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University-Industry Incubators: Igniting Global Startup Revolutions

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ABSTRACT

Universities are pivotal engines of economic development, serving as the apex of the research hierarchy and the primary incubators of scientific knowledge that fuels entrepreneurial ventures. Despite this potential, the current collaboration between universities and the private sector falls short of expectations, leaving both parties under-utilized. This study investigates how strategic cooperation between these actors can be strengthened and evaluates the feasibility of establishing research-focused business incubators within universities to support private-sector entrepreneurial projects. Guided by a novel philosophical framework that emphasizes systematic thinking and mutual social responsibility, the research adopts a mixed-methods approach: a comprehensive literature review identifies best-practice models; semi-structured interviews with university administrators, faculty, and industry partners reveal prevailing obstacles and opportunities; and a Delphi panel refines a conceptual model for a university-based research incubator. Findings indicate that the essential prerequisites—such as dedicated funding streams, interdisciplinary research clusters, technology-transfer offices, and supportive policy environments—are already present in many institutions, yet they are often fragmented or under-leveraged. Based on these insights, the proposed model recommends reallocating existing resources, synchronizing partnership timelines with regional development needs, and instituting formal mechanisms for joint project governance. Implementing such incubators promises to accelerate the translation of academic research into market-ready innovations, boost private-sector competitiveness, and generate broader societal benefits. The study thus offers a concrete roadmap for universities to become active catalysts of entrepreneurship, reinforcing their role as engines of sustainable economic growth.

Keywords: *Strategic cooperation, research business incubators, entrepreneurial projects*

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1. INTRODUCTION

The unsuccessful experiences of emerging projects have led to the need for establishing entities that can incubate these projects by providing essential services to ensure their operational continuity and offering specialized technical advice. Additionally, support in marketing their products is crucial to empower these projects and enhance their capabilities in facing surrounding challenges, ultimately equipping them with the fundamental skills for success.

This has given rise to what are known as research incubators, or "science parks," representing a collaborative initiative between universities and their personnel and the projects and companies that require knowledge and technological support to achieve joint work and knowledge investment, thereby fulfilling the social responsibility of educational institutions in serving their communities.

Accordingly, this research includes a discussion of a proposed model for implementing research incubators aimed at supporting entrepreneurial projects within universities. It also seeks to elucidate the concepts, stages, and requirements for nurturing creative and distinguished ideas from youth and transforming them into viable entrepreneurial projects. This will involve a discussion of the evolution of collaborative processes between universities and the private sector within a proposed model, developed in a logical sequence throughout the research stages. This encompasses the fundamental principles for applying research incubators, diagnosing the primary mechanisms for implementation, and identifying the supportive requirements necessary to ensure the success of research incubators. Finally, the research concludes by highlighting key findings, recommendations, and areas for future studies.

General Framework of the Research

First: Research Problem

Current data indicates an increasing number of unemployed individuals, particularly among university and institute graduates. This reality has prompted many developed and developing countries to seriously reconsider creating genuine and new opportunities for this demographic, with a primary focus on small and medium-sized enterprises as drivers of entrepreneurial projects.

Numerous scholarly contributions have discussed the complexities and sequential nature of implementing research business incubators, or "science parks." These discussions address various aspects, starting from the multiple objectives of incubators and their practices to the differing requirements for their implementation based on their intended purposes and extending to the diversity of terminologies used to describe them. A significant aspect of reviewing previous research efforts is to frame the concepts and requirements for applying research incubators in a way that aligns with the current research goal, which aims to propose a viewpoint for implementing research incubators designed to support research projects. This can be articulated through the development of a proposed model within universities to achieve a broader and clearer understanding of the concepts, stages, and requirements for applying research incubators, ultimately leading to a comprehensive application model.

From this perspective, the research problem is framed by the following research questions:

1. What are the fundamental principles of strategic cooperation between universities and the private sector?
2. What are the primary mechanisms for implementation that contribute to building a research incubator to support entrepreneurial projects?
3. What are the supportive requirements for the sustainability of the research incubator and its success in supporting entrepreneurial projects?

Importance of the Research

The importance of this research can be highlighted by observing the growing interest in entrepreneurial projects in developed countries and the attempt to adapt these concepts within the Iraqi context. This involves discussing the feasibility of implementing them according to the perspective adopted by the current study, which is to present a proposed model for supporting entrepreneurial projects through research incubators in Iraqi universities.

Based on the above, the significance of this study emerges in the following aspects:

1. Academic Importance: By discussing a contemporary topic in the field of management—namely, the identification of the concepts and requirements for implementing research incubators that support entrepreneurial projects—this study addresses these concepts in a way that opens new horizons and encourages other researchers to explore additional dimensions and factors not covered in this research. This contributes to a cumulative body of knowledge that enriches the Iraqi library. Furthermore, the proposed model will be continuously developed throughout the research process, reflecting one of the organized managerial thinking methods and providing a comprehensive and clear vision of the concepts related to supporting entrepreneurial projects.
2. Field Importance: The significance becomes clear as it directs researchers' attention towards adopting and applying these modern concepts in various fields, with the aim of enhancing awareness and interest among decision-makers in university management to embrace innovative strategies and methods for establishing genuine partnerships with the community. This requires a proper understanding of these methods, their philosophies, and their implementation. Here, the importance of the research crystallizes in arriving at conclusions that can represent a methodological roadmap for implementing research incubators, thereby potentially supporting the success of entrepreneurial projects when applying research incubators according to the proposed model. Additionally, the findings could be generalized to other universities interested in implementing research incubators more broadly.

