices (Jäger et al., 2018). Additionally, the complexity of sustainability standards and certification processes poses challenges for entrepreneurs, especially those operating in global markets (Bauer et al., 2019). Additionally, cultural and behavioral barriers hinder the adoption of sustainable agricultural practices. Traditional agricultural methods rooted in cultural practices can resist change, while farmers' risk-averse attitudes prevent the adoption of innovative

technologies but sustainability is uncertain (Ghose, 2020). The application of sustainable entrepreneurship in agriculture has multifaceted impacts on economic, environmental, and social aspects. Economically, sustainable practices can improve the market competitiveness and long-term profitability of agricultural businesses (Bauer et al., 2019). By reducing input costs, improving resource efficiency, and accessing premium markets, sustainable entrepreneurs can achieve economic growth while minimizing risks associated with environmental degradation. environment and climate change (Kibler et al., 2019). Sustainable, environmentally friendly businesses in agriculture contribute to biodiversity conservation, improving soil quality and water resource management (Ghose, 2020). Through practices such as organic farming, agroforestry, and integrated pest management, entrepreneurs can reduce chemical inputs, preserve ecosystems, and minimize greenhouse gas emissions (Malik et al., 2020). At the societal level, sustainable entrepreneurship promotes inclusive development. and the development of rural communities. By promoting fair trade, gender equality, and good working conditions, agricultural entrepreneurs contribute to poverty reduction and social justice (Jäger et al., 2018). In addition, sustainable agricultural practices also improve food security and resilience to climate change, bringing long-term benefits to producers and consumers (Kibler et al., 2019).

Literature Review

Sustainable Entrepreneurship

Sustainable entrepreneurship, also known as green entrepreneurship or eco-entrepreneurship, is an emerging field that integrates environmental, social, and economic goals into entrepreneurial activities. This literature review explores the conceptual foundations, drivers, challenges, and impacts of sustainable entrepreneurship. Sustainable entrepreneurship is rooted in the principle of sustainable development, which aims to meet the needs of the present generation without compromising the ability of future generations to meet their own needs (Schaltegger & Wagner, 2011). Therefore, sustainable entrepreneurs seek to create value not only for their businesses but also for society and the environment (Suddaby et al., 2019). This value creation is achieved through the adoption of innovative business models, products, and processes that minimize negative environmental impacts, promote social equity, and ensure the viability economy long-term (Hall et al., 2019). Several factors favor the emergence of sustainable entrepreneurship. Growing environmental awareness and concerns about climate change have increased consumer demand for environmentally friendly products and services, creating market opportunities for sustainable entrepreneurs.

Additionally, regulatory pressures, such as environmental regulations and sustainability standards, push companies to adopt green practices (González-Pernía et al.,2019). Technological advances, such as renewable energy technology and sustainable materials, also enable entrepreneurs to develop innovative solutions to environmental challenges (Cohen & Winn, 2007). Despite the growing interest in sustainable entrepreneurship, entrepreneurs face several challenges in carrying out their business activities; limited access to Finance poses a significant barrier, as many investors remain skeptical about the profitability of sustainable businesses (Schaper et al., 2014). Additionally, the complexity of sustainability standards and certification processes adds to the administrative burden and costs for entrepreneurs

(Hockerts & Wüstenhagen, 2010). Cultural and behavioral barriers, such as resistance to change and risk aversion, further hinder the adoption of sustainable practices (Bocken et al., 2013). Sustainable entrepreneurship creates positive impacts on the economy, environmental, and social aspects. Economically, green companies can improve market competitiveness, reduce operating costs, and access new markets through differentiation strategies (Schaltegger & Wagner, 2011).

