

University incubation at Cadi Ayyad University: current status and perspectives for local entrepreneurship

Hiba El Aoufir^{1*}, Rachid Ouskou², Khaoula Jabari³, Ibtissame Lakhli²

¹Laboratory of Economics and Management of Organizations, Faculty of Economics and Management, Ibn Tofail University, Morocco

²Laboratory of Economics and Management Multidisciplinary, Faculty of Khouribga, Sultan Moulay Slimane University, Morocco

³Laboratory of Economics and Management of Organizations, Higher School of Technology, Ibn Tofail University, Morocco

*Corresponding author: hiba.elaoufir@uit.ac.ma

Abstract

University incubation is a strategic tool for fostering innovation and entrepreneurship, particularly in emerging ecosystems such as Morocco. This article examines incubation at Cadi Ayyad University (UCA), highlighting its role in supporting project developers through strategic partnerships, university resources, and personalized mentoring. Despite these promising efforts, challenges persist, including a lack of funding, low beneficiary engagement, and insufficient structured collaborations with research. Using a descriptive qualitative case study approach, the study draws on semi-structured interviews with incubator staff and key figures from the local entrepreneurial ecosystem to provide in-depth insights. Key findings reveal that while strategic partnerships and personalized mentoring significantly enhance project development, limited funding mechanisms and weak ties with research institutions hinder the incubator's full potential. To maximize its impact, the study suggests strengthening public-private partnerships, developing sustainable funding mechanisms, and integrating technology transfer tools to position UCA as a driver of innovation and regional economic development.

Keywords: University incubation; Cadi Ayyad University; Entrepreneurial ecosystem; Entrepreneurship; Local economic development; Innovation.

1. Introduction

University incubation positions itself as a strategic tool to catalyze innovation and foster entrepreneurship by creating a tangible link between academic knowledge and the development of practical projects. As pillars of knowledge and research, universities play an essential role in supporting business creation by providing suitable technological, intellectual, and organizational resources. In a Moroccan context where entrepreneurial ecosystems are still in the structuring phase, university incubation holds significant importance for supporting innovation and the local economy. It is with this perspective that this study focuses on analyzing incubation at Cadi Ayyad University, a leading academic institution in Morocco.

This article examines how university incubation at Cadi Ayyad University supports the development of local entrepreneurship, focusing on its current state and effectiveness. Through an in-depth exploration of Marrakech's university entrepreneurial ecosystem, this research aims to identify the strengths and weaknesses of the existing incubation model while proposing improvement strategies tailored to local realities and the needs of project initiators. By leveraging a targeted literature review, comparative case studies, and an empirical analysis based on interviews with key stakeholders, this article seeks to enrich the debate on the role of Moroccan universities in entrepreneurial development. The objective is also to offer policymakers concrete recommendations to maximize the impact of university incubators on the entrepreneurial ecosystem and regional innovation.

2. Literature review

2.1. The definition of university incubation and its role in the entrepreneurial ecosystem

University incubation refers to an infrastructure within academic institutions that supports business creation by students, researchers, and academics. Hackett and Dilts (2004) define it as a formalized process through which universities provide project initiators with access to technological, intellectual, and logistical resources to transform ideas into viable businesses. University incubation is distinguished by the direct involvement of academic research and privileged access to university resources (Berger and Kuckertz, 2016), such as research laboratories, technical infrastructure, and academic and professional mentoring. University incubators also offer consulting services in management, marketing, and finance, as well as funding opportunities through grants, industrial partnerships, or investments (Bruneel et al., 2012).

Additionally, Grimaldi and Grandi (2005) specify that these structures support entrepreneurs during the critical phases of business creation. They provide access to networks of mentors, investors, and sectoral experts, facilitating the transition from idea to concrete project. Moreover, university incubation plays a key role in the entrepreneurial ecosystem by creating bridges between academia and industry. Rothaermel and Thursby (2005) note that these incubators enable startups to leverage scientific research to develop high-value-added products

and strengthen entrepreneurial networks through connections with mentors and investors (Clarysse et al., 2005). Furthermore, these structures stimulate the local economy by creating jobs and fostering innovation derived from university research (Guerrero and Urbano, 2012).

The impact of university incubation, however, is closely linked to the cultural and economic contexts in which it operates. In high-income economies with well-established innovation systems, university incubators often benefit from strong government backing, venture capital networks, and a risk-taking entrepreneurial culture that encourages disruptive innovation. In contrast, in emerging economies, incubators may struggle with institutional constraints, limited funding sources, and regulatory barriers, which influence the types of ventures they support and their overall effectiveness (Bruton et al., 2010).

University incubation enriches the entrepreneurial ecosystem by facilitating innovation, transferring knowledge, and creating a supportive startup environment while also bridging the gap between academic research and economic development, particularly by fostering social entrepreneurship and addressing local market needs.

2.2. University incubation models in other countries and their effectiveness

Understanding university incubation in different contexts allows us to see how various factors, such as institutional support, economic conditions and collaboration with industry, shape the success of these programs. By looking at models from different countries, we can learn from their strengths and challenges, drawing perspectives that could help improve incubation efforts at Cadi Ayyad University. In individualistic societies, such as North America and Western Europe, incubation models emphasize rapid scalability, high-growth startups, and investor-driven business strategies (Shane, 2003). The selection of the Brazilian, American and Portuguese models is deliberate: Brazil stands out for its strong ties between universities, businesses, and government; the United States is known for its emphasis on technology transfer and turning research into market-ready innovations; and Portugal emphasizes how incubation can drive regional economic development through science parks and specialized support programs.

