

ENTREPRENEURSHIP BOTANY: A PANACEA FOR CURBING THE RATE OF UNEMPLOYMENT IN NIGERIA

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Abstract

*Entrepreneurship botany, an emerging interdisciplinary field that integrates botanical science with entrepreneurial innovation, offers a sustainable solution to the escalating rate of unemployment in Nigeria. With the country's vast biodiversity and rich repository of economic plants, entrepreneurial engagement in botanical resources presents untapped opportunities for value addition, enterprise development, and job creation. This paper explores how entrepreneurial botanists can leverage indigenous and high-value plants such as *Moringa oleifera*, *Hibiscus sabdariffa*, *Zingiber officinale*, and *Azadirachta indica* to stimulate employment across multiple sectors, including agriculture, processing, marketing, and export. By promoting value chains and encouraging small and medium-scale enterprises (SMEs), entrepreneurship in botany can contribute to rural industrialization, youth empowerment, and economic diversification. The study underscores the need for supportive policies, capacity building, and investment in plant-based innovation systems to unlock the full potential of this sector. It concludes that entrepreneurship botany is not only a viable tool for curbing unemployment but also a strategic pathway toward achieving inclusive and sustainable development in Nigeria.*

Keywords: Entrepreneurship, Botany, Interdisciplinary, Industrialization, Unemployment.

Introduction

Botany is the scientific study of plants and it offers a vast array of possibilities for entrepreneurial ventures. The botanical sector presents numerous opportunities for individuals to establish businesses that are both profitable and sustainable. By leveraging on Nigeria's rich biodiversity in plant and agricultural resources, entrepreneurs can create innovative products and services that will meet the needs of both domestic and international markets, as well as generate income, thus booming the economy of the nation. Nigeria, as a nation is endowed with abundant natural resources, including economic plants, but yet, she has been grappling with the persistent issue of unemployment. This socio-economic challenge has far-reaching implications, affecting individuals, families, and the overall economy and development of the country. In recent years,

there has been a growing recognition of the potential of entrepreneurship as a catalyst for economic growth and job creation. This paper explores the untapped opportunities within the field of botany (opportunities for value addition, enterprise development, and job creation).

This paper also delves into the various entrepreneurial avenues within botany, including plant cultivation and harvest for their commercial value which serve as raw materials in various industries including agriculture, pharmaceuticals, cosmetics, textiles, and food processing.

It also highlights the potential for value-added products derived from Nigerian economic plants, such as food additives, cosmetics, and pharmaceuticals. By promoting entrepreneurship in botany, Nigeria can tap into its natural resources, diversify its economy, and provide employment opportunities for its citizens. This approach aligns with sustainable development goals and offers a promising avenue for addressing the unemployment crisis in the nation.

What is Entrepreneurship?

Entrepreneurship is the process by which either an individual or a team of individuals identifies a business opportunity, acquires and deploys the necessary resources required for its exploitation. It involves the recognition of business opportunities, the mobilization of resources, and the management of risk and innovation to establish and grow new ventures (Hisrich, Peters, & Shepherd, 2017).

From a classical perspective, entrepreneurship has been associated with the creation and management of new businesses. However, contemporary scholars emphasize its broader role in economic development, innovation, and societal transformation (Kuratko, 2016). Entrepreneurs are viewed not merely as business owners, but as agents of change who disrupt markets, introduce new technologies, and foster competitiveness (Schumpeter, 1934).

Entrepreneurship also encompasses various forms, such as opportunity-based entrepreneurship, where individuals exploit market gaps, and necessity-based entrepreneurship, where individuals engage in business activities due to a lack of alternative employment (Acs, Desai, & Hessels, 2008). Furthermore, it includes social entrepreneurship, which combines profit motives with social missions to address societal challenges (Zahra et al., 2009).

The entrepreneurial process typically involves stages such as opportunity recognition, feasibility analysis, business planning, resource acquisition, and enterprise management (Bygrave & Zacharakis, 2014). These stages demand creativity, resilience, leadership, and decision-making skills, highlighting the multidimensional nature of entrepreneurship as both a mindset and a practice.

In academic discourse, entrepreneurship is studied across disciplines including economics, management, sociology, and psychology, each contributing unique insights into the motivations, behaviors, and outcomes associated with entrepreneurial activity (Shane & Venkataraman, 2000). Entrepreneurship is widely recognized as a key driver of economic development, innovation, and social transformation. Its benefits extend across individual, organizational, and societal levels, making it a vital component of both emerging and developed economies (Acs & Szerb, 2007).

Entrepreneurship stimulates economic activity by introducing new goods and services, opening new markets, and increasing competition. New ventures contribute to gross domestic product (GDP) and serve as important sources of employment. Research shows that small and medium-sized enterprises (SMEs), often created through entrepreneurial initiatives, are responsible for a significant proportion of job creation in many economies (Audretsch, 2007; Van Praag & Versloot, 2007).

