KEY POINTS OF UNIVERSITY BUSINESS INCUBATORS : A SYSTEMATIC REVIEW AND FUTURE RESEARCH DIRECTIONS

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ABSTRACT

The purpose of this study is to investigate the key components and best practices of University Business Incubators (UBIs), which are becoming increasingly important in encouraging innovation and economic growth by combining academic resources with entrepreneurial ventures. Despite its potential, little study has been conducted to establish a clear knowledge of the factors that influence UBI effectiveness. To fill this gap, a systematic review was performed with a focus on three research questions: (1) identifying theoretical frameworks that enable UBI development; (2) assessing empirical evidence on UBI operations; and (3) suggesting future directions to enhance UBI impact. A comprehensive selection process began with 229 articles from Scopus and resulted in a final sample of 13 high-quality studies that were subjected to thematic synthesis analysis. The findings highlight key aspects such as technology adoption, coaching, human development, entry selection, and evaluation measures. Additionally, the results emphasize the importance of UBIs' external relationships, alignment with the Sustainable Development Goals (SDGs), and role in translating academic research into market-ready technologies via spin-offs. This analysis presents a complete framework for UBI optimization, providing actionable insights to increase their role in regional and national economic development while also filling important research gaps in UBI practices.

Keywords : University Incubator Business; Incubator Business

ABSTRAK

Tujuan dari penelitian ini adalah untuk mengeksplorasi komponen utama dari Inkubator Bisnis Universitas (UBI), yang semakin penting dalam mendorong inovasi dan pertumbuhan ekonomi dengan menggabungkan sumber daya akademis dengan kegiatan kewirausahaan. Sistematik review dilakukan dengan fokus pada tiga pertanyaan penelitian: (1) menemukan kerangka kerja teoritis yang memungkinkan pengembangan UBI; (2) menemukan bukti empiris tentang kegiatan UBI; dan (3) Saran untuk penelitian selanjutnya,. Penelitian ini dilakukan untuk melengkapi penelitian-penelitian terdahulu dalam Upaya untuk membangun pengetahuan yang jelas tentang faktor-faktor yang memengaruhi efektivitas UBI. Dimulai dengan 229 artikel dari Scopus, proses seleksi komprehensif menghasilkan sampel akhir 13 studi berkualitas tinggi yang menjadi sasaran analisis sintesis tematik. Hasilnya menunjukkan bahwa elemen penting seperti adopsi teknologi, pembinaan, pengembangan kemampuan manusia, proses seleksi, dan proses evaluasi sangat penting. Selain itu, juga ditemukan bahwa pentingnya UBI untuk memiliki hubungan eksternal, sehingga dapat menyelaraskan dengan Tujuan Pembangunan Berkelanjutan (SDGs), dan membantu mengubah penelitian akademis menjadi teknologi yang siap dipasarkan. Analisis ini menyediakan kerangka kerja yang lengkap dalam upaya optimalisasi UBI dan

memberikan wawasan yang dapat ditindaklanjuti tentang bagaimana dapat meningkatkan peran dalam pembangunan ekonomi regional dan nasional. Selain itu, analisis ini dapat mengisi celah penting dalam penelitian yang dilakukan tentang praktik UBI terdahulu.

Kata Kunci : Inkubator Bisnis Universitas, Inkubator Bisnis Perguruan Tinggi, Inkubator Bisnis.

INTRODUCTION

University Business Incubators (UBIs) have become essential organizations for promoting economic growth, innovation, and entrepreneurship, especially in knowledge-intensive industries. Utilizing university resources including state-of-the-art technology, research knowledge, and academic networks, UBIs create an atmosphere that fosters the growth of startups and would-be business owners. This ecosystem creates substantial socio-economic value by bridging the gap between academia and business and expediting the commercialization of academic research (McAdam et al., 2016). UBIs' distinct positioning strengthens their role in the entrepreneurial ecosystem by enabling them to serve a range of stakeholders, such as external entrepreneurs, professors, and students (Hausberg & Korreck, 2020).

Although UBIs are recognized to provide benefits, research reveals that there are significant differences in their operational designs and efficacy. Numerous factors, such as stakeholder participation, network development, resource allocation, and management strategies, have been found to influence the effectiveness of universal basic income (UBI) (Mian et al., 2016). However, only little is understood about how these components interact in universal basic income (UBI) and how best practices should be standardized to optimize their impact. For example, McAdam et al., (2016) stress the value of organizational support and social networks, which are frequently disregarded while playing a crucial part in startup success. Furthermore, the implementation of technology is still uneven and understudied in many locations, even if some UBIs have responded to digital transformations by using tools like these to improve their operations Hausberg & Korreck, 2020).

