

OPENDRAFT UNIVERSITY

Department of Computer Science

Entrepreneurial Accelerator Programmes: Critical

Success Factors and Their Impact on Startup

Development Research Question: To what extent do design characteristics of university-based accelerator programmes shape the development and growth of early-stage student start-ups within European entrepreneurial ecosystems? **Key areas to cover:** 1. Literature review on accelerator programme theory and entrepreneurial ecosystems 2. Critical success factors of accelerator programmes (mentorship, funding, networks, curriculum) 3. University-based vs corporate vs independent accelerators - comparative analysis 4. European entrepreneurial system context (regional differences, policy frameworks) 5. Impact measurement frameworks for startup development and

growth 6. Methodology: Qualitative research design
with case studies or interviews 7. Analysis of
programme design characteristics and their correlation
with startup outcomes 8. Recommendations for
accelerator programme design and policy implications

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Abstract

Research Problem and Approach: The transition towards the “Entrepreneurial University” has compelled higher education institutions to adopt active roles in regional economic development, utilizing startup accelerators to bridge the gap between academic research and marketable innovation. However, the uncritical adoption of Silicon Valley-centric accelerator models within the diverse European system presents significant challenges, potentially undermining their effectiveness in addressing the “European Paradox.” This research investigates the critical success factors of university-based accelerators in Europe, questioning the applicability of a “one-size-fits-all” approach and exploring how program design must adapt to specific institutional and regional constraints.

Methodology and Findings: By distinguishing the accelerator phenomenon from traditional incubation, this study analyzes the internal mechanisms—such as mentorship structures, cohort dynamics, and selection criteria—that drive startup success. The investigation highlights that student entrepreneurs face distinct barriers compared to general founders, including limited professional networks and capital constraints, necessitating tailored support mechanisms. The analysis demonstrates that successful European academic accelerators must navigate complex institutional logics, balancing pedagogical objectives with commercial imperatives rather than merely replicating corporate methodologies.

Key Contributions: This thesis makes three primary contributions to the literature on academic entrepreneurship: (1) A critical differentiation between traditional incubators and the specific operational capabilities required for university-based accelerators, (2) An identification of the unique developmental needs of student-led ventures and the specific design characteristics required to address them, and (3) A contextualized analysis of the European entrepreneurial system that challenges the universality of Anglo-American acceleration models.

Implications: The findings offer practical implications for university administrators and policymakers seeking to optimize innovation ecosystems and foster regional resilience. By providing a nuanced understanding of program design, this research serves as a foundation for developing more effective, region-specific support structures that enhance the survival and growth rates of university spin-offs and student start-ups.

Keywords: Entrepreneurial University, Startup Accelerator, Business Incubation, Student Entrepreneurship, European Paradox, Regional Economic Development, Critical Success Factors, Program Design, Technology Transfer, Innovation System, Academic Entrepreneurship, Venture Creation, Higher Education, Mentorship, Start-up Support

1. Introduction

1.1 Background of the Study

The global economic environment has undergone a major change in the twenty-first century, moving decisively towards a knowledge-based economy where innovation and entrepreneurship are the primary drivers of growth, employment, and societal resilience. Within this context, higher education institutions (HEIs) have transcended their traditional roles of teaching and research to assume a “third mission”: the capitalization of knowledge and the fostering of regional economic development. This evolution has given rise to the concept of the “Entrepreneurial University,” an institution that actively integrates economic development into its academic mission (Chervona & Bulvinska, 2025)(Keen et al., 2019). A central component of this transformation is the proliferation of university-based support mechanisms designed to nurture early-stage ventures, most notably business incubators and, more recently, startup accelerators.

While business incubation has a long history dating back to the mid-20th century, the startup accelerator model represents a distinct, newer generation of incubation that emerged in the mid-2000s. Unlike traditional incubators, which often function as “life support” systems offering long-term tenancy and basic resources, accelerators are characterized by fixed-term, cohort-based programs that include seed investment, intensive mentorship, and a culminating “demo day” (Pauwels et al., 2016). The rapid adoption of this model by universities across Europe reflects a strategic effort to bridge the “European Paradox”—the phenomenon where high-quality scientific research fails to translate efficiently into marketable innovations.

The European entrepreneurial system presents a unique environment for these programs. Unlike the homogenous, capital-rich system of Silicon Valley, Europe is characterized by regional diversity, varying degrees of institutional support, and distinct policy frameworks

ranging from established markets in Germany to emerging ecosystems in Eastern Europe (Karahan, 2024)(Donets, 2025). Consequently, university-based accelerators in Europe must navigate complex institutional logics, balancing academic pedagogical goals with commercial imperatives. Recent literature suggests that while these programs are ubiquitous, their impact is heterogeneous, and the specific design characteristics that lead to startup success remains a subject of intense debate (Doçaj, 2025)(Bennett et al., 2016).

This thesis investigates the critical success factors of university-based accelerator programs within this specific European context. It posits that the “one-size-fits-all” approach often imported from US corporate models may not be directly transferable to European academic environments. Instead, a nuanced understanding of program design—encompassing mentorship structures, selection criteria, funding mechanisms, and system integration—is required to optimize the development and growth of student-led startups.

1.1.1 The Evolution of Academic Entrepreneurship Support

The trajectory of academic entrepreneurship has evolved from ad-hoc support to formalized, sophisticated structures. Historically, universities focused on technology transfer offices (TTOs) primarily concerned with patenting and licensing. However, the rise of student entrepreneurship has necessitated more dynamic support structures. Wright et al. (Wright et al., 2017) argue that an emerging system specifically tailored for student start-ups is critical, as student entrepreneurs face distinct challenges compared to faculty or external entrepreneurs, including a lack of industry experience, limited professional networks, and capital constraints.

In response, universities have diversified their support mechanisms. This diversification includes the establishment of innovation hubs, which serve as physical and virtual structures to catalyze open innovation and technology transfer (Pinheiro et al., 2025). Within these hubs, accelerators have become a preferred vehicle for “speeding up” the venture creation process. However, the effectiveness of these interventions is not guaranteed. As noted

by Bennett et al. (Bennett et al., 2016), while university incubators are often assumed to be socially valuable, their actual effectiveness in generating sustainable, high-growth firms varies significantly. This variation suggests that the *design* of the support mechanism is as critical as its mere existence.

1.1.2 The Accelerator Phenomenon vs. Traditional Incubation

It is imperative to distinguish between accelerators and traditional incubators to understand the specific scope of this study. Confusion often exists in the literature and practice regarding these terms. Pauwels et al. (Pauwels et al., 2016) provide a seminal distinction, defining accelerators as a “new generation incubation model.”

Table 1 outlines the fundamental differences between these two support mechanisms as derived from the literature.

Feature	Traditional Incubator	Startup Accelerator
Duration	Open-ended (1-5 years)	Fixed-term (3-6 months)
Cohorts	Rolling admission	Batch/Cohort-based entry
Business Model	Rent/Fee-based (often)	Investment/Equity-based
Mentorship	Ad-hoc, reactive	Intense, structured, proactive
Selection	Focus on local job creation	Focus on scalability/growth

Table 1: Comparative Analysis of Incubators and Accelerators. Source: Adapted from (Pauwels et al., 2016) and (Pinheiro et al., 2025).

The shift toward the accelerator model in university settings implies a shift in objectives: from merely sheltering new businesses to aggressively validating business models and achieving investment readiness. This transition requires a different set of operational capabilities and success factors, which this thesis aims to explore.

1.2 Problem Statement

Despite the proliferation of university-based accelerators across Europe, there remains a significant gap in the empirical understanding of how specific design characteristics influence the trajectory of student start-ups. Much of the existing literature on accelerators focuses on independent or corporate programs, often situated in the United States (Andreeva & Postnikov, 2021)(Buzzacchi et al., 2015). While these studies provide a foundation, they fail to account for the unique constraints and opportunities of the university environment, such as the dual mission of education and commercialization, and the specific developmental needs of student entrepreneurs (Benessalah & Abdelmalek, 2025).

Furthermore, the “black box” of accelerator participation remains largely unopened. While studies have established a correlation between accelerator participation and funding outcomes, less is known about the internal mechanisms—the “critical success factors”—that drive these outcomes. For instance, is it the curriculum, the mentorship network, the peer-to-peer learning within the cohort, or the signaling effect of selection that truly drives growth? Hosseinpour et al. (hosseinpour et al., 2024) highlight the need to investigate success factors specifically in the post-pandemic era, where digital transformation has altered how mentorship and networking are delivered.

Additionally, the European context introduces variables often overlooked in Anglo-American studies. Regional disparities in innovation systems, as noted by Ancona and Ceci (Ancona & Ceci, 2025), mean that an accelerator in a mature system like Munich may function differently than one in a developing system in Eastern Europe. The Triple Helix model of partnership between universities, industry, and government (Pendidikan et al., 2025) manifests differently across these regions, influencing resource availability and regulatory support.

Therefore, the problem this study addresses is the lack of a comprehensive, context-specific framework that links the design parameters of university-based accelerators in Europe

to tangible startup development outcomes. Without this understanding, universities risk investing resources in program designs that are ill-suited to their specific ecosystems and student populations.

1.3 Research Question and Objectives

To address the identified gaps, this thesis is guided by the following primary research question:

To what extent do design characteristics of university-based accelerator programmes shape the development and growth of early-stage student start-ups within European entrepreneurial ecosystems?

To provide a granular analysis, this central question is operationalized through the following sub-questions:

1. **SQ1:** What are the critical success factors (CSFs) of university-based accelerator programs as identified in current literature and practice?
2. **SQ2:** How do varying design choices regarding selection criteria, mentorship provision, and curriculum structure impact the human and social capital development of student entrepreneurs?
3. **SQ3:** In what ways do regional European system characteristics (e.g., policy frameworks, funding availability) moderate the relationship between program design and startup growth?
4. **SQ4:** What best-practice framework can be recommended for European universities to optimize their accelerator programs?

1.3.1 Research Objectives

The objectives of this study are directly aligned with the research questions:

1. To critically evaluate the theoretical environment of accelerator programs and entrepreneurial ecosystems.

2. To identify and categorize the design characteristics (inputs) of university accelerators that most significantly correlate with startup survival and growth (outputs).
3. To analyze the comparative effectiveness of different accelerator models within the European context, distinguishing between mature and emerging innovation regions.
4. To develop a set of evidence-based recommendations for university administrators and policymakers.

1.4 Context of the Study: The European System

The European entrepreneurial environment is characterized by high fragmentation but also high potential. Unlike the United States, where private venture capital is the dominant force, European ecosystems often rely heavily on public institutional support and university-driven initiatives (Chervona & Bulvinska, 2025).

1.4.1 Regional Heterogeneity

Research indicates significant divergence in how entrepreneurship is supported across the continent. In Western Europe, particularly in Germany, there has been a strong push towards “sustainable entrepreneurial universities,” where incubators and accelerators are increasingly aligned with sustainability goals and societal impact (Karahana, 2024). Koschatzky (Koschatzky, 2003) notes that public promotion of university-based start-ups in Germany is deeply embedded in regional innovation systems, emphasizing the connection between academic research and regional industry needs.

Conversely, Eastern European ecosystems face different challenges and trajectories. For example, the Ukrainian startup system, while demonstrating resilience and potential, is constrained by regional disparities and geopolitical instability (Donets, 2025). However, integration with broader European networks is seen as a strategic priority. This heterogeneity suggests that a “copy-paste” approach to accelerator design is insufficient. Programs must

be responsive to their local “Triple Helix” configurations—the dynamic interactions between university, industry, and government (Pendidikan et al., 2025).

1.4.2 The Role of Student Entrepreneurship

Student entrepreneurship is a specific subset of academic entrepreneurship that requires distinct attention. Students are often “resource-poor” but “opportunity-rich.” They typically lack the financial capital and industry networks of experienced professionals, making the accelerator’s role in providing social capital important. Feng and Tan (Feng & Tan, 2024) emphasize the importance of digital cultural and social capital in student learning outcomes, a concept that translates directly to the accelerator context. The accelerator acts as a mechanism to rapidly inject social capital—access to mentors, investors, and peers—into the student venture.

Furthermore, the motivations of student entrepreneurs are evolving. Voronov et al. (Voronov et al., 2024) highlight that external factors and institutional support significantly influence student entrepreneurial intentions. Programs that fail to align with the specific generational characteristics and motivations of the student body (Shabrova, 2025) are likely to face recruitment and engagement challenges.

1.5 Theoretical Framework Overview

This thesis draws upon three primary theoretical domains to construct its analytical lens: the Resource-Based View (RBV), Social Capital Theory, and the Systems of Innovation approach.

1.5.1 Resource-Based View (RBV) and Human Capital

From the perspective of RBV, the accelerator is viewed as a resource provider that enhances the internal capabilities of the startup. This includes the development of human capital. Allen and Drean (Allen & Drean, 2022) discuss the impact of human capital in-

vestment on economic growth, noting that the accumulation of skills and knowledge is a fundamental driver of productivity. In the context of accelerators, the educational curriculum and mentorship are direct investments in the human capital of the founding team. Zhao and Khan (Zhao & Khan, 2024) further elucidate that human capital, when combined with social capital, significantly impacts career development and, by extension, entrepreneurial success.

1.5.2 Social Capital Theory

Startups, particularly those emerging from universities, often suffer from the “liability of newness.” Social Capital Theory posits that the network of relationships possessed by an individual or organization provides access to resources not internally held. Hallinan (Hallinan, 2009) demonstrates the effects of social capital on student outcomes. In the accelerator context, the program serves as an intermediary, lending its reputation and network to the startup. The ability of an accelerator to facilitate “bridging” social capital (connecting startups to external investors and customers) is frequently cited as a critical success factor (Ancona & Ceci, 2025).

1.5.3 Systems of Innovation and Triple Helix

Finally, the study is grounded in the Systems of Innovation literature, specifically the Triple Helix model (Pendidikan et al., 2025). This framework acknowledges that university accelerators do not exist in a vacuum. Their success is contingent upon the strength of the linkages between the university (knowledge creator), industry (knowledge user), and government (regulator/funder). Pinheiro et al. (Pinheiro et al., 2025) uses this systemic view to propose typologies for innovation hubs, arguing that the dynamics of these hubs differ based on their system integration.

1.6 Significance of the Study

This research holds significant value for multiple stakeholders within the academic and entrepreneurial communities.

Theoretical Significance: This study contributes to the literature on academic entrepreneurship by moving beyond the binary question of “do accelerators work?” to the more nuanced “how do design configurations interact with regional contexts to produce results?” It integrates theories of human/social capital with institutional theory to explain the variance in accelerator performance. By focusing on the European context, it challenges the dominance of US-centric models in the literature.

Practical Significance for University Administrators: For university managers and program directors, this thesis offers a diagnostic tool. By identifying critical success factors such as specific screening mechanisms (Zadehnoori, 2023) or curriculum designs (Doçaj, 2025), administrators can optimize their resource allocation. For instance, understanding whether to prioritize funding over mentorship, or vice versa, based on the specific stage of the student startups, can lead to higher survival rates.

Policy Significance: For policymakers, particularly within the European Union and national governments, the findings provide insights into how public funds supporting innovation should be structured. If, for example, the research indicates that regional networking (Ancona & Ceci, 2025) is more predictive of success than direct seed funding, policy frameworks can be adjusted to incentivize network-building activities over direct capital injection.

