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Exploring the determinants of university incubator performance in Morocco

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ABSTRACT
This study investigates the determinants of university incubator performance in Morocco. It aims to understand the factors influencing the effectiveness of these incubators and their contribution to economic development, addressing the gap in assessing their real impact despite their recent proliferation. This study employs a qualitative methodology based on a case study approach of six incubators. Data is collected through document analysis of scientific literature, public policies, and activity reports, accompanied by semi-structured interviews with incubator managers, university administrators, incubated entrepreneurs, and key ecosystem players. Thematic analysis is used to identify and explore the key determinants of incubator performance. The study reveals several critical factors affecting the performance of university incubators in Morocco. These include incubator characteristics, the external environment, and attributes of the incubated entrepreneurs. The findings provide insights into the elements that contribute to the success or failure of these incubators, underlining areas for improvement and optimisation. This paper contributes to the existing literature on university incubators by providing a nuanced understanding of the specific factors influencing their performance in a Moroccan context. It extends current theories by incorporating the interplay of internal and external factors and offering a detailed analysis of their impact on incubator effectiveness. This research offers valuable recommendations for policymakers, university administrators, and incubator managers. By identifying key performance determinants, the study informs the developers of targeted strategies to enhance incubator effectiveness and boost their role in fostering innovation and entrepreneurship in Morocco.

KEY WORDS
university incubator, determinants of performance, entrepreneurship

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Introduction

Entrepreneurship is often seen as a key driver of economic growth and job creation. Although the United States (US) was the first to initiate business incubation programmes and accelerators to foster development and stability, many other countries have since followed suit (Osiobe & Winingham, 2020). Today, business incubators are an integral part of business ecosystems in many countries and play a vital role in driving economic growth (Siddiqui et al., 2021).

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In this context, university incubators have emerged as principal players in fostering innovation and entrepreneurship within academic institutions (Etzkowitz, 2016). These specialised entities create an ideal environment for generating revenue while fostering mutually beneficial relationships among universities, business sponsors, government, and society, with a focus on financial, legal, and technical support (Hassan, 2020). However, despite the rapid rise of incubators, particularly in Morocco, their effectiveness and real impact have not been sufficiently evaluated (Fakhri et al., 2023). In addition, measuring business process performance is important for universities and businesses, as it helps connect incubator success factors with commercial strategies to ensure better performance (Gozali et al., 2020).

In Morocco, an emerging country undergoing rapid transformation, where innovation and entrepreneurship are gaining importance, understanding the determinants of university incubator performance is necessary to optimise their effectiveness. Although studies have outlined their potential, little research has focused on the specific factors influencing their performance in the Moroccan context, an area where practices and challenges may differ from those observed in other parts of the world (Fakhri et al., 2023). A number of questions remain unanswered: what are the key factors influencing the performance of these structures in Morocco? How do the characteristics of incubators, their external environment and the profiles of incubatees interact to determine their performance? This study aims to fill this gap by exploring the determinants of university incubator performance in Morocco and identifying the key elements that contribute to their success or failure.

To this end, a qualitative methodology (a case study of six incubators) is adopted based on document analysis and semi-structured interviews. Documentary analysis enables the exploration of the scientific literature on university incubators, public policies on innovation in Morocco, and the activity reports of the incubators studied. Semi-structured interviews with incubator and university managers, incubated entrepreneurs and key players in the entrepreneurial ecosystem provided rich, nuanced data on the perceptions and experiences of the various players. The data is then analysed using a thematic approach, enabling the identification of the main determinants of Moroccan university incubator performance.

The findings of this study have important implications for policymakers, university administrators, and incubator managers. By identifying the critical factors influencing incubator performance, this research can inform the development of targeted strategies to enhance their effectiveness and maximise their contribution to innovation and entrepreneurship in Morocco.

1. Literature review

1.1. University incubators

History reveals that the first university incubators were created in the United States when American universities became a breeding ground for entrepreneurial activity. Their birth followed the launch of innovation centres through an experimental research and development programme by The United States National Science Foundation in 1973 and its extension in 1981 (Osiobe & Winingham, 2020; Mian, 1997). Nevertheless, the definitions of these incubators vary from one author to another, reflecting the diversity of their missions and objectives.

