

جامعة الجزائر 3

كلية العلوم الاقتصادية والعلوم التجارية وعلوم التسيير

مخبر العولمة والسياسات الاقتصادية

فرقة البحث الاتجاهات الجديدة للعولمة

الملتقى الدولي حول:

التحديات التي تواجه قطاع الفلاحة في ظل التحولات المعاصرة بالجزائر

يومي 9-10 جوان 2026

Enhancing the Agricultural Sector through AgriTech Business Accelerators: A Case Study of the Dutch "StartLife" and Potential Applications in Algeria.

"المحور الخامس: التجارب الدولية الرائدة في قطاع الفلاحة"

Dr. Medekhel Khaled

Political Economy Laboratory between Economic Development and Political Challenges for Arab and African Countries./ Lecturer - A - / University of El-Oued, **Algeria**.
medekhel-khaled@univ-eloued.dz

Dr. Khaled Dershwı

Assistant Professor, Karabuk University, **Türkiye**.
Khaleddershwi@karabuk.edu.tr

Dr. Elhachemi Tamma

Laboratory of Business Management and Sustainable Economic Enterprises, University of El-Oued/ Lecturer - B - / University of El-Oued, **Algeria**.
elhachemi-tamma@univ-eloued.dz

ملخص

يتناول هذا التحليل كيفية مساهمة مسرعات الأعمال المتخصصة في مجال التكنولوجيا الزراعية في إحداث تحول في القطاع الزراعي، وذلك من خلال دراسة حالة مسرع الأعمال الهولندي "StartLife" وإمكانية تطبيقه في الجزائر. تستخدم المرحلة الأولى من التحليل إطاراً مفاهيمياً لتوضيح آلية العلاقة بين قطاع التكنولوجيا الزراعية ومسرعات الأعمال. بعد ذلك تحلل الدراسة بيئة مسرع "StartLife" وحوكمته ومصادر تمويله ونتائجه

القابلة للقياس. ثم يقيم التحليل الوضع الراهن لرواد الأعمال الزراعيين، وحاضنات الأعمال، ومسرعات التكنولوجيا الزراعية في الجزائر، مسلطاً الضوء على قضايا التوافق الحاسمة وفرص النمو المحتملة. تستخدم النتائج التجريبية لهذه الدراسة منهجاً مختلطاً، يشمل دراسة الحالة، بالإضافة إلى التحليل الوصفي والتحليلي، وتقدم توصيات لإنشاء مسرعات التكنولوجيا الزراعية في الجزائر بهدف دعم تحسين الأمن الغذائي، وزيادة فرص عمل الشباب، وتسهيل الانتقال من اقتصاد قائم على الزراعة إلى اقتصاد قائم على المعرفة.

الكلمات المفتاحية: التكنولوجيا الزراعية، مسرعات الأعمال، الابتكار الزراعي، الجزائر، ريادة الأعمال، بيئة الابتكار

Abstract

In this analysis of how specialized AgriTech business accelerators can shape the transformation of the agricultural sector through a case study examining the Dutch "StartLife" accelerator and its potential replication in Algeria. The initial phase of the analysis will utilise a conceptual framework to show how the relationship between the AgriTech sector and business accelerators operates. Following this, the study analyses the StartLife Accelerator's ecosystem, governance, funding sources, and measurable results. The analysis then assesses the current landscape of agricultural entrepreneurs, incubators, and AgriTech accelerators in Algeria, which highlight the critical alignment issues and potential for growth opportunities. The empirical results of this study will use a mixed method, including case study, as well as descriptive and analytical descriptions and provide recommendations for establishing AgriTech Accelerators in Algeria in order to support improved food security, increase youth employment opportunities, and facilitate the transition from an agriculture-based economy to a knowledge-based economy.

Keywords: AgriTech, business accelerators, agricultural innovation, Algeria, entrepreneurship, innovation ecosystem

Introduction

Digital, biological and mechanical innovations are revolutionizing agriculture and driving this change through the establishment of AgriTech startups throughout the world that are helping to convert advanced research into practical technology-based solutions that can be used within agricultural supply chains; Moreover, Algeria is changing its national economy from dependence on hydrocarbons and is using technology to create a new type of economy, with the establishment of technology-based entrepreneurial opportunities and technology-based innovation as significant components to create long-term food security, rural employment, and sustainable territorial development.