Furthermore, sustainable entrepreneurship drives innovation and job creation, stimulating economic growth and resilience (Hockerts & Wüstenhagen, 2010). Environmentally and spiritually Sustainable business contributes to resource conservation, pollution prevention, and biodiversity conservation (Hall et al., 2019). By adopting sustainable production methods, recycling initiatives, and eco-design principles, entrepreneurs minimize their ecological footprint and contribute to environmental sustainability (Cohen & Winn, 2007). Socially, sustainable entrepreneurship promotes social inclusion, community development, and poverty reduction (González-Pernía et al., 2019). Through initiatives such as fair trade, ethical sourcing, and corporate social responsibility, entrepreneurs are solving social problems and improving the well-being of local communities (Schaper et al., 2014). Sustainable entrepreneurship is a dynamic and transformative force that integrates environmental, social, and economic considerations into business operations. Although challenges such as limited access to Finance and the complexity of sustainability standards persist, adopting green business practices will create significant benefits for businesses, society, society, and the environment. Future research should focus on addressing these challenges and exploring innovative solutions to foster sustainable entrepreneurship and advance the Sustainable Development Goals.

Sustainable Entrepreneurship and Socio-economic Development

Sustainable entrepreneurship, characterized by the integration of environmental, social, and economic considerations into business activities, is increasingly attracting attention as a driver of socio-economic development. This literature review explores the link between sustainable entrepreneurship and socioeconomic development, examining its conceptual foundations, drivers, challenges, and impacts. Sustainable entrepreneurship is rooted in the principles of sustainable development, which seeks to meet the needs of the present without compromising the ability of future generations to meet their own needs (Schaltegger & Wagner, 2011). By adopting sustainable business practices, entrepreneurs contribute to achieving socio-economic development goals, including poverty reduction, job creation, and inclusive growth (González-Pernía et al., 2019). Sustainable entrepreneurship, therefore, catalyzes inclusive and equitable development, balancing economic prosperity with social and environmental well-being (Hall et al., 2010). Several factors promote the emergence of sustainable entrepreneurship and its contribution to socio-economic development. Environmental degradation, social inequality, and economic disparities create urgent challenges that require innovative and sustainable solutions (Schaper et al., 2014). In addition, legal frameworks, policy incentives, and international agreements promote sustainable entrepreneurship by encouraging businesses to adopt environmentally friendly practices, promote social inclusion, and contribute to sustainable entrepreneurship. Poverty

reduction part (González -Pernía et al., 2019). Technological advances, such as renewable energy technology and digital innovation, enable entrepreneurs to address socioeconomic challenges sustainably (Cohen & Winn, 2007). Despite its potential benefits, sustainable businesses still face various challenges when it comes to contributing to socio-economic development. Limited access to Finance, especially for small and medium-sized enterprises (SMEs) and startups, hinders their ability to implement sustainable business models and scale their operations.

Additionally, the complexity of sustainability standards, bureaucratic hurdles, and lack of institutional support pose barriers to entry for aspiring sustainable entrepreneurs, especially in developing countries. Development (Bocken et al., 2013). Cultural and behavioral barriers, such as resistance to change and risk aversion, further hinder the adoption of sustainable practices and innovations (Schaltegger & Wagner, 2011). Sustainable businesses create a positive impact on various aspects of socio-economic development. Economically, it promotes innovation, stimulates job creation, and improves productivity, thereby contributing to economic growth and poverty reduction (Hall et al., 2010).

Additionally, sustainable entrepreneurs often prioritize local sourcing, fair trade, and community empowerment, thereby promoting inclusive growth and equitable resource distribution (González-Pernía and al., 2019). Environmentally, sustainable entrepreneurship helps minimize environmental degradation, conserve natural resources, and reduce greenhouse gas emissions, thereby contributing to environmental sustainability and resilience (Cohen & Winn, 2007). Socially, sustainable entrepreneurship promotes social cohesion, cultural diversity, and empowerment, especially among marginalized communities, thereby improving social capital and well-being (Schaper et al., 2014). Sustainable entrepreneurship plays a central role in promoting socio-economic development by addressing environmental, social, and economic challenges through innovative and sustainable business practices. While facing obstacles such as limited access to Finance and institutional barriers, sustainable entrepreneurs contribute to inclusive growth, environmental sustainability, and social justice. Future research should focus on addressing these challenges and maximizing sustainable business potential to advance socio-economic development goals.