Mian (1997), one of the first researchers to take an interest in university incubators, considers that university incubators aim to support the creation of incubated companies during the start-up years with value-added contributions such as rent reductions, access to capital, shared office space, university-related services like laboratories, technology transfer services and interim faculty consultants. Often, these are entities established by governments to foster entrepreneurial ecosystems by supporting the development and growth of spin-offs and small and medium enterprises (SMEs) (Muslim Saraireh, 2021). These two definitions, and many others (Hassan, 2020), focus on the support provided by university incubators for start-ups.

According to Adriansyah and Rimadias (2023), university incubators are created on the initiative of academic institutions or research centres to develop the knowledge economy based on scientific discoveries and technology transfer. These structures can take many forms: they can be located on or off campus, owned by a single university or several, be generalist or specialised, etc. Their appeal stems from the potential offered by the ability to link technology, capital and know-how. University incubators capitalise on entrepreneurial talent and help accelerate technology commercialisation by fostering new knowledge-based businesses (Kulkarni et al., 2024). Thus, this second perspective focuses on the role of university

incubators in technology transfer and the commercialisation of research results.

The approach that considers university incubators as drivers of creating an entrepreneurial ecosystem is also widely recognised. Dániel and Porkoláb (2021) explain that university incubators contribute to establishing a dynamic network of economic actors, including entrepreneurs, investors, researchers and academic institutions. These structures facilitate interactions and collaborations, thus stimulating innovation and local economic growth (Siddiqui et al., 2021; Osiobe & Winingham, 2020; Gorączkowska, 2020).

Despite the variations in the definitions of university incubators, several core elements emerge. Firstly, incubators provide a dedicated physical or virtual space designed to welcome and support project leaders. Additionally, incubators offer a comprehensive set of services, including shared office spaces, technical equipment, personalised support, and access to a network of mentors and experts. These services are tailored to address the specific needs of start-ups and facilitate their development. Furthermore, incubators play a pivotal role in fostering a vibrant community of entrepreneurs, researchers, and investors, which enhances collaboration and promotes the exchange of ideas. Finally, incubators have a mission to add value to university research results by encouraging the commercialisation of innovative ideas and supporting the creation of new businesses. This multifaceted approach underscores the integral incubators' role in bridging the gap between academic research and industry (Hassan, 2020; Etzkowitz, 2016).

1.2. Distinctive traits of university incubators

University incubators tend to operate differently from other types of incubators on several points raised in this section. But first, it must be recognised that university incubators are also heterogeneous and diversified, hence the attempts of some researchers to classify them into reasoned typologies.

Clarysse et al. (2005) proposed one of the first classifications of university incubators by considering three criteria: field of activities (opportunity search, IP protection, strategy, business planning, funding, and spin-out); resources employed (organisation, human resources, technology, physical resources, finance, and network); and reference models (strategies and outcomes). Criticising this and other classifications for being too general and incorporating the attributes of these incubators that are overlooked in the previous typologies, Nicholls et al. (2020) developed a more detailed typology based on the following dimensions: stakeholders, objectives, strategic focus, incubation process, resources and services, and socio-economic impacts. This typology is based on six main dimensions that are in turn subdivided into 17 sub-dimensions (dominant logic, outputs, target scope, business model, structure, infrastructure, networking, capital, and culture), which define the scope of each dimension to clearly reveal the heterogeneity of university incubators. As university incubators are heterogeneous, it is time to analyse the specific features that distinguish them from other types of incubators.

In many ways, university incubators are similar to traditional incubators. However, they tend to operate differently in a few respects due to how they were created and operated (Pellegrini & Johnson-Sheehan, 2020). First, compared to other incubators, university incubators are mainly set up for technology dissemination and transfer (Adriansyah & Rimadias, 2023; Hassan, 2020). In this regard, Dániel and Porkoláb (2021) confirmed that university incubators have adequate experience in terms of human expertise, funding sources, location on or near university campuses, focus on innovation and product commercialisation.

Second, Pellegrini and Johnson-Sheehan (2020) considered that the main difference between university incubators and other incubation structures is the support approach in terms of duration and nature. They are designed to offer long-term support to enable the companies created to remain and develop within the university ecosystem. By contrast, non-university incubators focus on short-term support and transition to other forms of support.

