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**A Proposed Model To Activate The Role Of University Business Incubators In
Achieving Sustainable Development**

Sürdürülebilir Kalkınmanın Sağlanmasında Üniversite İş Kuluçka Merkezlerinin Rolünü
Etkinleştirmek İçin Önerilen Bir Model

Heba Tawfiqe Abu Eyadah

Doç. Dr. Eğitim Liderliği ve Yönetimi
Minnesota İslam Üniversitesi, ABD
Associate Professor, Educational Leadership
and Management
Islamic University of Minnesota, USA
Heba_chimist@hotmail.com
<https://orcid.org/0000-0002-2650-0885>

Anas Adnan Adibat

Doç. Dr. Minnesota İslam Üniversitesi, ABD
Associate Professor of Instruction Islamic
University of Minnesota, USA
Anas.odibat1@gmail.com
<https://orcid.org/0000-0003-4071-9039>

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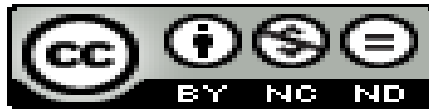
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ÖZET

Mevcut çalışma, üniversite iş inkübatörlerinin gelecekte sürdürülebilir kalkınmayı sağlamada ve yükseköğretim kurumlarının istenen hedeflerine verimli ve etkili bir şekilde ulaşmada, mevcut krizleri yönetmede ve sorunları yaratıcı bilimsel yollarla çözümede rolünü etkinleştirmek için önerilen bir model oluşturmayı amaçlamıştır. Bu amaçla, mevcut yıl (2024/2025) boyunca önceki araştırma ve çalışmaları ve eğitim literatürünü analiz edip gözden geçirerek, etkili dijital sürdürülebilir öğretim ve sürdürülebilir kalkınmayı sağlamak için net adımlara göre entegre bir tedavi modeli oluşturulmuştur. Mevcut çalışma, önceki çalışmalardan araştırma metodolojisi açısından farklılık göstermektedir, çünkü analitik yaklaşımı benimsemekte ve önceki çalışmaların sonuçları ışığında ve araştırmacıların vizyonuna göre model oluşturulmuş ve uygunluk derecesi uzmanların ve uzmanların bakış açısıyla bilinmektedir. Çalışma, üniversite kuluçka merkezlerinin yerel, kültürel, ekonomik ve politik bağlamının ve çevredeki sürdürülebilir kalkınmanın analiz edilmesini önermektedir. Kuluçka merkezlerinin sürdürülebilir kalkınmayı gerçekleştirme yeteneğini etkileyen çevresel, sosyal ve ekonomik faktörlerin anlaşılması, daha sonra bu rolü güçlendiren stratejilere rehberlik edebilir.

Anahtar Kelimeler: Model, Üniversite İş Kuluçka Merkezleri, Sürdürülebilir Kalkınma.

ABSTRACT

The current study aimed to build a proposed model to activate the role of university business incubators in achieving sustainable development in the future and achieving the desired goals of higher education institutions efficiently and effectively, managing current crises and solving problems in creative scientific ways, by analyzing and reviewing previous research and studies and educational literature during the current year (2024/2025).) to ensure an integrated treatment model according to clear steps to achieve effective digital sustainable teaching and sustainable development. The current study differs from previous studies in the methodology of the study, as it adopts the analytical approach and in the light of the results of previous studies, and according to the vision of the researchers, the model was built and the degree of its suitability is known from the point of view of specialists and experts. The study recommends analyzing the local, cultural, economic and political context of university incubators and sustainable development in the surrounding area. Understanding the environmental, social and economic factors that influence the ability of incubators to achieve sustainable development can later guide strategies that enhance this role.

Keywords: Model, University Business Incubators, Sustainable Development.

Introduction

In light of the growing environmental and social challenges facing the world today, it has become essential for societies to seek innovative solutions aimed at achieving sustainable development. This development requires striking a balance between economic growth, environmental protection, and the promotion of social justice. University business incubators are one of the effective tools that can contribute to this goal, providing a suitable environment for nurturing creative ideas and emerging projects that can achieve the Sustainable Development Goals (SDGs).

University business incubators are centers established within academic institutions to support entrepreneurs and startups in their early stages. These incubators provide a dynamic environment that fosters innovation and development, helping to transform ideas into viable and scalable projects. They offer a range of services, including academic mentorship, advanced infrastructure, seed funding, and networking opportunities with investors and other stakeholders.