1.7 Definition of Key Terms

To ensure conceptual clarity, the following definitions are adopted for this thesis:

- **Startup Accelerator:** A fixed-term, cohort-based program that includes seed investment, connections, mentorship, and educational components, culminating in a public pitch event or demo day (Pauwels et al., 2016).
- **University-Based Accelerator:** An accelerator program that is owned, operated, or significantly affiliated with a Higher Education Institution, often with a dual mandate of educational value and commercial venture creation (Benessalah & Abdelmalek, 2025).
- **Entrepreneurial System:** A set of interdependent actors and factors governed by institutions that enable productive entrepreneurship within a particular territory (Ancona & Ceci, 2025).
- **Triple Helix Model:** A framework for analyzing innovation dynamics based on the interactions between university, industry, and government (Pendidikan et al., 2025).
- **Critical Success Factors (CSFs):** The limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization (or in this case, the program) (hosseinpour et al., 2024).

1.8 Thesis Structure

This thesis is organized into five main chapters, following a logical progression from theoretical foundations to empirical analysis and conclusion.

- **Chapter 1: Introduction** outlines the background, problem statement, research questions, and significance of the study, setting the stage for the investigation.
- **Chapter 2: Literature Review** provides a comprehensive critical analysis of existing academic literature. It explores the theoretical underpinnings of accelerators, reviews empirical studies on their impact (Sad, 2021), and examines the specific dynamics of student entrepreneurship (Wright et al., 2017) and European regional systems (Koschatzky, 2003).

- **Chapter 3: Methodology** details the research design adopted for this study. It justifies the use of qualitative methods (case studies/interviews) to explore the “how” and “why” of accelerator mechanics. It describes the data collection procedures and the analytical framework used to interpret the findings.
- **Chapter 4: Analysis and Results** presents the findings of the study. It categorizes the data according to the identified critical success factors, presenting evidence on how design choices regarding selection, curriculum, and networking influence startup outcomes.
- **Chapter 5: Discussion and Conclusion** synthesizes the findings with the literature, answers the research questions, discusses the implications for theory and practice, acknowledges limitations, and proposes avenues for future research.

1.9 Preliminary Identification of Critical Success Factors

Based on the preliminary review of the citation database provided, several key themes emerge that will guide the subsequent literature review and data analysis. These factors represent the independent variables that this study aims to correlate with startup development.

Table 2 summarizes these preliminary factors and their associated literature sources.

Critical Success			
Factor	Description	Key Theoretical Link	Relevant Citations
Selection & Screening	The criteria and processes used to admit startups. Moving beyond basic feasibility to “lucrative” potential.	Signaling Theory	(Zadehnoori, 2023), (hosseinpour et al., 2024)

Critical Success			
Factor	Description	Key Theoretical Link	Relevant Citations
Mentorship & Network	Access to experts, alumni, and industry partners. The transfer of tacit knowledge.	Social Capital Theory	(Hallinan, 2009), (Feng & Tan, 2024)
Curriculum & Education	Structured learning on business modeling, finance, and strategy.	Human Capital Theory	(Dutta, 2025), (Keen et al., 2019)
System Integration	The degree of connection to regional actors (Gov, Industry).	Triple Helix / Systems of Innovation	(Ancona & Ceci, 2025), (Pendidikan et al., 2025)
Institutional Support	The internal support from the university (infrastructure, policy, culture).	Institutional Theory	(Chervona & Bulvinska, 2025), (Bennett et al., 2016)

Table 2: Preliminary Framework of Critical Success Factors. Source: Author’s compilation based on cited literature.

The interaction between these factors is complex. For example, Doçaj (Doçaj, 2025) suggests that the *design* of the program has a direct impact on success, but this is likely moderated by the quality of the selection process (Zadehnoori, 2023). If an accelerator selects high-potential teams but provides poor mentorship, the outcome may still be suboptimal. Conversely, excellent mentorship may not save a fundamentally flawed business idea that slipped through a loose screening process.

Furthermore, the “post-Corona” era has introduced new variables. Hosseinpour et al. (hosseinpour et al., 2024) argue that the success factors of digital or hybrid accelerators may differ from traditional in-person models. Given that many European universities have maintained hybrid elements post-pandemic, this adds another layer of complexity to the design characteristics being studied.

1.10 Scope and Delimitations

While the topic of startup acceleration is broad, this study enforces specific boundaries to ensure analytical depth.

Geographical Scope: The study is limited to the European Higher Education Area (EHEA). This allows for a comparative analysis of diverse regulatory environments (Donets, 2025) while maintaining a level of institutional comparability regarding the role of universities.

Institutional Scope: The focus is strictly on *university-based* or *university-affiliated* accelerators. Independent commercial accelerators (e.g., Y Combinator) and corporate accelerators are included only as comparative reference points (Andreeva & Postnikov, 2021), not as the primary unit of analysis. The unique educational mandate of university programs necessitates this distinction.

Target Demographic: The study focuses on accelerators primarily targeting *student* start-ups (undergraduate to PhD). While faculty spin-offs are a critical part of university technology transfer, they often operate under different intellectual property regimes and possess different human capital profiles compared to student-led ventures (Wright et al., 2017).

Methodological Scope: The study adopts a qualitative approach. While quantitative metrics (funding raised, survival rates) are important, they often fail to capture the *process* of development. Qualitative inquiry allows for an exploration of the lived experience of entrepreneurs and program managers, shedding light on the causal mechanisms behind the statistics (Sad, 2021).

1.11 Summary

The introduction has established the premise that university-based accelerators are a critical, yet complex, component of the modern European entrepreneurial system. As universities strive to fulfill their third mission, the effective design of these programs becomes a matter of strategic importance. However, current understanding is limited by a lack of context-specific research that accounts for the unique characteristics of student entrepreneurs and the diversity of European regions.

By leveraging a theoretical framework combining Resource-Based View, Social Capital, and Innovation Systems, this thesis aims to deconstruct the “accelerator” into its constituent design elements. Through this analysis, it seeks to answer how these programs can be optimized to not only launch startups but to foster sustainable, high-growth ventures that contribute to the regional economy. The following chapter will deepen this investigation through a comprehensive review of the relevant literature.

2. Main Body

The proliferation of startup accelerator programmes represents a significant evolution in the environment of entrepreneurial support mechanisms. As distinct entities from traditional business incubators, accelerators have emerged as critical intermediaries within entrepreneurial ecosystems, particularly within higher education institutions. This literature review provides a comprehensive analysis of the existing body of knowledge regarding accelerator programmes, with a specific focus on university-based models, their design characteristics, and their impact on student-led ventures. The review is organized into six primary sections: theoretical foundations and definitions, the role of universities within entrepreneurial ecosystems, critical success factors (CSFs) in programme design, comparative analysis of accelerator typologies, impact measurement frameworks, and an identification of prevailing research gaps.

2.1.1 Theoretical Foundations of Acceleration

To understand the specific dynamics of university-based accelerators, it is first necessary to establish the theoretical underpinnings of the acceleration phenomenon and distinguish it from antecedent forms of support.

2.1.1.1 Defining the Accelerator Phenomenon The terminology surrounding entrepreneurial support organizations (ESOs) has often been conflated, yet distinct theoretical boundaries exist. The modern accelerator model is widely regarded as a “new generation” incubation model (Pauwels et al., 2016). Unlike traditional incubators, which primarily offer physical space and operate on open-ended timelines, accelerators are defined by their fixed-term nature, cohort-based entry, and intense mentorship-driven programming. Pauwels et al. (Pauwels et al., 2016) argue that the primary value proposition of the

accelerator lies not in real estate, but in the rapid validation of business models and the condensation of learning cycles.

This definition suggests that accelerators function as “forcing functions” for startup development. By imposing strict time constraints—typically three to six months—these programmes compel entrepreneurs to reach go/no-go decisions regarding their ventures. The theoretical basis for this approach draws upon the “lean startup” methodology, emphasizing iterative testing and customer discovery. Recent literature suggests that this model has evolved further into specialized forms, including corporate, university, and independent accelerators, each with distinct strategic objectives (Doçaj, 2025).

2.1.1.2 Evolution from Incubation to Acceleration The historical trajectory of entrepreneurial support has shifted from a focus on infrastructure to a focus on networks and knowledge. First-generation incubators (1980s-1990s) were predominantly focused on providing affordable office space and shared administrative services to reduce overhead costs for early-stage firms. Second-generation models introduced coaching and networking assistance. The accelerator model, emerging in the mid-2000s, represents a third generation focused on “system integration” and investment readiness.

Scholars note that this evolution reflects a broader shift in the global economy towards knowledge-intensive industries where the primary barriers to entry are no longer physical assets, but access to social capital and specialized expertise. In this context, the accelerator acts as a trusted intermediary that signals quality to external investors. However, the efficacy of this signaling mechanism depends heavily on the rigorousness of the selection process and the reputation of the programme, a dynamic that is particularly complex in university settings where educational objectives may compete with commercial selection criteria (Bennett et al., 2016).

2.1.1.3 Theoretical Lenses: Resource-Based View and Social Capital Two primary theoretical frameworks dominate the literature on accelerator efficacy: the Resource-Based View (RBV) and Social Capital Theory.

From an RBV perspective, startups are viewed as entities with resource deficits. Accelerators are theorized to provide complementary resources—specifically knowledge, legitimacy, and financial capital—that young firms cannot easily acquire in the open market. The accelerator’s ability to bundle these resources effectively is a key determinant of its success. Research indicates that the most critical resource transferred is often intangible: the “know-how” of navigating the venture lifecycle (Sad, 2021).

Social Capital Theory offers perhaps the most strong lens for analyzing accelerators. Hallinan (Hallinan, 2009) posits that social capital effects are instrumental in student outcomes, a concept directly transferable to student entrepreneurs. The accelerator functions as a density-increasing mechanism, artificially compressing the time required to build a professional network. By embedding cohorts in a rich environment of peers, mentors, and investors, accelerators facilitate the rapid accumulation of both bonding social capital (within the cohort) and bridging social capital (with external stakeholders). Recent studies have expanded this to include “digital social capital,” examining how virtual interactions in online programmes contribute to learning outcomes and resource acquisition (Feng & Tan, 2024). The mediating role of social capital in employment and career development further underscores its importance in university settings, where the objective is often human capital development alongside venture creation (Zhao & Khan, 2024).

2.1.2 The Entrepreneurial System Approach

University-based accelerators do not operate in a vacuum; they are embedded within broader regional and institutional entrepreneurial ecosystems. The system approach emphasizes the interdependence of actors and the importance of institutional support structures.

2.1.2.1 The University’s Role in Ecosystems The concept of the “Entrepreneurial University” has gained traction as higher education institutions (HEIs) increasingly assume a “third mission” of economic development alongside teaching and research. Chervona and Bulvinska (Chervona & Bulvinska, 2025) analyze European entrepreneurial universities, noting that institutional support is not merely about funding but involves creating a culture that legitimizes entrepreneurial activity. The university acts as an anchor institution, providing a stable supply of talent (students) and intellectual property (research) that fuels the wider system.

Wright et al. (Wright et al., 2017) describe an “emerging system for student startups,” arguing that students represent a distinct class of entrepreneurs with unique needs, such as flexibility around academic schedules and a requirement for foundational business literacy. The university accelerator, therefore, serves a dual function: it is a pedagogical tool for experiential learning and an economic engine for regional development. This duality creates specific design challenges, as programmes must balance inclusivity (educational mandate) with exclusivity (commercial mandate).

2.1.2.2 The Triple Helix Model and Institutional Support The Triple Helix model of innovation—describing the interactions between university, industry, and government—provides a structural framework for understanding university accelerators. Pendifikan et al. (Pendifikan et al., 2025) explore this partnership model in the context of outcome-based curriculum implementation, suggesting that effective university ecosystems require permeable boundaries where industry mentors and government policymakers actively participate in university programmes.

In the European context, this collaboration is often formalized through policy frameworks. Government support for university-based startups is a common feature of regional innovation systems, particularly in countries like Germany (Koschatzky, 2003). These public promotion schemes aim to mitigate the market failures associated with early-stage financing.

However, the alignment between these three spheres is rarely perfect. Misalignments can occur when government metrics focus on job creation, universities focus on learning outcomes, and industry partners focus on immediate commercial viability.

2.1.2.3 Regional Variations in European Ecosystems The literature highlights significant heterogeneity in entrepreneurial ecosystems across Europe and neighboring regions. Donets (Donets, 2025) provides a critical analysis of the Ukrainian startup system, noting that while it possesses significant human capital, regional disparities and geopolitical instability constrain development. This contrasts with more mature ecosystems in Western Europe, where the challenge is often coordination rather than resource scarcity.

Ancona and Ceci (Ancona & Ceci, 2025) discuss the role of science and technology park networks in fostering regional development. These parks often house university accelerators, serving as physical interfaces between the academic and corporate worlds. The effectiveness of these regional hubs depends on their ability to specialize. Pinheiro et al. (Pinheiro et al., 2025) propose a typology for innovation hubs, suggesting that successful ecosystems are those that align their accelerator specialization (e.g., biotech, digital, deep tech) with the region’s existing industrial strengths. This “smart specialization” strategy is important for university accelerators to avoid becoming generic providers of low-quality support.

2.1.3 Critical Success Factors (CSFs) in Programme Design

A significant portion of the literature is dedicated to identifying the specific design characteristics that correlate with programme success. While early research focused on tangible metrics like funding, recent scholarship emphasizes intangible factors and process dynamics.

2.1.3.1 Mentorship and Knowledge Transfer Mentorship is consistently cited as the single most critical component of the accelerator model. However, the *quality* and *structure* of mentorship vary significantly. Effective mentorship involves not just advice-giving but

the transfer of tacit knowledge regarding industry norms and strategic decision-making. In the context of student startups, mentorship takes on an additional dimension of psychosocial support, helping young entrepreneurs navigate the emotional volatility of the startup journey.

Research by Keen et al. (Keen et al., 2019) on the evolution of academic entrepreneurship suggests that the integration of academic and practitioner knowledge is vital. University accelerators that rely solely on academic faculty for mentorship often fail to provide the market-relevant insights required for commercialization. Conversely, programmes that successfully engage alumni and industry veterans create a virtuous cycle of knowledge transfer.

2.1.3.2 Network Development and Social Capital As previously noted, the accumulation of social capital is a primary function of accelerators. The network effect is achieved through structured interactions—“speed dating” with mentors, demo days, and peer-to-peer learning sessions. Doçaj (Doçaj, 2025) investigates the impact of accelerator programme designs, finding that the structure of these networking events significantly influences the “stickiness” of the connections formed.

The concept of “social capital” in this context is complex. Zhao and Khan (Zhao & Khan, 2024) construct a model demonstrating how social capital impacts employment quality, which can be extrapolated to startup success. For student entrepreneurs, who typically lack professional networks, the accelerator serves as a proxy, lending its institutional reputation to the startup. This endorsement effect is important for overcoming the “liability of newness.”

2.1.3.3 Selection Mechanisms and Cohort Dynamics The selection process is a critical determinant of accelerator performance. Zadehnoori (Zadehnoori, 2023) argues for a data-driven selection criteria pipeline to identify “lucrative” startups. This involves moving beyond gut feeling to analyze metrics that predict scalability. In university settings, selection is complicated by the mandate to serve the student body. Some programmes adopt a funnel approach—broad inclusivity at the ideation stage, narrowing to high selectivity for the acceleration stage.

Cohort dynamics also play a vital role. A well-curated cohort creates a competitive yet collaborative environment. The diversity of the cohort—in terms of disciplinary background and skill sets—is a key factor. Benessalah (Benessalah & Abdelmalek, 2025) examines student startups in Algeria, noting that multidisciplinary teams often outperform those formed within a single faculty. The peer pressure within a cohort can drive performance, but toxic competitiveness can undermine the psychological safety necessary for learning.

2.1.3.4 Digital Transformation and Hybrid Models The COVID-19 pandemic forced a major change in accelerator design. Hosseinpour et al. (hosseinpour et al., 2024) investigate the success factors of digital startup accelerators in the post-Corona era. Their findings suggest that while digital delivery expands reach and inclusivity, it challenges the formation of deep social ties. Success in the digital field requires intentional design choices, such as virtual serendipity engineering and high-frequency check-ins, to replicate the intensity of physical presence.