Third, it is argued that university incubators can help start-ups increase their legitimacy by reducing transaction costs through location under the university umbrella (Chan & Lau, 2005). They benefit from similar services offered by other incubators (offices, administrative services, equipment, etc.), in addition to access to the university's infrastructure for facilities, support staff, equipment and services, while leveraging the university's reputation (Adriansyah & Rimadias, 2023; Siddiqui et al., 2021).

Fourth, university incubators are generally funded by universities, whereas most business incubators are funded by potential investors and charge their tenants for services (Pellegrini & Johnson-

Sheehan, 2020). Indeed, a key decision for university incubators is how to obtain resources and turn them into services. To this end, Somsuk and Laosirihongthong (2014) have listed university incubator resources in four main categories: human, financial, organisational, and technological resources.

Fifth, the profile of the entrepreneurs hosted is another aspect that differentiates incubators. In the case of university incubators, it is mostly professors, researchers, and students who have the advantage of undertaking less risk (professors already have a source of income, and students can more easily enter or re-enter the job market) than other entrepreneurs who often face greater financial and career risks (Pellegrini & Johnson-Sheehan, 2020). However, these profiles can act as barriers to entrepreneurship because of the contradictions between academic and industrial cultures (Adriansyah & Rimadias, 2023; Clarysse et al., 2005; Hidayati et al., 2018): the former focuses on research, publication and the advancement of knowledge, while the latter focuses on the practical application of innovations, profitability and commercial results.

These various traits of university incubators are not exhaustive, but they provide valuable insight into how they operate and the key elements that contribute to their success. By examining these characteristics, we can better understand the factors that drive their effectiveness. While there are other potential determinants at play, these traits offer a starting point for identifying the most critical factors that impact the performance of university incubators.

1.3. Performance measurement in university incubators

The literature on measuring the performance of university incubators explores various frameworks and methods for assessing their effectiveness, impact and contribution to the entrepreneurial ecosystem. This section focuses on theoretical and empirical approaches to measuring the performance of university incubators, highlighting key criteria and associated challenges.

Over the past forty years, numerous studies have examined the question of incubator performance (Fakhri et al., 2023). Nevertheless, it is clear that they have not reached a consensus on how to apprehend this performance: efficient use of resources, business and job creation, incubatee satisfaction, and multidimensional measure combining multiple criteria (Vanderstraeten et al., 2012). This complexity is likely to be amplified in the case of university incubators due to the specificities of the university environment (Gozali et al., 2020).

Mian (1997) was one of the first to propose a comprehensive, integrated model of university incubator performance. His starting point is the scarcity, fragmented nature, and controversy surrounding the data on the contribution of university incubators to the development of technology-based start-ups in the USA. Thus, adopting an integrative approach, he conducts a study combining available knowledge on incubation activity, the university's contribution to technology transfer, and commonly accepted approaches to organisational evaluation. The model is broken down into three performance dimensions: (a) incubation results (sustainability and growth of the programme, survival and growth of the tenant company, contributions to the mission of the sponsoring university, and impacts on the community); (b) management policies and their effectiveness; and (c) services offered and their added value.

While acknowledging the merit of Mian's (1997) model for benchmarking incubator performance, Chan and Lau (2005) consider it inappropriate for evaluating an incubation programme from the perspective of incubated companies throughout their development process. They propose a set of indicators to measure incubator performance: advantages from pooling resources, sharing resources, consulting services, positive effect from higher public image, networking advantages, clustering effect, geographic proximity, cost subsidies, and funding support. The most obvious limitation of this model is its one-dimensional nature, associating an incubator's performance with the incubation process alone without considering the role of internal and external stakeholders.

Based on factors identified in the literature and a preliminary study with expert professors affiliated with world-renowned universities, Gozali et al. (2020) proposed a new explanatory framework for incubator performance in public universities in Indonesia. They propose a six-factor model including age and quality of facilities, credits and awards, entry criteria, exit criteria, financial support, a good system, and good infrastructure.

Conducting a similar study among Thai university incubators, Yamockul et al. (2019) identified four main practices influencing university incubator performance: (a) practice in management and administration of the incubators; (b) practice in supporting services provided to incubatees; (c) practice in aug-

mented services for technopreneur incubation, and (d) practice in the selection of potential incubatees.