Despite the vital role that business incubators play in driving economic growth and creating jobs, their potential to contribute to achieving the SDGs still needs to be fully realized. These incubators have the potential to guide startups toward achieving environmental and social objectives, such as reducing carbon emissions, improving working conditions, and promoting social responsibility.

By activating the role of university business incubators within the context of sustainable development, an environment can be created that encourages the development of innovative and sustainable solutions in fields such as renewable energy, information technology, sustainable agriculture, and healthcare. These projects can contribute to boosting economic growth while preserving the environment and achieving social justice.

In this context, it is necessary to develop an innovative model that contributes to stimulating the role of university business incubators in achieving sustainable development. This model should include providing technical and financial support to emerging projects that aim to improve the environmental and social landscape, while emphasizing the importance of cooperation between universities, governments, and investors to achieve this goal.

1. Problem Statement

Sustainable development has emerged as a crucial global agenda, aiming to balance economic growth, social well-being, and environmental conservation. Recognizing the pivotal role of entrepreneurship and innovation in achieving the Sustainable Development Goals (SDGs), university business incubators have gained increasing prominence. These incubators act as catalysts, nurturing and supporting the growth of startups, providing them with necessary resources, mentorship, and networking opportunities.

However, despite the potential of many university business incubators, they face challenges in effectively contributing to sustainable development. These challenges include limited collaboration between academia, industry, and government; insufficient integration of sustainable practices within the incubation process; and the lack of comprehensive models that meet the specific needs of sustainable startups. To address these gaps, a proposed model is needed to activate the role of university business incubators in driving sustainable development.

This study aims to leverage the technological revolution, artificial intelligence applications, university business incubators, entrepreneurial projects, and the energy of youth to support education and its outcomes in addressing its challenges. The study's central question is: What is the proposed model for activating the role of university business incubators in achieving sustainable development? This leads to the following sub-questions:

- What role do university business incubators play in achieving sustainable development
- What is the proposed model for activating the role of university business incubators in achieving sustainable development?
- How suitable is the proposed model for activating the role of university business incubators in achieving sustainable development, from the perspective of specialists and experts?

2. Importance of the study

The practical and applied importance of the study:

The practical and applied importance of this study lies in its ability to provide strategic insights for policymakers seeking to leverage university business incubators to achieve educational goals and sustainable development. The study's findings can contribute to the development of sustainable educational policies that foster innovation in the educational process and contribute

to a comprehensive understanding of the future. Furthermore, the study's recommendations will be beneficial to educational leaders, enabling them to encourage educators and specialists in this field to recognize the importance of sustainable development and the necessity of integrating it into educational plans to achieve lasting positive impacts on societies.

- **The theoretical and intellectual importance of the study:**

From a theoretical and intellectual perspective, this study represents a significant scholarly contribution to the field of education and sustainable development, addressing a vital topic that reflects a pressing need in our time. This study is a valuable addition to the existing literature, revealing new aspects that may have been overlooked in previous research on the role of university business incubators in achieving sustainable development. The study also opens up scientific and research horizons for a large number of researchers in this field, encouraging them to expand their study of this topic and work on developing it in a way that enhances educational thought and contributes to adding new knowledge to the academic field, thus driving the desired positive change in education and society.

3. Study Methodology

The researchers used the descriptive analytical method, as they used the theoretical method by referring to the theoretical literature and studies related to the subject, in order to form a theory about the ideas and concepts specialized in the field of study, and to review previous studies related to the study, through analyzing the literature related to the study, in order to reach an answer to the study questions and provide a number of recommendations.

4. Previous Studies

- Sultana and Turkina's study ¹(2023) entitled "Collaboration for a Sustainable Innovation Ecosystem: The Role of Intermediaries." Innovation ecosystems have been increasingly studied from various perspectives, including linking them to sustainable development. Existing studies have found that innovation is important for sustainable development, collaboration is important for innovation, and intermediaries create the necessary links and opportunities to develop relationships and cooperation among different actors in the ecosystem. However, what has been lacking is an explicit analysis of the collaboration process in innovation ecosystems to ensure

¹ Nadia Sultana – Elena Turkina, "Collaboration for Sustainable Innovation Ecosystem: The Role of Intermediaries", *Sustainability* 15/10 (2023), 7754. <https://doi.org/10.3390/su15107754>

sustainability and the role of intermediaries in this process. To fill this gap, this paper examines six organizations acting as intermediaries, using a multi-case design approach. It analyzes the collaboration process in innovation ecosystems and elucidates the role of intermediaries in developing sustainable ecosystems. The results indicate that the collaboration process among actors in innovation ecosystems is an iterative process facilitated by intermediaries. By connecting various actors, intermediaries support the dissemination of innovation, which has significant implications for building sustainable innovation ecosystems and achieving the Sustainable Development Goals (SDGs).

