Journal of Economics, Finance and Accounting Studies (JEFAS)
ISSN: 2709-0809
DOI: 10.32996/jefas
Journal Homepage: www.al-kindipublisher.com/index.php/jefas

JEFAS
AL-KINDI CENTER FOR RESEARCH AND DEVELOPMENT

| RESEARCH ARTICLE

Economic Viability of Organic Farming Practices in Developing Countries

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| ABSTRACT

Organic farming has become a better option compared to conventional farming methods, offering sustainability, health benefits, and improved rural livelihoods. Organic farming practices face unestablished economic feasibility challenges in developing countries because these areas often deal with resource limitations along with market system faults. This paper analyzes available studies to understand how costs and benefits interact with market structures and policy structures to determine organic agricultural sustainability in these regions. Various studies show organic farming provides lasting economic advantages, together with ecological advantages, though transition difficulties and short-term disadvantages prevent many farms from adopting this system. Organic systems gain viability when policies support them and when knowledge and market integration develop effectively. Future empirical work should focus on developing solutions to barriers that limit organic agriculture expansion in developing economies, according to the recommendations for policymakers and development practitioners.

| KEYWORDS

Economic Viability; Organic Farming Practices; Developing Countries

| ARTICLE INFORMATION

ACCEPTED: 05 December 2024 **PUBLISHED:** 25 December 2024 **DOI:** 10.32996/jefas.2024.6.6.10

1. Introduction

Environmental factors must support all facets of human growth, whether social or physical, and they must not jeopardize the environment's integrity for humans to survive [1]. In addition to taking inputs or instruments into account, a sustainable agricultural system must handle challenges of environmental, economic, and social sustainability. Organic farming has become a major worldwide preference for sustainable agriculture over the last few decades [2, 3]. The organic practice, which excludes artificial inputs, is known to enhance soil quality while increasing biodiversity alongside promoting better conditions for farmers [4, 5]. The economic sustainability of organic farming techniques holds major importance in developing countries since agriculture remains their anchor for progress, and farmers rely on farming to survive [6-8].

The many hurdles developing countries confront involve poor capital availability, combined with inadequate market systems, alongside climate uncertainties [9, 10]. In such conditions, organic farming is connected to lower chemical costs, environmental sustainability, and enhanced food quality. Organic farming is marketed as a way to increase rural economic success by lowering input needs and earning market premium pricing [11]. The economic stability of smallholder farmers remains in question due to objections that challenge reduced production during conversions and rising labor needs, together with unstable market indicators [12, 13]. Environmental factors must support all facets of human growth, whether social or physical, and they must not jeopardize the environment's integrity for humans to survive [14]. In addition to taking inputs or instruments into account, a sustainable agricultural system must handle challenges of environmental, economic, and social sustainability. The literature has referenced the connection between soil organic matter and crop productivity [15, 16]. Crop response to fertilizer application is dependent on the availability of soil organic matter, according to research citing the link between soil organic matter and crop productivity[17]. Thus, applying organic amendments is equivalent to increasing soil productivity [18-22].

Organic farming is based on a comprehensive perspective. Nature can be divided into many distinct elements, but it is more than that [23, 24].

The study of ecology, which examines the interactions between living things and their surroundings, contains the concepts and principles of farming. In general, organic farming avoids synthetic inputs like fertilizers, insecticides, and herbicides and instead emphasizes adequate biological processes like composting and other ways to preserve soil fertility, naturally control pests, and diversify crops and livestock [25-28].

Unlike conventional farming, which focuses on immediate financial rewards, organic agriculture prioritizes long-term ecological health, such as biodiversity and soil quality. Thus, the National Organic Standards Board of the United States defined organic agriculture [29-32].