Entrepreneurial Botany

Entrepreneurial botany refers to the application of entrepreneurial principles and practices to the field of botany, particularly in the development, commercialization, and sustainable management of plant-based innovations. This interdisciplinary domain combines botanical knowledge with business acumen to generate economic, ecological, and social value, especially in areas such as agriculture, pharmaceuticals, biotechnology, and environmental conservation.

Entrepreneurial botany is particularly relevant in addressing global challenges such as food security, climate change, and biodiversity loss. Entrepreneurs in this field leverage scientific research on plant species, genetics, and ecosystems to develop innovative solutions, such as drought-resistant crops, plant-based medicines, and organic fertilizers (Rai, 2004). These innovations not only enhance agricultural productivity and sustainability but also open up new markets and revenue streams.

Entrepreneurial botany paves the way for ethnobotanical enterprises—businesses that commercialize traditional knowledge of medicinal plants for pharmaceutical or nutraceutical development. This approach supports local economies, especially in biodiversity-rich regions, and encourages the conservation of indigenous plant species (Cox, 2000). However, ethical concerns related to biopiracy and benefit-sharing have led to calls for fair and equitable business models that respect local knowledge systems and biodiversity rights (Shiva, 2007).

Additionally, entrepreneurial botany plays a key role in the green economy, where plant-based innovations are used to create eco-friendly products and services. For instance, the use of plant fibers in biodegradable packaging, or the cultivation of algae for biofuel production, reflects how botany-driven entrepreneurship can contribute to sustainability and low-carbon development (Demirbas & Demirbas, 2011).

Entrepreneurial botany also promotes agribusiness innovation, where farmers and plant scientists collaborate to improve crop varieties, optimize supply chains, and create value-added products. Start-ups and small businesses in this space often bridge the gap between research institutions and the market, facilitating the transfer of scientific discoveries into commercially viable solutions (World Bank, 2007).

Therefore, entrepreneurial botany is a growing and impactful field that combines botanical science with entrepreneurial initiative to solve real-world problems, promote sustainable development, and stimulate economic growth, particularly in agriculture-dependent economies.

Solve real-world problems: It integrates the systematic study of plants with innovative business models to address global challenges such as food insecurity, environmental degradation, and public health concerns. This interdisciplinary approach has led to the development of sustainable agricultural practices, plant-based pharmaceuticals, biodegradable materials, and renewable energy sources, all of which contribute to both economic development and ecological resilience (Demirbas & Demirbas, 2011; Cox, 2000). By commercializing plant-based innovations, entrepreneurs in this space also support biodiversity conservation and promote the responsible use of traditional knowledge systems (Shiva, 2007). In regions rich in plant biodiversity, particularly in Africa, Asia, and Latin America, entrepreneurial botany has emerged as a tool for rural development and inclusive growth, offering opportunities for smallholder farmers, herbal medicine practitioners, and eco-entrepreneurs to participate in green value chains (World Bank,

2007). As such, entrepreneurial botany holds promise not only as a business opportunity but also as a transformative strategy for sustainable development.

Promote sustainable development: Entrepreneurial botany merges the deep scientific understanding of plants with innovative business approaches to create solutions that are environmentally responsible, economically viable, and socially inclusive. By harnessing the commercial potential of plant-based resources such as medicinal herbs, biofuels, natural fibers, and organic crops, entrepreneurs contribute to green innovation and ecosystem conservation (Demirbas & Demirbas, 2011; Rai, 2004). This field also supports rural livelihoods and biodiversity preservation by empowering local communities, especially in biodiversity-rich regions, to commercialize indigenous knowledge and sustainably manage plant resources (Shiva, 2007; Cox, 2000). In doing so, entrepreneurial botany fosters inclusive economic growth, enhances food and health security, and aligns with global development agendas such as the United Nations Sustainable Development Goals (UN, 2015). As climate change and ecological degradation intensify, the integration of botany and entrepreneurship is becoming increasingly vital for creating resilient and regenerative economies.

Stimulate economic growth: By leveraging the economic potential of plants ranging from medicinal herbs and aromatic species to high-value crops and bio-based materials, entrepreneurs are creating innovative products and services that drive new business opportunities and market development (Rai, 2004). This convergence of scientific research and business strategy supports the commercialization of plant-based innovations, which contributes to job creation, rural development, and export diversification, particularly in agriculture-dependent economies (World Bank, 2007). In many developing countries, small and medium enterprises (SMEs) involved in botanical industries play a significant role in generating income for local communities while encouraging sustainable resource use (Cox, 2000; Shiva, 2007). Furthermore, entrepreneurial ventures in areas such as phytopharmaceuticals, organic farming, and green cosmetics are not only revitalizing traditional knowledge systems but also enhancing the competitiveness of natural products in global markets. As such, entrepreneurial botany serves as a catalyst for inclusive economic growth by turning plant-based knowledge and biodiversity into viable, scalable, and sustainable business models.