This shift has led to the rise of hybrid models that combine the efficiency of online content delivery with the impact of in-person community building. The literature suggests that the “post-Corona” accelerator must be resilient and adaptable, leveraging digital tools not just for delivery but for data collection and performance monitoring.

2.1.4 Typologies and Comparative Analysis

The literature distinguishes between several dominant accelerator typologies, each with distinct governance structures and strategic goals. Understanding these differences is essential for positioning university-based programmes effectively.

2.1.4.1 University-Based vs. Corporate Accelerators University-based accelerators differ fundamentally from their corporate counterparts. While corporate accelerators are often driven by strategic alignment, open innovation, or potential acquisition targets, uni-

versity accelerators are driven by educational outcomes, regional economic development, and technology transfer.

Andreeva and Postnikov (Andreeva & Postnikov, 2021) analyze the survival of innovative technology startups in corporate accelerators, using the “TechNet” case. Their findings highlight that corporate programmes often provide superior access to markets and pilot opportunities. In contrast, Bennett et al. (Bennett et al., 2016) question the effectiveness of university incubators/accelerators, suggesting they may be socially valuable but commercially inefficient compared to private models. The tension lies in the timeline: universities operate on academic calendars, while corporate accelerators operate on market speed.

2.1.4.2 Independent and Regional Innovation Hubs Independent accelerators (e.g., Y Combinator style) focus primarily on financial returns and equity growth. Regional innovation hubs, as described by Pinheiro et al. (Pinheiro et al., 2025), often sit between these models, aggregating resources from various stakeholders. These hubs often serve as “super-connectors,” linking university research outputs with independent venture capital.

Table 1 summarizes the comparative characteristics of these typologies based on the reviewed literature.

Feature	University-Based	Corporate	Independent
Primary Goal	Education, Tech Transfer (Chervona & Bulvinska, 2025)	Strategic Fit, Innovation (Andreeva & Postnikov, 2021)	Financial Return, Exits (Pauwels et al., 2016)
Duration	Semester/Academic Year	3-6 Months	3 Months
Mentorship	Faculty + Alumni	Executives + Technical Staff	Investors + Serial Founders
Funding	Grants/Non-equity	Equity/Pilot Contracts	Equity Investment

Feature	University-Based	Corporate	Independent
Key Metric	Learning, Regional Impact	Strategic Value, Integration	Valuation, Follow-on Funding

Table 1: Comparative Analysis of Accelerator Typologies. Source: Adapted from Pauwels et al. (Pauwels et al., 2016), Andreeva & Postnikov (Andreeva & Postnikov, 2021), and Bennett et al. (Bennett et al., 2016).

The distinction in “Key Metric” is particularly relevant. While independent accelerators ruthlessly optimize for valuation, university programmes must often justify their existence through “soft” metrics like student employability or regional retention of talent.

2.1.4.3 Sustainability and Social Impact Focus A growing sub-theme in the literature is the focus on sustainability. Karahan (Karahan, 2024) discusses the transformation of university business incubators in Germany towards sustainable entrepreneurship. This reflects a broader trend where universities use their public mission to support ventures addressing Grand Challenges (climate change, social inequality) that might be deemed too risky or long-term for commercial accelerators.

2.1.5 Impact Measurement and Startup Outcomes

Measuring the impact of accelerator programmes remains a contentious area in the literature. The diversity of objectives makes standardized benchmarking difficult.

2.1.5.1 Survival Rates and Financial Metrics Traditional metrics focus on survival rates, funding raised, and revenue growth. Sad (Sad, 2021) provides an empirical analysis of the impact of incubators and accelerators on startups, reinforcing that participation generally correlates with higher survival rates. However, selection bias remains a pervasive methodological issue—do accelerators create success, or do they merely select startups that were already destined to succeed?

Buzzacchi et al. (Buzzacchi et al., 2015) explore investment stage drifts and venture capital incentives, noting that the metrics used by investors often drive startup behavior. If an accelerator measures success solely by “funding raised,” it may incentivize startups to pursue premature scaling rather than sustainable growth.

2.1.5.2 Human Capital Development For university accelerators, human capital development is a co-equal outcome. Allen and Drean (Allen & Drean, 2022) investigate the impact of human capital investment on economic growth, a macro concept that applies at the micro level of the accelerator. The skills acquired during acceleration—pitching, financial modeling, customer discovery—remain with the student regardless of the venture’s fate.

Calof and Blakely (Calof & Blakely, 2023) introduce the concept of “futures literacy” and anticipatory systems in entrepreneurship programmes. They argue that measuring the development of these cognitive skills is important, as they determine the entrepreneur’s long-term adaptability. Similarly, Dutta (Dutta, 2025) emphasizes the role of innovation culture in Indian HEIs, suggesting that the cultural imprint left on the student body is a valid, albeit difficult to measure, outcome.

2.1.5.3 Methodological Approaches in Existing Literature The methodologies used to study accelerators have evolved. Early studies were largely descriptive or relied on single case studies. Recent work has employed more rigorous quantitative methods. For example, Naderi and Ahi (Naderi & Ahi, 2025) uses randomized controlled trials (though in a clinical context, the methodology is aspirational for social science). In the business domain, longitudinal studies tracking cohorts over time are becoming the gold standard.

However, challenges remain. Feng and Tan (Feng & Tan, 2024) conduct a systematic literature review on digital cultural and social capital, highlighting the fragmentation of measurement tools. There is no universally agreed-upon scale for measuring “system integration” or “mentorship quality,” leading to disparate findings that are difficult to meta-analyze.

2.1.6 Identification of Research Gaps

Despite the growing volume of literature, several critical gaps persist, particularly regarding the specific dynamics of university-based accelerators in the European context.

2.1.6.1 Theoretical Gaps First, there is a lack of integrated theory that combines educational pedagogy with accelerator mechanics. Most studies view the university accelerator through a purely economic lens (as a sub-par commercial accelerator) or a purely educational lens (as a capstone course). There is a need for a theoretical framework that acknowledges the hybrid nature of these programmes.

Second, the literature on *student* specific psychometrics within accelerators is sparse. While Voronov et al. (Voronov et al., 2024) analyze external factors forming entrepreneurial intentions, there is less understanding of how the *internal* design of an accelerator interacts with the specific developmental stage of university students (e.g., identity formation, risk tolerance).

2.1.6.2 Methodological Limitations in Current Studies Methodologically, most studies rely on short-term metrics (funding raised upon exit). There is a paucity of longitudinal research that tracks student entrepreneurs 5-10 years post-acceleration to understand the long-tail impact of the intervention on their career trajectories and subsequent entrepreneurial endeavors. Furthermore, qualitative deep dives into the “black box” of the mentorship process—what actually happens in those sessions—are rare.

Additionally, while regional studies exist (e.g., Ukraine (Donets, 2025), Germany (Karahana, 2024), Algeria (Benessalah & Abdelmalek, 2025)), comparative cross-European studies that control for institutional variance are lacking. Understanding how different national policy frameworks influence the design and efficacy of university accelerators represents a significant opportunity for contribution.

Summary

The literature confirms that university-based accelerators are complex, hybrid organizations that serve multiple masters. They must balance the commercial imperatives of the startup world with the pedagogical and social missions of the university. While critical success factors such as mentorship, network access, and rigorous selection are well-identified, the specific mechanisms of how these factors function within the constraints of a university environment remain under-explored. The shift towards digital and hybrid models post-COVID-19 adds another layer of complexity, necessitating new research into how virtual proximity affects the transmission of tacit knowledge and social capital in student ecosystems.

This review establishes the foundation for the present study, which aims to address these gaps by qualitatively exploring the design characteristics of university accelerators and their influence on the developmental trajectory of student startups within the European context.

2.1.7 Synthesis of Key Findings

To consolidate the insights from the reviewed literature, Table 2 presents a synthesis of key findings regarding critical success factors and their implications for programme design.

Critical Success Factor	Key Findings from Literature	Implications for University	
		Accelerators	Citations
Digital Adaptation	Shift to virtual/hybrid models requires intentional “serendipity engineering” to maintain social capital.	Must invest in digital infrastructure and hybrid community building.	(hosseinpour et al., 2024), (Feng & Tan, 2024)
System Integration	Success depends on permeability between university, industry, and government (Triple Helix).	Programmes cannot operate in silos; need formal industry bridges.	(Pendidikan et al., 2025), (Ancona & Ceci, 2025), (Pinheiro et al., 2025)
Selection Rigor	Data-driven selection correlates with better outcomes; tension between inclusivity and exclusivity.	Need transparent criteria that balance educational access with commercial viability.	(Zadehnoori, 2023), (Bennett et al., 2016)
Mentorship Quality	Access to “tacit knowledge” is more valuable than general advice; alumni networks are underutilized.	Shift from faculty-led to practitioner/alumni-led mentorship.	(Keen et al., 2019), (Sad, 2021)

Critical Success Factor	Key Findings from Literature	Implications for University	
		Accelerators	Citations
Sustainability Focus	Growing emphasis on sustainable and social entrepreneurship as a university differentiator.	Opportunity to specialize in “Grand Challenges” rather than generic software.	(Karahan, 2024), (Benessalah & Abdelmalek, 2025)

Table 2: Synthesis of Critical Success Factors and Implications. Source: Author’s compilation based on cited literature.

This synthesis highlights that the “one-size-fits-all” approach to acceleration is obsolete. University accelerators must use their unique assets—research capabilities, student talent, and institutional longevity—to create value propositions that corporate accelerators cannot replicate. The subsequent methodology section will detail how this study investigates these dynamics through empirical fieldwork.

2.1.8 Conclusion of Literature Review

In conclusion, the literature review demonstrates that while the accelerator model has matured, its application within the university context is still evolving. The transition from physical incubation to intangible acceleration, the integration of digital delivery models, and the increasing focus on system embeddedness are the defining trends of the current decade. The identified gaps regarding the long-term impact on human capital and the specific pedagogical-commercial hybridity of these programmes provide a clear mandate for the research questions posed in this thesis. By examining the interplay between programme design and startup development, this study contributes to a more nuanced understanding of how universities can effectively act as engines of entrepreneurial growth in Europe.

2.2 Methodology

The preceding literature review identified a critical shift in the domain of entrepreneurial acceleration: a transition from inquiring whether accelerators function to understanding the mechanisms of *how* they function, particularly within the hybrid physical-digital context of European university ecosystems. To investigate the research question—*To what extent do design characteristics of university-based accelerator programmes shape the development and growth of early-stage student start-ups?*—this study adopts a qualitative, multiple-case study design. This methodological choice is predicated on the need to capture the “tacit knowledge” and social capital dynamics identified as important by recent scholarship (Keen et al., 2019)(Zhao & Khan, 2024).

This chapter details the research philosophy, design, case selection strategy, data collection protocols, and analytical frameworks employed. It grounds these choices in the theoretical gaps highlighted in Section 2.1, specifically addressing the tension between standardization and the bespoke needs of student entrepreneurs in a post-pandemic environment (hosseinpour et al., 2024).

2.2.1 Research Philosophy and Approach

2.2.1.1 Interpretivist Constructivism

Given the complex, socially embedded nature of entrepreneurial ecosystems, this research is grounded in an interpretivist philosophical stance. Unlike positivist approaches that seek to isolate variables in a laboratory-like setting, interpretivism acknowledges that the “success” of an accelerator is socially constructed by its stakeholders—university administrators, student founders, mentors, and policymakers.

The choice of interpretivism is supported by the work of Pauwels et al. (Pauwels et al., 2016), who argue that understanding the new generation of incubation models requires

dissecting the complex interactions between programme design and participant experience. Furthermore, as highlighted by Wright et al. (Wright et al., 2017), student start-up ecosystems are distinct from general corporate ecosystems; they are heavily influenced by the educational and institutional mission of the university. An interpretivist approach allows for the exploration of these institutional nuances, such as the “generational communities” within universities described by Shabrova (Shabrova, 2025), which influence how knowledge is transferred and how mentorship is perceived.

2.2.1.2 Qualitative Case Study Design

A qualitative research design was selected as the most appropriate method to answer the research question. Quantitative methods alone are insufficient to explain the causal mechanisms between specific programme design elements (e.g., curriculum structure, mentorship matching) and long-term startup outcomes.

The rationale for a multiple-case study design is threefold: 1. **Contextual Sensitivity:** It allows for the examination of accelerators within their specific regional and institutional contexts (e.g., the difference between a technical university in Germany (Koschatzky, 2003) and an emerging system in Eastern Europe (Donets, 2025)). 2. **Process Tracing:** It enables the tracking of startup development over time, distinguishing between the impact of the accelerator and the inherent quality of the startup team, addressing the selection bias concerns noted in the literature (Zadehnoori, 2023). 3. **Comprehensive Analysis:** It facilitates the integration of diverse data sources—interviews, programme documents, and performance metrics—to build a comprehensive picture of the acceleration process.

Table 3 summarizes the alignment between the identified research gaps and the chosen methodological approach.

Research Gap	Methodological Response	Justification Source
“Black Box” of Acceleration	In-depth interviews with managers and founders to open the “black box” of daily operations.	(Pauwels et al., 2016), (Doğaj, 2025)
Hybrid Paradox (Digital vs. Local)	Analysis of digital engagement tools and virtual mentorship logs.	(hosseinpour et al., 2024), (Pinheiro et al., 2025)
Sustainability & Impact	Longitudinal tracking of social impact metrics beyond mere financial valuation.	(Karahan, 2024), (Calof & Blakely, 2023)
System Embeddedness	Mapping of Triple Helix relationships (University-Industry-Government).	(Pendidikan et al., 2025), (Ancona & Ceci, 2025)

Table 3: Alignment of Research Gaps with Methodological Design. Source: Author’s elaboration based on cited literature.

2.2.2 Case Selection Strategy

2.2.2.1 Purposive Sampling Criteria

To ensure the findings are strong and transferable, a purposive sampling strategy is employed. The selection of university accelerators is driven by the diversity of “design characteristics” identified in the literature review. The goal is not statistical representativeness but analytical generalization.

The following criteria are established for case inclusion: 1. **Institutional Affiliation:** The accelerator must be formally affiliated with a European Higher Education Institution (HEI), ensuring the presence of the “university effect” on entrepreneurship (Chervona

& Bulvinska, 2025)(Voronov et al., 2024). 2. **Operational Maturity:** Programmes must have been operational for at least three years (pre- and post-2020) to allow for the analysis of resilience and adaptation to the “post-Corona era” (hosseinpour et al., 2024). 3. **System Integration:** Selected cases must demonstrate active engagement with regional innovation systems, as isolated programmes do not reflect the “Triple Helix” partnership model (Pendidikan et al., 2025). 4. **Data Availability:** Access to alumni data and programme managers is a prerequisite.

2.2.2.2 Typology of Selected Cases

Based on the typology proposal for innovation hubs by Pinheiro et al. (Pinheiro et al., 2025), the study targets three distinct types of university accelerators to allow for comparative analysis:

- **Type A: The Research-Intensive Hub.** Focuses on deep-tech and spin-offs from faculty research. This type aligns with the “Science and Technology Park” model described by Ancona and Ceci (Ancona & Ceci, 2025), where the emphasis is on hard science transfer.
- **Type B: The Student Entrepreneurship Sandbox.** Focuses on broad-based competency development for undergraduates. This aligns with the “educational incubator” model discussed by Benessalah (Benessalah & Abdelmalek, 2025), where the primary KPI is student learning rather than immediate commercialization.
- **Type C: The Regional System Integrator.** Focuses on regional economic development and sustainability. This type reflects the “sustainable entrepreneurial university” model (Karahan, 2024), emphasizing social impact and regional retention of talent.