2. Literature Review

Organic farming looks to principles that support environmental harmony with biodiversity and prohibits the use of artificial pesticides as well as artificial fertilizers [4]. Organic agriculture tries to imitate natural ecosystems through crop rotation, biological pest management, and composting. According to proponents, these environmental saving methods bring both improved soil health and better future harvests [33]. Organic production yields tend to decrease before the system stabilizes after converting from conventional farming methods to organic farming. The performance of yield gaps varies among different agricultural areas primarily because of differences in local climate and soil types, and farmer experience, according to [5]. Unique economic difficulties found in developing nations determine the way farmers make their decisions. The limitations of capital resources and poor infrastructure, together with market irregularities, prevent farmers from implementing organic practices. The conversion expenses, together with the risk of not obtaining organic premium prices, create major barriers that prevent smallholder farmers from pursuing organic farming according to Hossain, Hosen [20]. Domestic markets in various developing countries show limited interest in organic produce, which causes price fluctuation, especially since organic products tend to have a premium status in established markets.

Organic farming generates financial success primarily through the use of price premiums in the market. According to Willer, markets with better development allow organic products to generate higher prices than non-organic products. The absence of certification systems, along with low consumer knowledge about organic products, prevents developing nations from accessing increased market prices. Climate shocks combined with policy changes produce external factors that make the economic situation more complex [34]. Achieving market access serves as an essential factor determining economic profitability. The access to specific product markets, combined with international trade prospects and added-value supply networks, enables organic farmers to boost their profits [35]. Many developing nations face major obstacles because they lack strong marketing routes combined with adequate regulatory systems. According Palombi and Sessa [36] farmers will not realize the practice economic potential when nations fail to develop coherent policies for certification and market expansion [20, 37].

Public policies create substantial changes to market competition. Different incentives that include providing organic input subsidies alongside training programs and market infrastructure development have proven effective for enhancing organic agriculture results [38]. When organic methods go unsupported, farmers show slower adoption, even though these methods might yield long-term advantages [39]. Organic farming transitions go beyond economic considerations because social components, along with institutional aspects, play pivotal roles in this adoption [40]. Farm owners in developing economies need to deal with multiple risks that emerge from uncertainty regarding crop yields throughout the certification process. The present lack of technical expertise and extension assistance leads to higher risks, according to Pretty, Camilla [13]. The limited financial capacity of smallholder farmers means that minimal changes to their yield production or market price changes affect their household income severely. Community-based organizations and farmer cooperatives prove decisive in risk reduction since they help farmers share knowledge and organize group marketing endeavors [41, 42].

Agroecology establishes an effective system to evaluate farming systems through their connection between nature and human environmental issues. Agroecology creates understanding about organic practice adaptation through studying biological processes as they interact with human management procedures [33]. Research indicates that organic farming offers better ecosystem services, which reduce production costs and improve system stability. Farmers usually face unstable production levels during their transition to economic success, which occurs after a set period of time [5]. The sustainable livelihoods framework (SLF) stands as one of the main approaches for evaluating economic together with social, and environmental outcomes produced by different development interventions. According to Sakho-Jimbira and Hathie [39] livelihoods consist of assets accompanied by capabilities and activities that dictate household welfare levels[43]. The SLF shows how organic farming creates a connection between better natural resource practices along economic stability [44]. Organic practices need to be embedded within wider livelihood strategies according to this framework because it emphasizes both market connections and technical resources and capacity building institutions as fundamental aspects for delivering sustainable organic outcomes [13, 45].

These analytical frameworks collectively explain the conditions under which organic farming succeeds economically, though they prove difficult in various situations. These conceptual models offer both the technical and social understanding of factors that affect farmer decisions in developing areas and the biophysical aspects of agricultural systems[43].

3. Methodology

This research method contains stages as described below:

1. **Literature Collection:** Academic databases, including Google Scholar and JSTOR, alongside ScienceDirect, received systematic examination for peer-reviewed articles dating from 2000 until the present. Bélanger and Pilling [34] emphasized studies which analyzed the dynamics of organic farming methods together with cost–benefit evaluations and market examinations, while focusing on developing nation policies[46].

2. **Selection Criteria:** During selection, researchers focused on studies matching the research topics. The evaluation process focused on research materials with empirical evidence and strong economic evaluations or comparative findings between organic farming and its conventional counterpart. The research included studies from both qualitative and quantitative approaches because the subject involves various dimensions [35].