Sustainable Agriculture Management

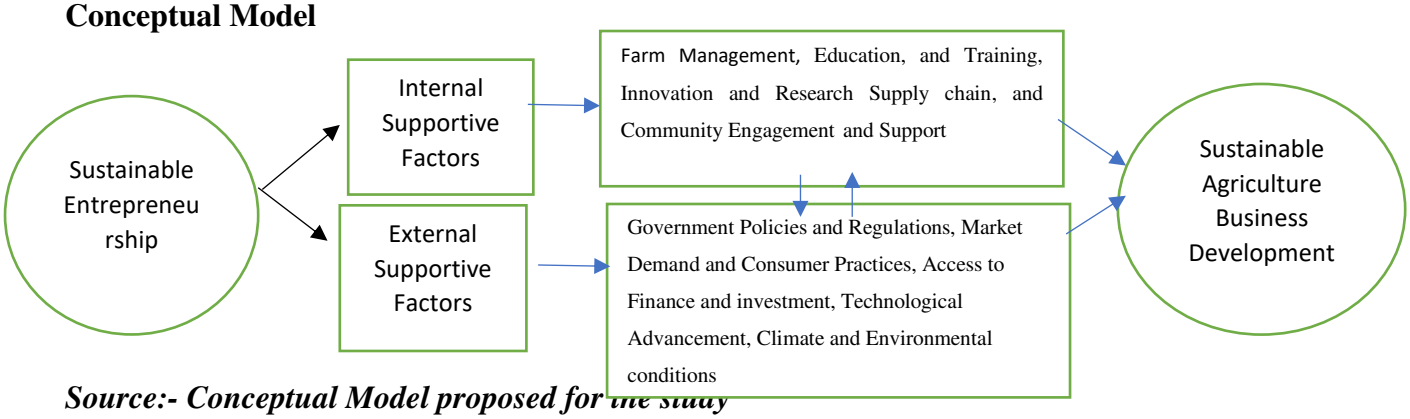
Sustainable agricultural management is critical to addressing the challenges of food security, environmental degradation, and climate change. Sustainable agricultural management is based on the principles of sustainable development, aiming to meet the needs of the present without compromising the ability of future generations to meet their own needs (Pretty, 2008). It integrates ecological, economic, and social considerations to ensure the long-term viability of agricultural systems (Foley et al., 2011). Sustainable agricultural management includes a comprehensive approach that promotes soil health, biodiversity conservation, water resource management, and resilience to climate change (Pretty, 2008). Some key principles guide sustainable agricultural management. Conservation tillage and crop rotation improve soil fertility, reduce erosion, and improve carbon sequestration (Lal, 2015). Integrated pest management helps minimize the use of chemical pesticides and promotes natural pest control mechanisms (Altieri, 1999). Agroforestry systems integrate trees into

agricultural landscapes, providing many benefits such as soil stabilization, nutrient cycling, and increased biodiversity (Nair, 2012).

Additionally, organic farming methods avoid synthetic inputs and prioritize soil health, biodiversity conservation, and animal welfare (Reganold & Wachter, 2016). Sustainable agricultural management includes a range of activities appropriate to the local context and ecological conditions. Conservation agriculture involves minimal soil disturbance, regular mulching, and diverse crop rotations to improve soil quality and water retention (Hobbs et al., 2008). Precision agriculture uses technologies such as GPS, sensors, and drones to optimize resource use, reduce inputs, and minimize environmental impact (Scharf et al., 2016). In addition, water-saving irrigation techniques, such as drip irrigation and rainwater harvesting, help improve water use efficiency and alleviate water scarcity in agricultural areas (Keller & Bliesner, 1990).

Despite the potential benefits, sustainable agricultural management faces a number of challenges. Limited access to knowledge, resources, and technical support hinders the adoption of sustainable practices, especially for smallholder farmers in developing countries (Pretty, 2008). Economic pressures, market forces, and political dynamics often favor traditional agricultural systems over sustainable alternatives (Foley et al., 2011). Additionally, climate change, extreme weather events, and environmental degradation pose significant risks to agricultural productivity and sustainability (Lal, 2015). Balancing competing interests and trade-offs between environmental conservation, economic viability, and social equity remains a complex challenge in sustainable agricultural management (Reganold & Wachter, 2016). Sustainable agricultural management is essential to address challenges related to food security, environmental sustainability, and climate change. By applying key principles such as soil conservation, biodiversity enhancement, and resource efficiency, sustainable agricultural management will promote resilience, productivity, and equity in systems. Agriculture. However, overcoming challenges such as knowledge gaps, economic constraints, and environmental risks requires coordinated efforts from policymakers, researchers, farmers, and stakeholders. They are related to transitioning to more sustainable agricultural practices.