2.2.3 Data Collection Protocols

The data collection phase uses triangulation across three primary sources: semi-structured interviews, document analysis, and observation of digital/physical artifacts. This

triangulation enhances the validity of the findings by cross-verifying self-reported data against documented evidence.

2.2.3.1 Semi-Structured Interviews

Interviews constitute the primary data source. The interview protocol is designed to elicit detailed narratives regarding the acceleration experience.

Target Groups: 1. **Programme Managers:** To understand the strategic intent, resource allocation, and selection criteria (Zadehnoori, 2023). 2. **Student Founders (Alumni):** To gauge the perceived value of mentorship, funding, and network access. 3. **Mentors/External Stakeholders:** To validate the quality of the “tacit knowledge” transfer (Keen et al., 2019).

The interview guide is structured around the Critical Success Factors (CSFs) identified in Section 2.1. Specifically, questions regarding **mentorship** probe not just the frequency of interaction, but the *nature* of the guidance—technical vs. Strategic. Questions regarding **networks** focus on the concept of “social capital” and its conversion into economic value (Zhao & Khan, 2024).

Key interview themes derived from literature include: - **Selection Mechanisms:** How rigorous is the screening? Does it align with the “lucrative startup” criteria described by Zadehnoori (Zadehnoori, 2023)? - **Curriculum Design:** Is there a balance between “corporate contractualism” and educational freedom (Yang, 2025)? - **Sustainability Integration:** How are sustainable development goals (SDGs) integrated into the business modeling process (Karahan, 2024)?

2.2.3.2 Document and Artifact Analysis

To supplement interview data, a systematic review of programme documentation is conducted. This includes: - **Official Annual Reports:** To extract quantitative data on cohort size, funding distributed, and survival rates (Andreeva & Postnikov, 2021). - **Cur-**

riculum Syllabi: To analyze the pedagogical approach—specifically, the extent to which “futures literacy” and anticipatory systems are taught (Calof & Blakely, 2023). - **Digital Platforms:** Analysis of the virtual tools used for cohort management, reflecting the digitalization trends noted by Hosseinpour et al. (hosseinpour et al., 2024).

2.2.3.3 Defining Key Variables and Metrics

While this is a qualitative study, it is essential to define the conceptual variables that frame the analysis. Drawing from the literature, “Startup Development” is not defined solely by revenue but by a composite of **Human Capital** and **Social Capital** accumulation.

Human Capital Formation: As noted by Allen and Drean (Allen & Drean, 2022), human capital investment has a lagged impact on economic growth. In the context of student startups, this is measured by the acquisition of entrepreneurial competencies. The study adopts the framework from Dutta (Dutta, 2025), which links entrepreneurship education to innovation culture.

Social Capital Formation: Social capital is operationalized as the network resources embedded within the accelerator. Following Hallinan (Hallinan, 2009) and Feng and Tan (Feng & Tan, 2024), this study distinguishes between *bonding social capital* (peer-to-peer support within the cohort) and *bridging social capital* (connections to external investors and industry partners).

2.2.4 Data Analysis Framework

2.2.4.1 Thematic Analysis

The collected data is analyzed using a reflexive thematic analysis approach. This involves six phases: familiarization with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report.

Coding is conducted using a hybrid approach: - **Deductive Coding:** Codes derived a priori from the literature review (e.g., “Mentorship Quality,” “Funding Access,” “Institutional Support” (Chervona & Bulvinska, 2025)). - **Inductive Coding:** Codes emerging directly from the data (e.g., “Digital Fatigue,” “Alumni Re-engagement”).

2.2.4.2 Comparative Analysis Strategy

Cross-case synthesis is employed to identify patterns across the different accelerator types. This analysis seeks to determine if specific design characteristics (e.g., the presence of a “sustainability track” (Karahana, 2024)) consistently lead to specific outcomes (e.g., higher survival rates or social impact).

To rigorously compare the “success” of startups across different programmes, the study uses a qualitative interpretation of the “Startup Survival” concept. While quantitative survival analysis (e.g., Ngeno (Ngeno, 2025)) looks at retention rates, this qualitative analysis looks at the *reasons* for survival or failure. The analysis framework considers the “survival of innovative technology startups” as a function of external support mechanisms, as suggested by Andreeva and Postnikov (Andreeva & Postnikov, 2021).

The analytical logic follows the equation of impact proposed in the theoretical framework:

$$\text{Impact} = f(\text{Design Characteristics} \times \text{System Integration})$$

Where “Design Characteristics” include the variables of curriculum, mentorship, and selection, and “System Integration” represents the Triple Helix connections (Pendudukan et al., 2025).

2.2.4.3 Evaluating Mentorship and Knowledge Transfer

A specific analytical focus is placed on the *quality* of mentorship. The literature suggests that access to “tacit knowledge” is a primary value driver (Keen et al., 2019). The

analysis will categorize mentorship interactions based on the depth of knowledge transfer, distinguishing between generic business advice and domain-specific technical guidance. This distinction is critical in university settings where faculty mentors may possess deep technical knowledge but limited commercial experience.

2.2.5 Methodological Rigor and Ethical Considerations

2.2.5.1 *Validity and Reliability*

To ensure the trustworthiness of the study, several strategies are employed: - **Triangulation:** As previously mentioned, combining interviews with document analysis. - **Member Checking:** Returning summary findings to interview participants to verify accuracy. - **Thick Description:** Providing detailed contextual information for each case to allow readers to determine transferability.

The study also acknowledges the “Selection Bias” inherent in accelerator research. As noted by Doçaj (Doçaj, 2025), distinguishing whether an accelerator creates success or merely selects it is difficult. This study addresses this by asking participants specifically about the *value-add* of the programme relative to their baseline trajectory.

2.2.5.2 *Limitations of the Methodology*

It is important to acknowledge the limitations of this design. 1. **Generalizability:** As a qualitative study, findings are not statistically generalizable to all European universities. However, they provide analytical generalization regarding the mechanisms of acceleration. 2. **Recall Bias:** Retrospective interviews with alumni may be subject to recall bias. 3. **Geographic Heterogeneity:** The economic context of Western Europe differs significantly from Eastern Europe (e.g., Ukraine (Donets, 2025)), which may influence startup viability independent of accelerator design. 4. **Self-Selection:** Startups that failed or had negative

experiences may be less likely to participate in interviews, potentially skewing the perception of success.

2.2.5.3 Ethical Considerations

Ethical approval is a prerequisite for data collection involving human participants. All interviewees are provided with informed consent forms detailing the purpose of the study, the voluntary nature of participation, and the measures taken to ensure anonymity. Given the competitive nature of startups, strict confidentiality regarding intellectual property and business strategies is maintained. Data storage and processing adhere to GDPR regulations, ensuring the protection of personal data.

2.2.6 Conclusion of Methodology

This methodology chapter has outlined a strong qualitative framework designed to investigate the internal dynamics of university-based accelerators. By adopting a multi-case study approach grounded in interpretivism, the research is positioned to uncover the nuanced interplay between programme design and startup development.

The focus on “Human Capital” (Zhao & Khan, 2024) and “Social Capital” (Hallinan, 2009) as primary units of analysis—rather than simple financial valuation—allows for a deeper understanding of the university’s role in the entrepreneurial system. This design directly addresses the call in recent literature (hosseinpour et al., 2024)(Pauwels et al., 2016) to move beyond descriptive lists of success factors toward an explanatory understanding of how these factors interact in practice. The subsequent chapter will present the analysis of the data collected through this framework, organized by the key themes of mentorship, network integration, and sustainability.

2.2.7 Methodological Framework Summary

Table 4 provides a consolidated view of the methodological framework, linking research questions to specific data sources and analytical techniques.

Research Component	Data Source	Analytical Technique	Key Literature
			Reference
Programme Design	Manager Interviews, Syllabi	Content Analysis	(Doçaj, 2025), (Higuera, 2014)
Mentorship Quality	Alumni Interviews, Mentor Logs	Thematic Coding	(Keen et al., 2019), (Shabrova, 2025)
System Links	Partnership Agreements	Network Mapping	(Pendidikan et al., 2025), (Ancona & Ceci, 2025)
Startup Resilience	Survival Data, Founder Narratives	Pattern Matching	(Andreeva & Postnikov, 2021), (hosseinpour et al., 2024)
Sustainability	Impact Reports, Strategy Docs	Discourse Analysis	(Karahan, 2024), (Benessalah & Abdelmalek, 2025)

Table 4: Summary of Methodological Framework. Source: Author’s elaboration.

The inclusion of sustainability as a core analytical dimension is particularly relevant. As Karahan (Karahan, 2024) notes, university incubators are undergoing a “sustainability transformation.” This methodology is specifically tuned to detect how this transformation manifests in the day-to-day operations of acceleration, distinguishing between superficial “greenwashing” and genuine integration of sustainable business modeling.

Furthermore, the design accounts for the “digital shift.” By incorporating the analysis of digital platforms and virtual engagement strategies, the methodology addresses the post-

Corona reality described by Hosseinpour et al. (hosseinpour et al., 2024), where the physical boundaries of the accelerator have become porous. This “hybrid” lens is applied across all cases, evaluating how digital tools either enhance or diminish the accumulation of social capital (Feng & Tan, 2024).

Finally, the measurement of “success” is calibrated to the student context. Recognizing that students often engage in entrepreneurship for learning rather than immediate IPOs, the methodology incorporates the “entrepreneurial intention” factors discussed by Voronov et al. (Voronov et al., 2024). This ensures that the evaluation of accelerator impact is fair and aligned with the educational mission of the host universities.

2.3 Analysis and Results

The following section presents the comprehensive analysis and results derived from the investigation into the design characteristics and impact of university-based accelerator programmes. Following the methodological framework established in the previous chapter, this analysis synthesizes empirical evidence, theoretical models, and comparative case studies from the identified literature. The results are categorized into five primary dimensions: the structural architecture of accelerator programmes, the specific context of university integration, the digital transformation of acceleration services, the measurable impact on startup trajectories, and the broader integration within regional entrepreneurial ecosystems. The analysis specifically addresses the research question regarding the extent to which programme design shapes the development of early-stage student start-ups.

2.3.1 Analysis of Accelerator Programme Design Architectures

The structural design of an accelerator programme serves as the fundamental scaffolding upon which entrepreneurial support is delivered. The analysis of the literature reveals that design choices—specifically regarding duration, selection criteria, and service

composition—are not merely logistical details but are determinative factors in the success and survival of participating ventures.

2.3.1.1 Structural Configuration and Service Provision

The “new generation” incubation model, widely referred to as the accelerator, is distinguished by specific structural features that separate it from traditional incubators. A critical analysis of the definitions and typologies provided by Pauwels et al. (Pauwels et al., 2016) and Higuera (Higuera, 2014) indicates that the “fixed-term” nature of accelerators is their most defining and consequential characteristic. Unlike the open-ended tenure often found in science parks or traditional innovation centers, accelerators impose a time constraint—typically three to six months—that forces a rapid validation of business assumptions.

The literature suggests that this temporal pressure acts as a forcing function for student entrepreneurs. Doçaj (Doçaj, 2025) argues that the design of these programmes must balance the intensity of the curriculum with the absorptive capacity of the entrepreneurs. The analysis shows that successful university-based accelerators often structure their service provision around “batches” or cohorts, which creates a competitive yet collaborative environment. This cohort effect is central to the accumulation of social capital, a theme that will be explored in greater depth in subsequent sections.

Furthermore, the service mix within these programmes has evolved. While early definitions focused heavily on seed funding and office space, recent findings highlight a shift toward intangible assets. Higuera (Higuera, 2014) emphasizes the design of “best-practice” accelerators that prioritize mentorship networks and educational content over physical infrastructure. This aligns with the findings of Sad (Sad, 2021), who notes that the impact of business incubators and accelerators is increasingly measured by the quality of soft-skill transfer rather than capital injection alone.

Table 1 summarizes the key structural design variables identified in the comparative analysis of the literature, contrasting traditional approaches with modern, university-centric adaptations.

	Traditional Commercial	University-Centric	Impact
Design Variable	Model	Model	Implication
Duration	3-4 months (rigid)	4-12 months (flexible)	Accommodates academic calendars (Benessalah & Abdelmalek, 2025)
Cohort Size	Small (10-15 teams)	Variable (often larger)	Scalability vs. Attention trade-off (Pauwels et al., 2016)
Funding	Equity-based investment	Grants/Non-equity	Reduces financial barrier without dilution (Buzzacchi et al., 2015)
Mentorship	Investor/Exit-focused	Education/Skill-focused	Prioritizes learning over immediate ROI (Keen et al., 2019)
Outcome	Demo Day/Investment	Venture viability/Skills	Focus on human capital development (Allen & Drean, 2022)

Table 1: Comparative Analysis of Accelerator Design Variables. Source: Synthesis of findings from (Benessalah & Abdelmalek, 2025), (Pauwels et al., 2016), (Keen et al., 2019), (Higuera, 2014), and (Buzzacchi et al., 2015).

The data presented in Table 1 illustrates a distinct divergence in the university-centric model. The extension of duration to accommodate academic calendars, as noted by Benessalah (Benessalah & Abdelmalek, 2025), represents an important adaptation. Student entrepreneurs often balance their venture creation with degree requirements, making the rigid 3-month “bootcamp” model of commercial accelerators (like Y Combinator) potentially counterproductive. By extending the timeline, university accelerators allow for a deeper integration of the educational curriculum with the practical demands of venture creation.

However, this extension poses a risk of reducing the “pressure cooker” environment that drives rapid iteration. Analysis of (Doçaj, 2025) suggests that programmes must introduce artificial deadlines and milestones to maintain momentum in the absence of the intense commercial pressure found in private accelerators. The non-equity funding model prevalent in universities (Buzzacchi et al., 2015) further alters the incentive structure; while it lowers the risk for students, it may also reduce the immediate alignment with market realities that equity investors typically enforce.

2.3.1.2 Selection Mechanisms and Screening Criteria

The input stage of an accelerator—the selection of startups—is arguably as critical as the programme itself. Zadehnoori (Zadehnoori, 2023) provides a data-driven analysis of screening criteria, highlighting the challenge of identifying “lucrative” startups from a staggering number of applicants. In the commercial sector, selection is often predicated on the potential for high-growth returns and the team’s track record.

In the university context, the analysis reveals a more complex set of criteria. The “lucrative” nature of a startup is not solely defined by financial potential but also by edu-

cational value and alignment with institutional goals. Wright et al. (Wright et al., 2017) discuss the emerging system for student start-ups, suggesting that universities often select ventures based on the learning potential for the student, rather than just the commercial viability of the idea.

This creates a tension in the selection mechanism. If an accelerator selects primarily for educational outcomes, it may accept ventures with lower growth potential, thereby impacting the programme’s aggregate economic metrics. Conversely, strict commercial screening might exclude high-potential learning opportunities. The analysis of Zadehnoori (Zadehnoori, 2023) suggests that data-driven pipelines can help optimize this process by identifying early indicators of success—such as team composition and coachability—that satisfy both educational and commercial objectives.

Furthermore, the “screening” function acts as a quality signal to the broader system. Participation in a selective university accelerator validates the venture to external stakeholders. This signaling effect is important for early-stage student ventures that lack a track record. By passing through a rigorous selection process, these ventures inherit a degree of legitimacy from the university brand.

2.3.2 The University Context: Institutional Integration and Support

The university environment provides a unique ecological niche for accelerators. Unlike independent or corporate accelerators, university-based programmes are embedded within a mission of research and education. The analysis of the literature identifies two major themes in this context: the integration of entrepreneurship into the academic fabric and the ongoing sustainability transformation of these institutions.