Understanding how UBIs can adapt and flourish is becoming more and more important as the entrepreneurship and innovation landscape changes. This systematic review looks at the theoretical underpinnings, empirical data, and potential future paths for universal basic income (UBI) in an effort to fill up research gaps. This review aims

to answer the following research questions by combining the results of recent studies: What theories can be used in the university business incubators, what does empirical evidence suggest about the key point to running the University Business Incubators, What are the possible directions for future research to broaden the scope and effectiveness of university business incubators?

These are important questions because they help set the stage for useful insights and policy suggestions by revealing the theoretical foundations and empirical results related to universal basic income (UBI). Furthermore, this evaluation takes into account more general contextual elements that affect the design and functionality of universal basic incomes (UBIs) around the world. Developing all-encompassing policies that enable UBIs to optimize their contributions to regional and national economic development requires an understanding of these factors.

THEORETHICAL STUDY

University Business Incubator

According to the type of goal and the origin of the original initiation, there are various kinds of business incubators that can be differentiated (von Zedtwitz, 2003) . Among these, the University Business Incubator is the one that initially gained popularity (Wiggins & Gibson, 2003) . The government provides financing to universities to encourage students' entrepreneurial interests and qualities. According to Suwandi (2007) , University Business Incubators are business incubators that are designed to prepare college business units that are aimed at making a profit and to provide facilities that are intended to help colleges and the community build their enterprises. Selection of commercially feasible research findings and technological advances, dissemination of research findings and innovations to relevant parties, and establishment of marketing networks for college-produced goods are among the planned incubation tasks.

Additionally, they provide a significant contribution to driving new technology enterprises and motivating students to become technology entrepreneurs (Gozali et al., 2016) . The resources available to university incubators are very abundant. The resources that allow the participating enterprises to be competitive in their environment are available to them (Lasrado et al., 2016).

METHODS

This research will be following the systematic literature review methodology as suggested by (Tranfield et al., 2003). The three primary steps of the systematic review process are planning, carrying out, and documenting the review (Tranfield et al., 2003). Each of these phases has multiple processes, which can be tailored to the particular requirements of the study to align with the defined research methodology. This approach has been used and assessed in previous studies (Fajar Subhekti et al., 2024; Vergiansyah et al., 2024)

The next section provides a description of these steps. Databases like Scopus used to find articles on university business incubator that have been reviewed by previous researchers. Scopus is largely complete and has a search mechanism that allows for enough precision, it was selected (Fajar Subhekti et al., 2024; Vergiansyah et al., 2024). With more than 18,000 articles from more than 5,000 international publishers, Scopus is an extensive electronic database. It contains 16,500 journals that have been reviewed by researchers in a variety of scientific domains. The author searched for article with the keyword "Universit* Incubator Business", and published between 2001 to 2023. This year selected because after 2001 incubator business are evolve to more active develop the incubates rather than only give physical services (Bruneel et al., 2012; Theodorakopoulos et al., 2014). Yielded 229 articles.

Selection Criteria

According to Tranfield et al. (2003), all chosen articles must fulfil a number of requirements. For example, any articles that are used as literature review resources must be in English, exhibit University Business Incubator, be open access, and have a global reputation according to the Scopus index in order to be considered high quality. 144 articles are excluded based on the inclusion standard set since they do not meet the requirements.

Quality Assessment

The purpose of quality assessment is to evaluate the reliability of the chosen study, offer suitable explanations, and give readers the knowledge they need to assess how relevant this review approach is to their own studies. Because of its extensive and excellent coverage of pertinent papers, the authors specifically include Scopus-indexed journals with the highest quartile (Supriharyanti & Sukoco, 2023). Additionally, out of

all the indices, the Q1 index is the highest Scopus index, indicating the top 25% of journals with high impact. In order to ensure that the research direction was uncontaminated by other contexts and that the literature review debate was exclusive and focused, the educational context was then carefully chosen from Q1 indexed journals. The last 13 articles were chosen for the literature study after 72 of the 85 available articles failed the quality assessment.

Data Extraction

To reduce errors and biases, data were taken from a few chosen studies after the quality assessment was finished (Tranfield et al., 2003). After that, the extracted data was moved to an Excel spreadsheet, which contained details about the journal, the author, the study's title, the year and used NVIVO Application to extract the information to answer the research questions.