Siddiqui et al. (2021) believed that the work of Gozali et al. (2020) has methodological issues, while that of Yamockul et al. (2019) is based on students' entrepreneurial intentions and not on actual incubator experience. They try to consider these limits and propose a framework of critical success factors for university business incubators that culminates into five big factors: (a) support services, (b) network support, (c) financial support, (d) economic development, and (e) alumni success. The results of their study show that, ten years after their launch in Saudi Arabia, university incubators still face difficulties in obtaining funding and bureaucratic requirements from the government. In addition, they recommend a great deal of comprehensive awareness-raising among students to enhance their knowledge and develop entrepreneurial passion. These findings are similar to those formulated by Ruiz Navarro et al. (2017) in their study of Moroccan Universities and Entrepreneurship.

A review of these various studies indicated the multidimensional nature of university incubator performance involving various factors and interactions. This complexity reinforces the relevance of the current study, particularly in the Moroccan context, where such dynamics may differ from those in other regions of the world.

2. Methodology

2.1. Research design

This research adopts a qualitative approach to explore the determinants of university incubator performance in Morocco. In qualitative research, one major challenge is deciding whether to analyse a single case or several. According to Miles and Huberman (2003), examining several cases enables the researcher to discover divergent cases, reinforcing the theory developed by confronting similarities and differences.

A multiple case study was chosen, which focused on six university incubators, to gain an in-depth and nuanced understanding of the factors influencing their performance. According to Yin (2017), multiple case studies enable the characteristics of the units studied to be compared and contrasted, offering a more holistic view of the themes investigated. Thus, this methodology, favoured in exploratory research (Eisenhardt, 1989), will help analyse the specific contexts of each incubator while allowing for limited comparisons and generalisations due to the relatively new and understudied nature of the subject in Morocco.

2.2. Data collection methods

Six university incubators were selected according to criteria specific to the university context to ensure that the sample was adequately representative. These criteria included the geographical location of the universities to cover different regions of Morocco. We also considered the current presence of active incubatees, choosing incubators that host start-ups or projects under development, enabling us to obtain relevant information on current incubation practices. In addition, we selected incubators with a track record of business creation, i.e., incubators that have already produced companies. The types of support programmes offered were also a selection criterion, including those offering various supports such as mentoring, training, financing, and networking. Finally, we considered incubators' academic and industrial partnerships, selecting those that collaborate with other academic institutions, companies, and government organisations to explore the impact of these collaborations on incubator performance. These criteria enable us to cover a wide range of characteristics and contexts, offering a comprehensive perspective on the determinants of university incubator performance in Morocco.

A combination of documentary methods and semi-structured interviews were used to collect the data required for the study. Miles and Huberman (2003) encouraged researchers to triangulate data from multiple sources to gain a fuller understanding of the subject under study and strengthen the credibility of qualitative research findings.

Yin (2017) considered documentary analysis essential for case study researchers, as it enables them to explore in depth the historical, contextual, and organisational aspects of the cases studied. In the current study, a structured form was used to systematically extract and analyse relevant documents, such as academic literature, institutional reports, public policies and internal documents of university incubators.

At the same time, according to Miles and Huberman (2003), interviews are a valuable means of obtaining in-depth perspectives and experiences from participants. They stress the need for active listening and the creation of a relationship of trust with

Tab. 1. Data sources

Incubator	Analysed Documents	Number and Profiles of Interviews
1	Annual report, business plans, sector studies, website content	5 interviews: 3 incubatees, 1 incubator director, 1 funder
2	Activity reports, public policy documents, flyers, communication materials	4 interviews: 2 incubatees, 1 incubator director, 1 expert
3	Strategic plans, internal reports, guide of procedures	3 interviews: 1 incubatee, 1 incubator director, 1 coach
4	Sector studies, academic literature, website content, internal reports,	5 interviews: 2 incubatees, 1 funder, 1 coach, 1 university officials
5	Business model templates, annual reports, communication documents	4 interviews: 1 laureate, 1 incubator director, 1 university official, 1 expert
6	Reports on regional impact, funding guidelines, flyers	3 interviews: 1 laureate, 1 funder, 1 coach

interviewees to enable participants to fully express their thoughts and experiences. Twenty-four semi-structured interviews were conducted with incubator managers, incubated entrepreneurs, funders, incubation experts, and university managers.