Although Algeria is currently undergoing transformational change, it still has a considerable structural gap between the potential it has associated with its extensive agricultural resources and the current use of advanced AgriTech solutions. There are many factors associated with the agriculture sector that continue to limit these types of advances, including low-productivity

agriculture, significant climate vulnerability, and a fragmented support structure for innovation-facilitating ventures. However, as demonstrated by a number of successful international ecosystems, specialized agricultural business accelerators have successfully demonstrated the capacity to mitigate and de-risk emerging AgriTech-based startups, while concurrently accelerating growth. Therefore, the primary purpose of this study is to identify how Algeria will draw on established, proven international models of agricultural accelerator systems to facilitate the development of agricultural entrepreneurial ecosystems within Algeria. Specifically, this study will explore the following questions: How do AgriTech accelerators function in advanced global ecosystems? What are the unique features of the Dutch "StartLife" accelerator? and what conditions would need to be met in order to adapt the Dutch accelerator for use in Algeria?

Great Significance and Goals: This research is very significant because Algeria is trying to combine food and youth with Sustainable Development as it grows into a Knowledge Based Economy. As the world around it becomes increasingly affected by climate change and water shortages, it becomes increasingly clear that Algeria must quickly innovate in agriculture. In order to achieve these goals, this study will create a conceptual understanding of the role of AgriTech Accelerators in the development of agriculture. Then, we will take the StartLife Accelerator (the Netherlands) as a reference framework to investigate how the StartLife accelerator works, what opportunities exist, what requirements must be met, and what barriers may prevent the development of similar models in Algeria.

Methodology and Structure: In order to accomplish these goals, we will use a combination of a descriptive-analytical (DA) and an in-depth Case Study research methodology. First, we will create a conceptual framework for how business accelerators and agricultural innovation overlap. Next, we will utilize an in-depth case study of the StartLife Accelerator (the Netherlands) using secondary (institutional) data to reconstruct its structure and functions (the governance, funding, and role in the ecosystem) of StartLife. Finally, we will conduct a contextual analysis of the current startup support environment for Algeria. By using a triangulation methodology, we will provide a structured way to compare an advanced ecosystem to an emerging ecosystem and provide one to two context-specific policy recommendations.

The Paper includes three primary sections. The first section contains the theoretical understanding of Business Accelerators and their relationship to AgriTech. The second section discusses the StartLife case study and the entire Dutch agricultural innovation ecosystem. The third section discusses the reality of Algeria – the current state of local incubators and the overall assessment of the institutional, financial, and technical feasibility for developing a similar StartLife accelerator in Algeria. The conclusion synthesizes the findings and provides action-oriented recommendations for the development of Algerian Agricultural Innovation.

1. Conceptual Framework of Business Accelerators and Agricultural Technology (AgriTech)

The purpose of this section is to establish the theoretical basis for the research by investigating the important relationship between entrepreneurial support systems and innovations that develop in agriculture. This chapter will provide a definition for the primary elements of the Business Accelerator model, discuss how the development of AgriTech has taken place over time,

and study the synergy between the two to de-risk start up ventures and promote the long-term viability of technology-enabled food production systems.

1.1 The Concept of Business Accelerators

Accelerators accelerate the growth of early-stage businesses or startups through a combination of support services such as mentoring and networking. Accelerators typically operate in a cohort model within fixed timeframes of a few months and provide structured, intensive training to support the growth of innovative, high-growth startup companies. They aim to help entrepreneurs improve their chances of survival and success and become more prepared for investment by concentrating resources (e.g., training, mentoring) together with other support services in a short time period (Lange & Johnston, 2020). Additionally, accelerators provide space for collaboration and reduce the risks associated with starting a new business. They also help to fill gaps in information and resources that most startups have during their early days of operation (Madaleno et al., 2021). In contrast to incubators, accelerators typically have a higher level of selectivity, fixed-term and curriculum-driven programs and a focus on getting their entrepreneurs through the scaling and investor engagement phases more quickly than incubators do. Many accelerators also collaborate with universities, corporations, and public organizations and connect the science, entrepreneurship, and public policy (job creation, competitiveness, and regional development) objectives of those organizations to the best interests of the entrepreneur (Szczukiewicz and Makowiec, 2021). From the perspective of entrepreneurs, the largest benefit from participating in an accelerator program is access to knowledge, entrepreneurial culture and resources and to the signalling benefits of being involved in a structured program (Lange & Johnston, 2020).

1.2 Agricultural Technology “AgriTech”

Agricultural Technology (AgriTech) is the combination of digital technologies, biological technologies, mechanical technologies, and data driven technologies to increase productivity, efficiency, sustainability, and resiliency throughout the entire agri-food value chain (Manning et al., 2019). The historical evolution of AgriTech has gone from mechanization and the Green Revolution inputs to a focus on smart, connected, service-based solutions such as precision agriculture, remote sensing, artificial intelligence, farm management platforms and biotechnology (Manganda et al., 2024). The evolution of AgriTech is a result of the decreasing costs of digital technology and increased environmental and socio-economic pressures on food systems such as climate change, resource constraints, and challenges to achieve food security (Piot Lepetit, 2023).