- Manioudis and Angelakis² (2023) study, "The Creative Economy and Sustainable Regional Growth: Lessons Learned from Implementing the Entrepreneurship Discovery Process at the Regional Level," highlights the close link between the creative economy sector and sustainable development and the SDGs. Creative industries contribute to sustainability in several ways. They are essential for accelerating sustainable consumption and production patterns and promoting sustainable development at the regional level. This paper attempts to emphasize the role of the creative economy in promoting sustainable regional growth by focusing on priority smart specialization areas in the Attica region. This was achieved by presenting the current regional policy model and the methodology of the Entrepreneurship Discovery Process (EDP) in the Attica region. The paper concludes that the EDP paves the way for formulating policy lessons that strengthen the link between the creative economy and sustainable regional growth. In summary, three key conclusions drawn from this paper include the following aspects: (a) Formulating an integrated smart specialization strategy requires a continuous and well-organized process along the policy cycle (a structured lifecycle approach); (b) Formulating an integrated smart specialization strategy requires a continuous and well-organized process along the policy cycle (a structured lifecycle approach); (ii) Deploying a robust innovation ecosystem requires a holistic approach to engaging and mobilizing regional actors and identifying their needs and priorities; (iii) The lessons observed through exploring the case study lead to tangible results regarding the critical importance of long-term interactive institutional learning and co-design of policies as a prerequisite for an effective regional ecosystem.

² Manolis Manioudis – Alexandros Angelakis, "Creative Economy and Sustainable Regional Growth: Lessons from the Implementation of Entrepreneurial Discovery Process at the Regional Level", *Sustainability* 15/9 (2023), 7681. <https://doi.org/10.3390/su15097681>

- A study by Tien-Dung Nguyen (2023),³ titled “The Role of Technological Advancement, Supply Chain, and Environmental, Social, and Governance Responsibilities in the Sustainable Development Goals of SMEs in Vietnam,” explores the relationship between technological advancement, environmental, social, and governance responsibilities, and the Sustainable Development Goals of SMEs in Vietnam. This study examines the impact of technological advancement and environmental, social, and governance responsibilities on the Sustainable Development Goals, while also investigating the mediating role of the supply chain in the relationship between technological advancement and the Sustainable Development Goals of SMEs in Vietnam. The study utilized a questionnaire for data collection and smart-PLS for data analysis. The results indicate that technological advancement, environmental responsibility, and social responsibility are positively correlated with the Sustainable Development Goals of SMEs in Vietnam. The study also reveals that the supply chain significantly mitigates the relationship between technological advancement and the Sustainable Development Goals. This study serves as a guide for regulators in developing regulations related to sustainable development for business organizations.

- A study by Al-Jawhari, Hatem; Sultan, Fahd; Allam, Siam; Muzaffar Abbas; Shoaib Muhammad El-Gohary, H., Sultan, F., Alam, S., Abbas, M., & Muhammad, S. (2023). Titled “Shaping Sustainable Entrepreneurial Intentions Among Business Graduates in Developing Countries Through Social Media Adoption: A Moderating Mediating Mechanism in Pakistan.” Entrepreneurship is crucial for mitigating the challenges of employment among business graduates and sustaining the growing local economy. However, various factors support and encourage students to become entrepreneurs. Modern technologies such as social media have become increasingly popular among young people for starting businesses. However, the relationship between social media use and entrepreneurship among young people in developing countries has not yet been observed. This study investigates the relationship between entrepreneurship education (EE), attitudes towards sustainable entrepreneurship (ATSE), and sustainable entrepreneurial intentions (SEIs). It also examines the moderating effect of social media adoption on this relationship. To test the proposed concept, data were collected from 314 business administration graduates from Pakistani universities. Structural equation modeling