2.3. Data analysis

The data used in this study are primary and secondary. Primary data are obtained from interviews with various players and stakeholders in university incubators. Secondary data are obtained and collected from literature reviews, activity reports of incubators and universities, institutional reports (ministry bodies), and websites.

Regarding the primary data, the 24 interviews conducted are first carefully recorded to ensure a complete and accurate capture of the exchanges. After recording, each interview is transcribed in full, providing a faithful text of the discussions held. This transcription forms the basis of the qualitative data to be analysed.

For secondary data, documentary analysis is carried out in parallel with interview analysis. It starts by drawing up a detailed document analysis guide, including document selection criteria, specific research questions, and themes and categories to be explored. The selected documents are then imported into NVivo 12, a qualitative analysis software, for systematic processing.

This qualitative analysis software enables systematic coding of the transcripts, facilitating data organisation and exploration. In this way, thematic codes can be applied to the various interview segments and documentary analysis, identify recurring patterns, and explore relationships between emerging themes. This method enables triangulating the results of the documentary analysis with those of the interviews, thus reinforcing the validity of conclusions (Miles & Huberman, 2003). In addition, this approach ensures a certain objectivity in the analysis and facilitates comparison between different data sources.

3. Results

3.1. Emergence of university incubators in Morocco

Law No. 01-00 on organising higher education in Morocco has opened up new prospects for Moroccan universities, providing them with the legal framework they need to strengthen their entrepreneurial activities and contribute to the country's socio-economic development. They now have the possibility of setting up structures to bring the business world closer to them, thereby enhancing the value of their research results. Indeed, article 7 of this law recognises the entrepreneurial mission of universities, stipulating that "within the framework of the missions assigned to them by the present law, universities may, by agreement, provide services for remuneration, create incubators for innovative companies, exploits patents and licenses, and market the products of their activities".

Since then, efforts have been made by central authorities and universities to set up programmes and structures, such as university incubators, to promote the valorisation of research results and innovation. In this context, the Moroccan Incubation and Spin-Off Network was launched in 2002 to promote the valorisation of scientific research results, encourage innovation and the creation of innovative companies, and develop an entrepreneurial dynamic in university and research circles.

This programme has supported the incubation of 81 projects, only 23 of which have gone on to become

start-ups. Difficulties encountered include the lack of autonomy and human resources for incubators at the university level, the lack of a favourable legal framework due to the absence of texts implementing the provisions of Law No. 01-00, and cumbersome financial and administrative procedures. Based on this experience, a more ambitious programme is underway with the creation of Innovation Cities.

3.2. Organisation and operation of university incubators

The Moroccan Incubation and Spin-off Network (RMIE) Terms of Reference propose two forms of organisation for carrying out the mission of creating innovative companies: first, focusing on technological and scientific aspects, and second, more general, encompassing all aspects of support.

Although the organisation of university incubators varies considerably, the interviews revealed two predominant configurations. In the first scenario, incubators are placed under the responsibility of project managers, often lecturers appointed by university presidents, who maintain a direct relationship with the university institution hosting them. In a second scenario, some incubators are managed at the Innovation City level, reporting directly to the Innovation City hierarchy or to the university president.

The organisation of university incubators seems to be closely linked to the university itself. They can be seen as internal university services, which can facilitate access to university resources. Some university incubators have steering committees that define overall strategy, objectives and scope of activity. However, it is noted that these committees do not necessarily follow a vertical hierarchy, but rather a cross-functional, project-based approach.

Despite their varying sizes, the six university incubators in our study generally have adequate space to accommodate incubated projects, reflecting a supply adapted to demand. They are strategically located within or close to university establishments, particularly those in the hard sciences, to facilitate direct access to laboratories and scientific research platforms.

An analysis of the services offered by these university incubators reveals a remarkable convergence in the offerings and philosophy of support for incubatees. Despite the differences in size, a basic set of services is widely offered to support projects. Essential services include office space, internet connection, meeting rooms, and coworking spaces to facilitate collaboration. Beyond the physical infrastructure, training, management consulting and support services are also offered to help incubatees improve their entrepreneurial skills and develop their ideas.