Today, AgriTech is applied to precision agriculture, precision livestock management, climate-smart agricultural practices, optimum use of inputs, reduction of post-harvest losses, implementing a circular bio-economy, and digitally connected supply chain integration (Manganda et al., 2024). In many areas, AgriTech also provides opportunities for Rural Entrepreneurship, Eco-preneurship, and new kinds of Farm Based Business Models that produce both Economic and Environmental outcomes (Manning et al., 2019). The merging of Digitalization with Sustainability, which is sometimes called Digitainability, will help start-ups in the AgriTech space to reconfigure existing Agrifood value chains and to accelerate our transition to more Inclusive and Low-carbon Food Systems (Piot Lepetit, 2023).

1.3 The Complementary Relationship Between Accelerators and Agricultural Innovation

The relationship between AgriTech innovation and Business Accelerators reinforces itself, with Agriculture Technology Start-Ups encountering a number of obstacles such as high levels of technological, market, and regulatory uncertainty; long leads to market development cycles; and challenges with accessing finance (particularly in an emerging ecosystem) (Guina et al., 2023). Business accelerators assist with these challenges through the provision of expert mentorship; domain specific expertise; extensive networks; and validation mechanisms that facilitate the crossing of the so-called Valley of Death, i.e., the gap between invention and commercialisation (Maliarchuk, 2021).

In addition, Business Accelerators (driven primarily by the desire to de-risk the investment), assist AgriTech Start-Ups through the leveraging of agronomic knowledge, pilot locations, and partnerships with corporations and farmers; permitting a more rapid prototype development, field testing, and adaptation of technologies to fit the local conditions (Manning et al., 2020). Business Accelerators connect AgriTech Start-Ups to the emerging trend of investing in impact focused investing and programs, which increasingly focus on circular bioeconomy; climate resilient technologies; and digital transformation and align both the business model of AgriTech with the emerging policies and incentives in the market, therefore encouraging investment in AgriTech (Gatto and Re, 2021). Business Accelerators foster open innovation by providing connection points between university and research centres, AgriBusiness and Start-Ups to create collaborative platforms for the exchange of knowledge, data, and infrastructure (Madaleno et al., 2021).

Ultimately, Business Accelerators act as catalytic intermediaries: they reduce transaction costs for investors and act as a quality signal to investors that an AgriTech Start-Up is an attractive investment opportunity. In addition, Business Accelerators create and communicate standards, narratives, and networks that facilitate the legitimisation of new technologies within conservative agricultural markets (Lange and Johnston, 2020). At the same time they develop entrepreneurial and eco-preneurial capabilities of scientists, farmers, and youth in rural regions and help support the emergence of innovation-driven agricultural entrepreneurs that are able to adapt to and meet the challenges posed by changes to both the environmental and food systems in a more responsive manner (Manning et al., 2020). For nations that are working to modernise their agricultural sector and promote knowledge-based entrepreneurship, the synergies between Business Accelerators and AgriTech Innovation represents a strategic opportunity to create strong, scalable, and sustainable Agri-Innovation Ecosystems (Gu et al., 2021).

2. Case Study of the Dutch "StartLife" Accelerator

The move from theory to practical application is realized in this section by analyzing how the operational dynamics of the Netherlands agricultural accelerator operate within an ecosystem context—the structural model of an accelerator, financing sources, and resulting impact of those entities—thereby creating a complete template for innovation in agriculture.

2.1. The Agricultural Innovation Ecosystem in the Netherlands

According to the Dutch Ministry of Foreign Affairs , The Netherlands is the second largest exporter of agricultural products in the world. Co-incidentally, The Netherlands is also

internationally recognized as a major contributor to global food security because it has only a small land mass (approximately 42,000 square kilometers) relative to its enormous agricultural output . In other words, The Netherlands is not a nation that derives substantial benefits from having vast amounts of land; it has established itself as an agricultural powerhouse through an advanced ecosystem that emphasises the integration and collaboration of technology, innovation, research and development (R&D) . In a recent study conducted by the Netherlands Foreign Investment Agency (NFIA) , they indicate that the Government of the Netherlands is making a conscious effort to move from land-based intensive agricultural systems to knowledge-based intensive agricultural systems, with a major emphasis being placed on R&D investment for horticultural and agricultural sciences (p. 2). The primary location of this advanced ecosystem is in Wageningen University & Research (WUR), which is widely regarded as the premier academic institution for agricultural science, environmental sustainability and food systems.