³ Tien-Dung Nguyen – Thi Quynh Ngo, “The Role of Technological Advancement, Supply Chain, Environmental, Social, and Governance Responsibilities on the Sustainable Development Goals of SMEs in Vietnam”, *Ekonomika Istraživanja / Economic Research* 35/1 (2023), 4557–4579. <https://doi.org/10.1080/1331677X.2021.2015611>.

using AMOS (version 26) was employed to test the proposed hypotheses. The study results show that students' attitudes toward sustainable entrepreneurship mediate the relationship between energy efficiency and the intention to engage in sustainable entrepreneurship. Furthermore, the results indicate that social media attenuates the relationship between research participants' attitudes toward sustainable entrepreneurship and their willingness to practice it. The study offers significant contributions to the field, which researchers can utilize to initiate future research projects.

- Study by Jesús Fernando Bejarano-Oke, Adriana Ruiz Berrio, Raúl Rodríguez Antonio, and Aguado, Beatriz Estefani ⁴(2023), entitled "The Entrepreneurial Ecosystem in the Eastern Cone of Lima as an Indicator of Competitiveness and Sustainable Development." Significant changes and contradictions have occurred in the economy in recent years, compelling entrepreneurs to seek solutions to enhance competitiveness, sustain growth, and implement mechanisms that can create lasting solutions for the future, thereby promoting development. In this context, this study aims to investigate whether the perception of the entrepreneurial ecosystem is a significant indicator of the perception of competitiveness and sustainable development in the case of Peru. Therefore, the structural equation model was tested using data obtained from a convenient sampling method (n = 240) along with a 32-item scale, which was adapted and validated using exploratory factor analysis. The participants in this study were actors within the entrepreneurial ecosystem in the eastern cone of Lima, 79.1% of whom were entrepreneurs and businesspeople (6.2% from the industrial sector, 50.5% from the commercial sector, and 22.4% from the service sector). The remaining 20.9% of the sample consisted of university professors, students, and managers and advisors of incubators and accelerators. The results of this study indicate that these actors' perception of the entrepreneurial ecosystem has a significant impact on their perception of competitiveness and sustainable development.

A 2023 study by Dong⁵, H., Murong, R., & Li, J, titled "Investigating Network Capacity, Absorption Capacity, and Service Innovation Performance of Technology Business Incubators – Based on PLS-SEM and fsQCA Methods in the New Normal Economic Situation," explores

⁴ Jesús Fernando Barragán Adrianzén – Adriana Rodríguez Benzaquen – Raúl Rodríguez Antonio – Eduardo Aguado Benavente, "The Entrepreneurial Ecosystem in the Eastern Cone of Lima as a Predictor of Competitiveness and Sustainable Development", *Administrative Sciences* 13/1 (2023), 12. <https://doi.org/10.3390/admsci13010012>.

⁵ Hong Dong – Rong Murong – Jing Li, "Research on Network Capacity, Absorptive Capacity and Service Innovation Performance of Technology Business Incubators—Based on PLS-SEM and fsQCA Methods", *Frontiers in Environmental Science* (2023). <https://doi.org/10.3389/fenvs.2023.1154162>.

the crucial role of technology incubators in supporting the growth of emerging strategic enterprises. Drawing on resource-based theory, organizational learning theory, inter-organizational relationship theory, and network capacity theory, this study establishes a theoretical framework and hypotheses regarding the impact of network capacity, from a resource-capacity relationship perspective, and absorption capacity on the service innovation performance of technology business incubators. The study utilizes 234 Chinese incubators within the incubator network as a sample and employs partial least squares structural equation modeling (PLS-SEM) and fuzzy qualitative comparative analysis (fsQCA) to investigate the aforementioned questions. The findings confirm the relationship between network capacity, absorption capacity, and service innovation performance. Furthermore, the results yield four pathways leading to high innovation performance in services, such as "network capacity orientation" and "high uptake orientation," which are different combinations of network capacity and uptake. The research findings are important for improving the innovation performance of technology incubator services and ensuring the stable and efficient operation of incubated enterprises.