3.3. Perceived performance of university incubators

The theme of university incubator performance is explored through the responses of 24 respondents. They represent a variety of perspectives, including funders, incubator managers and staff, incubation experts and project owners. This diversity of viewpoints is likely to present a comprehensive view of how performance is perceived in the context of university incubators.

Representatives of funding organisations generally recognise the essential role incubators play in promoting entrepreneurship. They believe that performance depends on several factors, including the specific context of each incubator. However, they emphasise that performance can vary from one incubator to another, depending on their objectives and available resources.

Managers and staff of incubators and universities, on the other hand, express mixed views. While some consider that their incubators are performing well despite the constraints they face, others feel that a lack of resources limits their level of performance. They also stress the need for adequate resources to achieve the desired performance.

Experts acknowledge that incubators have made progress but feel there is still room for improvement. They consider that university incubators are on the right track. Nevertheless, they must develop business expertise and collaborate more with the entrepreneurial ecosystem to reach their full potential. On the other hand, project owners have varying opinions on the performance of incubators. Some consider that incubators perform well, while others feel they can do better by overcoming recurring problems.

The perceptions of the various players regarding the level of performance of university incubators in Morocco vary according to the categories of respondents and their personal experiences in the field. While these perspectives may differ, a consensus on the challenges and constraints encountered is emerging. First, the current model does not always seem suited to the early stages of entrepreneurial projects, with an urgent need to clarify the different support phases,

Tab. 2. Perceptions of university incubator performance by respondent category

Respondent Category	Positive Perception of Performance	Mixed Perception of Performance	Negative Perception of Performance
Funders	33 %	67 %	0 %
Incubator Directors, University Officials & Coaches	56 %	33 %	11 %
Experts	50 %	50 %	0 %
Incubatees & Laureates	50 %	40 %	10 %

Tab. 3. Frequency of determinants discussed by different stakeholders

	Incubator Directors, University Officials & Coaches	Incubatees & Laureates	Funders	Experts
Incubatee characteristics	89 %	80 %	100 %	50 %
Access to funding	100 %	70 %	100 %	100 %
Governance	89 %	60 %	100 %	100 %
Selection practices	33 %	10 %	67 %	50 %
University regulations	89 %	60 %	100 %	100 %
Networks	100 %	90 %	67 %	100 %
Human resources	100 %	90 %	100 %	100 %
Services and available infrastructure	100 %	90 %	100 %	100 %
Government support	89 %	60 %	67 %	50 %
Specialisation	33 %	20 %	0 %	100 %

from pre-incubation to incubation. The lack of qualified and motivated mentors is also a significant obstacle, compounded by the lack of mature, innovative projects and truly committed incubatees. In addition, the bureaucratic system, while necessary, often hinders the agile management of incubators. Difficult access to financing and red tape are recurring obstacles exacerbated by the absence of legislation and appropriate structures, such as implementing regulations for Law No. 01-00 or mechanisms for participatory financing and business angels. There are also governance problems, notably the lack of autonomy of incubators from universities, which complicates budget management and the involvement of the private sector. Incubators also suffer from a lack of local prototyping infrastructure and stable human resources, which can undermine the continuity and effectiveness of projects. Finally, university training courses often focus on entrepreneurial culture without offering the technical skills needed to create innovative businesses, which limits the potential of incubated projects.

The perspectives of various stakeholders involved in the incubation process were analysed to further understand the determinants of university incubator performance. Table 3 provides a breakdown of the frequency with which different themes were discussed during interviews with funders, incubator managers, entrepreneurs, and experts. These themes reflect the major factors that influence the success and challenges faced by university incubators in Morocco. These determinants will be discussed in detail in the next section.

4. Discussion

Based on the thematic content analysis (literature review and semi-structured interviews), various determinants of university incubator performance in Morocco were identified, which were split into three categories as proposed by Sun et al. (2007): those relating to the incubator, the incubatee, and the environment.