2.2. The Establishment of StartLife: Vision, Mission, and Startup Programs

Wageningen University & Research, along with other organisations, recognised that while there was a significant gap in the commercialisation of groundbreaking academic research; the creation of market-ready businesses was extremely difficult. Therefore, it co-founded the StartLife accelerator to assist with the gap between academia and the market. In its first decade, StartLife has become Europe's leading and longest-running accelerator that specifically targets the agrifoodtech sector. StartLife's primary mission is to systematically empower visionary founders to build and scale start-ups based on innovative business solutions that leverage cutting-edge techniques (StartLife, 2023a). Initially, StartLife provided support primarily by helping academic researchers transition their ideas into the commercial sector. However, it has now expanded its focus to include early-stage global companies looking to become investor-ready and integrate into global food systems (StartLife, 2023a, p. 3).

The core operational model of StartLife is based on the competitive "Start Life Accelerate Program." The program is cohort-based and typically lasts several months, during which time the selected start-ups participate in a comprehensive curriculum that teaches them how to develop and validate their business models, develop their intellectual property strategy and execute advanced financial models. Participants are paired with experienced advisors who guide them through their process of validation and developing the path to commercialisation based on the product-market fit and deep technology commercialisation. As indicated by Foodvalley (2023), the program culminates with an invitation-only Demo Day where entrepreneurs showcase validated solutions before an exclusive audience of venture capitalists, agribusiness executives and policymakers (Foodvalley, 2023, p. 5).

StartLife focuses exclusively on providing support to early-stage companies that develop upstream agricultural innovations (agricultural inputs), such as remote sensing hardware (e.g., drones), artificial intelligence-powered crop management platforms, and alternative proteins. This rigorous selection process ensures that the start-ups supported by StartLife are tech-optimized and have an opportunity to significantly enhance access to food and environmental sustainability globally.

2.3. Funding and Support Mechanisms

Obtaining start-up financing for agtech businesses can be a challenge due to long product development timelines, costly capital needs, and high biological risks associated with the sector. StartLife's unique funding and support model for early-stage agtech entrepreneurs helps bridge the early-stage capital "Valley of Death". StartLife (2023b) offers early-stage pre-seed funding to start-ups that are participating in the accelerator program, and continues to support start-ups in building long-term, non-dilutable pre-seed funding strategies in partnership with grant consulting firms (p. 2). The availability of 'patient capital' enables the start-up to create early-stage physical prototypes as well as conduct critical proof-of-concept crop trials that consume significant amounts of time before being subject to potentially heavy equity dilution resulting from early-stage venture capital rounds.

In addition to providing financial resources, StartLife's most significant benefit to start-ups is through its business network of corporate partners within the multinational agribusiness community. StartLife connects its venture cohort with agribusiness corporations to launch pilot projects, establish joint ventures and provide licensing agreements with them. As noted by the Alliance of Bioversity International and CIAT (2023), this type of close corporate relationship enables new ventures greater access to subsidised top-quality testing facilities, experimental greenhouse facilities for quarantined plants, and proprietary data sets from agribusiness companies that they could never have afforded without access to StartLife (p. 1). In addition to working with agribusiness partners, founders of start-ups are provided personalised mentoring from senior leaders and scientists from WUR working within global agrifood companies. By providing start-ups with both patient fundraising and access to leading corporate and academic entities, StartLife systematically eliminates much of the risk that investors encounter. As such, when a start-up later seeks later-stage capital investment through institutional investors, it will be highly attractive to them, as they will have provided significant technical validation prior to their capital investment in the start-up.

2.4. Tangible Results and Success Stories of StartLife Alumni

The StartLife business accelerator has proven effective based upon the innumerable measurable economic and sectoral impacts achieved through the accelerator programme. By supporting hundreds of agri-food technology-based new ventures, StartLife has successfully transitioned product ideas from the conceptual phase to becoming viable large-scale businesses. According to Bax Company (2023), StartLife alumni have helped develop the Dutch agri-food technology innovation ecosystem, raising hundreds of millions of euros through follow-on venture capital investment and creating thousands of direct high-value jobs in the burgeoning green economy. This impressive financial performance reflects StartLife's ability to consistently identify and present high-quality scientifically validated new ventures to the worldwide investment community.