Conceptual Model



Source:- Conceptual Model proposed for the study

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Internal supportive Factors

Farm Management

Farm management encompasses a range of activities aimed at optimizing resources, maximizing productivity, and ensuring the long-term viability of agricultural operations. Sustainable agriculture principles are increasingly integrated into farm management practices to address environmental concerns, such as soil erosion, water pollution, and biodiversity loss (Giller et al., 2015). By adopting conservation tillage, crop rotation, and integrated pest management, farmers can minimize negative environmental impacts while enhancing soil health and ecosystem resilience (Altieri, 1995). Moreover, sustainable farm management involves resource-efficient practices that optimize inputs, reduce waste, and mitigate greenhouse gas emissions (Lal, 2015). Precision agriculture techniques, such as GPS-guided machinery and sensor-based monitoring systems, enable farmers to optimize fertilizer application, irrigation, and pest control, thereby improving resource use efficiency and minimizing environmental footprints (Rejesus et al., 2017). Effective farm management is essential for ensuring the economic viability and profitability of agricultural enterprises, especially in the context of sustainable agriculture. By adopting cost-effective production methods, diversifying income streams, and accessing niche markets for sustainably produced goods, farmers can enhance their competitiveness and financial resilience (Swinton et al., 2007).

Furthermore, sustainable farm management practices often result in reduced input costs, increased yields, and improved product quality, thereby enhancing farm profitability while minimizing environmental impacts (Godfray et al., 2010). For example, organic farming systems that prioritize soil health, biodiversity conservation, and natural resource management can produce comparable or even greater long-term benefits than conventional farming. Organic versus conventional agriculture (Seufert et al., 2012). Agricultural management practices also play an important role. Role in promoting social justice, community development, and rural livelihoods in the agricultural sector. Sustainable agricultural management approaches, such as agroecology and agroforestry, emphasize community participation, knowledge sharing, and collective decision-making, thereby empowering farmers and strengthening social networks (Pretty, 2018).In addition, sustainable agricultural management promotes inclusion. Growth by promoting fair labor practices, gender equality, and access to resources for disadvantaged groups (Doss et al., 2018). By creating opportunities for diverse livelihoods, skills development, and income generation, sustainable agriculture contributes to poverty reduction and rural development (Tittonell et al., 2016).

Education and Training

Education and training programs are the most important way to develop people's agricultural skills and give them the knowledge and skills they need to work in permaculture. Permaculture education, such as agricultural degree programs and vocational training, provides students with basic knowledge of agriculture, soil science, pest management, and permaculture (Llewellyn et al., 2013). Education is an opportunity to develop skills among

farmers, enabling them to understand permaculture, use new technologies, and improve productivity and livelihoods (Van Mele et al., 2005). By investing in education and training, governments, NGOs, and academic institutions can help agricultural stakeholders make informed decisions, adopt sustainable practices, and help promote agricultural growth (Birner et al., 2006). These programs are a means of capacity building and knowledge sharing in agriculture, promoting collaboration, experimentation, and the exchange of best practices among stakeholders. Research organizations, universities, and consulting organizations play an important role in conducting applied research, developing new technologies, and providing information to farmers and agriculturists (Klerkx et al., 2010). Learning networks and community outreach programs that support peer learning, knowledge creation, and innovation (Bacon et al., 2017). By promoting collaboration between researchers, experts, and farmers, education and training can promote the implementation of agriculturally adapted solutions to agricultural problems, thus encouraging sustainable development of agriculture (Holt-Giménez et al., 2012).