The Brazilian university incubation model relies on strong cooperation between universities, businesses, and the government. This model is characterized by the integration of incubators into public and private universities, particularly in Rio Grande do Sul, which includes the Federal University of Rio Grande do Sul (UFRGS), the Catholic University (PUCRS), and the University of the Sinos Valley (Unisinos). These incubators are often sector-specific and affiliated with university departments or multisectoral, such as the RAIAR incubator at PUCRS, integrated into a technology park. These structures aim to facilitate business creation by providing material resources, management consulting, and promoting interactions between researchers, students, and local businesses.

This model stimulates innovation by implementing resources tailored to businesses and creating a collaborative environment conducive to technological development. Its effectiveness

lies in its ability to strengthen ties between universities, businesses, and the government, facilitating the creation of opportunities for entrepreneurs. Consequently, it significantly contributes to the growth of startups and regional development. The American university incubation model is distinguished by its focus on student entrepreneurship and the commercialization of academic research. Universities like the Massachusetts Institute of Technology (MIT) and Stanford have become global benchmarks due to their innovative approaches to incubation and entrepreneurship.

A central aspect of this model is the commercialization of university research, which allows transferring technologies and discoveries from laboratories to the market. To this end, American universities invest heavily in Technology Transfer Offices (TTOs), which connect researchers with investors and private companies (Siegel et al., 2007). At MIT, for example, initiatives like the Deshpande Center for Technological Innovation help researchers overcome challenges in transitioning from academic research to entrepreneurship by providing funding for early stages of technological development (Roberts and Eesley, 2011).

In Portugal, science parks and business incubators foster economic development and job creation, particularly in so-called "converging" economies like Portugal's. According to Ratinho and Henriques (2010), while the direct impact of science parks and business incubators on economic growth is modest, their success is based on two main factors: links with universities and suitable management practices. University connections enable the necessary knowledge transfer, particularly in research and development, while appropriate management practices facilitate the support of incubated companies through personalized services. Indeed, the presence of these incubators in academic environments promotes the creation of university spin-offs and technology startups, which indirectly contribute to local innovation and regional economic resilience.

2.3. The role of the university in local economic development

Science parks and business incubators achieve their full potential only by leveraging university expertise. In fact, the university plays a fundamental role in local economic development, particularly through the production of human capital and knowledge applicable to the regional economy. On one hand, universities support growth by training highly qualified graduates ready to enter the local job market and address the specific needs of businesses. Ratinho and Henriques (2010) highlight how universities, through partnerships and tailored management practices, indirectly contribute to innovation and economic dynamism by ensuring a skilled workforce for businesses.

On the other hand, universities generate and disseminate new knowledge through fundamental and applied research, creating knowledge externalities that foster technological progress. Mille (2004) illustrates this in the case of the University of Littoral Côte d'Opale, where collaborations between researchers and local businesses address the needs of the regional economy, strengthening the competitiveness and resilience of the host territory.

2.4. The relationship between incubators and startup development

This synergy between universities and incubators creates a conducive ecosystem where university skills and knowledge enhance the resources offered by incubators, thereby optimizing startup development. In fact, the relationship between incubators and startup development is extensively documented in the literature and highlights their impact on various aspects of startup growth and success.

On one hand, incubators provide a supportive environment essential for new businesses, offering resources, personalized guidance, and networks of mentors and investors. These elements enable startups to access technical knowledge and funding, essential for their survival and growth. Incubated companies thus exhibit faster growth and higher profitability levels compared to businesses that do not benefit from incubation (Colombo and Delmastro, 2002).

On the other hand, incubators foster job creation and startup resilience by facilitating entrepreneurial skill development and strengthening innovation capacities. It is crucial to select "promising" projects to optimize the chances of success for incubated companies while recognizing the methodological challenges associated with accurately measuring the impact of incubators (Hackett and Dilts, 2004). The ability of incubators to adapt their services to the specific needs of emerging companies allows startups to develop within a structured framework, positively contributing to their sustainable success.

In Morocco, university incubators play a key role in promoting entrepreneurship and innovation. Introduced in the early 2000s, particularly under the impetus of Law 01/00 concerning the organization of higher education, these incubators aim to enhance the results of academic research and stimulate the creation of innovative businesses.

Several Moroccan universities have established incubation structures to support project initiators. Mohammed VI Polytechnic University, for instance, launched "U-Founders," a structure dedicated to entrepreneurial support, implementing awareness, pre-incubation, and incubation programs aimed at students. Similarly, Moulay Ismail University created the "iBDA3" incubator to enhance the results of scientific and technical research.

However, despite these efforts, Moroccan universities face major obstacles related to funding, infrastructure, and collaboration with the private sector.

The specific challenges of university incubation in Morocco include:

- **Sustainable Funding:** A lack of durable funding for incubation programs, often reliant on temporary projects or short-term international partnerships.
- **Qualified Staff:** A lack of skilled personnel and the absence of specific training in incubator management, as highlighted by El Amrani and El Ghourraf (2020), hindering the quality of entrepreneurial support.