- A study (2023, Korejo⁶, E. N., Korejo, M. S., Bhutto, N. A., & Soomro, S) titled "University Business Incubators and Students' Entrepreneurial Intentions: Impact and Effectiveness" focuses on the impact and effectiveness of university business incubators (UBIs) on students' entrepreneurial intention (EI). The study is quantitative in nature and includes an empirical investigation of the relationship between UBI effectiveness and students' emotional intelligence. Primarily, five Pakistani universities that offer entrepreneurship courses and also provide incubation facilities for their students to start their own business ideas were targeted. The Partial Least Squares (smart PLS 3) software was used to analyze the data. This paper presents a quantitative analysis of a 300-study sample demonstrating a positive impact of Universal Basic Income (UBI) on students' intelligence. Furthermore, the effective incubation facility provided by the university also influences students' cognitive abilities and increases their emotional intelligence, thus making them more motivated to start their own businesses. Moreover, this study reveals that students with an entrepreneurial family background experience a stronger impact on their emotional intelligence than those without. The paper

⁶ Ehsan N. Korejo – Muhammad S. Korejo – Niaz A. Bhutto – Shabir Soomro, "University Business Incubators and Students' Entrepreneurial Intentions: Impact and Effectiveness", *Lex Humana* 15/3 (2023), 182–204, <https://www.proquest.com/scholarly-journals/university-business-incubators-students/docview/2815642648/sc-2> (erişim: 22 Şubat 2026).

explores the implications for universities in measuring the success of UBIs and other entrepreneurship facilities offered for business development. Additionally, it proposes that Universal Basic Income can be a more effective tool for shaping new business creation activity among university graduates. The contribution of this study lies in explaining how Universal Basic Income can enhance the emotional intelligence of university students, ultimately contributing to economic development through the creation of new startups and other entrepreneurial activities.

- Malhotra,⁷ S., & Ravi, K. (2023). Entitled "A Study of the Relationship Between Perceived Entrepreneurial Behavior, Intentions, and Competencies as Drivers of Sustainable Growth: An Indian Perspective," this research aimed to link perceived entrepreneurial behavior (EPB) and entrepreneurial intentions (EI) with students' perceptions of the United Nations Sustainable Development Goals (SDGs). The current research builds upon EPB and EI to analyze whether studying entrepreneurial competencies (ECs) enhances the impact of emotional intelligence on sustainable growth. Sustainable growth is measured by students' perception of the UN SDGs, specifically SDG3, SDG8, SDG9, and SDG10. Previous studies have linked EPB and EIs, suggesting that entrepreneurship, in the long term, should focus on sustainable growth. EPB comprises entrepreneurial attitude, perceived behavioral control, and self-criteria. ECs include leadership skills (LS), risk-taking skills (RTS), opportunity identification skills (OIS), perseverance skills (PS), and community skills (SS). The study is based on a survey, with data collected through a structured questionnaire administered to 480 engineering students. SEM-PLs were used to analyze the results. The findings indicate a direct relationship between EPB and EI, and between EI and sustainable growth. However, since the primary objective of the study was to determine whether environmental councils enhance the impact of emerging economies on sustainable growth relative to European economies, the results provide empirical support for the EM-EI(ECs)-SG model, demonstrating a significant positive indirect effect. This suggests the need for complementary measures, thereby validating the proposed theoretical sustainable growth model (SG). These results indicate a need to focus on implementing entities to enhance the impact of NGOs on the study committee.

⁷ Saurabh Malhotra – K. Ravi, "Examining the Relationship between Entrepreneurial Perceived Behaviour, Intentions, and Competencies as Catalysts for Sustainable Growth: An Indian Perspective", *Sustainability* 15/8 (2023), 6617, <https://doi.org/10.3390/su15086617>.