2.3.2.1 Curricular Integration and Academic Entrepreneurship

The concept of the “Entrepreneurial University” has evolved from a theoretical ideal to a practical operational model. Chervona and Bulvinska (Chervona & Bulvinska, 2025) analyze the institutional environment of European entrepreneurial universities, noting that support for student entrepreneurship is now a key criterion for accreditation and ranking. This institutional mandate drives the design of accelerators to be more than just extracurricular activities; they are increasingly integrated into the academic pathway.

Benessalah (Benessalah & Abdelmalek, 2025) examines the specific case of student startups under regulatory frameworks that permit final-year students to establish businesses as part of their degree requirements. This integration transforms the accelerator from a peripheral service to a core educational vehicle. The analysis indicates that when acceleration is tied to academic credit or thesis work, student engagement increases, but the nature of the venture often shifts toward projects that demonstrate academic rigor rather than pure market agility.

Keen et al. (Keen et al., 2019) trace the evolution of academic entrepreneurship over one hundred years, arguing that we are currently in a phase where management education and practical venture creation are converging. The accelerator becomes the “laboratory” for this convergence. However, Bennett et al. (Bennett et al., 2016) raise a critical question regarding effectiveness. Their case study analysis suggests that while university incubators are socially valuable, their effectiveness in producing commercially sustainable firms can be inconsistent. This inconsistency often stems from the dual objectives mentioned earlier: the tension between educating students and launching viable businesses.

The “Triple Helix” model, discussed by Penedidikan et al. (Penedidikan et al., 2025), provides a framework for resolving this tension. By fostering partnerships between universities, industry, and government, outcome-based curricula can be designed to satisfy multiple stakeholders. The accelerator serves as the nexus of this triple helix, where government policy (funding), industry needs (market validation), and university goals (education) intersect.

2.3.2.2 The Sustainability Transformation in University Incubators

A significant finding from the recent literature is the “sustainability transformation” of university business incubators (UBIs). Karahan (Karahan, 2024) provides a seminal analysis of this trend in Germany, noting that Higher Education Institutions (HEIs) are adopting sustainability as a central mission. This goes beyond simple corporate social responsibility; it involves a fundamental redesign of how startups are incubated.

The analysis reveals that modern university accelerators are increasingly prioritizing “impact ventures”—startups that address environmental or societal challenges. This shift is not merely ideological but strategic. Given the profound environmental challenges facing society, universities are positioning themselves as engines of sustainable innovation. Karahan’s findings suggest that UBIs are modifying their selection criteria, mentorship networks, and curriculum to favor sustainable business models.

This transformation introduces new critical success factors. Accelerators must now provide expertise in circular economy principles, social impact measurement, and ethical governance. Yang (Yang, 2025) discusses the broader context of corporate contractualism versus constitutionalism, implying that sustainable ventures require a different governance structure—one that balances profit with purpose. For university accelerators, this means teaching students not just how to pitch to VCs, but how to structure a B-Corp or a social enterprise.

Table 2 highlights the dimensions of this sustainability transformation as identified in the literature.

Transformation Dimension	Traditional Focus	Sustainable Focus	Key Literature
Mission	Economic Growth, Job Creation	Societal Impact, SDGs	(Karahan, 2024), (Benessalah & Abdelmalek, 2025)

Transformation Dimension	Traditional Focus	Sustainable Focus	Key Literature
Curriculum	Business Planning, Finance	Circular Economy, Ethics	(Karahana, 2024), (Yang, 2025)
Mentorship	VCs, Serial Entrepreneurs	Impact Investors, NGOs	(Higuera, 2014)
KPIs	Revenue, Funding Raised	CO2 Reduction, Social ROI	(Karahana, 2024), (Calof & Blakely, 2023)
Outcome	Exit/IPO	Long-term Resilience	(Calof & Blakely, 2023)

Table 2: Dimensions of Sustainability Transformation in University Accelerators.
Source: Analysis based on (Benessalah & Abdelmalek, 2025), (Yang, 2025), (Karahana, 2024), (Calof & Blakely, 2023), and (Higuera, 2014).

The shift towards sustainability also aligns with the “Futures Literacy” concept discussed by Calof and Blakely (Calof & Blakely, 2023). By integrating anticipatory systems into entrepreneurship programs, universities help students design ventures that are resilient to future shocks, whether environmental or economic. This forward-looking approach is a distinct advantage of university-based programmes, which can afford to take a longer-term view compared to commercially driven accelerators focused on quarterly returns.

2.3.3 Digital Transformation and Hybrid Operating Models

The COVID-19 pandemic acted as a catalyst for a radical restructuring of accelerator operating models. The analysis of literature from the post-2020 period reveals that the “digital shift” is not a temporary measure but a permanent evolution in how entrepreneurial support is delivered.

2.3.3.1 Virtualization of Mentorship and Networking

Hosseinpour et al. (hosseinpour et al., 2024) investigate the success factors of digital startup accelerators in the post-Corona era. Their findings indicate that the virtualization of services has fundamentally altered the geography of acceleration. Previously, the value of an accelerator was heavily tied to its physical location (e.g., Silicon Valley, London) and the serendipitous interactions that occurred in co-working spaces. The shift to digital platforms has democratized access, allowing accelerators to support startups regardless of their physical location.

However, this virtualization presents significant challenges. The analysis suggests that while *transactional* interactions (e.g., webinars, legal advice) transition well to digital formats, *relational* interactions (e.g., trust-building with mentors, peer-to-peer bonding) suffer. Pinheiro et al. (Pinheiro et al., 2025), in their typology of innovation hubs, note that virtual structures must be deliberately designed to enhance innovation, rather than just facilitate communication.

The “hybrid” model appears to be the emerging standard. This model uses digital tools for efficiency in content delivery while reserving physical gatherings for high-value networking and community building. For university accelerators, this is particularly relevant. Students are digital natives, yet the campus experience is inherently physical. The analysis of Hosseinpour et al. (hosseinpour et al., 2024) suggests that successful digital accelerators must implement rigorous communication protocols and virtual community-building rituals to replicate the “hallway effect” of physical incubators.

2.3.3.2 Digital Social Capital Accumulation

The concept of social capital is central to the value proposition of any accelerator. Feng and Tan (Feng & Tan, 2024) provide a systematic review of digital cultural and social capital in student learning. Their analysis is important for understanding how student entrepreneurs navigate the hybrid accelerator environment. They find that digital profi-

ciency acts as a gateway to social capital; students who can effectively use digital networks (LinkedIn, virtual conferences, Slack communities) can accumulate social capital faster than those relying solely on traditional networking.

However, this also introduces a digital divide. Not all students possess the same level of digital cultural capital. Zhao and Khan (Zhao & Khan, 2024) construct a model of the impact of human and social capital on employment quality, which can be extrapolated to entrepreneurship. Their findings suggest that social capital mediates career development. In a virtual accelerator, if a student cannot effectively engage online, their ability to access mentors and investors is severely compromised.

Therefore, a critical success factor for modern university accelerators is the active facilitation of digital social capital. This involves not just providing access to a platform, but training students in digital networking etiquette, personal branding, and virtual pitching. The “porous” nature of the digital accelerator means that students can access global networks, but only if they have the skills to navigate them.

2.3.4 Impact Analysis on Startup Development Trajectories

Ultimately, the efficacy of an accelerator is measured by the performance of the startups it supports. The literature offers various metrics for this, ranging from survival rates to human capital development.

2.3.4.1 Survival Rates and Financial Performance

Measuring the survival of startups is a complex longitudinal task. Andreeva and Postnikov (Andreeva & Postnikov, 2021) analyze the survival of innovative technology startups in a corporate accelerator context. Their comparison of activity over three years provides a benchmark for understanding survival dynamics. They find that participation in an accelerator significantly improves survival rates compared to non-accelerated control groups. The

structured support, mentorship, and validation provided by the programme act as a buffer against early-stage failure.

However, the definition of “survival” in a university context is nuanced. As noted earlier, if the goal is education, a “failed” startup that taught the student valuable lessons might still be considered a programme success. Nevertheless, financial viability remains a key metric. Sad (Sad, 2021) provides an empirical analysis of the impact of incubators on startups, confirming that incubated firms generally demonstrate better management practices and financial discipline.

Table 3 synthesizes findings related to startup performance metrics from the reviewed studies.

Performance Metric	Finding/Observation	Context/Nuance	Source
Survival Rate	Higher for accelerated firms	particularly in first 3 years	(Andreeva & Postnikov, 2021)
Funding Access	Improved signaling to investors	Validation effect of selection	(Buzzacchi et al., 2015), (Sad, 2021)
Management Quality	Enhanced strategic planning	Effect of mentorship/curriculum	(Sad, 2021), (Keen et al., 2019)
Pivot Speed	Faster iteration cycles	“Fail fast” methodology	(Doğaj, 2025)

Performance Metric	Finding/Observation	Context/Nuance	Source
Regional Impact	Higher local retention	University ties anchor firms	(Koschatzky, 2003)

Table 3: Impact of Acceleration on Startup Performance Metrics. Source: Synthesized findings from (Sad, 2021), (Doçaj, 2025), (Andreeva & Postnikov, 2021), (Koschatzky, 2003), and (Keen et al., 2019).

The data indicates a clear positive correlation between acceleration and survival. However, Buzzacchi et al. (Buzzacchi et al., 2015) introduce a caveat regarding “investment stage drifts.” They note that venture capital managerial incentives can shift the focus of startups. In a university accelerator, if the mentorship is too heavily dominated by VCs, student startups might be pushed towards premature scaling or exit strategies that align with investor timelines rather than the organic growth needs of the venture. This highlights the importance of the “protection” function of university accelerators—shielding early-stage innovations from market pressures until they are strong enough to survive.

2.3.4.2 Human Capital and Skill Acquisition

Beyond the firm level, the impact on the individual entrepreneur is essential in a university setting. Allen and Drean (Allen & Drean, 2022) investigate the impact of human capital on economic growth, noting that investment in human capital (education, skills) often has a delayed impact compared to financial capital. In the context of accelerators, this suggests that the true value of the programme might not be realized in the current startup, but in the student’s future entrepreneurial endeavors.

Voronov et al. (Voronov et al., 2024) analyze the external factors forming entrepreneurial intentions among university students. Their findings suggest that the university environment plays a critical role in shaping the *intention* to become an en-

trepreneur. Accelerators serve as a primary vehicle for converting this intention into action. By providing a safe space to experiment, they lower the psychological barrier to entry.

Furthermore, Hallinan (Hallinan, 2009) discusses social capital effects on student outcomes. Participation in an accelerator creates a dense network of peer support. This “cohort effect” contributes to psychological resilience, a critical trait for entrepreneurs. The skills acquired—pitching, business modeling, negotiation, agile development—constitute a permanent increase in the student’s human capital stock, regardless of the specific venture’s outcome.

2.3.5 System Embeddedness and Regional Development

University accelerators do not exist in a vacuum; they are key nodes in broader regional and European ecosystems. The analysis highlights their role as intermediaries that facilitate the flow of knowledge and resources.

2.3.5.1 Triple Helix Interactions and Innovation Hubs

Ancona and Ceci (Ancona & Ceci, 2025) analyze the role of science and technology park networks in fostering regional entrepreneurial system development. They find that these networks are essential for bridging the gap between academic research and industrial application. University accelerators often function as the entry point to these larger parks.

The “Triple Helix” model (University-Industry-Government) is operationalized through these programmes. Penedidikan et al. (Penedidikan et al., 2025) describe how universities implement outcome-based curricula through these partnerships. The accelerator becomes a neutral ground where industry partners can scout for talent and innovation, government agencies can deploy economic development funds, and universities can fulfill their “third mission” of knowledge transfer.

Pinheiro et al. (Pinheiro et al., 2025) propose a typology for innovation hubs, categorizing them based on their activities and objectives. University accelerators are distinct

in that they often prioritize “knowledge spillover” over profit generation. This makes them critical for regional development, as they are more likely to support deep-tech or high-risk ventures that purely commercial hubs might reject.

2.3.5.2 Regional Disparities and European Integration

The European context adds a layer of complexity regarding regional development and integration. Donets (Donets, 2025) examines Ukrainian startup ecosystems in the context of European integration. The findings highlight significant regional disparities. Accelerators in peripheral regions often face challenges in accessing the same quality of mentors and capital as those in central hubs (e.g., London, Berlin, Paris).

However, the digital transformation discussed earlier (hosseinpour et al., 2024) offers a potential remedy. By linking peripheral university accelerators with central European networks, the system can become more integrated. Donets (Donets, 2025) argues that building an innovation economy is a strategic priority for integration. University accelerators act as local anchors that can retain talent in the region while connecting them to global markets.

Koschatzky (Koschatzky, 2003) provides historical context on entrepreneurship stimulation in regional innovation systems in Germany. The analysis shows that public promotion of university-based start-ups is a long-standing policy tool for regional economic renewal. The success of these initiatives often depends on the “absorptive capacity” of the local region—whether there are enough local firms to partner with or acquire the graduating startups.

2.3.6 Synthesis of Critical Success Factors

Synthesizing the findings across all dimensions, a set of Critical Success Factors (CSFs) for university-based accelerator programmes emerges. These factors are distinct from those of corporate accelerators due to the dual educational-commercial mission.

1. **Curricular Alignment:** The programme must be integrated with the student’s academic journey to prevent conflict between study and startup (Benessalah & Abdelmalek, 2025), (Chervona & Bulvinska, 2025).
2. **Mentorship Diversity:** A mix of academic (theoretical) and industry (practical) mentors is essential to balance rigor with relevance (Keen et al., 2019), (Higuera, 2014).
3. **Flexible Duration:** Timelines must accommodate the academic calendar and the learning curve of students (Pauwels et al., 2016).
4. **Digital Hybridity:** Effective use of digital tools to expand networks while maintaining physical community building (hosseinpour et al., 2024), (Pinheiro et al., 2025).
5. **System Integration:** Strong links to regional science parks, industry partners, and government funding bodies (Ancona & Ceci, 2025), (Pendidikan et al., 2025).
6. **Sustainability Focus:** Integrating SDGs and ethical governance into the core value proposition (Karahan, 2024), (Yang, 2025).

The correlation between these design characteristics and startup outcomes is strongly supported by the literature. Programmes that exhibit these CSFs tend to produce startups with higher survival rates (Andreeva & Postnikov, 2021), better financial discipline (Sad, 2021), and founders with higher human and social capital (Zhao & Khan, 2024), (Allen & Drean, 2022). Conversely, programmes that simply replicate the commercial “bootcamp” model without adapting to the university context often face challenges with student retention and venture sustainability.

2.3.7 Conclusion of Analysis

The analysis of the gathered literature confirms that the design characteristics of university-based accelerator programmes significantly shape the development of student start-ups. The shift from a purely commercial logic to a “sustainability-oriented” and “educational” logic represents a maturation of the field. The results indicate that the most successful programmes are those that acknowledge their hybrid nature—functioning simul-

taneously as educational institutions and business launchpads. The digital transformation has further complicated but also enriched this environment, offering new opportunities for inclusion and scaling. The evidence suggests that when universities align their accelerator design with their institutional strengths (research, long-term perspective, societal mission), they create a unique value proposition that corporate accelerators cannot replicate.

The subsequent Discussion section will further interpret these findings, placing them in the context of the broader theoretical framework and offering specific policy recommendations for European higher education institutions.

2.4 Discussion

The synthesis of literature presented in Section 2.3 provides a comprehensive overview of the design characteristics and critical success factors (CSFs) defining contemporary university-based accelerator programmes. These findings, when interpreted through the theoretical lenses established in Section 2.1, reveal a complex environment where educational mandates intersect with commercial imperatives. This section interprets the significance of these findings, discussing how university accelerators function not merely as economic engines but as important mechanisms for human capital development and regional cohesion. By revisiting the theoretical foundations of the “new generation” incubation model (Pauwels et al., 2016) and the emerging system for student start-ups (Wright et al., 2017), this discussion addresses the research question regarding the extent to which programme design shapes startup development. Furthermore, it reconciles the tension identified in the research gaps between the necessity for local institutional embeddedness and the increasing pressure for digital scalability.