Research Objectives

In light of the research problem and its significance, this study aims to achieve the following objectives:

a) To identify the fundamental principles for implementing research incubators in Iraqi universities.
b) To examine the primary mechanisms for implementation that contribute to establishing a collaborative work system between research incubators and entrepreneurial projects.
c) To clarify the supportive requirements for the success of research incubators in the local environment.
d) To provide recommendations that could benefit institutions related to the implementation of research incubators based on the conclusions drawn from the study.

2. LITERATURE REVIEW

Although the perspective of the process can indicate various meanings, such as "process focus, process methodology, process orientation, process management, process measurement, process diagnosis, process modeling, process improvement, and others"—the general concept of a process is defined as "transforming inputs into outputs within a continuous flow." The concept that this research will adopt is to view the process as "a network of activities that are repeated in a timely manner with the aim of creating value for entrepreneurial projects." This definition aligns with the collaborative perspective that we will attempt to develop throughout the sections of this research, based on the premise that "achieving desired results is more effective when related activities and resources are managed as a process." The goal is to identify and define the basic framework of the process as the foundational basis for the proposed model.

First: Strategic Cooperation

(Al-Sabaawe Younis M. Kh et al., 2018, p. 244) indicate that the concept of cooperation can be derived from the Latin word "cooper," meaning collaboration or assistance. Historically, the concept of cooperation has evolved from simple forms of collaboration in factories that exploit workers based on the division of labor and cooperation in industrial and agricultural production to contemporary forms of collaboration in commercial activities, which adopt different methodologies for interpreting this concept (Kondasová Stanislava & Starzyczná Halina, 2013, pp. 2, 5).

Achieving an organization's strategic objectives, both in terms of proper formulation and execution, should involve the participation and support of stakeholders from both within and outside the organization, as this is a key element of success. This occurs through core processes within the framework of the 3Cs perspective, which refers to the varying contexts used to describe

cooperation, such as "cooperation" or "co-operation," denoting collaboration over competition; "collaboration," signifying working together instead of independently; and "coordination," describing cooperation through the alignment of efforts to achieve common goals. Whether described together or independently, the 3Cs significantly impact the formulation and implementation of the organization's strategic plan within the context of strategic cooperation (Al-Maadhedee Maan W. & Al-Sabaawe Younis M. Kh., 2018, p. 67).

It can be challenging to discuss the implications of strategic cooperation within a specific definition or concept. Recent studies reviewed in this context have addressed the concept of strategic cooperation and its associated aspects, reflecting the breadth and complexity of this term. In this regard, (Evin Agathe et al., 2013, p. 2) describe strategic cooperation as a broad research area studied across various disciplines within the humanities, including psychology, sociology, linguistics, and philosophy. Furthermore, the topic of strategic cooperation has framed a wide and diverse range of practices such as organizational management, work environments, international management, educational practices, and sports education. In this context, (Boragno Irene, 2012), p. 87) views strategic cooperation as a variety of strategies based on the concepts of shared intention and joint action, which can provide a better understanding of what we mean by cooperation.

(Kurniawan Ernest et al., 2013, p. 1) and (Kerret Paul & Gesbert David, 2013, p. 12) discussed the concept of strategic cooperation within the framework of optimal energy strategies through cooperative strategies that enhance resource and energy utilization within business networks to achieve performance excellence. Meanwhile, (Falahat Darius et al., 2013, p. 593) referred to strategic cooperation in the context of behaviors arising from negotiation and the emergence of cooperative relationships in light of reactive strategies. (Ehrmanna Thomas et al., 2012, pp. 1-5) focused on collaborative relationships within network management, emphasizing the advantages of cooperatives and strategic alliances, along with the outcomes these networks can achieve through knowledge building, incentives, control, and coordination.

(Brown Dormio et al., 2013, p. 5) define strategic cooperation as organizational innovation, referring to the implementation of a new organizational style within the commercial practices of an organization and the organization of the workplace and external relationships with other relevant organizations. (Salamonsen Krister, 2013, pp. 1-2) discussed the concept of strategic cooperation in the context of forming strategic alliances through a network of cooperative relationships aimed at entering new markets and acquiring knowledge. In a related context(Chi Sun Chia, 2013, pp. 125-126) examined cooperative behavior through the formation of strategic alliances with technical alignment in research and development to enhance competitive capabilities. (Rand & Nowak, 2013, pp. 413-414) pointed to the concept of strategic cooperation in terms of the evolution of five mechanisms of human cooperation, which include direct interactions that occur when two parties interact repeatedly, motivated by today's cooperation to ensure future collaboration, indirect interactions based on reputation when one organization deals with another in light of the latter's behavior toward others, spatial selection requiring local interaction and competition leading to the formation of groups of cooperators, multi-level selection occurring when competition exists between individuals and groups, and assortative selection arising when there is conditional behavior associated with this choice.

(Kondasová Stanislava & Starzyczná Halina, 2013, pp. 2-5) discussed the topic of strategic cooperation within the framework of coordinating contractual cooperation activities at both horizontal and vertical levels, focusing on franchise chains as one of the most significant forms of vertical cooperation that contributes to entrepreneurship. (Evin Agathe et al., 2013, pp. 3-4) examined the concept of strategic cooperation in terms of building trust among partners and the impact of this trust on the choice of cooperation methods during task execution. (Bernard Corinne Autant et al., 2012, pp. 1-21) provided a conceptual perspective on strategic cooperation as one of the driving factors and main engines for adopting innovation-based choices among collaborating organizations. (Prediger Sebastian et al., 2013, p. 5) presented the concept of strategic cooperation in the context of resource scarcity and the increasing competition for resources, which leads to antisocial behaviors on one hand and resource scarcity and a spirit of cooperation on the other. Meanwhile, (Wang Youcheng & Krakover Shaul, 2008), pp. 87-91) discussed the implications of collaborative work within a social context.