Economic Plants for Entrepreneurial Botanists to Create Employment in Nigeria

Nigeria, endowed with rich biodiversity and diverse climatic zones, possesses significant potential for botanical entrepreneurship, especially through the commercial utilization of economic plants. Entrepreneurial botanists can leverage indigenous plant species and high-value plants in Nigeria, such as, *Moringa oleifera*, *Hibiscus sabdariffa*, *Zingiber officinale*, and *Azadirachta indica* as a means of generating employment and promoting inclusive economic growth.

Moringa oleifera, often referred to as the "miracle tree," is one such plant with high nutritional and medicinal value. It is widely cultivated in Nigeria and has become a major source of income for small-scale farmers, particularly in rural areas (Foidl et al., 2001). Its leaves, seeds, and oil are used in dietary supplements, skincare products, and water purification, making it a versatile resource for agro-processing enterprises.

Another important economic plant is *Azadirachta indica* (neem), known for its pesticidal, cosmetic, and medicinal properties. Neem-based products are increasingly being adopted in organic agriculture and traditional medicine, creating opportunities for botanically inclined entrepreneurs to establish small- and medium-sized enterprises (SMEs) focused on organic inputs and natural remedies (Boeke & Thijssen, 2002).

Zingiber officinale (ginger) and *Capsicum* species (chili pepper) are also high-demand cash crops in both local and international markets. Nigeria is one of Africa's leading producers of ginger, which is used in food, pharmaceuticals, and cosmetics (Yusuf & Ayedun, 2021). Entrepreneurs can add value through processing, packaging, and exporting these products, thereby enhancing employment generation in agriculture and agribusiness.

The cultivation and commercialization of *Hibiscus sabdariffa* (zobo) is another viable venture. Hibiscus is widely consumed as a beverage and exported for use in teas and herbal blends. Its processing and branding present viable opportunities for youth- and women led enterprises (Adegoke et al., 2019).

The promotion of value chains around these economic plants, enables entrepreneurial botanists to stimulate employment across production, processing, marketing, and export sectors.

Production: Entrepreneurial botanists stimulate employment across production. These value chains enable the transformation of raw plant materials into high-value products, thereby increasing income opportunities for farmers, processors, artisans, and small-scale retailers (Adegoke et al., 2019). The cultivation of *Moringa oleifera* can generate jobs not only in farming but also in the processing of leaves into powders and teas, and the extraction of oil for cosmetic and pharmaceutical use. Similarly, *Zingiber officinale* (ginger) supports a thriving agro-processing industry in Nigeria, with potential for export-driven enterprises that create rural and urban employment (Yusuf & Ayedun, 2021).

In this context, entrepreneurial botanists act as catalysts, facilitating the link between scientific knowledge of plant resources and practical business applications. Their involvement in capacity building, product innovation, and market development strengthens the entire ecosystem of plant-based industries. Additionally, by encouraging sustainable harvesting practices and the cultivation of underutilized species, they contribute to biodiversity conservation and climate resilience (Okigbo, 2008).

The economic empowerment derived from these ventures is especially important for marginalized groups, such as rural youth and women, who are often faced with barriers to formal employment. Through targeted support programs, training, and access to finance, entrepreneurial botany can be a pathway to inclusive development and a reduction in rural-urban migration (World Bank, 2007).

Processing activities: Entrepreneurial botanists stimulate employment across processing activities, where raw plant materials are transformed into market-ready products such as herbal medicines, essential oils, food condiments, and cosmetic items. This stage of the value chain is particularly labour-intensive, requiring skilled and semi-skilled labour for tasks such as drying, grinding, extraction, packaging, and quality control (Adegoke et al., 2019). The processing of *Hibiscus sabdariffa* into tea products or *Zingiber officinale* into ginger powder involves multiple hands-on operations that create jobs for youth and women in rural and urban areas (Yusuf & Ayedun, 2021). Additionally, the establishment of small-scale processing facilities enables local entrepreneurs to reduce post-harvest losses, increase shelf life, and add value to indigenous plant resources, which in turn attracts investment and enhances income generation (Okigbo, 2008).

The integration of modern botanical knowledge with appropriate technologies, entrepreneurial botanists can further support training programs, promote local equipment fabrication, and improve hygiene and packaging standards thereby enhancing both employment and competitiveness in the growing natural products market. These interventions contribute not only to job creation but also to broader rural industrialization and sustainable economic diversification in Nigeria.