3. **Thematic Coding and Synthesis:** The analyzed literature received thematic analysis regarding input costs, together with yield results and market accessibility, and governmental policies. The research team used agroecology and sustainable livelihoods frameworks to arrange the studied themes. Researchers discussed contrasting results to understand both the positive and negative aspects of organic farming under various conditions [38].

4. **Analysis and Integration:** Synthesis in this research included uniting evidence from different sources to build an integrated report about organic agriculture economics. The study paid close attention to reveal factors from regional markets and institutional backing that affect the economic rewards of the organic farming system[47]s.

4. Analysis and Findings

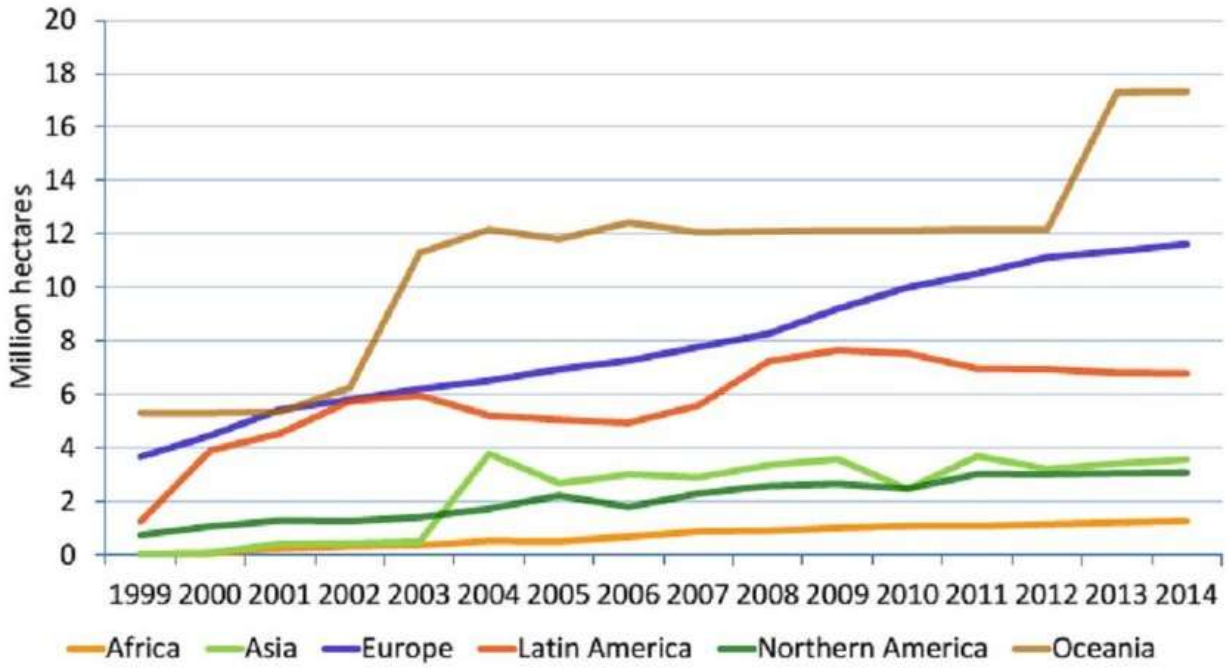

Figure 1. Yield decline and cost reduction during organic conversion

The economic and productivity dynamics that farmers encounter when switching to organic farming are depicted in the graph titled Yield Decline and Cost Reduction During Organic Conversion in Figure 1. Crop yields usually decrease by 10% to 30% during the first two to three years while ecological systems rebalance and soils adapt to the lack of synthetic inputs. At the same time, less money is spent on chemical pesticides and fertilizers, which lowers operating costs [20]. Over time, yields start to

increase but prices stay relatively low as sustainable farming methods gain traction and soil health improves. This trend draws attention to the immediate financial difficulties associated with organic conversion, especially for smallholder farmers in areas with low resources, such as sub-Saharan Africa.