Strategic cooperation can be expressed in its simplest form as the process through which individuals work together in intellectual, academic, or practical endeavors (Kaufmann et al., 1999, p. 1). This involves individuals participating in collective activities aimed at achieving common goals (Bengtsson Maria & Kock Sören, 2000, p. 416).

Strategic cooperation begins with identifying a problem and seeking the contributions of multiple stakeholders with a shared interest, encompassing both orientations and objectives to determine the appropriate approach to cooperation in addressing operational and engineering challenges (Quik Wee Hock & Wright Nevan, 2012, p. 1477). Strategic cooperative relationships are founded on mutual interest, reciprocal support, and unconditional interaction. The relationship between cooperating organizations is characterized by clarity and transparency, particularly in small and medium-sized enterprises that lack resources and may thus require greater collaboration with others. These relationships involve the distribution of activities and resources among cooperative parties as part of a business network (Al-Sabaawe Younis M. Kh et al., 2018, p. 244).

This process is referred to as the outsourcing model, specifically the make-or-buy decision, which is a form of cooperative work that involves purchasing business operation services from market partners to streamline certain stages of the processes required to achieve business objectives. Given the rapid changes in market environments and competition, organizations must adopt a more dynamic approach to outsourcing services to build or maintain a competitive position, which can be expressed as dynamic business processes of outsourcing in light of the mobility of selection, contracting, participation, and execution of business services (Grefen Paul et al., 2003, p. 1).

Second: Research Incubators

University-linked business incubators, also known as research business incubators or science parks, were established to create a new and crucial role for universities in contributing to economic development. In addition to their traditional roles of education, scientific research, and community service, universities can provide investment and operational opportunities for their final outputs (Abu Al-Majd, 2015, p. 313). Alongside the practices and services offered by research incubators, other factors may also affect their performance, as the performance of research incubators varies according to their type. Four types of research incubators can be distinguished: private research incubators, basic research incubators, university incubators, and regional development incubators (Hausberg & Korreck, 2020, p. 3).

Due to the diversity in types and names of research incubators, research efforts aimed at discussing their contents and objectives have also varied. Researchers' contributions have covered multiple aspects related to research incubators and associated terminologies, including both macro and micro perspectives on the mechanisms of research incubators. For instance, the study by (Adrian Sergio & Cristancho Romero, 2020) discussed how incubators operate according to the Spanish model, while the study by (Al Ameeri Fareed Mahmoud Abdallah, 2019) examined the success factors of research incubators aimed at developing entrepreneurial practices. Additionally, the study by (Al-Jallab, 2020) provided a forward-looking perspective on research incubators in universities and their role in achieving excellence and innovation. The study by (Al-Zahrani Ibrahim Hanash & Al-Shamry Ahmed Khuwaitam Lowaibed, 2022) discussed the reality of research incubators in enhancing the competitive dimensions of universities, whereas (Numa-Sanjuan & Márquez Delgado, 2019) addressed research incubators as science parks to develop the capabilities of novice researchers in the field of scientific research.

In a related context, several studies have focused on the expected outcomes of implementing research incubators at various levels, including community-wide results. For example, the study by (Sharaf & Ramadani, 2004) discussed the tools and opportunities for applying research incubators in combating unemployment in the Arab world. Similarly, the study by (Boudehane, 2021) explored the role of business incubators in promoting entrepreneurial work among university youth. At the level of small and medium-sized entrepreneurial projects, studies have examined the active role of research incubators in supporting small and medium enterprises, such as the studies by (Barakat & Haif, 2012) and (Ben Nasser, 2016). Furthermore, the study by (Laika, 2017) investigated the role of research incubators in achieving sustainable competitive advantage, culminating in discussions on achieving genuine participation between universities and the private sector in the fields of scientific research development, as reflected in the study by (Al-Thunyan, 2008).

Concept of Research Incubators

The concept of business incubators can generally be described as independent institutions with legal personality that provide a range of services and facilities to small enterprises, assisting them in overcoming the burdens of the startup phase.

Business incubators may be private, mixed, or state-owned, with the latter offering strong support for new projects (Barakat & Haif, 2012, p. 6). For the idea of incubators to lead to successful investment, several conditions must be met, including access to the market, connections to networks of individuals and organizations, adequate financing, and market knowledge along with appropriate business expertise. Perhaps the most critical requirement is the availability of infrastructure, such as "roads, electricity, water, and suitable communication networks" (Laika, 2017, p. 51). Figure (3) illustrates the general concept of business incubators.