Innovation and Research

Innovation and research are very useful in solving environmental problems related to agriculture. Climate change, land degradation, water scarcity, and biodiversity loss threaten the sustainability of global agriculture (Lipper et al., 2014). Through scientific research, technology, and collaboration, researchers find solutions to these problems and promote agricultural environmental management (Foley et al., 2011). Climate change and reducing greenhouse gas emissions (Lal, 2015). Innovations such as permaculture, ecological agriculture, and permaculture help farmers adapt to climate change, increase yields, and reduce environmental pollution (Pretty et al., 2018). By combining tree planting, food growing, and agriculture, researchers help protect soils, protect biodiversity, and sequester carbon in agricultural environments (Gliessman, 2015). Biotechnology, nanotechnology, robotics, and data analytics are transforming agriculture, enabling farmers to optimize resource use, reduce waste and increase productivity. (Lower et al., 2016). Through genetic engineering, researchers are creating plant varieties that are more resistant to pests and diseases, more resilient to environmental stress, and healthier (Godfray et al., 2010). Real-time data and decision support methods for product analysis, input management, and field operations optimization (Klerkx et al., 2010). Harnessing the power of big data, machine learning, and blockchain technology, researchers are improving identification, understanding, and accountability in agriculture, promoting fair trade, food safety, and consumer trust (Dillon & Hobbs, 2017). Innovation and research promote agriculture that integrates environmental, social, and economic sustainability. Agroecology, agricultural intensification, and integrated land management emphasize the importance of biodiversity, ecosystem services, and cultural values in agriculture (Altieri, 2004). Through participatory research, farmer experimentation, and knowledge creation, researchers collaborate with stakeholders to find solutions to agricultural problems (Scoones, 2016). Furthermore, technology and research foster collaboration between academia, industry, government, and civil society, facilitating knowledge exchange and fostering innovation and policy discussion (Darnhofer et al., 2012). By promoting multidisciplinary approaches, systems thinking, and multi-stakeholder collaboration, researchers contribute to sustainable agricultural policies,

programs, and investments that focus on development, the environment, society, and the economy (Vermeulen et al., 2012).

Supply chain and Community Engagement and Support

Supply chain management practices are essential for ensuring the sustainability of agricultural production and distribution systems. Sustainable sourcing, traceability, and certification schemes enable companies to identify and promote responsibly produced agricultural products, thereby incentivizing farmers to adopt sustainable practices (Blackburn & Van Wassenhove, 2014). For example, initiatives such as fair trade, organic certification, and Rainforest Alliance certification provide farmers with access to premium markets, fair prices, and technical assistance while promoting environmental conservation and social welfare (Jaffee & Howard, 2010). By integrating sustainability criteria into procurement policies, retailers, food companies, and government agencies influence production practices across the supply chain, driving demand for sustainable agricultural products and incentivizing farmers to adopt environmentally friendly and socially responsible practices (Seuring & Müller, 2008). Community engagement is essential for promoting sustainable agriculture industry development by fostering collaboration, empowerment, and social cohesion among diverse stakeholders. Participatory approaches such as farmer cooperatives, community-supported agriculture (CSA) programs, and multi-stakeholder platforms enable farmers, consumers, NGOs, government agencies, and other actors to collectively address agricultural challenges and co-create solutions (Pimbert & Wakeford, 2011). For example, farmer field schools provide opportunities for peer learning, knowledge sharing, and skill development, empowering farmers to adopt sustainable practices, improve their livelihoods, and build resilience to climate change (Van Mele et al., 2005).

Moreover, community-based natural resource management initiatives, such as watershed associations and land trusts, enable local communities to manage land, water, and biodiversity resources sustainably, thereby promoting environmental conservation and community development (Leach et al., 1999). The integration of supply chain initiatives and community engagement strategies is essential for promoting sustainable agriculture industry development. By linking farmers and markets, supply chain management systems provide economic incentives for sustainable investments. In contrast, public relations systems enable farmers, consumers, and other stakeholders to define and manage agricultural development processes (Holt-Giménez et al., 2012).