A study⁸ (2023, Alam, A., Mansour, S. A., Akhtar, S., & Hafiz, W. A.) entitled Sustainable Development and the Kingdom's Vision 2030: Students' Entrepreneurial Orientation Towards E-Business and the Proposed Model for a "Virtual Business Incubator" at the Saudi Electronic University aims to explore the orientation of Saudi students towards e-entrepreneurship in line with achieving the strategic objectives of the Kingdom's Vision 2030. Saudi Vision 2030 (hereinafter referred to as Vision 2030) is a strategic framework for achieving sustainable development in the Kingdom of Saudi Arabia. It was first announced by Crown Prince Mohammed bin Salman in April 2016. The authors proposed a Saudi Vision Links model to demonstrate the role and importance of higher education (UE) and entrepreneurial culture in meeting the specific requirements of the Saudi labor market to achieve the ultimate strategic objectives of Vision 2030. The authors also proposed a conceptual model for the study to depict the relationship between employers' organizational structures and their entrepreneurial intentions towards e-business (e-EI). The study employed a multidimensional model of employer organization, utilizing three sub-dimensions: risk tolerance (RTP), innovation (INV), and proactivity (P-ACT). The conceptual model also presents UE and gender (GEN) as moderating variables. The authors used convenience sampling to collect cross-sectional data and conducted an online survey among students at the Saudi Electronic University (SEU) using a 5-point Likert scale. A total of 17 items were observed, and 408 completed questionnaires were received. The authors proposed six hypotheses. Four hypotheses posit direct relationships: RTP (H1), INV (H2), P-ACT (H3), and UE (H4) with e-EI. Hypotheses H5 and H6 were further subdivided into H5a, H5b, H5c, H6a, H6b, and H6c, respectively, to demonstrate the moderating influence of UE (H5) and GEN (H6). The SmartPLS 4.0 software is used to apply structural equation modeling for data analysis. The reliability, composite validity, discriminant validity, and model fit indices of the measurement model are assessed before running the boot to measure significance and standardized β estimates of the hypothesis trajectories (structural model analysis). After analyzing the results, in the suggestions section, the authors propose that the university establish a student-run business incubator to promote entrepreneurial activities across all campuses, with a main office on the Riyadh campus.

⁸ Abid Alam – S. A. Mansour – Shumaila Akhtar – W. A. Hafiz, "Sustainable Development and Saudi Vision 2030: Entrepreneurial Orientation of Students toward E-Businesses and Proposed Model of 'Virtual Business Incubator' for SEU", *Education Research International* (2023), 6106580, <https://doi.org/10.1155/2023/6106580>

- Commentary on Previous Studies:

Previous studies on the role of university business incubators in achieving sustainable development have highlighted some of the challenges and opportunities in this important field. A comprehensive analytical study of this topic was conducted to enhance our understanding of the roles and functions that university business incubators can play in achieving sustainable development.

Previous studies indicate that university incubators have the potential to provide an environment conducive to innovation and entrepreneurship aimed at achieving sustainable development. However, incubators face challenges that may hinder the achievement of this goal, such as limited collaboration between academia, industry, and government; weak integration of sustainable practices within the incubation process; and the lack of comprehensive models that address the specific needs of sustainable startups.

The proposed analytical study aims to address these gaps and present a proposed model that can contribute to activating the role of university business incubators in achieving sustainable development. The study will rely on a review of previous literature, collaboration with stakeholders, and the use of best practices to develop a roadmap for enhancing the impact of university business incubators in achieving sustainable development goals.

1.6. Study Results

Results of the first research question, which asks: What is the role of university business incubators in achieving sustainable development?

University business incubators play a vital role in achieving sustainable development by fostering entrepreneurship, innovation, and collaboration among various stakeholders. The following are some of the main ways in which university business incubators contribute to sustainable development:

Key Function	Description
Supporting Sustainable Startups	University business incubators provide a nurturing environment for startups focused on sustainable solutions. They offer infrastructure, mentorship, and access to resources that help these startups develop and scale their innovative ideas, technologies, and products. By supporting sustainable startups, incubators

Key Function	Description
	contribute to creating businesses that address environmental, social, and economic challenges.
Collaboration and Knowledge Exchange	Business incubators facilitate collaboration between startups, academia, industry, and government organizations. This collaboration enables the exchange of knowledge, expertise, and best practices in sustainable development. By connecting startups with relevant stakeholders, incubators create opportunities for multidisciplinary research, partnerships, and technology transfer, leading to more sustainable solutions.
Capacity Building and Skill Development	Incubators offer training programs, workshops, and mentorship to entrepreneurs, equipping them with the necessary skills and knowledge to develop and manage sustainable businesses. Capacity building helps entrepreneurs understand and integrate sustainable practices into their business models, including resource efficiency, social impact, ethical considerations, and environmental stewardship.
Access to Funding and Investment	University incubators often have networks and connections with investors, venture capitalists, and funding agencies interested in sustainable development. They assist startups in securing funding, grants, and investments to support their growth and expansion. By bridging the gap between sustainable startups and financial resources, incubators play a vital role in fostering the development of impactful businesses.
Community Engagement and Outreach	Many university incubators actively engage with local communities and ecosystems. They organize events, workshops, and initiatives that promote sustainable entrepreneurship and raise awareness of Sustainable Development Goals (SDGs). By engaging with the community, incubators contribute to creating a supportive ecosystem for sustainable startups and inspire others to pursue sustainable business ideas.
Research and Development (R&D)	University incubators often leverage the research capabilities of their affiliated academic institutions. Through collaborative research projects, incubators support the development of sustainable technologies, processes, and solutions. This research helps drive innovation, improve sustainability practices, and address pressing environmental and social challenges.