- **Limited Collaboration:** Restricted collaboration between universities and local businesses, which reduces opportunities for students to test their projects in real-world environments and benefit from practical advice.

Generally, although Morocco has made progress in developing university incubation, previous research highlights the need to strengthen financial and human resources, as well as intensify partnerships with the private sector to improve the effectiveness of these programs and better support entrepreneurship within universities.

3. Methodology

This study adopts a qualitative approach to explore university incubation at Cadi Ayyad University (UCA) and its impact on the local entrepreneurial ecosystem. A qualitative research design was chosen because it provides in-depth findings into the experiences, perceptions, and challenges faced by key stakeholders. As noted by Yin (2014) and Creswell (2014), qualitative case studies are particularly well-suited for analyzing complex institutional structures and social dynamics in real-world contexts.

The data collection process relied on semi-structured interviews, designed around two distinct interview guides. The first guide targeted university incubation stakeholders, including incubator managers and professionals involved in supporting entrepreneurial projects within the university. The second guide focused on key socio-economic actors, such as entrepreneurs, investors, and local business experts, to gain their perspective on the role and effectiveness of university incubation in fostering economic development.

The sample consisted of six participants, evenly divided into the two categories (three from university incubation and three from the local entrepreneurial ecosystem). A purposive sampling strategy (Miles & Huberman, 1994) was applied to select individuals with significant experience in entrepreneurship and incubation. The interviews were conducted between 30 to 40 minutes, with an average duration of 35 minutes per interview. All interviews were recorded with the participants' consent, then transcribed and systematically coded for analysis.

Data were processed using MAXQDA 2020, a qualitative analysis software that allowed for structured coding and the identification of emerging themes. To enhance the reliability of the findings, data triangulation was conducted by cross-referencing interview responses with field observations and secondary sources. To determine data saturation, the Pearson correlation coefficient was calculated using NVivo 12. The results (0.75, 0.82, and 0.84 for university incubators and 0.74, 0.76, and 0.85 for socio-economic actors) confirmed a high degree of convergence, indicating that additional interviews were unlikely to yield new insights.

To ensure the scientific rigor and validity of this study, several methodological safeguards were implemented. Following Lincoln and Guba's (1985) trustworthiness criteria:

- Credibility was reinforced through data triangulation and peer review.

- Transferability was considered by providing a detailed contextual analysis, allowing for potential application to other university incubators in Morocco.
- Dependability was ensured through a systematic coding protocol and the use of specialized qualitative analysis software.
- Confirmability was maintained by documenting the analytical process and incorporating direct quotes to support the findings.

From an ethical standpoint, this study adhered to strict research ethics guidelines. All participants were fully informed of the study’s objectives and provided their informed consent. Additionally, their anonymity and confidentiality were rigorously maintained throughout the research process.

By adopting a robust qualitative methodology, this study offers a structured, reliable, and well-contextualized analysis of university incubation at UCA. The combination of semi-structured interviews, data triangulation, and thematic analysis ensures that the findings contribute meaningful insights into the role of university incubation in fostering entrepreneurial development in Morocco.

4. Results and discussion

4.1. Characteristic identification

The results pertain to the two qualitative studies conducted with the two target groups, namely the incubators and the actors of the entrepreneurial ecosystem. The coding of the first dataset produced 120 segments. Table 1 presents all the identified themes, as well as the sub-themes associated with them, based on the interviews.

Table 1: Coding of university incubator interview segments

Theme	Code	Coded segments	% coded segments
Incubator structure	Strong partnership with university	5	3,57
	Awareness of entrepreneurship	1	0,71
	Preparing future entrepreneurs	1	0,71
	Partnership with the private sector	5	3,57
	Partnership with public organizations	3	2,14
Available resources	Service continuity	1	0,71
	Improving entrepreneurial spirit	1	0,71
	Encouraging exchanges	1	0,71
	Networking	3	2,14
	Co-working space	3	2,14
	Free service	1	0,71
	Training and mentoring	14	10

	Access to university resources	4	2,86
	Access to funding	2	1,43
	Conferences	1	0,71
	Events	4	2,86
	Competitions	3	2,14
	Internships	1	0,71
	Projects	2	1,43
Support	Personalized service	4	2,86
	Variety of services	5	3,57
	Expertise	3	2,14
	Post-launch support	1	0,71
	Needs diagnosis	4	2,86
Impact on scientific research	Lack of collaboration	1	0,71
	Local economic development	1	0,71
	Strengthening innovation	1	0,71
	Collaboration with research projects	2	1,43
	Scientific events	1	0,71
	Training workshops	2	1,43
	Prototyping	1	0,71
Organizational strengths	Flexibility	1	0,71
	Accessibility	2	1,43
	Comprehensive support	3	2,14
	Free services	1	0,71
	Practical approach	2	1,43
	Service continuity	1	0,71
	Access to co-working space	2	1,43
	Personalized mentoring	5	3,57
Challenges	Diversification of collaborations	1	0,71
	Meeting beneficiary expectations	1	0,71
	Quality standardization	1	0,71
	Insufficient financial resources	4	2,86
	Increasing visibility	1	0,71
	Strengthening industrial mentorship	1	0,71
	Strengthening partnerships with univ.	1	0,71
	Competent HR	1	0,71
	Beneficiary engagement	2	1,43
Evaluation	Progress measurement	6	4,29
	Strategy adjustment	3	2,14

Source: Authors' analysis using MAXQDA, 2020

The second dataset resulted in the coding of 154 segments. The table below presents these segments and also explores all the identified themes, along with the associated sub-themes.