4.1. Determinants relating to the incubator

The thematic content analysis reveals several determinants of university incubator performance and their ability to stimulate innovation and entrepreneurship in Moroccan universities. This approach underlines various internal factors, such as services offered, available infrastructure, governance, selection practices, and human resources.

First, the governance of university incubators is a key factor in their performance. That means having a clear mission and vision, an appropriate structure with well-defined management bodies, and a flexible, adaptable organisation. This observation is confirmed by several studies that have raised the importance of governance in ensuring incubator performance (Adriansyah & Rimadias, 2023; Siddiqui et al., 2021; Sun et al., 2007). The analysis also shows that the services offered and the facilities available are fundamental aspects influencing the activities of university incubators and, therefore, their performance. Physical facilities, such as premises, scientific equipment and workspaces, are essential for creating an environment conducive to entrepreneurs' creativity and productivity. In addition, personalised support services, such as training and access to academic expertise, play a decisive role in the success of incubators in the university context.

In addition, the availability of skilled, varied, and dedicated human resources is important for providing quality support that meets the needs and expectations of all stakeholders (Gozali et al., 2020). The involvement of experts, mentors and experienced advisors is essential to guide entrepreneurs along their journey. The development and professionalisation of human resources, aligned with the objectives of each incubator, are necessary to guarantee their performance (Siddiqui et al., 2021; Hassan, 2020; Somsuk & Laosirihongthong, 2014).

The analysis also revealed that given the quantity of resources available, clear selection criteria and rigorous evaluation enable incubators to admit promising projects, thereby optimising their performance (Gozali et al., 2020). However, a balance between selectivity and openness to new opportunities must be struck, as overly strict selection policies could exclude innovative ideas.

Therefore, a significant new dimension revealed by the analysis of interview responses is the specialisation of incubators. This specialisation makes more efficient use of limited resources and fosters innovation by responding in a targeted way to specific needs. This approach aligns with the findings of previous studies that highlight the benefits of specialisation for incubator performance (Dániel & Porkoláb, 2021; Chan & Lau, 2005).

4.2. Determinants relating to the incubator environment

The thematic analysis carried out on documents and interviews enables the identification of the main environmental determinants of the performance of Moroccan university incubators. By focusing on factors such as government support, networks, university regulations, and access to funding, this study underlines the importance of the external environment in the development and success of these structures. These factors are not isolated variables but form part of a complex system in which each element influences and is influenced by the others.

The availability of funding emerges as a central factor in the performance of university incubators. Although efforts have been made to improve access to funding, respondents point to a lack of funds specifically dedicated to university entrepreneurs. Access to adequate funding is crucial to the development and growth of incubated start-ups and the fulfilment of incubator missions. Despite improvements in access to funding, challenges remain, including the reluctance of banks, the need to revitalise programmes such as RMIE, and the creation of financing tailored to innovative projects. These findings confirm the results of various studies (Gozali et al., 2020; Somsuk & Laosirihongthong, 2014), reinforcing the validity of observations and contributing to the continued research progress in this field.

Government support is also a major determinant of the performance of university incubators (Kulkarni et al., 2024; Hassan, 2020; Sun et al., 2007). Study respondents claimed that government policies and initiatives, such as tax incentives, subsidies, specific funding programmes, intellectual property services, and administrative facilitation, are essential to encourage business creation and support university incubators in their missions.

Another important determinant identified is the availability of networks. The analysis revealed that networking plays a key role in the performance of university incubators. Collaborations with various ecosystem actors, diversification of networks, entre-

preneurial education, and community support are essential to sustain incubated projects. By consolidating partnerships and fostering collaboration within the entrepreneurial ecosystem, incubators can improve their effectiveness and impact on entrepreneurial development (Siddiqui et al., 2021; Dániel & Porkoláb, 2021).

Finally, analysis of the interviewees' feedback and activity reports reveals that university regulations present several significant challenges to incubator performance. Administrative complexities, bureaucracy and regulatory rigidity hamper incubator operations by generating delays and limiting resources due to budget constraints and complex financial management processes. Regulatory changes are needed to recognise and support the entrepreneurial commitment of students and researchers through dedicated academic modules and formal recognition of entrepreneurship in university curricula.