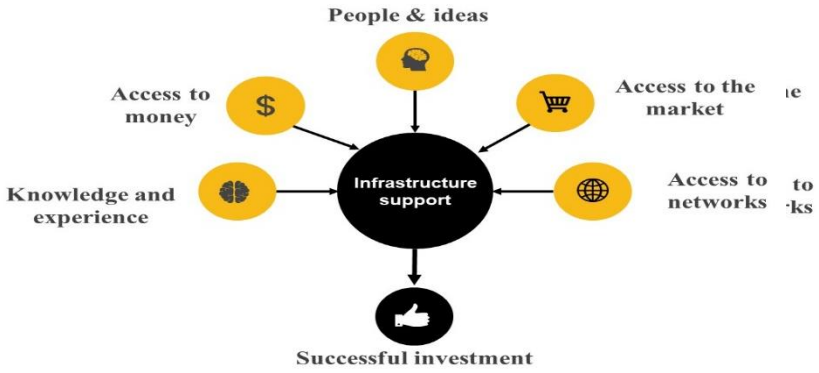

Figure 1. General Concept of Business Incubators

Source: Laiqa, Hisham Adnan (2017)

In this context, and in order to better adapt to the continuous developments in the scientific, technological, economic, and social realms, universities have assumed significant roles in keeping pace with these changes through research and scientific studies. Scientific research is considered a cornerstone of human civilization for nation-building and achieving sustainable development (Sharaf & Ramadani, 2004, 64). This has led to the emergence of centers that encourage the nurturing of entrepreneurs and their ideas, transforming them into viable entrepreneurial projects, known as research incubators (Boudehane, 2021, 1721). Research incubators are often located within university campuses or research centers that work on developing ideas and research, utilizing the available workshops and laboratories in universities (Barakat & Haif, 2012, 7; Ben Nasser, 2016,32; Sharaf & Ramadani, 2004,69)

Research incubators are described as places that provide services to encourage new and innovative research, directing development pathways more effectively. They also offer practical training, administrative and legal consulting, and financial support for research within a specified timeframe (Abu Al-Majd, 2015, 312). In this regard, (Al-Jallab, 2020), 58) notes that university research incubators are units or centers established under the university's umbrella to provide services related to supporting and guiding researchers, helping them develop new and technology-based research, and linking scientific research to community needs while commercializing scientific findings.

The concept of "science parks" was introduced by (Phan et al., 2005) within the framework of research incubators as accelerators for projects and companies, contributing to the provision of resources and managerial support by universities. Consequently, science parks offer incubated projects rapid access to knowledge through universities and research centers, enabling entrepreneurs to benefit from advanced technology and facilitating partnerships and networking with successful, innovative organizations (Laika, 2017, 51). The functional basis of science parks is largely agreed upon, despite the variety of definitions presented for this term, and there is a consensus on their important role in achieving technological development by transforming innovative ideas into entrepreneurial projects (Slatnia, 2022, 612). (Al-Jallab, 2020, 65) indicates that the history of research incubators has passed through several developmental phases, which can be illustrated in the accompanying diagram.

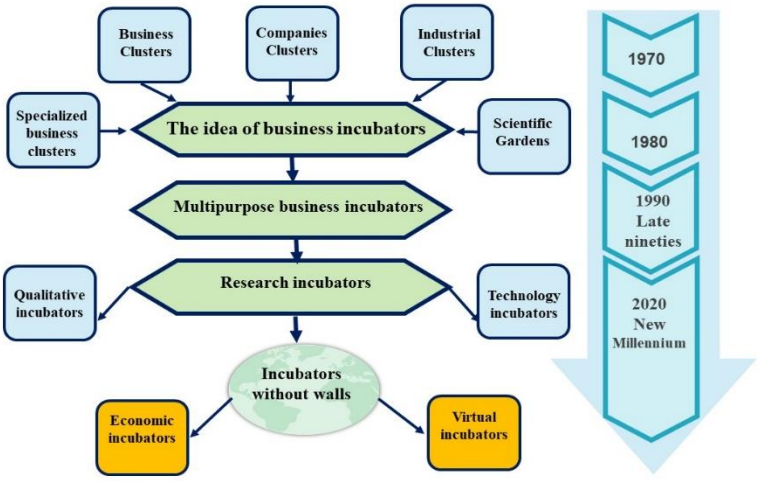

Figure 2. Historical Development of Research Incubators

Source: (Al-Jallab, 2020)

Based on the above, research incubators can be defined as spaces within the university that provide services, expertise, and facilities for those looking to establish entrepreneurial projects. These incubators operate under specialized technical and administrative supervision to empower projects with the necessary skills and experience to ensure success in the market and in competition.

Hypothetical Framework of the Research

The design of the hypothetical framework for the research is a necessary requirement for methodically addressing its problem, as it indicates the logical relationship between the dimensions of the research. It clarifies the nature and direction of the relationships that prevail among these dimensions. The hypothetical framework has been developed throughout the course of the research, relying on content analysis as a set of methodological rules aimed at discovering meanings through an objective and organized examination of the observable characteristics in a specific content, leading to sufficient meanings within that content and the interrelationships of these meanings through quantitative and objective analysis of both visible traits and underlying content. Consequently, the underlying content is no less important than the observable content; in fact, it is often more significant.