2.4.1 The Hybrid Paradox: Educational vs. Commercial Logic

As discussed in Section 2.1, the theoretical definition of an accelerator has traditionally hinged on fixed-term cohorts, seed funding, and a “demo day” conclusion. However, the findings from the literature review in Section 2.3 suggest that university-based programmes are fundamentally altering this definition by embedding a “hybrid paradox”—the simultaneous pursuit of student learning outcomes (pedagogy) and viable venture creation (commercialization).

2.4.1.1 Redefining Success Beyond Financial Metrics

Standard commercial accelerators typically measure success through follow-on funding, exits, and valuation growth. In contrast, the literature analyzed indicates that university-based models require a broader impact measurement framework. Research by Benessalah and Abdelmalek (Benessalah & Abdelmalek, 2025) highlights that for student startups, particularly under regulatory frameworks like the “1275 bylaw” in Algeria, the sustainability and quality of the venture are inextricably linked to the educational scaffolding provided by the university. This aligns with the findings of Zhao and Khan (Zhao & Khan, 2024), who demonstrate that the primary output of these programmes is often the enhancement of human capital rather than the immediate financial success of the venture.

The implication here is significant: if university accelerators are judged solely by commercial metrics, they may appear underperforming compared to their private counterparts (e.g., Y Combinator). However, when viewed through the lens of human capital theory (Allen & Drean, 2022), they are highly effective. The literature suggests that the design characteristic of “educational integration”—incorporating curriculum on business ethics, sustainability, and management—serves a dual purpose. It prepares the venture for market entry while simultaneously equipping the student founder with employability skills that persist even if the specific venture fails. This supports the argument by Wright et al. (Wright et al., 2017) re-

garding the emergence of a distinct system for student start-ups that prioritizes experiential learning.

2.4.1.2 The Role of “Safe Failure” in Programme Design

A critical insight emerging from the comparison of survival rates discussed in Section 2.3 is the concept of “safe failure.” Commercial accelerators often operate on a “fail fast” mentality driven by investment logic. However, the academic environment provides a safety net that alters this dynamic. The findings regarding student survival rates and educational policy (Ngeno, 2025) suggest that institutional support mechanisms function as a buffer, allowing student entrepreneurs to experiment without the immediate existential threat faced by non-academic founders.

This “safe failure” environment is structurally supported by the integration of academic credit and university resources, which lowers the opportunity cost of entrepreneurship. Consequently, the design of university accelerators should explicitly acknowledge this by including “off-ramps” for ventures that prove unviable, transitioning founders back into the academic or employment stream without stigma. This interpretation extends the findings of Bennett et al. (Bennett et al., 2016), who questioned the effectiveness of university incubators, by suggesting that effectiveness must be re-evaluated to include “soft” outcomes like resilience and adaptability.

2.4.2 Critical Success Factors in the Triple Helix Context

The analysis in Section 2.3 identified system integration as a essential success factor. This finding strongly corroborates the Triple Helix model (University-Industry-Government) introduced in the theoretical framework of Section 2.1. The literature confirms that isolated programmes perform poorly; success is contingent upon the accelerator acting as a connective node between stakeholders.

2.4.2.1 The University as an Orchestrator

The findings from Pendidikan et al. (Pendidikan et al., 2025) regarding the implementation of outcome-based curricula within a Triple Helix partnership illustrate that universities are uniquely positioned to orchestrate these relationships. Unlike private accelerators, which may view other stakeholders primarily as sources of capital or deal flow, universities can use their neutral status to build broader coalitions.

Table 1 summarizes the divergent roles and success factors of university-based versus independent accelerators as synthesized from the reviewed literature.

Feature	University-Based Accelerator	Independent/Corporate Accelerator	Implications for Design
Primary Goal	Education & Regional Development	ROI & Strategic Acquisition	Universities must track learning outcomes (Benessalah & Abdelmalek, 2025)
Stakeholder	Triple Helix (Govt/Ind/Univ)	Investors & Shareholders	Curriculum needs policy alignment (Pendidikan et al., 2025)
Time Horizon	Long-term (Student Lifecycle)	Short-term (Fund Cycle)	Post-programme support is critical (Andreeva & Postnikov, 2021)
Key Resource	Knowledge & Human Capital	Financial Capital & Market Access	Focus on mentorship quality over cash (Zhao & Khan, 2024)

	University-Based	Independent/Corporate Implications for	
Feature	Accelerator	Accelerator	Design
Selection	Inclusivity/Pedagogical	Exclusivity/Scalability	Broader intake
	Value		criteria needed
			(Zadehnoori, 2023)

Table 1: Comparative Analysis of Accelerator Typologies and Design Implications.

Source: Adapted from synthesis of (Pendidikan et al., 2025), (Benessalah & Abdelmalek, 2025), and (Zhao & Khan, 2024).

The data presented in Table 1 underscores a critical design implication: university accelerators must structurally embed industry and government partners into their governance and mentorship layers. Ancona and Ceci (Ancona & Ceci, 2025) demonstrate that science and technology park networks foster regional system development. Therefore, a university accelerator that physically or virtually co-locates with such parks significantly enhances its startups’ survival prospects. This physical proximity facilitates what Hallinan (Hallinan, 2009) describes as social capital effects, where unstructured interactions lead to resource exchange.

2.4.2.2 Policy Alignment and Regional Development

The success of university accelerators is also heavily influenced by regional policy frameworks. The work of Koschatzky (Koschatzky, 2003) on entrepreneurship stimulation in regional innovation systems highlights that public promotion is a key driver. In the European context, this often involves alignment with “Smart Specialization Strategies” (RIS3). The findings from Donets (Donets, 2025) regarding the Ukrainian startup system and its integration with Europe suggest that accelerators serve as vehicles for cross-border integration and economic resilience, particularly in challenging geopolitical contexts.

Consequently, the design of these programmes cannot be static; it must be responsive to regional economic needs. For instance, a university in a region with a strong agricultural base should design its accelerator to use specific faculty expertise and industry connections in agritech, rather than attempting to replicate a generic Silicon Valley software model. This “place-based” approach addresses the tension between global best practices and local relevance.

2.4.3 The Digital Transformation of Support Mechanisms

A significant theme emerging from Section 2.3 is the impact of digitalization on accelerator design, particularly in the post-COVID era. This directly addresses the research gap regarding the tension between physical community building and digital reach.

2.4.3.1 *Virtual vs. Physical Hubs*

Hosseinpour et al. (hosseinpour et al., 2024) investigate the success factors of digital startup accelerators, finding that the post-COVID era has necessitated a permanent shift toward hybrid models. While digital tools allow for broader reach and efficiency in delivering educational content, the literature suggests that the “community” aspect—important for emotional support and co-founder matching—is harder to replicate virtually.

Pinheiro et al. (Pinheiro et al., 2025) propose a typology for innovation hubs that distinguishes between physical and virtual structures. Their findings suggest that while virtual structures enhance information flow and reduce transaction costs, physical structures are superior for building trust and tacit knowledge transfer. For university accelerators, this implies a “flipped classroom” design: using digital platforms for delivering standardized business knowledge (e.g., business model canvas, legal basics) while reserving physical gatherings for high-value mentorship and peer-to-peer bonding.

2.4.3.2 Digital Social Capital

The concept of “digital social capital” explored by Feng and Tan (Feng & Tan, 2024) offers a theoretical explanation for how modern students engage with entrepreneurship. The literature indicates that students today build networks differently, often leveraging digital platforms to access global expertise. University accelerators that fail to integrate these digital behaviors into their design risk becoming obsolete. However, the challenge remains to convert these weak digital ties into strong, supportive relationships necessary for navigating the “trough of sorrow” in the startup journey.

2.4.4 Mentorship and Human Capital Development

The literature review in Section 2.1 identified mentorship as a cornerstone of acceleration. The findings in Section 2.3 deepen this understanding by distinguishing between different types of capital transferred through mentorship.

2.4.4.1 Beyond Generic Advice

Research by Sad (Sad, 2021) on the impact of incubators and accelerators emphasizes that not all mentorship is equal. The most effective university programmes use a mix of academic mentors (for technical/scientific validity) and industry mentors (for market reality). This dual-mentorship model addresses a common failure mode in student startups: excellent technology with no market fit.

Furthermore, Zhao and Khan (Zhao & Khan, 2024) argue that the interaction between human capital (skills/knowledge) and social capital (networks) is mediated by career development. In the context of an accelerator, this means that mentors do not just provide advice; they validate the student’s professional identity. This psychological validation is a critical success factor that distinguishes successful programmes from those that merely offer workshops.

2.4.4.2 The Role of Alumni Networks

An underutilized resource identified in the literature is the alumni network. While corporate accelerators rely on professional investors, universities have vast networks of alumni who can serve as mentors, early adopters, or angel investors. Leveraging this network requires intentional design, such as formal matchmaking platforms or “alumni-in-residence” programmes. The continuity of this community contributes to the long-term sustainability of the system, creating a virtuous cycle where successful founders return to support the next generation.

2.4.5 Sustainability and Ethical Governance

A distinguishing feature of European university accelerators, as noted in the findings, is the increasing emphasis on sustainability and ethics. This reflects a broader institutional mandate that differs significantly from the profit-maximization logic of corporate entities.

2.4.5.1 Integrating SDGs into the Value Proposition

Karahan (Karahan, 2024) discusses the transformation of university business incubators toward sustainability. The findings suggest that programmes effectively integrating the Sustainable Development Goals (SDGs) into their selection criteria and curriculum tend to attract a different profile of entrepreneur—one motivated by impact as well as profit. This aligns with the concept of “corporate constitutionalism” discussed by Yang (Yang, 2025), which argues for a governance model that respects broader societal duties.

For university accelerators, this implies that “success” should include metrics related to social and environmental impact. Designing the programme to require an “impact assessment” alongside a financial projection forces student founders to consider externalities early in the venture creation process. This pedagogical intervention shapes the DNA of the startup, potentially leading to more responsible corporate citizens in the long run.

2.4.6 Limitations of Current Research and Future Directions

While the synthesized literature provides strong insights, several limitations persist. First, as noted by Bennett et al. (Bennett et al., 2016), there is still a reliance on case studies and self-reported data, which may introduce positive bias. Quantitative longitudinal studies that track student founders over 5-10 years (including those who failed) are rare but necessary to fully understand the long-term impact on human capital.

Second, the literature on AI and advanced technologies in acceleration is nascent. While papers like Ario et al. (Ario et al., 2025) discuss AI in healthcare planning and Zadehnoori (Zadehnoori, 2023) discusses data-driven selection, there is limited research on how AI tools are specifically transforming the *curriculum* of university accelerators. Future research should investigate how generative AI is reshaping the “MVP” (Minimum Viable Product) process for student entrepreneurs.

Finally, the geopolitical dimension of startup ecosystems, touched upon by Donets (Donets, 2025), requires further exploration. How do university accelerators in conflict zones or emerging economies adapt standard models to survive? This remains a critical gap for understanding the resilience of entrepreneurial ecosystems.

2.4.7 Conclusion of Discussion

The discussion of the literature reveals that university-based accelerator programmes are complex, hybrid institutions that cannot be reduced to mere “startup factories.” Their design characteristics—specifically their approach to mentorship, system integration, and impact measurement—must reflect their dual educational and economic missions. The findings from the cited research (Benessalah & Abdelmalek, 2025)(Pendidikan et al., 2025)(Zhao & Khan, 2024) confirm that when universities embrace this hybridity rather than suppressing it, they create unique value propositions that corporate accelerators cannot replicate.

The integration of digital tools (hosseinpour et al., 2024) and sustainability frameworks (Karahana, 2024) represents the next frontier in programme design. By moving beyond the “Silicon Valley consensus” and adopting place-based, ethically grounded, and pedagogically sound models, European universities can foster entrepreneurial ecosystems that are not only productive but also resilient and inclusive. The following conclusion will summarize these key arguments and present final recommendations.

2.4.8 Theoretical Implications for Entrepreneurial Ecosystems

The findings discussed above have profound implications for the theoretical understanding of entrepreneurial ecosystems (EE). Traditional EE theory often centers on the availability of venture capital and high-growth firms. However, the literature reviewed here suggests a need to expand this theory to include “pre-seed” educational environments as distinct, critical sub-systems.

2.4.8.1 The “Pre-Accelerator” Function of Universities

The analysis suggests that universities function effectively as “pre-accelerators” for the broader system. By absorbing the early-stage risk and providing the initial human capital development, they prepare ventures for downstream actors (VCs, corporate accelerators). This validates the view of Wright et al. (Wright et al., 2017) that student start-ups require a specific system configuration.

Table 2 illustrates the theoretical shift in understanding the university’s role within the system, moving from a passive supplier of IP to an active creator of ventures.

	Traditional View (Tech	Emerging View
Theoretical Perspective	Transfer)	(Accelerator/System)
University Role	Patent licensor; passive IP source	Active venture creator & co-founder

	Traditional View (Tech Transfer)	Emerging View (Accelerator/System)
Theoretical Perspective		
Key Output	Patents & Publications	Human Capital & Sustainable Ventures
Interaction Mode	Transactional (Licensing Office)	Relational (Mentorship & Networks)
Success Metric	Licensing Revenue	Regional Economic Vitality & Alumni Success
Dominant Logic	Legal/Protectionist	Open Innovation/Collaborative

Table 2: Shift in Theoretical Perspective on University Entrepreneurship. Source: Synthesized from (Wright et al., 2017), (Pauwels et al., 2016), and (Pinheiro et al., 2025).

This shift implies that the “Third Mission” of universities (economic development) is evolving into a “Fourth Mission” centered on co-creation and regional sustainability. The triple helix model (Pendidikan et al., 2025) is thus not just a static structure but a dynamic process where the accelerator acts as the kinetic energy driving interaction between the helices.

2.4.8.2 Institutional Isomorphism vs. Differentiation

A theoretical tension observed in the literature is the risk of “institutional isomorphism”—where universities mimic successful corporate accelerators (like Y Combinator) without adapting to their specific context. The findings in Section 2.3 regarding the importance of “sustainability focus” (Karahan, 2024) and “regional integration” (Ancona & Ceci, 2025) argue against this mimicry. Theoretical frameworks must account for the fact that differentiation—based on local strengths and academic values—is a predictor of long-term stability, whereas isomorphism often leads to “zombie accelerators” that exist in name only but fail to deliver value.

2.4.9 Practical Implications for Programme Directors

Based on the synthesis of findings in Section 2.3 and the interpretations above, several practical implications emerge for directors of university accelerator programmes.

2.4.9.1 Selection Criteria and “Coachability”

The data-driven selection criteria discussed by Zadehnoori (Zadehnoori, 2023) suggest that programmes should move beyond judging just the “idea” or the “market size.” Instead, selection should heavily weight the “coachability” of the team and their potential for human capital growth. Since the university’s mission includes education, rejecting a student solely because their market is “too small” may be a strategic error if that student has high potential for learning and future entrepreneurial activity.

2.4.9.2 Curriculum Design: The “T-Shaped” Entrepreneur

The literature on human capital (Allen & Drean, 2022) supports designing curricula that foster “T-shaped” entrepreneurs—individuals with deep domain knowledge (from their academic major) and broad entrepreneurial skills (finance, marketing, legal). Programme directors should collaborate with different faculties to ensure that engineering students receive “soft skills” training, while humanities students receive financial literacy training. This cross-disciplinary approach is a unique advantage of the university environment that is often absent in independent accelerators.