In conclusion, analysis of the environmental determinants of university incubator performance offers valuable insights into the external factors influencing their effectiveness. These elements are essential to guide actions aimed at optimising the operation of incubators and maximising their contribution to innovation and entrepreneurship within academic institutions.

4.3. Determinants relating to the incubatee

Adriansyah and Rimadias (2023) underlined the specificity of university incubators compared to other types of incubators, emphasising the critical role played by the academic community, which includes lecturers, students, and alumni. This community is not only a valuable source of expertise but also serves as a network of business connections and a source of essential support for incubatees. The involvement of the academic community in UBIs offers unique advantages, as it creates an environment where knowledge, innovation, and entrepreneurial spirit can be shared and nurtured. In addition, self-employment serves as a means of creative expression and identity formation while also fostering community altruism and leveraging cultural capital, promoting economic development and enhancing the performance of university incubators (Osiobe & Winingham, 2020).

In line with this, Sun et al. (2007) recognised that incubatee characters and backgrounds (education and experience) are critical factors in incubator performance. Indeed, the results of the current study underline the preponderant role of incubatee skills and attitudes in the performance of university incubators. Essential traits identified include motivation, passion, commitment, perseverance, and adaptability, including openness to change and acceptance of advice. Other aspects, such as training, entrepreneurial skills and experience, are also important for success in these environments.

These elements underline the fact that incubatees need certain personal qualities, technical skills, and practical experience to take full advantage of the opportunities offered by incubators.

Interviewee statements confirmed that motivation and passion, e.g., strengthen the determination to overcome the challenges encountered during the incubation phase. Commitment and perseverance enable incubatees to stay on course in the face of obstacles, while adaptability ensures an effective response to advice and unforeseen changes. At the same time, adequate training and entrepreneurial skills provide the foundations for developing effective strategies and bringing projects to fruition. Previous experience, meanwhile, enriches the ability to thrive in complex environments and avoid common mistakes.

This thematic content analysis of documents and semi-structured interviews revealed a nuanced understanding of the factors influencing the performance of university incubators in Morocco. The study categorises these determinants into three primary areas (those related to the incubator itself, the incubatee, and the external environment) and offers a framework for understanding and enhancing the effectiveness of university incubators in fostering innovation and entrepreneurship. In discussing these various factors, the findings pave the way for different stakeholders to develop targeted strategies and make informed decisions. For instance, incubatees can use this information to identify and select the most effective incubators that align with their needs and goals. Funders, on the other hand, can leverage these insights to determine which incubators are most worthy of financial support, ensuring that their investments are directed towards entities with a proven track record of success. Furthermore, incubator managers will gain a clear understanding of the key elements that require attention and improvement, enabling them to enhance the overall performance and impact of their programmes.

Conclusions

Based on an in-depth thematic analysis, this study has helped to enrich knowledge of the determinants of university incubator performance in the Moroccan context. The results emphasise the importance of a multidimensional approach that considers internal, external, and incubatee-related factors. By acting on these different levers, it is possible to optimise the role of incubators in promoting innovation and business creation in Morocco.

From a scientific point of view, this study contributes to the existing literature on university incubators by exploring the determinants of their performance in the context of an underdeveloped country. By analysing these determinants, this research confirms and extends existing theories on the subject. The results corroborate previous studies on the importance of internal and external factors when evaluating incubator effectiveness. The appearance of specialisation as a potential lever for optimising incubator resources and responding more effectively to entrepreneur needs opens up new avenues for research. Finally, incubators need to pay particular attention to the characteristics of their incubatees. A rigorous selection process, accompanied by personalised support, is essential to maximise the chances of success for entrepreneurial projects.

From a practical point of view, the findings of this study offer valuable insights for policymakers, university administrators, and incubator managers in Morocco. The results can help to improve the effectiveness of university incubators in fostering innovation, job creation, and economic development in Morocco by highlighting the importance of creating a supportive environment for university incubators.

The results of this study answer the question asked on the performance of Moroccan university incubators. However, the sample of incubators studied is relatively small, which limits the generalisability of the results. For future work, the authors will consider conducting longitudinal studies to better understand the evolution of incubator performance over time and to explore in more detail the impact of public policies and funding mechanisms on incubator outcomes. An international comparison could also offer additional perspectives into best practices and effective strategies for supporting academic entrepreneurship.

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