RESULT AND DISCUSSION

The purpose of this section is to examine research questions 1 and 2 (RQ 1 and 2). The findings cover topics such as the development of academic publications, the theory and methodology used, and key point on running University Business Incubator from earlier studies. From 13 articles, the studies conducted in 9 Countries (Canada, Germany, Indonesia, Netherlands, Poland, Spain, Thailand, United Kingdom, United Stated America), where two studies utilized mixed methods, six articles used qualitative methods, and six articles used quantitative methods. For the complete information, see Table 1.

The analysis of 13 papers identifies 24 major themes that are essential to comprehending the function and significance of University Business Incubators (UBIs). Since digital tools like SMAC technologies (Social, Mobile, Analytics, and Cloud) allow for streamlined services and remote support, adoption of new technology is becoming more and more important for UBIs (Chan et al., 2022; Gozali et al., 2020). The development of entrepreneurial abilities still requires coaching services, and UBIs offer specialized advice to help incubates overcome first obstacles (Gozali et al., 2020). A strong university-based entrepreneurial ecosystem fosters cooperation between staff, students, and outside partners, fostering an atmosphere that is encouraging for new businesses (Almansour, 2022; Wann et al., 2017).

In UBIs, entry selection is a crucial procedure that guarantees the admission of high-potential companies while optimizing resource utilization (Gozali et al., 2020). In order to improve their services, UBIs use a variety of Evaluation Factors to gauge incubation performance, including job generation and company success rates (Wann et al., 2017) . The efficacy of UBI is further increased by external collaboration and relationships with business, government, and other stakeholders, which give incubates access to capital, networking opportunities, and markets (Gozali et al., 2020; Karahan, 2024; Redondo & Camarero, 2019; Somsuk & Laosirihongthong, 2014; Wonglimpiyarat, 2016).

Regarding human development, UBIs' Human Development programs emphasize the development of critical managerial and entrepreneurial abilities (Almansour, 2022; Rakthai et al., 2019). In order to maximize procedures and services for incubates, efforts to improve efficacy entail frequent assessments and feedback (Almansour, 2022) . UBIs serve as Innovations Worldwide Contributors, promoting international cooperation and introducing regional startups to international markets (Gorączkowska, 2020) . Incubation activities are in line with the larger goals of the university when they are in line with the university's vision and mission, which enhances UBI's strategic role within the academic institution (Almansour, 2022; Somsuk & Laosirihongthong, 2014; Wann et al., 2017).

Internal university collaboration and relationships are essential because they give businesses access to specialized resources and knowledge through partnerships with other academic departments (Gozali et al., 2020; Karahan, 2024; Somsuk & Laosirihongthong, 2014) . Choosing the right managers is essential to the success of incubation since competent managers have a big influence on startup results (Redondo & Camarero, 2017, 2019). Manager skills are as vital, and more experienced managers are better able to provide incubatees with appropriate support (Redondo & Camarero, 2017, 2019) . Commitment from experienced mentors and dedicated leaders enhances the incubation process by giving startups important direction and role models (Karahan, 2024).

The operational model of UBI, whether hybrid, virtual, or in-person, has an impact on the services available and resource accessibility, with numerous initiatives that support the Sustainable Development Goals (SDGs) to incentivize businesses to

adopt socially and ecologically conscious business models, sustainability has emerged as a key component of universal basic income (UBI) (Karahan, 2024) . The need for increased participation emphasizes the importance of involving a wide range of stakeholders in order to increase the incubator's impact and reach (Somsuk & Laosirihongthong, 2014).

UBIs must adopt more SDGs and include sustainability into their objectives and processes in order to match with global aspirations (Almansour, 2022) . Prioritize specific needs such as finance and technical assistance for individual startups will give maximum impact (Wann et al., 2017) . Through effective networking, incubates can interact with peers, mentors, and industry experts, creating a collaborative incubation environment and building social capital (Redondo & Camarero, 2019). UBIs also assist entrepreneurs in transforming ideas into services or products by assisting them through prototyping, market validation, and scaling (Redondo & Camarero, 2017).

UBIs have distinct benefits over non-university incubators because of their access to research resources and academic resources (Lasrado et al., 2016) . Creating a Creativity Plan within UBIs promotes innovation by encouraging entrepreneurs to experiment and try new concepts and UBI that has knowledge with their Environment helps incubates understand and successfully use university resources and networks, increasing their chances of success (Somsuk & Laosirihongthong, 2014). Finally, UBIs assist University Spin-Offs for Entrepreneurship, which convert academic research and discoveries into marketable products and businesses, thereby promoting economic development and enhancing the university's innovation environment (Berbegal-Mirabent et al., 2015; Wonglimpiyarat, 2016).