An essential driver of this commercial success is the annual F&a Next summit co-hosted by StartLife, Wageningen University and Research (WUR), and regional stakeholders. The F&A Next summit serves as a premier international event promoting a unique environment for graduating agri-food technology companies' to connect directly with top-tier global investors and corporate leaders to accelerate their growth on an international basis. The successes achieved by StartLife's concentrated accelerations of newly graduated venture companies is illustrated through the operating successes of specialised StartLife alumni companies. Through these firms, StartLife

supports deep technologies that minimise carbon footprints and directly achieve the United Nations Sustainable Development Goals. For example, StartLife supports developing precision agri-robotic systems that significantly reduce the use of hazardous chemical pesticides, as well as improved fermentation technologies used to create more sustainable global supply chains for protein.

By translating the academic knowledge gained through rigorous research into the commercialisation of sustainable enterprises, StartLife is not only solidifying the Netherlands' position as a global leader in developing agri-food technologies but is establishing a repeatable data-driven blueprint that allows for the use of specialised business accelerators to implement systemic industry-changing innovations across the globe.

3. The Reality of Agricultural Entrepreneurship in Algeria and Prospects for Replicating the Experience

As outlined above, this section provides an overview of the current state of agricultural entrepreneurship in Algeria and identifies the ongoing challenges facing agricultural entrepreneurs, as well as the significant demand for innovative AgriTech solutions. The report describes the gaps within the local "incubator" ecosystem and evaluates the potential for creating local accelerators that improve the likelihood of success for emerging companies through the development of an ecosystem to support the entrepreneurs. As such, this section analyses the opportunities to support the development of these ecosystems while also analysing what is needed to build upon the AgriTech Accelerator Model used in other countries.

3.1 Challenges Facing the Agricultural Sector in Algeria and the Urgent Need for AgriTech Solutions

Algeria's agricultural sector is characterized by a significant; however, as per the historical context of environmental policy reforms, historical agricultural policy reforms have increased agricultural productivity but failed to address the issues of low levels of productivity, fragmented land tenure patterns and climate variability vulnerabilities (Boudkhil et al.. 2020, page 214), While empirical studies of greenhouses In Biskra and El Oued have shown the lack of relationship between policies and technology uptake and/or specialization; based on land costs, investment assistance and education level, these are not consistently associated with either increased levels of specialization or technological advancements among less educated farmers or smaller farmers (Aidat et al.. 2023, page 11).

Furthermore, an analysis of entrepreneurship in all small and medium enterprises in Algeria, indicates that there are significant business challenges facing all entrepreneurs in Algeria, including limited access to capital; limited availability of skilled managers; lower levels of innovativeness; and excessive regulations, all contribute to an overall poor environment for opportunity oriented enterprises (Djidjik, 2024. page 9), Within the agricultural sector these problems are compounded by the lack of access to agronomic information, digital technology infrastructure and risk management tools, therefore the majority of farmers in Algeria lag behind when it comes to adopting modern agricultural technologies (Boudkhil et al.. 2020, page 220). In addition, many studies within the MENA region have indicated that improvements in resource efficiency, supply chain performance and water use could be made if digital agriculture were to be successfully

incorporated into agricultural production systems (Bahn et al., 2021, page 5), The combination of structural issues and the ability to utilize technical advances provides the incentive for the need for the immediate development and deployment of AgriTech solutions targeted to Algeria's agricultural environment.

3.2 The Current State of Business Incubators and Accelerators in Algeria and Their Focus on the Agricultural Domain

As part of its broader economic diversification efforts, the government of Algeria created the Ministry of Knowledge Economy and Startups and has begun implementing programs designed to assist startup businesses through labelling (by providing certain criteria which will define a business as a startup) and other forms of funding (Benlefki et al., 2024, p. 71). However, the current state of incubators and accelerators in Algeria is still very minimal and inconsistent among various segments of the economy. According to the National Business Development Review, Algeria lacks the number of business accelerators as well as the level of necessary resources and quality of services available to businesses in the market. The level to which Algerian business accelerators compare to other countries on an international level is still insufficient (Fetni & Barhoum, 2022, p. 132).

For businesses that have been granted the "labelled start up" designation in Algeria, access to personal savings as well as informal lenders represent a large portion of their overall funding while venture capital firms and specialized support systems provide very limited help and support to these types of companies. This has negatively impacted the ability of business incubators and accelerators to provide the level of support necessary to reduce the risks associated with starting new companies through the fast-tracking of innovative and exciting product developments including those needed in the AgriTech space, particularly for companies with a longer cycle of development time from idea to market (Benlefki et al., 2024, p. 77). While the sectors of agribusiness and agriservice represent an increasingly major role in the overall local economic development strategies being developed by municipalities, the available data about the Mitidja river valley indicates that the majority of businesses created in the area have been related to traditional agribusiness and agriservice rather than in the development and use of innovative technology related solutions (Ferdj, 2024, p. 52). There is a significant gap between the Algiers-inspired innovation policies being proposed and actual opportunities for developing AgriTech in Algeria.