2.4.9.3 Managing Intellectual Property (IP) Friction

While not the primary focus of all cited papers, the discussion on corporate contractualism (Yang, 2025) and institutional support (Chervona & Bulvinska, 2025) implies that IP policies can be a major friction point. Practical experience and literature suggest that universities with “founder-friendly” IP policies (e.g., taking no equity or only a small

non-dilutive stake) see higher engagement rates. Programme directors must advocate for simplified IP frameworks to prevent bureaucratic barriers from stifling student innovation.

2.4.10 Policy Recommendations for European Higher Education

The European context, characterized by strong public funding and a focus on social cohesion, requires specific policy approaches.

2.4.10.1 Standardization of Impact Metrics

There is a need for a unified framework to measure the impact of university accelerators across Europe. Currently, the heterogeneity of metrics makes comparison difficult. Policymakers should encourage the adoption of a balanced scorecard that includes financial metrics (survival, revenue) and social metrics (SDG alignment, regional retention of talent), as suggested by the work on sustainable entrepreneurial universities (Karahana, 2024).

2.4.10.2 Funding for “System Builders”

Funding mechanisms often target the startups directly (grants, seed capital). However, the literature on innovation hubs (Pinheiro et al., 2025) and science parks (Ancona & Ceci, 2025) suggests that funding the *infrastructure* and the *connectors* (the system builders) is equally important. Grants that support the operational costs of accelerators—allowing them to hire high-quality managers and mentors—may yield higher returns than direct subsidies to unproven ventures.

2.4.10.3 Cross-Border Collaboration

Finally, drawing on the insights regarding Ukrainian and European integration (Donets, 2025), there is a significant opportunity for “networked acceleration.” Policies that enable a student startup in Lisbon to access mentorship from a university in Berlin or a test market in Kyiv would use the true scale of the European Single Market. This requires

harmonizing accreditation for entrepreneurial skills and facilitating cross-border mobility for student founders.

In summary, the discussion confirms that university-based accelerators are critical infrastructure for the modern knowledge economy. Their design must be intentional, hybrid, and deeply embedded in both the academic mission and the regional reality. By balancing the tension between education and commerce, and between local roots and digital reach, these programmes can shape a generation of entrepreneurs who are resilient, socially responsible, and globally competitive.

3. Conclusion

The rapid proliferation of accelerator programmes within higher education institutions represents a major change in how universities contribute to regional economic development and student employability. This study set out to answer the research question: *To what extent do design characteristics of university-based accelerator programmes shape the development and growth of early-stage student start-ups within European entrepreneurial ecosystems?* Through a comprehensive analysis of programme architectures, critical success factors, and system integration strategies, this thesis has demonstrated that university-based accelerators function not merely as miniature versions of corporate counterparts, but as distinct pedagogical and economic intermediaries that bridge the gap between academic theory and commercial reality.

The investigation confirms that the impact of these programmes is heavily contingent upon specific design choices—namely, the integration of mentorship networks, the structure of educational curricula, and the depth of connection to the broader “Triple Helix” of university-industry-government relations. While corporate accelerators prioritize financial returns and rapid exit strategies, university-based models operate with a dual mandate: fostering viable commercial ventures while simultaneously building human and social capital among the student body. This duality presents unique challenges but also offers distinctive advantages in the European context, where regional innovation policies increasingly rely on universities to act as anchor institutions for entrepreneurial ecosystems.

3.1 Synthesis of Empirical Findings

The analysis yields three primary categories of findings that directly address the research question: the primacy of non-financial support mechanisms, the critical role of system embeddedness, and the heterogeneity of success metrics across European regions.

3.1.1 The Primacy of Network and Human Capital

Contrary to the popular assumption that seed funding is the primary driver of startup success, this study finds that for early-stage student ventures, the accumulation of social and human capital is the most significant determinant of survival and growth. The literature and case analysis support the view that accelerators act as “forcing functions” that compress learning cycles (Pauwels et al., 2016). Specifically, the provision of structured mentorship and access to alumni networks significantly reduces the “liability of newness” faced by inexperienced student founders.

The research highlights that effective accelerator design prioritizes the transfer of tacit knowledge over explicit financial injection. As noted in recent studies on student entrepreneurship, the development of entrepreneurial competencies—such as opportunity recognition and resource mobilization—is often more valuable to the student founder than immediate capital, which they may lack the experience to deploy effectively (Benessalah & Abdelmalek, 2025). This aligns with human capital theories suggesting that investment in skills and networks yields long-term economic dividends (Allen & Drean, 2022). Consequently, programmes that emphasize rigorous educational components and “democratized” access to industry experts tend to produce ventures that, while perhaps slower to scale initially, demonstrate greater resilience.

3.1.2 System Integration and the Triple Helix

The second major finding relates to the structural position of the accelerator within the broader system. University accelerators that operate in isolation—functioning as “silos” within the campus—demonstrate significantly lower impact than those integrated into a “Triple Helix” model involving government and industry partners (Pendidikan et al., 2025).

The data suggests that successful European university accelerators act as gateways. They use the university’s neutral status to facilitate connections that might otherwise be inaccessible to early-stage startups. Innovation hubs and science parks often serve as the

physical manifestation of this integration, providing a continuum of support that extends beyond the fixed-term accelerator program (Pinheiro et al., 2025)(Ancona & Ceci, 2025). This interconnectedness is particularly vital in the European context, where the fragmentation of markets requires startups to navigate complex regulatory and cultural landscapes early in their lifecycle. The analysis of Ukrainian and broader Eastern European ecosystems, for example, highlights how regional disparities and integration with European structures influence the trajectory of student startups (Donets, 2025).

3.1.3 Design Characteristics and Startup Outcomes

Regarding specific design characteristics, the study establishes a correlation between “cohort-based” intensity and venture progression. The fixed-term nature of accelerators creates a sense of urgency and community—often described as “communitas”—which fosters peer learning. However, the analysis also reveals a tension between the rigid “bootcamp” model and the academic calendar of student founders. Programmes that offer flexible, modular designs while maintaining the intensity of the accelerator methodology tend to achieve better retention rates and higher satisfaction among student entrepreneurs (Doçaj, 2025).

Table 3.1 summarizes the key design characteristics identified in this study and their observed impact on student venture development.

Design Characteristic	Key		
	Mechanism	Impact on Student Venture	Theoretical Basis
Cohort Structure	Peer pressure	Increased accountability;	Social Capital
	& support	reduced isolation	Theory (Hallinan, 2009)
Mentorship	Vicarious	Accelerated	Human Capital
	learning	decision-making; error avoidance	Theory (Zhao & Khan, 2024)

Design Characteristic	Key		
	Mechanism	Impact on Student Venture	Theoretical Basis
University Linkage	Reputation signaling	Legitimacy with partners/investors	Institutional Theory (Chervona & Bulvinska, 2025)
Curriculum	Experiential education	Skill acquisition (pitching, modeling)	Entrepreneurial Learning (Keen et al., 2019)
Demo Day	Focusing event	Deadline-driven product validation	Goal Setting Theory

Table 3.1: Impact of Accelerator Design Characteristics on Student Ventures. Source: Synthesized from (Doçaj, 2025), (Pauwels et al., 2016), and (Keen et al., 2019).

The table illustrates that the mechanisms driving success in university accelerators are fundamentally sociopsychological. The “Cohort Structure” and “Mentorship” elements uses social capital to compensate for the students’ lack of professional networks, while the “University Linkage” provides the institutional legitimacy required to engage with external stakeholders.

3.2 Theoretical Contributions

This thesis contributes to the academic discourse on entrepreneurial support organizations (ESOs) by refining the definition of the “accelerator” within the higher education context. While Pauwels et al. (Pauwels et al., 2016) provided a foundational typology of accelerators, this study argues for a distinct sub-category: the “Educational Accelerator.” Unlike the “Deal-flow Accelerator” (focused on investment returns) or the “System Accelerator” (focused on regional development), the Educational Accelerator treats the venture creation process as a pedagogical vehicle.

Furthermore, this research bridges the gap between the literature on entrepreneurial universities and accelerator theory. It demonstrates that accelerators are not merely peripheral activities but are central to the mission of the modern “Entrepreneurial University” (Chervona & Bulvinska, 2025). By integrating concepts of social capital (Hallinan, 2009)(Feng & Tan, 2024) into the analysis of accelerator mechanics, the study provides a more nuanced understanding of *how* these programmes work. It suggests that the value add of a university accelerator is less about the “hardware” (office space, funding) and more about the “software” (digital cultural capital, network density, and legitimacy).

The study also contributes to the understanding of regional innovation systems by highlighting the role of universities as stabilizing agents in volatile environments. As seen in the analysis of diverse European contexts, including those facing significant geopolitical and economic challenges, university-based support structures provide a continuity that market-based mechanisms often fail to supply during crises (Donets, 2025).

3.3 Practical Implications and Recommendations

The findings of this research carry significant implications for three distinct groups of stakeholders: university administrators, policymakers, and accelerator programme managers.

3.3.1 For University Administrators and Managers

University leaders must recognize that the metrics of success for a student accelerator cannot simply mirror those of Y Combinator or Techstars. Judging a university programme solely on the number of “unicorns” produced is likely to lead to strategic misalignment. Instead, administrators should focus on “graduate attributes” and the long-term employability of participants.

Recommendations: - **Curriculum Integration:** Embed accelerator participation into degree programmes to resolve conflicts between academic and entrepreneurial commitments. - **Alumni Engagement:** Formalize the role of alumni as mentors, creating a circular

economy of knowledge within the institution. - **Sustainability Focus:** Align accelerator themes with institutional sustainability goals, as this attracts highly motivated student cohorts and aligns with broader European funding priorities (Karahan, 2024).

3.3.2 For Policymakers

Policymakers at the national and European levels should view university accelerators as critical infrastructure for the digital and green transitions. The study suggests that public funding is most effective when it incentivizes collaboration between universities and industry, rather than when it is used to directly subsidize unproven startups.

Recommendations: - **System Funding:** Direct funds toward “Triple Helix” consortia where universities partner with regional industries to solve specific challenges (Pendikan et al., 2025). - **Cross-Border Mobility:** Facilitate “soft landing” programmes that allow student startups to move between university accelerators across Europe, thereby overcoming the fragmentation of the European market.

3.3.3 For Programme Managers

Managers of these programmes must navigate the tension between being “founder-friendly” and maintaining high standards. The research indicates that a rigorous selection process is vital not just for quality control, but for signaling value to the system (Zadehnoori, 2023).

Recommendations: - **Data-Driven Selection:** Implement transparent, data-driven selection criteria to identify high-potential teams and reduce bias (Zadehnoori, 2023). - **Hybrid Delivery:** Maintain the digital delivery capabilities developed post-pandemic to access a wider pool of mentors and accommodate student schedules (hosseinpour et al., 2024).

3.4 Limitations of the Study

While this research provides a strong analysis of university-based accelerators, several limitations must be acknowledged to contextualize the findings.

First, the heterogeneity of the European context makes generalization challenging. The “European entrepreneurial system” is, in reality, a mosaic of distinct national and regional systems with varying levels of maturity. The dynamics observed in a highly developed system like Munich or London may not perfectly translate to emerging ecosystems in Eastern or Southern Europe, although the inclusion of diverse case studies (Donets, 2025)(Koschatzky, 2003) attempts to mitigate this.

Second, the study relies heavily on qualitative data and self-reported metrics from programme managers and founders. As noted in the literature, there is a pervasive survivorship bias in accelerator research; successful startups are more likely to participate in studies than those that failed. Additionally, the long-term economic impact of these programmes is difficult to isolate from other variables affecting startup growth, a common challenge in impact measurement studies (Sad, 2021)(Bennett et al., 2016).

Finally, the rapidly evolving nature of the accelerator phenomenon means that programme designs are constantly in flux. The recent shift toward “virtual” or “hybrid” acceleration models, accelerated by the COVID-19 pandemic, represents a structural change whose long-term effects are only beginning to be understood (hosseinpour et al., 2024). This study captures a specific snapshot in time of a dynamic institutional form.

3.5 Directions for Future Research

The limitations and findings of this study point toward several fertile avenues for future research.

Longitudinal Impact Studies: There is a critical need for longitudinal studies that track student founders over 5-10 years. Future research should investigate not just

the survival of the *venture*, but the career trajectory of the *founder*. Do participants in university accelerators earn more, found subsequent companies at higher rates, or rise faster in corporate environments compared to non-participants? This would validate the “human capital” argument proposed in this thesis.

The Role of Digital Transformation: As accelerators increasingly adopt digital tools and remote mentorship models, research is needed to understand how this virtualization affects the formation of social capital. Can the “communitas” of a physical cohort be replicated online? Initial studies suggest potential, but more rigorous empirical work is required (hosseinpour et al., 2024).

Specialization vs. Generalization: An emerging trend is the verticalization of accelerators (e.g., HealthTech, EdTech, GreenTech). Future studies should compare the efficacy of generalist university accelerators against specialized vertical programmes. Specifically, in complex fields like deep tech or healthcare, do generalist university programmes offer sufficient domain expertise?

Psychological Resilience: Given the high failure rate of startups, future research should explore the psychological impact of accelerator programmes on student mental health. While this study touched on “peer support,” a deeper psychological investigation into whether high-pressure accelerator environments in a university setting contribute to or alleviate student burnout would be valuable.

3.6 Final Remarks

In conclusion, university-based accelerator programmes have matured from experimental initiatives into essential pillars of the European entrepreneurial system. They serve a unique dual purpose: they are engines of economic innovation and crucibles for experiential learning. This study confirms that their success depends not on mimicking the structures of private capital, but on leveraging the unique assets of the university—its intellectual capital, its neutrality, and its networks.

As Europe faces the challenges of the 21st century, from digital transformation to sustainable development, the ability of universities to translate research and student talent into viable solutions will be essential. The university accelerator is the interface where this translation occurs. By adopting the design principles and system integration strategies outlined in this thesis, higher education institutions can ensure that they remain relevant, dynamic drivers of the entrepreneurial economy. The future of the European startup system lies not just in funding new companies, but in empowering the next generation of innovators to build them.

4. Appendices

A.1 The Integrated University Accelerator System Model

This appendix presents the conceptual framework developed to analyze the role of university-based accelerators within the broader entrepreneurial system. The framework synthesizes the “Third Mission” of higher education institutions—economic development and knowledge transfer—with the specific operational mechanics of seed acceleration.

The model posits that university accelerators do not operate in a vacuum but function as an important interface between academic resources (human capital, research, infrastructure) and the commercial market. This interface is governed by the principles of the “Entrepreneurial University” (Chervona & Bulvinska, 2025)(Keen et al., 2019) and interacts dynamically with regional innovation systems.

Table A.1: Input-Process-Output (IPO) Framework for University Accelerators

Stage	Component	Key Elements
Inputs	Institutional Capital	Research labs, IP portfolios, faculty expertise
Inputs	Human Capital	Student talent, alumni networks, researchers (Allen & Drean, 2022)
Inputs	Social Capital	Industry partnerships, mentor networks (Hallinan, 2009)
Process	Program Design	Fixed-term cohorts, curriculum, demo days (Doçaj, 2025)
Process	Support Mechanisms	Mentorship, seed funding, peer learning

Stage	Component	Key Elements
Process	Selection	Data-driven screening, team evaluation (Zadehnoori, 2023)
Outputs	Venture Metrics	Survival rates, revenue growth, funding raised
Outputs	Educational Metrics	Skill acquisition, entrepreneurial intention (Voronov et al., 2024)
Outputs	Regional Impact	Job creation, innovation system density (Ancona & Ceci, 2025)

Table A.1: An Input-Process-Output model adapted for university-based accelerators, derived from system theory and accelerator typologies (Pauwels et al., 2016)(Pinheiro et al., 2025).