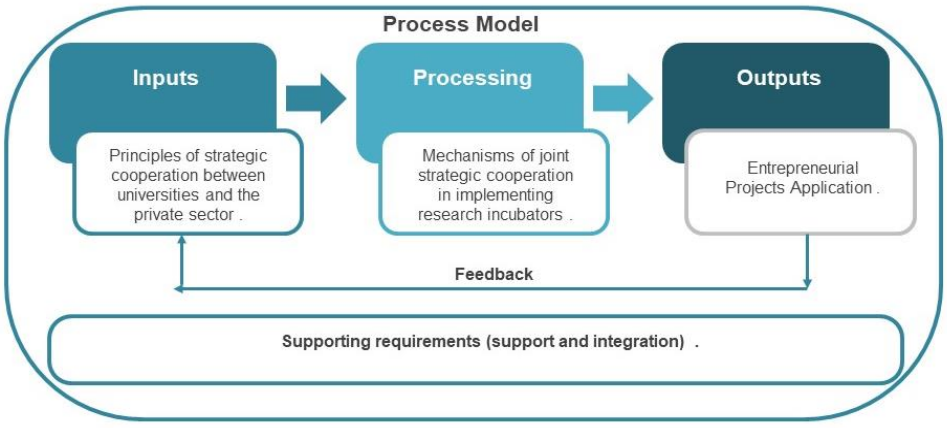

Figure 3. Hypothetical Framework of the Research

Source: Data Processed by researcher (2024)

Figure 3. Illustrates the main dimensions of the research as follows:

1. Inputs of the Process: Represented by the fundamental principles for implementing research incubators aimed at supporting entrepreneurial projects, serving as the basis for universities to engage in collaborative relationships with entrepreneurial projects and with various organizations, regardless of the nature of these relationships.

2. Process Handling: Referring to the specific requirements of procedures and practices that universities should adopt to implement research incubators.
3. Outputs of the Process: Interpreting the nature of the expected results from implementing research incubators to support entrepreneurial projects.

By adopting a process management model, we can derive two main aspects:

1. The nature of the relationship between the dimensions of the process management model is sequential and linear, allowing for development and enhancement through the necessary requirements for each type of incubator.
2. The application of the proposed model begins with the availability of fundamental principles that express the motivating factors and justifications, progressing through the formulation of mechanisms by ensuring the primary mechanisms for implementation and specific procedures that can be developed, ultimately leading to planned and desired outcomes. Under the presence of principles, mechanisms, and supportive requirements, positive expected results should emerge to support entrepreneurial projects.

3. RESEARCH METHOD

Requirements for Implementing Research Incubators

Global experiences, particularly in developed countries, highlight the necessity of several fundamental conditions to achieve development across various political, economic, and social sectors. Among these conditions, the presence of an ideal environment for the dissemination of research incubator applications is paramount. Educational institutions, especially universities, play a crucial role in establishing supportive research incubators for entrepreneurial projects, facilitating the required advancements across sectors.

Establishing entrepreneurial business networks may require organizations that foster genuine partnerships between projects, research units, and public authorities to achieve model business organizations (Laika, 2017, 11). The primary goal of research incubators is to embrace innovators and creators, transforming their ideas from abstract models into production and investment phases by providing various services and appropriate support to reach a product that adds value to the market economy (Abu Al-Majd, 2015, 313). Consequently, there is a need for an integrated system managed by skilled professionals who work to enhance community wealth by promoting a culture of innovation and fostering competition among knowledge-based entrepreneurial projects (Al-Thunyan, 2008, 20).

(Al-Jallab, 2020, 80-81) identifies three types of requirements for implementing research incubators: primary requirements, operational requirements, and execution requirements, which can be illustrated in the following figure (4).

Figure 4. Requirements for the Implementation of Research Incubators

Source: Prepared by the researchers based on (Al-Jallab, 2020, pp. 80-81)

In a related context, (Abu Al-Majd, 2015) points out that there are a set of key requirements for the activation and success of the mechanisms of research incubators, including (Abu Al-Majd, 2015), pp. 324-325):

1. Futurism: The research incubator should have a forward-looking vision that enhances the university's competitive ability in line with global universities.
2. Rarity: The incubator should have access to rare human resources with unique skills and capabilities.
3. Inimitability: The success achieved by the incubator should be difficult to replicate.
4. Empowerment: Outstanding members of the incubator should be granted the authority to make decisions related to the execution of assigned tasks.
5. Accountability: The principle of results-based accountability should be applied, holding members accountable based on their achievements.
6. Efficiency and Professionalism: Ensuring a high level of competence and professionalism in interactions within the incubator.
7. Transparency: Integrity should be upheld in all matters, avoiding deceptive practices.
8. Operating as a Hub of Expertise: The incubator should encourage the development of an adaptive environment that fosters a culture of competitiveness.

(Boudayef and Laala, 2021) added a set of requirements that should be met for the successful implementation of research incubators, including (Boudayef & Laala, 2021, pp. 1734-1735):

1. The presence of innovative scientific research, alongside research institutions capable of actively contributing to economic development by localizing new technologies that result in new products or improve the quality of existing ones.
2. The availability of an innovative and creative spirit to drive technological change by introducing a series of small and large improvements and additions to existing products or services.
3. Promoting a culture of entrepreneurship and innovation while adopting new ideas.
4. Providing integrated mechanisms of support and assistance.
5. Encouraging and supporting financing systems beyond traditional bank loans, focusing on the organization of research incubators and the market available for the projects joining them, as well as the incubator’s location and facilities.

(Laika, 2017) adds that establishing entrepreneurial networks requires certain elements that are considered key factors for the success of research incubators (Laika, 2017, p. 21).

1. Human Capital: This includes the availability of entrepreneurs, inventors, researchers, and consultants in the area, as well as laboratories and measurement centers. Therefore, it is preferable for research incubators to be located near universities or research centers.
2. Organizational Factor: The presence of capabilities in research incubator management that facilitate sound strategic planning, particularly in defining the technical and industrial specialization of the incubator.
3. Legislative Factor: The existence of a system for technology development and transfer, alongside streamlined and fast government procedures that encourage the establishment of knowledge-based entrepreneurial projects.
4. Financial Factor: Ease of access for entrepreneurial projects, inventors, and innovators to capital, investment funds, and bank loans.