Future Research Directions

These sections are to response the RQ number 3, tries to suggest prospective areas for further investigation, building on existing insights and filling gaps found in the systematic review. This section suggests future research directions that can improve understanding and practice within University Business Incubators (UBIs), focusing on issues such as digital technology integration, the role of sustainability, and the importance of managerial competencies in fostering innovation. This contributes to the evolving landscape of UBIs by proposing research that can deepen and refine the theoretical and empirical knowledge of incubation processes.

Future studies could look into the impact of digital technologies on UBI performance. While some UBIs integrate Social, Mobile, Analytics, and Cloud (SMAC) technologies, more research into their long-term effectiveness and scalability in different cultural and institutional contexts could be extremely beneficial (Chan et al., 2022) . Furthermore, sustainability remains a critical issue. UBIs are increasingly associated with the Sustainable Development Goals (SDGs), but empirical research on how these goals is implemented inside incubator programs, particularly in emerging economies, is limited (Karahan, 2024) Furthermore, managerial abilities and competencies in UBIs deserve further examination. Identifying the precise abilities that improve incubator success in a variety of situations could help build customized training programs for incubator managers, as well as provide insights into effective leadership styles in this context (Nicholls-Nixon & Maxheimer, 2022; Redondo & Camarero, 2017) . Finally, the importance of internal and external collaborations should be considered, specifically how partnerships with academic departments and industry stakeholders affect innovation outcomes and startup growth (Gozali et al., 2020) These categories provide a framework for future research, contributing to a more complete and nuanced knowledge of UBIs.

CONCLUSION

University Business Incubators (UBIs) play an important role in connecting academics and business, fostering innovation, and boosting economic growth by supporting companies in knowledge-intensive industries. This systematic analysis identifies 24 key themes that determine the function of UBIs, including the use of emerging technologies to improve services and expand global reach. UBIs prioritize coaching services and human development, equipping entrepreneurs with the necessary skills to negotiate the challenging landscape of starting and scaling enterprises. UBIs use entry selection and different evaluation parameters to ensure that only high-potential companies are incubated, maximizing resource usage and properly assessing performance.

External collaborations and strategic relationships with industry, government, and other stakeholders are critical to assisting incubates by providing access to funds, markets, and networking opportunities. Internally, UBIs benefit from aligning with university aims, employing academic resources, and improving their capacity to

promote high-impact businesses. Sustainability has also gained a lot of attention, and many UBIs support socially and ecologically conscious business practices among incubates by aligning with the Sustainable Development Goals (SDGs).

Furthermore, UBIs distinguish themselves from non-university incubators by encouraging university-based ideas and promoting spin-offs, thereby directly contributing to the commercialization of research. Effective management and leadership within UBIs, together with effective mentoring, foster a dynamic ecosystem in which entrepreneurs can thrive. Overall, UBIs work as catalysts for innovation and economic development, turning university research into marketable goods and increasing their regional and national influence. Future study should look on ways to improve UBI models, address problems, and maximize their impact on the entrepreneurial ecosystem.

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TABLES AND FIGURES

Tabel 1. RQ1 Theoretical Findings

Theoretical Findings

Author	Location	Theory Used	Methodology	Participants	Tools Used
Somsuk & Laosirihongthong, (2014)	Thailand	RBV Theory	MIx Method	Manager Incubator	Fuzzy Ahp
Karahan (2024)	Germany	Sustainable Theory	Qualitative	Staff	Manual Exam
Almansour (2022)	United Kingdom	SDGs Lens	Qualitative	Startup	Manual Exam
(Berbegal-Mirabent et al., 2015)	Spain	RBV Theory	Quantitative	Complete Dataset	QCA
(Chan et al., 2022)	Canada	Dynamic Capabilities	Qualitative	Manager Incubator	Nvivo
(Lasrado et al., 2016)	United States America	Cobb-Douglas Production Model	Quantitative	Complete Dataset	ANOVA
(Redondo & Camarero, 2017)	Netherlands	Institutional Logic	Quantitative	Manager Incubator	Amoss
(Gorączkowska, 2020)	Poland	Innovation Activity Standard	Quantitative	Startup	-
(Nicholls-Nixon & Maxheimer, 2022)	Canada	Entrepreneuri al coachin	Qualitative	Startup	Nvivo
(Rakthai et al., 2019)	Thailand	Balanced Scorecard	Quantitative	Startup	Amoss
(Gozali et al., 2020)	Indonesia	Business Incubator Performance	MIx Method	Manager Incubator	IBM SPSS version 23
(Redondo & Camarero, 2019)	Netherlands	Social Capital	Quantitative	Manager Incubator	Amoss
(Wonglimpiyarat, 2016)	Thailand	Technology Incubator	Qualitative	Manager Incubator	-