The results of the second research question, which asks: What is the proposed model for activating the role of university business incubators in achieving sustainable development?

University business incubators play a vital role in fostering innovation and entrepreneurship, which are essential for achieving sustainable development. While there is no single, universally applicable model for all university business incubators, there are several key elements and strategies that can enhance their role in promoting sustainable development. The following is a proposed model for activating the role of university business incubators in achieving sustainable development:

Proposed Action	Description
Integrating Sustainability into the Mission	Incubators should explicitly include sustainability as a core element of their mission. This involves promoting and supporting startups that address social, environmental, and economic challenges through sustainable business models, products, or services.
Tailored Support and Mentorship	Incubators can offer targeted support and guidance to startups focused on sustainable development. This includes advice on sustainable practices, impact measurement, access to networks, and connections with relevant stakeholders in the sustainability ecosystem.
Access to Resources and Funding	Incubators can help startups access resources and funding specifically dedicated to sustainable projects. This may include partnerships with impact investors, green funds, or government initiatives that prioritize Sustainable Development Goals (SDGs).
Collaboration and Partnerships	Incubators can foster collaboration and partnerships between startups, universities, industry players, government agencies, and NGOs. These partnerships facilitate knowledge exchange, provide access to expertise, and create opportunities for pilot projects or sustainability-related research collaborations.
Incubator Infrastructure and Practices	Incubators can lead by example by adopting sustainable practices in their own operations. This includes implementing energy-efficient measures, waste reduction strategies, and promoting social responsibility among their resident startups.

Proposed Action	Description
Educational Programs and Workshops	Incubators can offer educational programs and workshops focused on sustainable entrepreneurship and innovation. These programs raise awareness, build capacity, and equip entrepreneurs with the knowledge and skills needed to develop sustainable businesses.
Impact Measurement and Reporting	Incubators can support startups in measuring and reporting their social and environmental impact. This helps startups track their progress, attract investors, and demonstrate their contribution to sustainable development.
Policy Advocacy and Ecosystem Development	Incubators can actively participate in policy advocacy to create a favorable ecosystem for sustainable startups. They can work with policymakers to develop supportive regulations, incentives, and initiatives that encourage sustainable entrepreneurship.

The results of the third research question, which asks: To what extent is the proposed model for activating the role of university business incubators in achieving sustainable development suitable from the perspective of specialists and experts?

The proposed model for activating the role of university business incubators in achieving sustainable development was presented to a group of experts and specialists in educational and technological fields, and they expressed their approval of the proposed model.

1.7. Recommendations

Based on the study's findings, the researchers recommend the following:

- **Local Context Analysis:** Analyze the local, cultural, economic, and political context of university incubators and sustainable development in the surrounding region. Understanding the environmental, social, and economic factors that influence the incubators' ability to achieve sustainable development can subsequently guide strategies that enhance this role.
- **Performance Analysis of Existing Incubators:** Analyze the performance of current university incubators in supporting sustainable projects. Examine how they support companies operating in sustainable development fields, and evaluate the effectiveness

of the support provided and its impact on the growth and sustainable development of startups.

- Global Best Practice Analysis: Study global patterns and successful practices in integrating sustainable development into university business incubators. Look for real-world examples of incubators that have successfully supported sustainable projects and achieved a positive impact on society and the environment.

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Etik Beyan / Ethical Statement

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It is declared that scientific and ethical principles have been followed while carrying out and writing this study and that all the sources used have been properly cited.

Yazar(lar) / Author(s)

Heba Tawfiqe Abu Eyadah
Anas Adnan Adibat

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Yazar, çıkar çatışması olmadığını beyan ederler.
The author declares that he have no competing interests.