3.3 Practical Projection: Lessons Learned from StartLife and How to Apply a Similar Model in Algeria

There are established international experiences regarding how agri-tech incubators and accelerators operate, and that can inform Algeria's development of such entities; a Canadian case study found that these sector specific business accelerator/incubators (BAIs) create value by connecting start-ups with a dense network of investors, industry advisors, farmers and value chain partners while also providing targeted support for both business and technical advice (Newell et al (2021), p. 9). Additionally, in Europe, work on digital innovation ecosystems in agri-food demonstrates that multi-stakeholder collaboration, shared digital infrastructure and iterative field trials are necessary to successfully develop the technology solutions required to assist AgriFood start-ups to grow (Wolfert et al., 2023, p. 6). In Algeria, therefore, to replicate such an accelerator, it is essential to anchor the accelerator in a firm agricultural knowledge-based institution and use it as

a mechanism to facilitate the linkages between researchers, agripreneurs, cooperatives, and agri-businesses. Moreover, Biskra's greenhouse systems have demonstrated that targeted agri-tech innovation in such areas as water management, climate control and input optimization possibilities will lead to immediate productivity and an increase in sustainability (Aidat et al. (2023), p. 14). Furthermore, the experience of African entrepreneurs indicates that addressing infrastructure gaps, regulatory complexities, and skills shortages will require an ecosystem level approach rather than firm-to-firm support (Odeyemi et al., 2024, p. 5). Therefore, an accelerator model similar to StartLife's in Algeria must also include support for the building of broader ecosystem functions (e.g. policy advocacy, capacity development, and regional clustering).

3.4 Requirements and Obstacles for the Success of AgriTech Accelerators in the Algerian Ecosystem

To enable AgriTech accelerators to thrive, there are several conditions that need to be in place. First, an entrepreneur must view the perceived risks and barriers associated with starting a new business as manageable, while also importantly having stable and credible government support to mediate the dynamic relationship between uncertainty and sustainable entrepreneurial behaviours (Peng & Walid, 2022, p. 14). Secondly, in addition to having a supportive government, for a BAI to function effectively, they require the human, social and organisational capital that will provide skilled mentors, develop diverse networks and provide Institutional credibility to enhance openness of innovation, allow access to markets and finance (Leitão et al., 2022, p. 7).

The current situation in Algeria provides several key obstacles to developing AgriTech Accelerators; these include a new model to business accelerators and start ups as well as the weak entrepreneurial culture, the lack of venture capital and also the lengthy bureaucratic systems, the fact that Algeria has a technological lag compared to the rest of the world and that there is a deficit between universities and the productive sector (Fetni & Barhoum, 2022, p. 138). Most financing for start ups is derived from personal sources and informal means, due to the difficulty of accessing bank credit and institutional investors' wariness of risk, which limits the ability to scale up innovation driven ventures (Benlefki et al., 2024, p. 80). At the same time, the use of digital agriculture in MENA is still in its infancy with a focus primarily on high-value niches and little attention to smallholder farmers and environmental outcomes (Bahn et al., 2021, p. 8).

To be successful, overcoming these barriers for AgriTech accelerators in Algeria will require the coordinated reform of existing legal frameworks, financial instruments and technical infrastructure as well as long-term investment in digital connectivity, data governance and developing the skill set of entrepreneurs. If these conditions are progressively being met, then an AgriTech accelerator similar to StartLife could provide a strategic mechanism to align agricultural modernisation, youth employment and the transition to a knowledge-based and low-carbon economy at the national level.

Conclusion

Main Findings

This research revealed that, when properly integrated into an established and mature innovation ecosystem, specialized AgriTech business incubators and accelerators can be powerful catalysts for transformational change in our agricultural systems. This research has also helped clarify conceptually the distinction between incubators and accelerators, and to demonstrate why, in comparison with incubators, specialized AgriTech accelerators are well positioned to reduce the risk associated with developing AgriTech ventures which are often subject to long development cycles, significant uncertainty, and a conservative market.

The example of StartLife exemplifies how close partnerships with leading agricultural universities, extensive corporate networks, and tiered funding create the conditions necessary for transforming basic research outputs into scalable, investable startups that deliver both economic and environmental impact.