Based on the above, it can be said that incubating new entrepreneurial projects or expanding existing ones requires providing support to innovators in transforming their ideas into practical models, production processes, or marketable products. This necessitates the presence of incubators linked to universities or educational institutes to achieve integration and connection between innovative research and market needs, ultimately fostering an entrepreneurial spirit among innovators, supporting their projects, and marketing their products. This is precisely what research incubators offer.

Therefore, the implementation of research incubators aimed at supporting entrepreneurial projects in Iraqi universities will be discussed through a process model within the general perspective of organizational flows in the context of a simple linear process. The objective is to identify and define the basic framework of the process as the foundation of the proposed model, followed by the application of appropriate mechanisms for process management, leading to the outcomes that can be achieved through the management of the proposed model, which will be discussed in the following section.

4. RESULTS AND DISCUSSIONS

4.1 RESULTS

Model for Implementing Research Incubators Aimed at Supporting Entrepreneurial Projects

The steps involved in designing, constructing, and implementing the proposed framework represent a series of activities carried out by universities and research centers. These activities begin with the input phase, which includes ensuring the availability of fundamental principles for implementing research incubators. This is followed by the processing phase, where the necessary procedures, mechanisms, and practices are provided to guarantee the smooth incubation of entrepreneurial projects and the achievement of integration between universities and the private sector, as planned. Moreover, this phase includes offering support and assistance to facilitate the incubation process by providing the required resources.

The final phase is the output stage, which expresses the expected value derived from the incubation of entrepreneurial projects under the perspective of contributing to the creation of the targeted value. Each of these stages comprises a set of requirements and specific procedures that contribute to developing an integrated framework and approach for the parties involved in the incubation process, regardless of the types and forms of the projects.

This process is illustrated in Figure (5), which outlines the stages of transformation toward implementing research incubators aimed at supporting entrepreneurial projects.

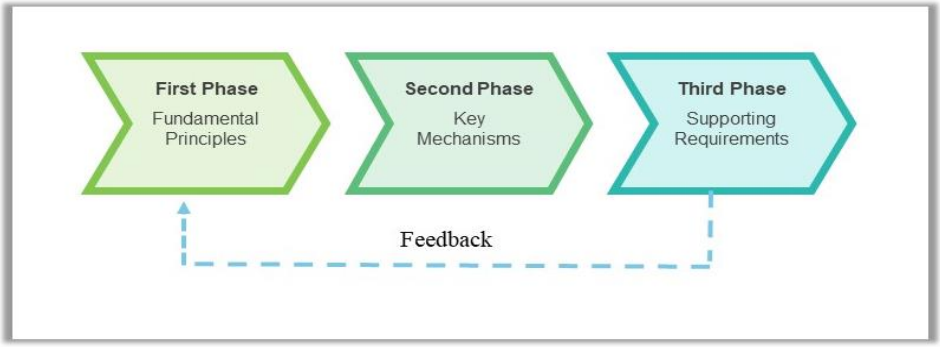

Figure 5. Stages of Transition Toward Implementing Research Incubators Aimed at Supporting Entrepreneurial Projects

Each of these phases includes a series of steps and requires a number of procedures and requirements. The researcher suggests adopting the steps outlined in the previous phases as a guide and proposed approach that may contribute to establishing an integrated and effective system for research incubators within the university. This represents the sections that will be included in this section:

First Phase: Fundamental Principles.

Second Phase: Key Mechanisms.

Third Phase: Supporting Requirements.

This is illustrated in the following Figure (6):

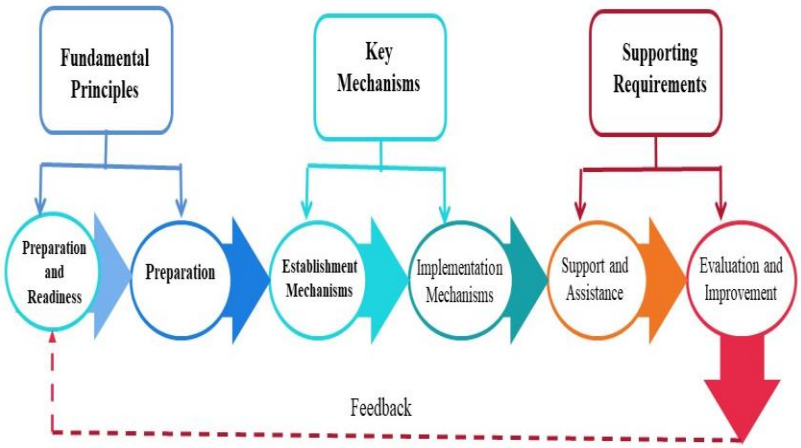

Figure 6. Stages of Implementing Research Incubators Aimed at Supporting Entrepreneurial Projects in the University

First Phase: Fundamental Principles

In this phase, the university must develop a comprehensive vision to assess the current situation, identify potential impacts, obstacles, and challenges, and adopt a holistic approach to change and organizational readiness. This aims to build research incubators that align with the knowledge era and ensure their sustainability. This requires following the subsequent sub-steps:

1. **Preparation and Readiness**

   The university should focus on strong leadership and ensure long-term commitment to designing, developing, and implementing specialized research incubators while providing support in various forms and at all levels within the university. It is essential to concentrate on having a clear strategic vision for the transformation process, which involves promoting the culture of research incubators and clarifying their significance in service delivery, task achievement, and other areas that distinguish the practices of incubating entrepreneurial projects. The preparation phase includes the following steps:

   a. Establishing an introductory program that addresses the intellectual preparation and clarifies the complete picture of the true objectives to shift from traditional frameworks in community service to a collaborative perspective with the community.
   b. Promoting the culture of research incubators across various colleges and departments of the university through seminars, workshops, and educational lectures.
   c. Achieving a complete conviction regarding the importance of research incubators and the benefits they can provide to both the university and the community it serves.
   d. Ensuring that the administration is prepared to support the application process and allocate the necessary resources.
   e. Emphasizing the importance of increasing awareness and specialized technological knowledge in the field of research incubators across various colleges and departments of the university.
   f. Clarifying the concept of research incubators and the potential returns that can be achieved at the community and university levels, as well as the personal level for faculty members through enhancing their capacities to transform ideas into successful entrepreneurial projects.

2. **Preparation**

   In this phase, the university needs to implement the process of re-engineering organizational structures to establish clear and accurate steps for applying research incubators. This stage involves studying the current situation at the university and identifying ways to enable it to keep pace with modern developments in establishing specialized research incubators. The preparation phase includes the following steps:

a. Developing a comprehensive vision to assess the current situation and identify potential impacts, obstacles, and challenges.
b. Simplifying the organizational structure to align with the nature of work under the implementation of research incubators, allowing for overlap and collaboration among departments and organizational units in their specific roles related to the incubators, thus enhancing capacity and efficiency in performance and execution.
c. Forming a task force of experts and specialized faculty members who excel in research, particularly in project management, while considering external expertise to support and assist the team.
d. Training and preparing the team to fulfill its responsibilities through engaging in effective training sessions focused on the role of research incubators in supporting entrepreneurial projects, in order to keep pace with rapid developments in this field.
e. Allocating sufficient financial resources to cover the costs associated with developing the technical and operational resources necessary for the application of research incubators.

The success of the first phase, Fundamental Principles, serves as the foundation for the successful implementation of subsequent steps in the application of research incubators. At the end of this phase, the task force submits a detailed report to senior management that includes a set of findings reflecting the success of this phase. The report encompasses the following outcomes:

1. Assessment of Administrative and Organizational Readiness: The extent to which adequate administrative and organizational preparations are in place to ensure the success of the advancement toward the implementation of research incubators, along with necessary suggestions to support and enhance these preparations.
2. Training Plan Results: Outcomes of the training plan for the task force, in addition to proposed training plans for other administrative levels within the university to support the application process.
3. Recommendations on Administrative Changes: Suggestions regarding the mechanisms that can be adopted for administrative changes to adapt to the implementation of research incubators.
4. Identification of External Expertise Needs: A determination of the specific requirements for engaging external experts.
5. Suggestions for Team Selection: Proposals regarding the selection of teams responsible for executing the subsequent phases

4.2 DISCUSSIONS

Second Phase: Key Implementation Mechanisms

This phase includes a series of necessary steps to provide the key mechanisms for implementing research incubators. The university needs to focus on the mechanisms essential for applying research incubators by enhancing its existing mechanisms, testing them, and implementing them to establish an integrated and effective system. This phase comprises two sub-steps as follows:

1. Establishment Mechanisms

   Developing the administrative and technical aspects for the application of research incubators requires directing management efforts to identify the strengths the university can rely on when initiating the implementation of research incubators, as well as identifying weaknesses in this system and working to enhance them. This involves aligning ambitions with the current reality and upgrading the weaknesses to meet aspirations. The following procedures are included:

   a. Establishing a vision, mission, and objectives for the research incubators aimed at supporting entrepreneurial projects.
   b. Providing appropriate organizational and administrative structures and procedures to incubate entrepreneurial projects.

c. Integrating processes and procedures of research plans and projects within the incubators as a central component in evaluating accreditation standards for scientific departments, colleges, and universities.
d. Formulating organizational procedures to enhance collaborative practices among the departments and colleges related to entrepreneurial projects for the systematic development of research plans and projects.
e. Initiating partnerships and memorandums of cooperation to exchange experiences and information with successful entrepreneurial projects.
f. Developing future plans for research projects within a suitable timeframe determined by the management of the incubator.

2. Implementation Mechanisms

Once the establishment process is complete and its requirements are developed and qualified, this phase focuses on activating these mechanisms in a manner that ensures their integration, ultimately leading to a comprehensive system for the application of research incubators within the university. During this phase, mechanisms for executing incubator activities are formulated to identify any difficulties or additional issues that may arise during the implementation process.

To assess the effectiveness of the application of research incubators, a series of sequential practices should be considered, as illustrated in the following figure (7).