4.1 Cost Structures and Yield Dynamics:

Authors throughout the literature emphasize the careful relationship between reduced expenses and decreased output that occurs during organic conversion initiation. The reduction of expenditures on synthetic fertilizers and pesticides enables organic systems to decrease their operating costs [4]. Various studies suggest that organic conversion spans between two and three years, while productivity declines because of ecological adaptations demanded by organic cultivation systems, according to [5]. .During the soil restoration phase, which leads to diminished economic stability for resource-strapped smallholders, even though yield gaps usually decline naturally with time and better farming practices[48].

4.2 Price Premiums and Market Access:

Higher prices for organic produce represent a common way to neutralize production decreases that occur in organic farming systems. The research by Willer, Lernoud [41] shows that organic foods certified in mature certification markets receive premiums of between 20–50% higher than standard agricultural products. Many developing nations face challenges associated with weak certification systems and infrastructure issues, while consumers remain unclear about the organic concept as per the [34]. Farmers sometimes need to pursue export markets due to unreliable domestic organic markets, yet they face numerous logistical and regulatory challenges, according to [13].

4.3 Impact of Policy and Institutional Support:

The existing agricultural policy determines what happens in organic farming economics. The transformation process into organic agriculture becomes less risky due to governmental backing of input assistance and technical consultancy, together with simplified certification procedures [38]. Social policies supporting organic agriculture in certain regions result in increased public interest and simultaneously strengthen regional sustainability levels. Accordant to [39] integrated rural policies promoting sustainability, together with environmental conservation, enable organic farming to replace conventional agricultural methods effectively[49].

4.4 Socioeconomic Benefits and Sustainable Livelihoods:

Organic farming provides wider developmental effects on rural communities that extend past monetary gains. The sustainable livelihoods framework demonstrates that organic practice adoption leads farmers toward three essential factors of broad-based rural prosperity, including improved soil quality and safer inputs combined with strengthened ecological diversity [13]. Organic farming develops community-based organizations through cooperative structures that create better market access and credit facilities. The sustainable development of smallholder livelihoods in developing countries depends on these wider socioeconomic advantages, which may not show significant returns in short-term financial measurements[50].

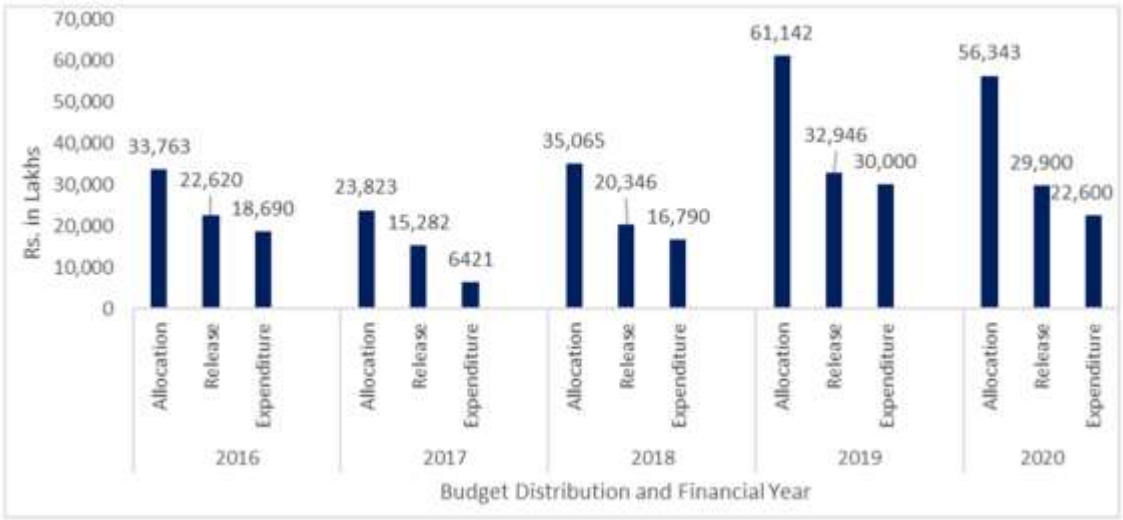

Figure 2. Budget Allocation, Release, and Expenditure for Organic Farming (2016–2020)