The analysis of the Algeria case provides a contrasting view, highlighting a dual reality; where there is a large agricultural sector with a significant development opportunity and an increasing focus by the industry on nurturing startup companies; however, Algeria suffers from limited Technological Transfer, poor support infrastructure and a fragmented agricultural sector. As a result, there are a small number of agriculture incubators and accelerators with limited resources available to develop agriculture and AgriTech ventures and to incorporate them into their portfolio. The comparison exposed both the opportunities as well as the comprehensive structural gaps that need to be addressed in order to establish the conditions conducive to developing a StartLife model in Algeria.

Practical Recommendations

Policymakers need to redesign their support instruments to highlight the importance of sector-specific AgriTech accelerators while growing their base of support through strong Agricultural Research Institutions (ARIs). Policymakers should develop the necessary policies to facilitate a stable regulatory framework to promote investment in these emerging AgriTech Accelerator businesses through dedicated fiscal incentives and blending financial methods to provide patient capital to support start-up ventures with high-risk, early-stage investment. Furthermore, the Ministry of Knowledge Economy and Startups should create an overall national initiative to establish AgriTech Accelerators linked to geographic strategic areas in Algeria that support both regional economic development and the AgriTech value chain. Collaboration amongst the Ministry of Knowledge Economy and Startups and the Ministry of Agriculture, Higher Education and Environment are critical for the success of these efforts.

Algerian universities should collaborate with emerging AgriTech ecosystems by creating dedicated innovation offices, building Living Labs/ Demo farms, creating interdisciplinary curriculum for Agricultural Engineering and Agriculture, and establishing long-term relationships with agribusinesses and international accelerators. In addition, all ecosystem participants should invest in strengthening Digital Skills and Entrepreneurial Skills for farmers and rural youth, increasing the availability of data and connectivity resources for the AgriTech ecosystem, and promoting pilot projects that demonstrate the benefits of AgriTech for public consumption. Together, these activities will enable Algeria to leverage and learn from the experiences of other start-up ecosystems such as StartLife in order to establish a more innovative, resilient, and inclusive Agricultural Sector in Algeria.

References

1. Aidat, T., Benziouche, S. E., Cei, L., Giampietri, E., & Berti, A. (2023). Impact of agricultural policies on the sustainable greenhouse development in Biskra region (Algeria). *Sustainability*, 15(19), 1–19. <https://doi.org/10.3390/su151914396>
2. Alliance of Bioversity International and CIAT. (2023). StartLife and CGIAR Accelerate for Impact Platform sign MoU. CGIAR. <https://www.cgiar.org/news-events/news/startlife-cgiar-a4ip-mou-joint-initiatives-climate-positive-diverse-food-system>
3. Bahn, R. A., Yehya, A. A. K., & Zurayk, R. (2021). Digitalization for sustainable agri-food systems: Potential, status, and risks for the MENA region. *Sustainability*, 13(6), 1–26. <https://doi.org/10.3390/su13063223>
4. Bax Company. (2023). Kick-starting the Dutch national agrifood innovation ecosystem. Bax & Company. <https://baxcompany.com/case/kick-starting-the-dutch-national-agrifood-innovation-ecosystem/>
5. Benlefkı, S., Bouchetara, M., Saba, A., & Gahlam, N. (2024). Financing practices of labeled startups. *Financial Markets, Institutions and Risks*, 8(2), 119-140. [https://doi.org/10.61093/fmir.8\(2\).119-140.2024](https://doi.org/10.61093/fmir.8(2).119-140.2024)
6. Boudkhil, M. E., Benchallat, M., & Benzair, M. (2020). Agricultural and rural policies and their role in achieving food security in Algeria 1974–2016. *China-USA Business Review*, 19(2), 209–225. <https://www.semanticscholar.org/paper/Agricultural-and-Rural-Policies-and-Their-Role-in-Boudkhil-Benchallat/d78fc74aa0f318c5adb1ced4ce190489a88761cc>
7. Djidjik, S. (2024). A review of constraint factors affecting the growth of small and medium enterprises (SMEs): The case of Algeria. *AYBU Business Journal*, 4(2), 12–36. <https://doi.org/10.61725/abj.1414992>
8. Ferdj, Y. (2024). Entrepreneurship and territorial economic development in Algeria. *Management and Entrepreneurship: Trends of Development*, 1(27), 8–18. <https://doi.org/10.26661/2522-1566/2024-1/27-01>
9. Fetni, S., & Barhoum, H. (2022). Start-ups and business accelerators in Algeria: Financing and marketing. *Valahian Journal of Economic Studies*, 13(2), 127–141. <https://reference-global.com/download/article/10.2478/vjes-2022-0012.pdf>
10. Foodvalley. (2023). Launch of the Dutch Agrifood Venture Hub. Foodvalley NL. <https://foodvalley.nl/en/launch-dutch-agrifood-venture-hub/>
11. Gatto, F., & Re, I. (2021). Circular bioeconomy business models to overcome the valley of death. *Sustainability*, 13(4), 1899. <https://doi.org/10.3390/su13041899>
12. Gu, Y., Hu, L., Zhang, H., & Hou, C. (2021). Innovation ecosystem research: Emerging trends and future research. *Sustainability*, 13(20), 11458; <https://doi.org/10.3390/su132011458>
13. Guina, J., Ferrão, J., Samamade, N., & Fernandes, T. (2023). Outlook on Mozambique's agribusiness as a driving force for family farmers. *European Journal of Agriculture and Food Sciences*, 5(1), 85-96. <https://doi.org/10.24018/ejfood.2023.5.1.618>
14. Lange, G. S., & Johnston, W. (2020). The value of business accelerators and incubators – An entrepreneur's perspective. *Journal of Business & Industrial Marketing*, 35 (10): 1563–1572. <https://doi.org/10.1108/JBIM-01-2019-0024>