Table 2: Coding of entrepreneurial ecosystem stakeholder interview segments

Theme	Code	Coded segments	% coded segments
Opportunities incubation UCA	Community dynamism	1	0,58
	Local innovation	4	2,33
	Support for regional economy	2	1,16
	Social innovation	2	1,16
	Sustainable development	4	2,33
	Collective intelligence	2	1,16
	Academic-economic synergy	2	1,16
	Market-oriented training	3	1,74
	Integration into the local market	2	1,16
	Local entrepreneurial development	4	2,33
	Regional competitiveness	2	1,16
	Solutions to local challenges	3	1,74
	Field learning	1	0,58
	Experimentation	1	0,58
	Networking	3	1,74
Strategic sector innovation	Territorial collaboration	1	0,58
	Resources for strategic sectors	1	0,58
	Technological domains	1	0,58
	Support for sustainable tourism	3	1,74
	Partnerships	7	4,07
	Addressing local needs	10	5,81
	Support for renewable energies	5	2,91
	Funding for sectoral innovation	1	0,58
	Training in strategic sectors	1	0,58
Expectations of incubated projects	Co-creation	1	0,58
	Innovation in key sectors	1	0,58
	Regional competitiveness	3	1,74
	Support for local employment	1	0,58
	Skills development	6	3,49
	Regional added value	2	1,16
	Solutions to local challenges	5	2,91
Potential sectors start-ups	Digital tourism	1	0,58
	Water management	2	1,16
	Renewable energies	3	1,74

	Digital technologies	1	0,58
	Sustainable development	3	1,74
	Digitization	1	0,58
	Pharmaceutical industry	1	0,58
	Chemical industry	1	0,58
	Agri-food industry	1	0,58
	Agriculture	3	1,74
	Information technologies	1	0,58
	Agri-tech	2	1,16
	Sustainable tourism	1	0,58
Public-Private Relations and incubators	Enhancing competitiveness	1	0,58
	Private sector experimentation fields	1	0,58
	Resources offered by the private sector	3	1,74
	Optimal conditions for innovation	1	0,58
	Public administrative facilitation	1	0,58
	Regular exchange	3	1,74
	Collaboration	6	3,49
	Expertise transfer	1	0,58
	Mentorship	2	1,16
	Funding	3	1,74
	Ideation approval	1	0,58
Training	2	1,16	
Recommendations for optimizing incubator impact	Equitable access	1	0,58
	Inclusive entrepreneurship	2	1,16
	Incubator integration into national vision	1	0,58
	Public sector partnership	3	1,74
	Funding	4	2,33
	Mentorship	5	2,91
	Private sector partnership	3	1,74
	Workshops	1	0,58
	Strengthening investments	1	0,58
	Organizing events/exhibitions	1	0,58
Permanent contact	1	0,58	

Source: Authors' analysis using MAXQDA, 2020.

The interviewees identified various characteristics linked to incubation at Cadi Ayyad University. Hence the importance of exploring each theme separately and deducing relevant conclusions.

4.2. Thematic content analysis

4.2.1. Incubators at UCA

- **Incubator structure:**

The structure of the incubator at Cadi Ayyad University (UCA) is largely based on strategic partnerships. Collaborations with the private sector emerge as one of the key elements for strengthening the operation and effectiveness of the incubator. Interviewee 3 stated that they "benefit from strong partnerships with local incubators and accelerators, enabling intensive support for entrepreneurs and access to networks of investors and mentors." Additionally, the partnership with the university significantly enhances this position. The collaboration with the private sector is particularly notable, as Interviewee 1 remarked that they "maintain strong partnerships with Cadi Ayyad University."

These partnerships allow for the mobilization of resources and expertise, embedding the incubator's activities in a professional and academic dynamic. The partnership with public organizations illustrates the importance of interconnection between public institutions and university incubation to ensure a broad and diverse coverage of entrepreneurs' needs. However, in the case of UCA, the university relies heavily on external organizations to energize its university incubation activities.

- **Available Resources:**

To ensure university incubation aligns with expectations, stakeholders provide project initiators and student beneficiaries with a multitude of resources, the primary being training and mentoring. Interviewee 2 highlighted their aim to "create educational programs tailored to market needs."

Interviewee 3 added that they offer "development workshops in marketing, finance, and digitization. Through programs like BIDAYA or TAKOUIYA, these collaborations provide students and entrepreneurs with a structured path to acquire the skills necessary to manage their projects and integrate into the local economic ecosystem". Additionally, these stakeholders provide incubates with networking sessions and access to co-working spaces to leverage proximity and shared skills. Moreover, they facilitate access to university resources, the organization of events, and entrepreneurial and innovation competitions.

- **Support:**

The support provided to incubates "takes place through a variety of services," according to Interviewee 1. Thus, university incubation goes beyond a single action and, despite limited capacities, aims to offer a wide range of services. Interviewee 3 stated that this allows participants to attend "workshops, mentoring sessions, and specialized training programs."

Beyond this variety, beneficiaries benefit from specialized services that enable them to enhance their projects in line with the constraints they face and the opportunities available to them. Interviewee 1 noted that "these individual sessions allow targeting the specific needs of each

project and setting concrete goals." Additionally, the programming includes the development of follow-up reports and regular diagnostics.