A.2 Detailed Framework Components

Input Dimensions: The Resource Base The framework identifies three critical forms of capital that serve as inputs for university accelerators. First, **Institutional Capital** encompasses the tangible assets of the university, including laboratories, intellectual property (IP), and physical infrastructure. Unlike independent accelerators, university-based programs often have privileged access to deep-tech innovations and scientific facilities, which shapes the nature of the startups they support.

Second, **Human Capital** is identified as a primary driver of economic growth and startup formation (Allen & Drean, 2022). In the university context, this includes not only the student entrepreneurs but also the faculty, researchers, and staff who support them. The framework emphasizes that the quality of human capital inputs—measured by technical skills and entrepreneurial intent (Voronov et al., 2024)—significantly influences program outcomes.

Third, **Social Capital** plays a important role in student outcomes (Hallinan, 2009) and career development (Zhao & Khan, 2024). For accelerators, social capital manifests as the network of mentors, alumni, and industry partners that the university can uses. Digital social capital has also emerged as a relevant factor, particularly in how students access learning resources and networks in online environments (Feng & Tan, 2024).

Process Dimensions: The Acceleration Mechanism The central processing unit of the framework is the accelerator program itself. Following the definition by Pauwels et al. (Pauwels et al., 2016), this involves a time-bounded intervention. The framework highlights “Program Design” as a critical variable, where decisions regarding cohort size, duration, and curriculum intensity are made. Recent research indicates that these design choices directly impact startup success (Doçaj, 2025).

A key component of the process is the “Selection Mechanism.” Unlike open-ended incubators, accelerators must employ rigorous selection criteria to identify high-potential ventures. The framework incorporates data-driven selection pipelines (Zadehnoori, 2023) as a best practice for managing the high volume of applicants and ensuring that scarce resources are allocated to the most promising teams.

Output Dimensions: Multi-Level Impact The framework categorizes outputs into three levels. **Venture Metrics** focus on the traditional measures of business success, such as survival rates and financial performance. However, given the university context, **Educational Metrics** are equally important. These include the development of entrepreneurial competencies and the fostering of an innovation culture (Dutta, 2025). Finally, **Regional Impact** assesses the broader economic contribution, aligning with the university’s role in fostering regional entrepreneurial ecosystems (Ancona & Ceci, 2025) and supporting sustainable development goals (Karahan, 2024).

A.3 The Triple Helix Context

The framework is situated within the “Triple Helix” model of innovation, which describes the interactions between universities, industry, and government (Pendidikan et al., 2025).

Table A.2: Triple Helix Interactions in Acceleration

Actor	Role in Accelerator	Contribution
University	Knowledge Generator	IP, talent, infrastructure, curriculum
Industry	Commercializer	Market validation, mentorship, acquisition
Government	Enabler	Policy frameworks, grant funding, regulation
Interaction	Hybrid Organizations	Innovation hubs, science parks (Pinheiro et al., 2025)

Table A.2: Roles of Triple Helix actors within the university accelerator context (Pendidikan et al., 2025)(Koschatzky, 2003).

Government policy acts as a critical enabler, particularly in European contexts where public promotion of university-based startups is a key economic strategy (Koschatzky, 2003). The framework acknowledges that regional differences, such as those seen between Western European ecosystems and developing ecosystems like Ukraine’s (Donets, 2025), influence how these Triple Helix interactions manifest. For instance, in regions with lower private venture capital density, government-backed university accelerators often play a more prominent role in early-stage funding.

Appendix B: Supplementary Data Tables

B.1 Comparative Analysis of Support Models

To distinguish accelerators from other forms of entrepreneurial support, this section provides a comparative analysis based on the typologies established in the literature. This distinction is vital for understanding the specific value proposition of university-based accelerators compared to traditional incubators or science parks.

Table B.1: Typology of Innovation Support Structures

Feature	Business Incubator	Accelerator	Innovation Hub
Duration	Open-ended (1-5 years)	Fixed-term (3-6 months)	Variable
Cohorts	No (Rolling admission)	Yes (Batch intake)	Mixed
Business Model	Rent/Fee-based	Investment/Equity	Membership/Grant
Mentorship	Minimal/Ad-hoc	Intense/Structured	Networking-focused
Goal	Survival/Job Creation	Growth/Exit	Open Innovation
Selection	Non-competitive	Highly competitive	Open/Curated
Reference	(Sad, 2021)(Bennett et al., 2016)	(Pauwels et al., 2016)(hosseinpour et al., 2024)	(Pinheiro et al., 2025)

Table B.1: Comparative characteristics of entrepreneurial support organizations.

Analysis of Structural Differences The data in Table B.1 highlights the fundamental structural differences that define the accelerator model. While incubators focus on “shielding” startups from market forces to ensure survival (Bennett et al., 2016), accelerators are designed to “speed up” the market validation process, often leading to “quick failures”

or rapid growth (Pauwels et al., 2016). Innovation Hubs represent a broader category that facilitates open innovation and technology transfer, often serving as the physical locus for system interactions (Pinheiro et al., 2025).

University-based programs often function as hybrids. While they adopt the cohort structure and mentorship intensity of accelerators, their funding models may resemble incubators (grant-based rather than equity-based) due to their non-profit educational mandates (Chervona & Bulvinska, 2025). This hybrid nature allows them to support early-stage student ventures that might be too risky for commercial accelerators.

B.2 Critical Success Factors (CSFs)

The literature identifies several critical success factors that determine the efficacy of accelerator programs. These factors are categorized into internal design elements and external system linkages.

Table B.2: Critical Success Factors for Accelerators

Category	Success Factor	Impact on Startup	Source
Network	Mentorship Quality	Strategic guidance, market access	(hosseinpour et al., 2024)
Funding	Seed Capital	Resource acquisition, runway	(Buzzacchi et al., 2015)
Education	Curriculum Design	Skill development, validation	(Doçaj, 2025)
Selection	Screening Criteria	Cohort quality, peer effects	(Zadehnoori, 2023)
Post-Program	Alumni Networks	Long-term support, fundraising	(Pauwels et al., 2016)

Category	Success Factor	Impact on Startup	Source
Context	System Integration	Regional embeddedness	(Ancona & Ceci, 2025)

Table B.2: Key success factors influencing accelerator performance.

Interpretation of Success Factors Research indicates that **Mentorship Quality** is frequently cited as the most valuable component of acceleration. In the post-COVID era, the digitalization of these networks has expanded access to global mentors, although it presents challenges in maintaining engagement (hosseinpour et al., 2024).

Selection Criteria are equally critical. Using data-driven pipelines to screen startups ensures that resources are invested in teams with the highest potential for growth (Zadehnoori, 2023). Furthermore, the **Curriculum Design** must be tailored to the specific needs of the cohort; a “one-size-fits-all” approach is often less effective than specialized tracks (Doçaj, 2025).

The role of **Seed Capital** varies significantly between corporate and university accelerators. While corporate accelerators often provide funding with strategic acquisition goals in mind (Andreeva & Postnikov, 2021), university programs often uses grants or non-equity stipends to support student learning without imposing heavy commercial pressure too early.

B.3 Regional System Variations

The effectiveness of accelerator programs is contingent upon the regional environment. The following table contrasts system characteristics across different European and global contexts based on the reviewed literature.

Table B.3: Regional System Characteristics

Region/Context	Key Characteristics	Accelerator Focus	Reference
Western Europe	High institutional support	Deep-tech, Sustainability	(Chervona & Bulvinska, 2025)(Kara- han, 2024)
Eastern Europe	Emerging ecosystems	ICT, Regional integration	(Donets, 2025)
Developing	Resource constraints	Necessity entrepreneurship	(Dutta, 2025)
Crisis Context	Resilience-focused	Survival, Adaptation	(hosseinpour et al., 2024)(Donets, 2025)

Table B.3: Comparative system contexts influencing accelerator operations.

Regional Dynamics In Western Europe, there is a strong emphasis on the “Entrepreneurial University” and sustainability transformations, with incubators and accelerators increasingly aligned with Sustainable Development Goals (SDGs) (Karahana, 2024). In contrast, ecosystems in Eastern Europe, such as Ukraine, face unique challenges related to regional disparities and geopolitical instability, yet show strong potential in ICT sectors (Donets, 2025). Programs in these regions often prioritize integration with broader European markets to overcome local market limitations.

Appendix C: Glossary of Terms

This glossary defines key terms used throughout the thesis, utilizing definitions derived from the cited literature to ensure academic precision.

Accelerator A fixed-term, cohort-based program that includes seed investment, connections, mentorship, and educational components, culminating in a public pitch event or “demo day” to accelerate growth (Pauwels et al., 2016). Unlike incubators, they focus on scaling and market validation rather than long-term tenancy.

Corporate Accelerator An accelerator program sponsored and managed by an established corporation. These programs often have specific strategic objectives, such as accessing external innovation or identifying acquisition targets, which influences the survival and trajectory of participating startups (Andreeva & Postnikov, 2021).

Demo Day The culminating event of an accelerator program where graduating startups pitch their businesses to a selected audience of investors, corporate partners, and media. It serves as a focal point for fundraising and signals the end of the formal program duration (Pauwels et al., 2016).

Entrepreneurial System A set of interdependent actors and factors governed by institutions that enable productive entrepreneurship within a particular territory. Key actors include universities, government, corporations, and capital providers (Ancona & Ceci, 2025)(Wright et al., 2017).

Entrepreneurial University A higher education institution that integrates economic development into its academic mission (teaching and research). It actively facilitates the transfer of knowledge to the commercial sector and supports the formation of new ventures through institutional mechanisms like incubators and accelerators (Chervona & Bulvinska, 2025)(Keen et al., 2019).

Human Capital The collective skills, knowledge, and intangible assets of individuals that can be used to create economic value. In the context of startups, this refers to the educational background, industry experience, and entrepreneurial capabilities of the founding team (Zhao & Khan, 2024)(Allen & Drean, 2022).

Incubator (Business Incubator) An organization designed to accelerate the growth and success of entrepreneurial companies through an array of business support

resources and services that could include physical space, capital, coaching, common services, and networking connections. They typically operate on an open-ended timeline (Sad, 2021)(Bennett et al., 2016).

Innovation Hub A physical or virtual space that catalyzes open innovation and technology transfer within innovation ecosystems. They differ from accelerators in their broader mandate to connect various system actors rather than solely focusing on startup growth (Pinheiro et al., 2025).

Science and Technology Park (STP) An organization managed by specialized professionals whose main aim is to increase the wealth of its community by promoting the culture of innovation and the competitiveness of its associated businesses and knowledge-based institutions (Ancona & Ceci, 2025).

Seed Funding The initial capital used to start a business. In accelerators, this is often provided in exchange for a small equity stake or as a convertible note. It is designed to cover initial operating expenses until the startup can generate revenue or raise a larger round of venture capital (Zadehnoori, 2023)(Buzzacchi et al., 2015).

Social Capital The networks of relationships among people who live and work in a particular society, enabling that society to function effectively. In entrepreneurship, it refers to the value derived from social networks, mentorships, and peer relationships that facilitate access to resources and information (Hallinan, 2009)(Feng & Tan, 2024).

Triple Helix Model A framework for analyzing innovation dynamics that focuses on the complex interactions between three key institutional spheres: University, Industry, and Government. It serves as a foundation for understanding the macro-level support structures for accelerators (Pendidikan et al., 2025).

Appendix D: Additional Resources and Evaluation Protocols

This appendix provides supplementary resources for practitioners and researchers, focusing on evaluation frameworks, selection protocols, and policy guidelines derived from the literature.

D.1 KPI Framework for University Accelerators

Evaluating the performance of university-based accelerators requires a balanced scorecard approach that accounts for both commercial and educational outcomes. The following framework is adapted from recent studies on university incubators and student startups (Benessalah & Abdelmalek, 2025).

Table D.1: Key Performance Indicators (KPIs)

Domain	Indicator	Measurement Method
Commercial	Survival Rate	% operating after 3 years (Andreeva & Postnikov, 2021)
Commercial	Funding Raised	Total external capital raised
Commercial	Job Creation	FTE employees hired
Educational	Skill Acquisition	Pre/Post competency assessment
Educational	Career Outcomes	Alumni employment quality (Zhao & Khan, 2024)
Process	Mentor Engagement	Hours of mentorship delivered
System	Network Density	Number of active partnerships (Ancona & Ceci, 2025)

Table D.1: Recommended KPIs for assessing accelerator impact.

Implementation Notes When implementing these KPIs, program managers should distinguish between “hard” metrics (funding, jobs) and “soft” metrics (skills, networks). Research suggests that for university programs, the sustainability and quality of the startups (Benessalah & Abdelmalek, 2025) and the enhancement of student employability (Zhao & Khan, 2024) are often more relevant indicators of success than pure financial valuation, which drives corporate accelerators.

D.2 Startup Selection Protocols

Effective selection is a primary determinant of accelerator success. The literature suggests moving away from purely intuition-based selection toward data-driven approaches.

Data-Driven Selection Criteria Zadehnoori (Zadehnoori, 2023) proposes a pipeline for screening startups that emphasizes the following dimensions: 1. **Team Composition:** Assessing the balance of technical and business skills (Human Capital). 2. **Market Potential:** Total Addressable Market (TAM) and growth trajectory. 3. **Traction:** Evidence of product-market fit or early prototype validation. 4. **Coachability:** The willingness of the team to accept feedback and pivot.

Inclusivity Considerations Selection protocols must also consider inclusivity. Recent EU-funded projects emphasize the need for inclusive stakeholder engagement strategies to ensure that innovation ecosystems are accessible to diverse groups (Conway et al., 2024). This is particularly relevant for university accelerators, which have a mandate to serve the entire student body.

D.3 Policy Recommendations for System Development

Based on the analysis of public promotion schemes (Koschätzky, 2003) and regional development strategies (Donets, 2025), the following policy recommendations are provided for university administrators and regional policymakers.

Table D.2: Policy Recommendations

Stakeholder	Recommendation	Rationale
Universities	Integrate Curriculum	Link academic credit to acceleration (Benessalah & Abdelmalek, 2025)
Universities	Formalize Alumni Roles	Uses alumni as mentors/investors (Pauwels et al., 2016)
Government	Provide Bridge Funding	Fill gap between research and commercialization
Government	Facilitate Visas	Retain international student founders
Industry	Co-create Programs	Ensure market relevance of startups (Pendidikan et al., 2025)

Table D.2: Strategic recommendations for system stakeholders.

Strategic Alignment To maximize impact, policies must align with the specific maturity level of the regional system. In early-stage ecosystems, public promotion and direct funding are important (Koschatzky, 2003). In more mature ecosystems, the focus should shift toward facilitating “Triple Helix” interactions (Pendidikan et al., 2025) and removing regulatory barriers to growth. Furthermore, incorporating “futures literacy” and anticipatory systems into entrepreneurship programs can help regions better prepare for long-term economic shifts (Calof & Blakely, 2023).

D.4 Best Practice Design Principles

Drawing from Higuera’s design for a best-practice accelerator (Higuera, 2014) and recent comparative studies, the following design principles are recommended for new university programs:

1. **Specialization:** Vertical-specific programs (e.g., HealthTech, EdTech) often outperform generalist ones by aggregating specialized mentors and investors.
2. **Time-Boundedness:** Maintaining strict program start and end dates creates a sense of urgency that drives rapid iteration (Pauwels et al., 2016).
3. **Cohort Effects:** Curating cohorts to maximize peer learning is as important as the formal curriculum.
4. **Sustainability Focus:** Integrating sustainability goals into the core business modeling process aligns with the evolving mission of Higher Education Institutions (Karahan, 2024).

These resources provide a toolkit for the continuous improvement of university-based accelerator programs, ensuring they remain effective engines for student entrepreneurship and regional economic development.

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