The graph (Figure 2) shows the yearly budgeted allocation, money release, and actual spending on organic farming from 2016 to 2020. Real spending remained much lower despite steadily rising allocations, especially in 2017 and 2020. 2019 showed the most effective utilization of funds, with the shortest period between release and expenditure. The persistent underutilization suggests

ineffective project management and resource allocation. This illustrates the need for stronger implementation strategies to maintain the economic viability of organic farming in developing countries[51]. Various case examinations present a deep understanding of the economic sustainability of organic agriculture. Multiple studies in India document that thorough organic certification programs have led to increases in farm yields and incomes during five years. Organic smallholder farms in Latin American territories developed economic equality with conventional methods after adequate government assistance and strong extension service infrastructure [41]. These case studies prove that economic sustainability becomes achievable long-term when proper conditions absorb short-term difficulties.

5. Discussion

This review confirms that the economic sustainability of organic agriculture in developing nations depends extensively on the local circumstances. The balancing act between economic input spending and yield reduction reveals that organic system transition serves as an essential stage that needs immediate support. Policy support stands as the vital factor needed for achievement. Widespread implementation of strategies leading to cheap inputs, combined with training programs and market collaboration, helps developers navigate transition risks alongside premium price acquisitions due to proper certification approaches [38, 52].

A complete understanding of organic practice adoption needs the combination of agroecology and sustainable livelihood frameworks. Organic farming improves ecosystem services, which develop gradually and eventually result in lower long-term production expenses [5, 33]. Local capacities are essential for attaining these benefits. The economic challenges that small farmers face during their transition phase are mainly due to their restricted access to both financial resources and technical guidance unless they receive external backing.

Various studies confirm that market access serves as an enormous impediment. Developing nations increasingly depend on specialized exports because local organic markets are either nonexistent or nonfunctional. According to Pretty, Camilla [13] it becomes necessary to improve consumer knowledge and set up dependable certification frameworks to achieve stable organic premium levels. Forming partnerships between public and private entities could function as an effective solution to bridge market deficits, thus enabling sustainable organic farm expansion.

The wider social advantages of organic farming, such as better public health results and eco-preservation together with vibrant rural social fabric, should be integrated into economic impact measures. The broader assessment of organic practices reveals their support for rural development and resilience, as described by Sakho-Jimbira and Hathie [39] despite any short-term benefits versus costs assessments. The policy-making process should incorporate multi-faceted advantages when developing sustainability policies for establishing organic agriculture as a resilient economic model in developing countries[53].

6. Conclusion

Organic farming stands as a promising solution for achieving sustainable agricultural development aims in developing world nations. This analysis demonstrates that organic farming holds promise to reduce expenses by being environmentally friendly and sociologically beneficial in the long term, but new farmers face short-term yield decline due to market hurdles that weaken their operational stability. Organic agricultural systems achieve economic results through the combination of favorable governmental frameworks with proper certification systems, along with specialist training and market growth which helps producers surmount switching difficulties. Expert policymakers should create multisectoral plans that unite agricultural advancement with countryside economic development goals. Smallholder organic farmers experience reduced economic risks when access to credit is improved and extension services receive investments, and public–private collaboration receives support. Empirical research about this matter would supply vital factual information for lawmakers to make decisions that optimize both financial outcomes and ecological resource stewardship in developing nations. The economic sustainability of organic farming within developing countries remains uncertain because it depends on three critical sets of determinants, including agricultural systems and market conditions, and institutional support structures. Stakeholders can unite organic agriculture's maximum potential to achieve environmental sustainability together with enhanced rural livelihoods by dealing with initial conversion difficulties and developing an environment supporting organic farming.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

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