▪ **Impact on Scientific Research:**

University incubation is based on connections with the scientific research conducted within the university. Although modest in its manifestations, form, and size, it plays a fundamental role in fostering innovation and developing emerging projects.

Interviewee 1 revealed that this dynamic is founded on "collaborative research projects" between researchers and project initiators. Interviewee 3 added that "collaborations with research laboratories allow project initiators to integrate research and innovation aspects into their projects, particularly in fields such as agriculture, tourism, and the green economy." This interviewee also mentioned that they organize "ideation workshops, provide technical advice, and conduct studies to validate the economic and technological models of projects". As such, university incubation at UCA is not heavily reliant on collaboration with research structures but demonstrates significant openness to ideation workshops, skill-sharing sessions, and training to enhance projects and foster innovation.

▪ **Strengths of the Organization:**

The incubators at UCA possess diverse strengths. The primary strength lies in personalized mentoring, which allows incubates to benefit from specialized services and "personalized support through one-to-one sessions," as noted by Interviewee 1, aligning with their specific needs and project development stages. Incubator 2 revealed that the goal is to help "materialize ideas with advice on product and strategy." They further added that their specialized intervention "increases the effectiveness of support."

Another strength of university incubation is offering "direct access to academic resources, laboratories, and experts, which enhances the scientific relevance of projects," as proclaimed by Interviewee 3. This constitutes a form of comprehensive support. This interviewee also noted that "teachers and researchers participate in ideation workshops, provide technical advice, and conduct studies to validate the economic and technological models of projects. These interactions foster innovation and the application of academic research to local economic development". Consequently, beneficiaries enjoy a multitude of resources for planning and implementing their product and business projects through university incubators. They also have access to co-working spaces and a practical approach to test and materialize their ideas.

▪ **Challenges encountered:**

Establishing a successful service is essential. However, various challenges arise, and university incubators must address them. The primary challenge lies in insufficient financial resources. Interviewee 2 highlighted the need to "find sufficient funding to support programs and initiatives, especially during periods of economic uncertainty." Similarly, Interviewee 3 expressed "the need for more stable funding to sustainably support young entrepreneurs and improve coordination among various stakeholders."

This reality underscores the importance of financial resources in enhancing the capacities of university incubation and its ability to provide beneficiaries with the required resources. Other challenges were also mentioned. Although the university incubation service is free, incubated beneficiaries sometimes display notable disengagement regarding the training and mentoring sessions organized. Interviewee 1 pointed out the issue of "student and project initiator engagement" and their "active and regular participation." Therefore, discipline is indispensable to navigate the different stages of guidance, training, and support for student entrepreneurs, demonstrating a strong willingness to learn and develop.

- **Evaluation:**

Evaluation is a crucial step in university incubation, primarily aiming to "measure the progress of projects," as stated by Interviewee 1. In addition, Interviewee 2 explained that they organize "regular meetings to assess progress and adjust support [...] relative to the set objectives."

Interviewee 3 added that they conduct "regular diagnostics and monitoring reports". Thus, it is impossible to discuss a high-performing university incubation program without monitoring project progress and addressing shortcomings to mitigate entrepreneurial risks and market-entry challenges, where competition is currently fierce in various fields. Consequently, strategy adjustment becomes essential. Interviewee 3 emphasized that this enables "young entrepreneurs to receive concrete feedback and evolve their projects based on market needs and professional standards."

4.2.2. Regional socio-economic stakeholders

- **Opportunities at UCA incubation:**

Incubation is seen as a key driver in fostering local entrepreneurial development. As Interviewee 1 stated, "University incubation is an essential driver of local entrepreneurial development."

It aligns with a holistic vision, where principles of sustainable development and social innovation incorporate values of inclusion and responsibility. This perspective was illustrated by Interviewee 1, who highlighted that "the university stands out for its commitment to creating synergies between the academic environment and the local economic fabric, fostering a dynamic of collective intelligence and sustainable development that reinforces social innovation and supports the regional economy". University incubation establishes itself as a strategic lever to boost local entrepreneurship, combining innovation, sustainability, and inclusion. Emphasizing these dimensions appears essential to maximize its impact.

- **Strategic sectoral innovation**

The interviewees' responses highlighted several essential levers for strengthening the university incubator's support for innovation in Marrakech and its region's strategic sectors. Addressing local needs, with ten references, was perceived as a top priority. This orientation aims to align the incubator's actions with regional specificities and expectations. As Interviewee 3 noted, it is crucial to enhance "the alignment of incubated projects with the actual needs of the market."

Furthermore, partnerships, particularly with the private sector, emerged as a fundamental pillar to maximize the impact of incubated projects. These partnerships enable the mobilization of the strengths of various ecosystem actors. Interviewee 3 confirmed this and stated, "By strengthening partnerships with local businesses, offering specialized training in strategic sectors like sustainable tourism, smart agriculture, and renewable energies, and facilitating access to funding for innovative projects."

▪ **Expectations of companies for incubated projects:**

The interviewees' responses revealed clear and diverse expectations from local businesses regarding university-incubated projects. Two major themes emerged: skills development and solutions to local challenges. Companies hope that incubated projects will help produce highly qualified entrepreneurs capable of addressing the specific needs of the local market. This expectation was illustrated by Interviewee 2, who noted that companies "want well-established start-ups led by talents with the skills and knowledge required to meet local demands."