Marketing: Entrepreneurial botanists stimulate employment across marketing, where processed plant products are branded, advertised, and distributed to reach local, national, and international

markets. Marketing is a critical link in the value chain that involves activities such as packaging design, sales promotion, digital advertising, logistics coordination, and customer relationship management. As the demand for natural and plant-based products grows, so does the need for skilled professionals in the marketing and the distribution channels (Adegoke et al., 2019). Products derived from *Moringa oleifera*, *Hibiscus sabdariffa*, and *Zingiber officinale* often rely on compelling branding and market education strategies to stand out in competitive wellness and agro-export markets (Yusuf & Ayedun, 2021).

Entrepreneurial botanists play a vital role in identifying target markets, building brand narratives around sustainability and health benefits, and facilitating access to e-commerce platforms and export networks. This creates employment opportunities for marketers, graphic designers, logistics providers, social media managers, and retail vendors particularly for youth and urban dwellers (World Bank, 2007). Moreover, by linking rural producers with urban and global consumers, the marketing component enhances income flows and economic linkages across regions, contributing to more balanced and inclusive development.

Export sectors: Entrepreneurial botanists stimulate employment across export sectors, particularly by harnessing the international demand for natural, organic, and plant-derived products. Nigeria's diverse flora including high-value species like *Zingiber officinale* (ginger), *Hibiscus sabdariffa* (hibiscus), *Moringa oleifera*, and *Capsicum species* (chili pepper) offers immense potential for agro-export-led growth. When these plants are cultivated, processed, and packaged to meet international quality standards, they open up significant opportunities for job creation in export logistics, quality assurance, certification services, customs processing, freight handling, and international marketing (Adegoke et al., 2019; Yusuf & Ayedun, 2021).

Entrepreneurial botanists serve as key drivers in this space by applying their scientific knowledge to ensure product consistency, compliance with phytosanitary standards, and the development of value-added plant products that meet the preferences of global markets. This contributes to employment in support services such as export documentation, warehousing, international trade consulting, and supply chain coordination.

Conclusion

Entrepreneurship botany presents a promising and innovative pathway for addressing the persistent challenge of unemployment in Nigeria. The combination of botanical science with entrepreneurial initiative, this field opens up numerous opportunities for income generation and job creation across various stages of the value chain—ranging from cultivation and processing to marketing and exportation of economic plants. Indigenous species such as *Moringa oleifera*, *Hibiscus sabdariffa*, *Zingiber officinale*, and *Azadirachta indica* are not only ecologically sustainable but also economically viable for smallholder farmers, youth entrepreneurs, and rural communities. The strategic development of plant-based enterprises can stimulate rural economies, reduce poverty, and foster self-reliance among Nigeria's growing population.

However, to fully harness the potential of entrepreneurship botany, there is a need for deliberate investment in capacity building, access to finance, infrastructure development, and policy support tailored to plant-based industries. Encouraging research, innovation, and market linkages will further enhance the competitiveness of botanical products locally and globally. Ultimately, entrepreneurship botany should be embraced as a catalyst for inclusive economic growth, sustainable development, and a long-term solution to Nigeria's unemployment crisis.

Recommendations

To fully harness the potential of entrepreneurship botany as a solution to Nigeria's unemployment crisis, the following strategic recommendations are proposed:

Integration into Educational Curricula: Entrepreneurship botany should be incorporated into the curricula of tertiary institutions, agricultural colleges, and vocational training centers. This will equip students and aspiring entrepreneurs with the knowledge and skills needed to explore and commercialize plant-based resources.

Government Support and Policy Implementation: The Nigerian government should formulate and implement supportive policies that encourage investment in botanical enterprises. These policies should include tax incentives, subsidies, and grants for startups and SMEs involved in the cultivation, processing, and export of economic plants.

Access to Finance and Microcredit Schemes: Financial institutions and development banks should create accessible funding mechanisms specifically tailored for young entrepreneurs and rural botanical ventures. Low-interest loans, cooperative funding, and microcredit schemes can boost the establishment and expansion of botanical businesses.

Capacity Building and Technical Training: Targeted training programs and workshops should be organized to build the technical and business capacities of prospective entrepreneurial botanists. These programs should focus on value addition, quality control, sustainable harvesting practices, and market development.

Research and Development (R&D): Increased investment in research is essential to discover new economic plants, improve yields, and develop innovative plant-based products. Partnerships between universities, research institutes, and private enterprises should be encouraged to promote applied botanical research.

Market Linkages and Export Promotion: Establishing strong market linkages between producers and buyers—both local and international—will enhance the profitability of plant-based enterprises. Export promotion agencies should support entrepreneurs in meeting international standards and accessing global markets.

Public Awareness and Community Engagement: Awareness campaigns should be launched to educate the public on the economic value of indigenous plants and the benefits of entrepreneurship botany. This will foster community involvement and support for local botanical ventures.

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