15. Leitão, J., Pereira, D., & Gonçalves, Â. (2022). Business incubators, accelerators, and performance of technology-based ventures: A systematic literature review. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(1), 1–24. <https://doi.org/10.3390/joitmc8010046>
16. Madaleno, M., Nathan, M., Overman, H., & Waights, S. (2021). Incubators, accelerators and urban economic development. *Urban Studies*, 59(2), 281–300. <https://doi.org/10.1177/00420980211004209>
17. Maliarchuk, O. (2021). Business incubation and acceleration process: Theoretical foundation. *Strategy of Economic Development of Ukraine*, 48(1), 149–160. <https://doi.org/10.33111/sedu.2021.49.021.033>
18. Manganda, A. S., Sehnem, S., & Lara, A. C. (2024). Transition to the circular economy: Innovative and disruptive production technologies adopted by agribusiness startups. *Environmental Quality Management*, 34(1), 1–17. <https://doi.org/10.1002/tqem.22293>
19. Manning, L., Smith, R., Conley, G., & Halsey, L. (2020). Ecopreneurial education and support: Developing the innovators of today and tomorrow. *Sustainability*, 12(21), 9228; <https://doi.org/10.3390/su12219228>
20. Netherlands Foreign Investment Agency [NFIA]. (2024). AgTech ecosystem thrives in the Netherlands. Invest in Holland. <https://investinholland.com/news/agtech-ecosystem-thrives-netherlands/>
21. Newell, R., Newman, L., & Mendly-Zambo, Z. (2021). The role of incubators and accelerators in the fourth agricultural revolution: A case study of Canada. *Agriculture*, 11(11), 1066; <https://doi.org/10.3390/agriculture11111066>
22. Odeyemi, O., Oyewole, A. T., Adeoye, O. B., Ofodile, O. C., Addy, W. A., & Okoye, C. C. (2024). Entrepreneurship in Africa: A review of growth and challenges. *International Journal of Management & Entrepreneurship Research*, 6(3), 1–16.
23. Peng, H., & Walid, L. (2022). The effects of entrepreneurs' perceived risks and perceived barriers on sustainable entrepreneurship in Algeria's SMEs: The mediating role of government support. *Sustainability*, 14(17), 11067; <https://doi.org/10.3390/su141711067>
24. Piot-Lepetit, I. (2023). Digitainability and open innovation: How they change innovation processes and strategies in the agrifood sector? *Frontiers in Sustainable Food Systems*, 7, 1267346. <https://doi.org/10.3389/fsufs.2023.1267346>
25. StartLife. (2023a). StartLife reflects on a decade of change in agrifoodtech. AgFunder. <https://agfundernews.com/startlife-reflects-on-a-decade-of-change-in-agrifood-tech>
26. StartLife. (2023b). StartLife and Catalyze: Non-dilutive funding strategy for impactful agrifoodtech startups. Catalyze Group. <https://www.catalyze-group.com/case/startlife/>
27. Wageningen University & Research [WUR]. (2024). Smarter, fairer, greener: Europe unites digital forces for farming's future. WUR. <https://www.wur.nl/en/research/social-and-economic/europe-unites-digital-forces-farmings-future>
28. Wolfert, S., Verdouw, C., van Wassenhaer, L., Dolfsma, W., & Klerkx, L. (2023). Digital innovation ecosystems in agri-food: Design principles and organizational framework. *Agricultural Systems*, 204, 103558. <https://doi.org/10.1016/j.agsy.2022.103558>