Moreover, they stated that "local companies expect projects incubated by the university to provide innovative solutions applicable to the region's specific challenges and sectors". This highlights the importance of aligning incubated initiatives with local socio-economic realities to maximize their relevance and long-term impact.

▪ **Potential Sectors for Start-Ups:**

There are various sectors and domains with significant potential for start-ups emerging from Cadi Ayyad University (UCA). These sectors reflect both regional specificities and strategic priorities. The most frequently cited sectors include renewable energy, sustainable development, agri-tech, water management, and tourism. This trend is confirmed by Interviewee 2, who stated that "sustainable tourism, agri-tech, renewable energy, and water management" are promising sectors. Furthermore, Interviewee 3 reinforced this idea, specifying that "start-ups from UCA in Marrakech are most promising in digital technologies, renewable energy, and water management; agro-technology to improve the use of local agricultural resources; and digital tourism to enhance the tourist experience with digital solutions. These sectors are the most relevant in terms of regional priorities and create the most sustainable economic impact for the city". These sectors are particularly relevant given regional priorities. As such, incubated start-ups can propose innovative solutions adapted to local needs. However, to ensure their performance and effectively meet expectations, they require increased support through strategic initiatives and close collaborations with private and public stakeholders.

▪ **Public-private relationship and the incubator:**

The synergy between the university incubator and actors in the private and public ecosystems is essential for boosting the incubator's performance. This synergy manifests in several elements highlighted by the interviewees. At the forefront are collaborations and partnerships that create value for all stakeholders. Interviewee 2 emphasized this, stating that public and private organizations "want projects to strengthen collaborations based on co-creation, where entrepreneurs or companies contribute together to develop solutions and share expertise."

Moreover, funding, as a source of support, is seen as a sine qua non for the development and survival of incubated projects. Interviewee 2 supported this idea, affirming that "links between the university incubator and private or public entities can be strengthened through forming strategic alliances based on financial support". Equally important, external organizations are encouraged to contribute resources to be made available to incubates to foster innovation, validate ideas, and test solutions. Interviewee 2 advocated for this, suggesting, "engaging external stakeholders early in the development of projects to align innovation projects with market demands, increase resource availability, and facilitate early-stage idea validation."

Additionally, collaboration between public and private organizations and incubates can also involve regular exchanges with their experts. These interactions enable incubates to benefit from knowledge transfer, feedback, and strategic advice, thereby enhancing the relevance and quality of their projects. Interviewee 1 supported this perspective, asserting that relationships "should evolve towards closer collaboration, with regular exchanges to better align projects with market needs". A synergy between the university incubator and public and private actors is indispensable. These partnerships, nurtured by regular exchanges, financial support, and expertise transfer, are crucial for aligning projects with market needs and stimulating local innovation.

▪ **Recommendations for optimizing the incubator's impact:**

The responses of the three interviewees highlight various initiatives to optimize the university incubator's impact on the local entrepreneurial ecosystem. These recommendations revolve around several key axes. Mentorship is considered an essential initiative to support project initiators' development, offering strategic guidance and advice tailored to their specific needs. Interviewee 2 confirmed its importance, stating, "To further strengthen the incubator's influence on the local business fabric, it would be recommended to organize more intensive mentorship programs with the participation of specialists from the region".

Additionally, Interviewee 1 emphasized the importance of mentorship and added the need for financing to ensure projects' viability and growth. They recommended "launching targeted mentorship programs and creating accessible funding mechanisms". Strengthening partnerships with the public and private sectors was also identified as a fundamental lever at all levels mentioned. Interviewee 3 supported this idea, stating that "links between the university incubator and private or public entities can be strengthened through forming strategic alliances."

Other important aspects were highlighted, including organizing workshops, events, and exhibitions, as well as promoting equitable access and inclusive entrepreneurship. Integrating incubation into a national vision was also emphasized as a strategic lever. To maximize the university incubator's impact, it is necessary to strengthen public-private partnerships, develop mentorship programs, mobilize increased funding, and promote inclusive initiatives. These actions, supported by a national strategy and strong private sector involvement, will enable the incubator to fully play its role in developing the local entrepreneurial ecosystem.

4.3. Interpretation

The interpretation of the results aims to explore the strengths and weaknesses of university incubation at Cadi Ayyad University (UCA) and propose improvement pathways tailored to local realities while drawing inspiration from international models. Each identified axis reflects a critical analysis of the findings and strategic recommendations to enhance the incubator's impact on the regional entrepreneurial ecosystem. The results show that UCA has strategic partnerships, particularly with local actors, which serve as an important pillar for mobilizing resources and strengthening support for project initiators.

However, these collaborations, while promising, lack diversity. Unlike international models, where incubators benefit from active support from multinational corporations and international organizations, UCA remains heavily dependent on local actors. This limits its innovation potential and its ability to integrate startups into global value chains. Furthermore, beneficiary engagement is another significant weakness. The findings reveal notable disengagement among some project initiators, often due to a mismatch between the services offered and their specific needs. This highlights the need for more personalized support, including entrepreneurial training programs integrated into the early years of university, similar to the Portuguese initiatives described by Ratinho and Henriques (2010).