Figure 7. Mechanisms for Stages of Incubating Entrepreneurial Projects

Third: Phase Three (Supporting Requirements)

The third phase follows the completion of the execution mechanisms for research incubators at the university. It focuses on providing support and assistance to research incubators and continuously evaluating and improving them to ensure the success of the implementation process while keeping pace with ongoing developments in the field of incubation. The supporting requirements include two types of activities and practices: external environmental support and internal environmental support. The latter involves continuous internal evaluation and improvement of research incubators, which collectively contribute to ongoing support and enhancement—essential for research incubators in this phase. This includes the following steps:

1. **Support and Assistance (External Environmental Requirements)**

The success of implementing research incubators requires creating a suitable external environment that supports the direction toward entrepreneurial project support. The government bears the responsibility in this phase to consider various aspects that contribute to establishing an appropriate climate for these initiatives, including focusing on and supporting the following areas:

a. Formulating Legal and Legislative Frameworks:

This includes issuing laws and regulations that govern interactions and practices of implementing research incubators, both between universities and with entrepreneurial project owners, as well as legislation regarding

financial support mechanisms, oversight, and continuous updates to these laws in light of new developments.

b. Promoting Social Awareness of Collaborative Work Culture:
Efforts should be made to promote a culture of collaboration with educational institutions and enhance integration between research incubators in universities and the private sector. This aims to encourage citizens to accept and rely on research incubators.

c. Preparing Skilled Individuals in Project Management::
This involves coordinating with universities and specialized educational institutions to ensure that their outputs align with the real needs required for current and future stages, aimed at encouraging entrepreneurial projects in both the private and public sectors.

d. Establishing a Wide Collaborative Network:
A global standard network linking various governmental organizations with research incubators should be created, ensuring the protection of the confidentiality and privacy of entrepreneurial projects while serving their activities, responsibilities, and commitments to project owners.

e. Allocating Sufficient Budgetary Resources:
Adequate funding must be dedicated to support the implementation of research incubators and provide necessary facilities to obtain the laboratories and workshops essential for application according to the varying needs of different entrepreneurial projects.

2. Continuous Evaluation and Improvement (Internal Environmental Requirements)

In this phase, the university needs to conduct continuous monitoring and evaluation of the results achieved in the implementation of research incubators. This responsibility falls on senior management, which must compare what has been accomplished with what was planned, identifying weaknesses that hinder the success of the process. The goal is to take corrective actions to address these weaknesses, as well as to carry out continuous improvements of the research incubators in line with the requirements of the current and future stages.

This phase includes the evaluation of the following aspects:

a. Awareness of the Importance of Research Incubator Implementation:
Assessing the extent to which awareness of the significance of research incubators is spread among stakeholders and the community.

b. Accessibility of Research Incubator Services:
Evaluating the extent to which research incubator services reach various segments of the community.

c. Suitability of Research Incubator Applications:
Determining how well the applications of research incubators align with the diverse needs of the community.

d. Challenges Associated with Research Incubator Implementation:
Assessing the challenges related to the implementation of research incubators at the university and evaluating the availability of necessary resources.

e. Commitment of Personnel in Research Incubators:
Evaluating the commitment of staff involved in research incubators to their activities and obligations, and assessing the ability of managers and individuals to cope with rapid developments in the field of research incubation.

f. Flexibility of Current Research Incubators:
Determining how flexible existing research incubators are in accommodating future improvements.

The results of the evaluation process in this phase serve as the guide for senior management in making continuous improvements to the research incubator within the university. The goal is to achieve its objectives by enhancing work methods. This improvement process requires focusing on addressing any negative aspects that may arise, as well as providing support and

assistance to the operational mechanisms of the incubator in order to attain the advantages that can be achieved through these applications.

The continuous commitment of senior management to the activities of the implementation process is essential, directing efforts towards the following areas:

a. Enhancing Individual Capacities in the Research Incubator:
   This involves improving individuals' skills in using the technological means related to the operations of the research incubators. Training and encouraging support, both financial and moral, should be provided to develop these skills and knowledge.
b. Supporting Participation and Interaction Among Incubators:
   Encouraging cooperation and interaction among different incubators, as well as between them and senior management, is crucial for achieving a shared vision and the primary goals of the organization.

This phase, along with the previous ones, contributes to forming a comprehensive picture of the operations of research incubators. It also supports their continuous improvement in communication and participation at various internal and external levels, ultimately enhancing the speed of support for research projects.

5. CONCLUSION

Despite the fast rise of research incubators around the world, Arabic academia, particularly in Iraq, has paid little attention to the underlying frameworks and strategic principles that ensure their success. This paper contends that viewing incubator activities and resources as a managed process provides a strong philosophical and theoretical foundation for encouraging reciprocal, dynamic collaborations among universities, industry, and community partners. The research suggests that incubators might speed entrepreneurial ideas and have a greater societal impact by fostering cross-disciplinary collaboration.

Building on extensive literature reviews and inductive analysis, we present a three-phase, process-management model for implementing university-based research incubators. Phase 1 establishes a clear strategic vision and core principles; Phase 2 activates the pivotal mechanisms—most importantly, skilled human resources—to drive the incubator's operations; and Phase 3 secures the internal and external support structures needed for sustained success. This evolutionary framework supplies a comprehensive theoretical scaffold that guides institutions through sequential steps, ensuring an effective transformation from concept to fully functional research incubator capable of empowering university-industry cooperation and nurturing innovative entrepreneurial ventures.

6. LIMITATION AND IMPLICATION

6.1 Limitation

Universities must deliberately sync capability-building, resource reallocation, and timing with their broader social-responsibility agenda. The proposed model provides a practical pathway for adopting innovative work practices that dovetail with institutional aspirations to nurture entrepreneurial projects, turning the campus into a catalyst for regional development rather than a passive knowledge holder.

6.2 Implication

The inaugural incubator project is the toughest, as it hinges on establishing genuine trust between the university and the community of project owners. Strengthening relational ties, both formal and informal at administrative and technical levels reduces fear and smooths first-contact collaborations. Incubator managers should embed a collaborative ethos, promote shared-resource mindsets, and nurture teamwork, while a dedicated joint-management team develops support tools, streamlines procedures, and swiftly resolves obstacles, ensuring subsequent projects flow more effortlessly.

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