External supportive Factors

Government Policies and Regulations

Government policies and regulations are important in addressing the environmental challenges facing agriculture. Policies such as land planning, environmental laws, and environmental protection plans address soil erosion, water pollution, biodiversity loss, and agricultural greenhouse gas emissions (Bryan et al., 2018). For example, programs such as the Conservation Reserve Program (CRP) in the United States provide financial incentives for implementing conservation measures such as planting broad-area crop hedgerows, restoring wetlands, promoting soil health, water quality, and wildlife (Claassen et al.,

2017).In addition, national policies such as the E.U. Common Agricultural Policy (CAP) and the U.S. Farm Bill have environmental management objectives that link agricultural resources and environmental practices (Maes et al., 2016; Durham, 2014). Additionally, government support plays an important role in promoting the implementation of permaculture practices and technologies. Through management strategies, incentives, and extension services, farmers are encouraged to adopt crop management, integrated pest management, agroforestry, and organic agriculture to promote the efficient use of resources, reduce chemical inputs, and improve environmental services (Lambert et al., 2017). For example, organic farming certification programs provide market access and higher prices, leading to sustainable crop changes that focus on soil health and environmental stewardship (Reganold & Wachter, 2016). Likewise, government research contributes to the development and dissemination of permaculture technologies, increasing productivity, permanence, and sustainability for all (Kemp et al., 2010). Agricultural growth and social balance. Strategies such as land reform, rural development policies, and labor policies aimed at addressing inequalities in access to land, resources, and markets and empowering farmers, ethnic minorities, women, tribal communities, and marginalized groups to participate in and benefit from agricultural development (Doss et al., 2018).

Market Demand and Consumer Practices

The importance of sustainable agricultural markets is very important for the growth of the company and affects the decisions and behaviors of different people. In recent years, consumer interest in organic, local, fair trade, and ethically produced foods has increased due to concerns about health, environmental sustainability, and social equity (Henisz et al., 2020). For example, global food sales are growing rapidly, and consumers are willing to pay high prices for alternative, safer, and more environmentally friendly products (Hamm & Gronefeld, 2011). Certifications such as Fair Trade, Rainforest Alliance, and USDA Organic assure consumers that they have met certain environmental, social, and ethical standards, thereby increasing demand for organic products. (Jaffee & Howard, 2010). Consumer food selection, purchasing behavior, food management, and other activities also play an important role in the sustainable development of agricultural enterprises. By adopting plant-based foods, reducing animal consumption, and making available food choices, consumers contribute to the well-being of the environment and animals (Willett et al., 2019). Public awareness programs, environmental labeling programs, and community-supported agriculture programs help consumers make informed choices, encourage demand for sustainable products, and support local farmers (Seyfang & Haxeltine, 2012). Furthermore, reducing food waste through composting, recycling, and smart use can contribute to conservation and waste reduction (Gustavsson et al., 2011). Market-driven initiatives, including corporate sustainability and awareness, respond to consumer needs by taking cost-effective measures, reducing emissions, and investing in social projects (Hollender & Breen, 2018).

Access to Finance and investment

The fund helps farmers, small businesses, and agricultural organizations implement new technologies and sustainable practices that increase productivity and promote environmental sustainability. There are many sources of funding, including agricultural loans, commercial

capital, grants, support for research and development projects, technology transfer mechanisms, and the use of appropriate agricultural tools, biotechnology, and new energy systems (FAO, 2019). For example, microfinance institutions provide smallholder farmers with credit opportunities to purchase inputs such as seeds, fertilizers, and tools, helping them increase productivity and maintain permaculture (Miller, 2012). Likewise, investors, development banks, and philanthropic organizations will provide funding for agricultural and social enterprises that develop and promote sustainable technologies that can help combat climate change and environmental degradation (Haglund et al., 2019). The ability of financing pathways to support the development of value chain structures and processes and improve agricultural market access and competition (IFAD, 2017). Investing in rural infrastructure such as roads, warehouses, and market facilities can facilitate the transportation and marketing of agricultural products, helping farmers access lucrative markets and obtain better prices (Barrett et al., 2012).In addition, there are excellent opportunities for funding to promote environmental protection and climate health. Sustainable financial instruments such as green bonds and climate finance encourage adaptation to climate change and environmental management practices such as agroforestry and conservation agriculture (UNEP, 2016). Payments for Ecosystem Services provide financial incentives to adopt sustainable land management practices, but climate insurance