From a strategic perspective, the sectors identified as priorities, such as sustainable tourism, renewable energy, and agri-tech, align perfectly with the specificities of Marrakech. However, the lack of formal mechanisms to measure the economic and social impact of incubated projects limits their optimal utilization. Performance indicators, such as the number of jobs created or the funding raised by startups, could provide concrete data to adjust strategies. In terms of scientific research, although occasional collaborations between UCA laboratories and incubated startups are mentioned, the absence of a formal technology transfer structure hinders the valorization of research results. Unlike practices observed in American universities such as MIT, where technology transfer offices play a key role in the commercialization of innovations, UCA would benefit from formalizing such initiatives to maximize the incubator's impact.

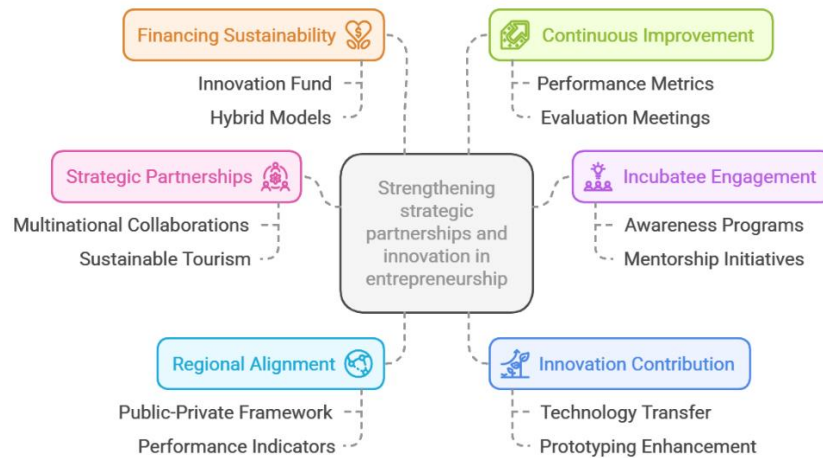
Financing represents a major structural challenge. UCA incubators lack innovative mechanisms, such as innovation funds or public-private partnerships, observed in international contexts such as South Africa (Rogerson, 2017). Exploring hybrid financing models, including public subsidies, private investments, and crowdfunding platforms, could ensure financial sustainability and better project support. The table 3 provides a structured summary of the main axes, accompanied by analysis and concrete solutions. Although UCA boasts promising infrastructures and partnerships, a more coherent strategy and adequate resources are necessary to maximize the impact of university incubation. The figure below summarizes all the recommendations for strengthening the dynamics of the entrepreneurial ecosystem.

Table 3 : Critical synthesis of the strategic axes of university incubation at UCA and prospects for improvement

Title	Critical Analysis	Recommendations
1. Dynamics of strategic partnerships: a strength to be consolidated	<ul style="list-style-type: none"> - Partnerships with the private and public sectors mobilize resources and specialized mentors. - Collaborations remain insufficiently diversified, limiting their impact. - UCA relies heavily on external partnerships to boost its incubator, which can lead to disruptions in project continuity. 	<ul style="list-style-type: none"> - Develop strategic alliances with multinational corporations and international startups. - Strengthen collaborations in key sectors such as sustainable tourism and renewable energies.
2. Incubatee engagement: insufficient mobilization	<ul style="list-style-type: none"> - Beneficiaries' disengagement reflects a mismatch between services and their needs. - Lack of prior entrepreneurial training limits their commitment, as observed in the Portuguese model (Ratinho & Henriques, 2010). 	<ul style="list-style-type: none"> - Introduce entrepreneurship awareness programs during the early university years. - Provide personalized support with local and international mentors.
3. Strategic alignment with regional priorities	<ul style="list-style-type: none"> - The identified priority sectors are strategically relevant. - The lack of precise monitoring of the economic impacts of incubated projects limits optimal exploitation. - Insufficient coordination with local public policies hinders the integration of startups into the university's existing value chains (Audretsch & Lehmann, 2005). 	<ul style="list-style-type: none"> - Create a collaborative framework bringing together public and private actors to coordinate efforts. - Develop regional performance indicators to measure the economic and social impact of projects.
4. Contribution to scientific and technological innovation	<ul style="list-style-type: none"> - Collaborations with research laboratories are modest and sporadic. - The absence of a formal structure for commercializing research results limits the promotion of innovation. 	<ul style="list-style-type: none"> - Create a technology transfer office to formalize researcher-entrepreneur collaboration. - Strengthen prototyping programs and incubation techniques using digital tools (AI, simulations, etc.).
5. Financing and project sustainability: a structural challenge	<ul style="list-style-type: none"> - The lack of innovative financing mechanisms, such as public-private partnerships or crowdfunding, is a major obstacle. 	<ul style="list-style-type: none"> - Establish a regional innovation fund financed by public and private contributions. - Explore hybrid financing models, including subsidies and private investments.
6. Evaluation and continuous improvement	<ul style="list-style-type: none"> - The absence of standardization in evaluation processes limits the analysis of project strengths and weaknesses (Phan & Siegel, 2006). - Although follow-up reports exist, their strategic use seems limited. 	<ul style="list-style-type: none"> - Introduce standardized performance indicators (startup survival rates, jobs created, funds raised, etc.). - Organize quarterly meetings to assess strategies and improve services.

Source: Authors' analysis using MAXQDA, 2020.

Fig. 1: Enhancing entrepreneurship ecosystem dynamics



Source: *Authors.*

By drawing inspiration from successful university incubation models internationally, UCA can strengthen its role as a catalyst for innovation and regional and national economic development.

5. Conclusion

University incubation at Cadi Ayyad University carries a remarkable ambition: to become a key player in economic transition and a pillar of regional innovation. With its Innovation City and incubation hub, UCA seems to have all the assets needed to achieve this ambition. However, the reality is different. These structures, though existing, still struggle to realize their full potential and to play a truly active role in supporting project leaders.

This lack of impact raises important questions. The national economic context positions entrepreneurship as a key driver for creating jobs, stimulating innovation, and delivering sustainable added value. Therefore, it is crucial for UCA to strengthen its framework. This involves better structuring resources, establishing stable funding mechanisms, and creating strong partnerships with local, national, and international economic actors.

The challenge is significant, but the vision remains inspiring. If Cadi Ayyad University manages to turn these ambitions into concrete actions, it could effectively contribute to an inclusive and dynamic entrepreneurial ecosystem. By adopting a more structured and collaborative approach, UCA could support innovative projects and play a central role in building an economic future where every idea has the chance to turn into success.

References

- Asli, A., & El Manzani, N. (2016). L'instauration du caractère entrepreneurial de l'université marocaine et le développement d'une culture entrepreneuriale régionale. *Moroccan Journal of Entrepreneurship, Innovation and Management*, 1(1), 62–83. <https://doi.org/10.48396/IMIST.PRSM/MJEIM-V1I1.5893>
- Audretsch, D. B., & Lehmann, E. E. (2005). Does the knowledge spillover theory of entrepreneurship hold for regions? *Research Policy*, 34(8), 1191–1202. <https://doi.org/10.1016/j.respol.2005.03.012>
- Avnimelech, G., & Teubal, M. (2006). Creating venture capital industries that co-evolve with high tech: Insights from an extended industry life cycle perspective of the Israeli experience. *Research Policy*, 35(10), 1477–1498. <https://doi.org/10.1016/j.respol.2006.09.017>
- Clarysse, B., & Bruneel, J. (2007). Nurturing and growing innovative start-ups: The role of policy as integrator. *R&D Management*, 37(2), 139–149. <https://doi.org/10.1111/j.1467-9310.2007.00461.x>
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.
- Garneau, S., & Comtois, J. (2009). Les jeunes Franco-Ontariens et l'accès à l'enseignement supérieur à l'heure de l'université entrepreneuriale. *Reflets*, 15(1), 144–173. <https://doi.org/10.7202/029591ar>
- Hayek, Z. E. (2023). *Contribution à la connaissance du rôle de l'université entrepreneuriale dans la favorisation des startups chez les jeunes étudiants libanais* [Phd thesis, HESAM Université]. <https://theses.hal.science/tel-04592909>
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). SAGE Publications.
- Phan, P. H., & Siegel, D. S. (2006). The effectiveness of university technology transfer. *Foundations and Trends® in Entrepreneurship*, 2(2), 77–144. <https://doi.org/10.1561/0300000003>
- Rasmussen, E., & Borch, O. J. (2010). University capabilities in facilitating entrepreneurship: A longitudinal study of spin-off ventures at mid-range universities. *Research Policy*, 39(5), 602–612. <https://doi.org/10.1016/j.respol.2010.02.002>
- Ratinho, T., & Henriques, E. (2010). The role of universities in regional innovation systems: The case of the Portuguese technology transfer system. *Research Policy*, 39(4), 485–498. <https://doi.org/10.1016/j.respol.2010.02.002>
- Rogerson, C. M. (2017). Innovation and economic development in the global South: The case of South Africa. *Journal of Development Studies*, 53(3), 375–391. <https://doi.org/10.1080/00220388.2016.1174430>

Rosenfield, C. L., & Lemos de Almeida, M. (2015). Modèles d'incubation et processus d'interaction dans les universités brésiliennes. In S. M. K. Guimarães & B. Pecqueur (Éds.), *Innovations, territoires et arrangements coopératifs*. OpenEdition Press. <https://doi.org/10.4000/books.oep.920>

Siegel, D. S., & Wright, M. (2007). Academic entrepreneurship: University spinoffs and wealth creation. *The Journal of Technology Transfer*, 32(5), 474–491. <https://doi.org/10.1007/s10961-007-9052-9>

Taouf, I., Elyoussoufi Attou, O., El Ganich, S., Arouch, M., & Oulhadj, B. (2019). Concept d'incubation d'entreprises au Maroc: Cas des incubateurs académiques. *Revue de l'Entrepreneuriat et de l'Innovation*, 2(7). <https://doi.org/10.34874/IMIST.PRSM/REINNOVA-V2I7.18015>

University business incubators: A systematic literature review from 2000 to 2019. (2020). *Abasyn Journal of Social Sciences*, 13(2). <https://doi.org/10.34091/AJSS.13.2.03>

Wright, M., Birley, S., & Mosey, S. (2004). Entrepreneurship and university technology transfer. *The Journal of Technology Transfer*, 29(3–4), 235–246. <https://doi.org/10.1023/B:JOTT.0000034121.02507.f3>

Yin, R. K. (2014). *Case study research: Design and methods* (5th ed.). SAGE Publications.