Technological Advancement

Technological advances such as precision farming, robotics, and biotechnology are making farming more efficient. Precision agriculture utilizes technologies such as GPS, sensors, and drones to optimize resource utilization, improve crop management, and reduce input costs, thereby reducing waste and environmental degradation while increasing productivity (Zhang et al., 2018; Sui et al., 2020). Robotics and electronic technologies increase farm productivity by increasing productivity, reducing labor costs and improving accuracy in operations such as planting and harvesting (Dillen et al., 2019; Santos et al., 2020). Technological advances contribute to environmental stewardship by supporting the implementation of permaculture, such as the scientific development of genetically modified crops, and agroecological methods, such as conservation agriculture and organic farming (Dwivedi et al., 2017; Altieri, 2004; Gliessman, 2015). This practice promotes biodiversity conservation, soil health, and ecosystem health and reduces reliance on manufactured products. And appropriate irrigation systems (Lipper et al., 2014; Boko et al., 2007; Lal, 2015). The technology helps farmers predict and adapt to adverse weather conditions, conserve water, and protect crops in harsh environments.

Climate and Environmental conditions

Climate change is a major challenge for global agriculture, damaging productivity, water supplies, and biodiversity. Changes in temperature, rainfall, and extreme weather conditions, such as droughts and floods, can lead to crop failures, reduced crop yields, and increased vulnerability to pests and diseases (IPCC, 2014). These issues, such as changes in cropping patterns and changes in pollination, have significant impacts on farmers' livelihoods (Porter et al., 2014) and exacerbate water stress, soil erosion, and subsidence (Lobell et al., 2011).To address these issues, stakeholders use adaptive strategies and permaculture practices under

the auspices of permaculture (CSA) (Lipper et al., 2014). Practices such as conservation agriculture, forestry, and integrated water management can benefit soil health, water protection, and biodiversity, making agricultural systems more resilient to climate change (Altieri, 2004).

Furthermore, crop diversification can reduce risks and support livelihoods under climate uncertainty (Thornton et al., 2014).Natural resources, soil color, water, and biodiversity support permaculture. Activities such as land conservation, growing large quantities of food, and better water management can improve resource efficiency and increase productivity and efficiency (Kibblewhite et al., 2008; Pandey et al., 2017). In addition, conservation practices such as habitat restoration and pollinator management can support ecosystem services needed for permaculture (Bommarco et al., 2013). Overall, it reduces climate risks, increases productivity, and promotes the long-term sustainability of agriculture.

Discussion

Sustainable businesses are characterized by the integration of environmental, social, and economic considerations into business activities and are an important component in promoting social development. The entire business approach is deeply rooted in the principle of sustainable development, aiming to meet the needs of the present generation and protect the ability of future generations to meet their own needs. Sustainable entrepreneurs are helping to shape our future by using new business methods, products, and processes that focus on environmental sustainability, social inclusion, and economic sustainability. Issues, including environmental awareness, enforcement, and advancement. However, local entrepreneurs need help with many challenges, such as limited funding sources, difficult living standards, cultural barriers, etc. Addressing these barriers is critical to unlocking the sustainability potential of businesses and advancing social development goals. Economically, it promotes innovation, job creation, and market competition, promotes economic growth, and reduces poverty. It is environmentally friendly and helps save resources, prevent pollution, and protect the environment by adopting sustainable and environmentally friendly manufacturing methods. Sustainable, sustainable businesses promote social inclusion, human development, and poverty reduction by ensuring fair trade, sourcing, and corporate responsibility. Demand from project developer bonds, investors, researchers, and entrepreneurs. Addressing challenges such as access to financing, legal challenges, and cultural barriers will require new approaches and solutions. By supporting sustainable businesses, we can create a better, sustainable, and stable environment for future generations.

Conclusions

Sustainable businesses characterized by a combination of environmental, social, and economic goals are crucial to meeting today's challenges. Starting from the principle of sustainable development, sustainable entrepreneurs strive to create value for people and the environment and ensure economic prosperity. Despite obstacles such as economic downturns and regulatory challenges, sustainable industries offer many benefits. It encourages innovation, encourages job creation, and promotes economic growth while supporting environmental protection and social inclusion. In addition, permaculture management will

play an important role in achieving food security, environmental sustainability, and social development, supported by factors such as good agricultural management, education, research, and public intervention. To increase its effectiveness, collaboration with a variety of stakeholders and external resources is required.

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