

MIDOCEAN University

Administration College

Master of Business Administration



**The Impact of Entrepreneurial Education on Startup Success in The Kingdom of Saudi
Arabia**

تأثير التعليم الريادي على نجاح الشركات الناشئة في المملكة العربية السعودية

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

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Chapter 1: General Outline of the Study

Introduction

Historical Development and Relevance of Entrepreneurial Education in Saudi Arabia

Nowadays, entrepreneurship is among the most potent movers of the economy, innovations, and jobs. Saudi Arabian entrepreneurial education is still in its infancy but has been growing at a very high speed, especially since the country adopted the economic reform program generally known as Vision 2030. The ambitious master plan that was launched in earnest years ago, in 2016, was to transition the economy of the nation away from hydrocarbons through the development of a private sector with an entrepreneurial bent, meaning one anchored on startups and small- and medium-sized enterprises.

It wasn't until the early 2000s that Saudi Arabian entrepreneurship scholarship began to look backward in time, when King Saud University, King Fahad University of Petroleum and Minerals, and King Abdulaziz University first added courses in entrepreneurship to their curriculum. And even then, curriculum was only levels and even theory-focused, with specializations such as management theory, business planning, and feasibility studies. This realignment of the national agenda toward growth driven by innovation was accompanied by a call for experiential competency-based entrepreneurial training in real time and experimentation mode within programs instituted. One of those switch points was the institution in 2016 of the Small and Medium Enterprises General Authority-or Monsha'at. Monsha'at also pushed development in a national entrepreneurship ecosystem by sponsoring accelerators, incubators, startup bootcamps, finance access, and international cooperation initiatives.

Foundation- and nonprofit-sponsored programs-those of the Bab Rizq Jameel and Misk Foundation, for example-were structured early-stage training, mentoring, and services. University incubators like the KAUST Entrepreneurship Center closed research-to-market windows by commercializing. Today, education in entrepreneurship in the Kingdom runs from bachelor's and minor degrees to executive development, government seminars, government backed incubators and accelerators, e-learning centers, hackathons, and training workshops. The pre-university education encompasses things like the Ministry of Education "Future

Entrepreneurs" program aimed at gauging strategic intent in the context of introducing entrepreneurial and finance courses as part of their course study earlier.

While such a program success exists, there is also failure in the startup company. Because they cannot maintain high embryonic movement and performance after it, extremely high startup company failure rates result; hence, efficiency, applicability, and transferability of existing entrepreneurial education into actual startup performance are doubtful. The levels of attendance at training cannot on their own ensure the measurability of business survival and achievement. While identification of which entrepreneurial education streams, that is, investor readiness training, business modeling practice, intensity of mentoring, or innovation management exposure, are associated with improved start-up performance is basic, the Kingdom of Saudi Arabia is still trying to attain empowering entrepreneurship as a development pillar. In this study, an attempt is made to undertake evidence-based inquiry that will help apply and inform curriculum design, policy convergence, and ecosystem investment relative to relatively entrepreneurially competent entrepreneurs in formality and informality institutions. It is the hope of the study that the findings will provide prescriptive data to the nascent entrepreneurs, universities, development agencies, and policy makers in an attempt to address the education gap and sustainable start-up success in Saudi Arabia.

Startups and Instantaneity of Prosperity

They really represent the dynamism of the markets and the new market innovation economy which pushes the economic growth, jobs, and technology development. More generally speaking, the startups can be described as the beginning of a new business firm, high point in its infancy or starting years of operation. Mature small firms are suitable to maintain stable and neighborhood business but start-ups, by their very nature, are fitted to create new solutions, replace competition, and build high-growth, scalable businesses. Startups live in the space of risk, experimenting with new types of business models and staking on technology in hopes of finding solutions to a part of what ails the marketplace. The terms have evolved from the use of Silicon Valley, Boom and Technology Revolution but are increasingly being used to describe ventures in all industries including health, education, fin-tech and sustainability. Usually, startups are founded by entrepreneurs who have come across a niche or inefficiency in the marketplace and plan on capitalizing on it through new products or services. What makes a startup different

from any other business is not its size or age, but its plans for itself to double or triple in size and penetrate more and more markets-even disrupt industry tradition for others. But a successful startup is an uphill fight and requires some ingredients. Beneath every successful startup, there is a decent business idea that is clean and is compelling. The idea has to be centered around solving some real-world problem on some differentiated value proposition so that it shines above the rest. Without some significant market need, even very technologically innovative ideas won't fly. Also, the most important and top priority goes to the founding team. The success of a start-up depends upon augmenting the skill fit within an optimally-sized team if possible, business and technical skills fit. Founders must learn from bad feedback and be resilient to it, doing high-speed learning from this since they are in the middle slot in a high-churn domain where startups happen. The second most essential need is good market sense. Very fine-grained market research to uncover customer pain points, track competition, and determine demand. A startup should have a business model that catalyzes not only innovation but growth. That model can be subscription, freemium, direct-to-consumer, or business-to-business service, but it must let the company grow profitably on scale. Finances are equally among the requirements for success that a startup needs. In order to test whether their solution has a chance in the market and scale the business, funds will definitely be needed to develop the minimum viable product. Such funds may come from founders' capital, family and friends, angel investors, venture capitalists, or even government grants. Several institutions are there in Saudi Arabia such as Small and Medium Enterprises General Authority (Monsha'at), Misk Foundation, and Saudi Venture Capital Company (SVC) which offer structured support and investment to the startups. Besides this, startups need to avoid some of the legal and operational trends. These are the important procedures which get ignored at the grass-root level: the rights pertaining to intellectual property, registration of the company, the agreement among the shareholders, and compliance with the local rule. Most of the startups are liable to commit those mistakes, which otherwise can be easily avoided without a strong platform. Customer acquisition and trust are also brand and marketing strategy. A clearly defined go-to-market strategy allows the startups to set terms on which customers are acquired and retained through digital marketing, social media visibility, partnerships, or direct selling channels. Generally, customer acquisition and retention are make-or-break for early-stage companies. Finally, networking and mentorship for startups can go a long way in propelling a startup to success. Apart from money, incubators, accelerators, and

university incubators also provide mentorship, training, advice, and networking. In light of the above, this research investigates the degree to which entrepreneurial education in Saudi Arabia leads to measurable startup outcomes, such as survival beyond three years, growth in revenue, and job creation. This further establishes what components of instruction-what is taught, experiential learning opportunities, mentorship-are most strongly related to such outcomes.

Research Problem

Despite the high extent of public and private investments in entrepreneurship through ecosystem development, education reforms, and national support programs within the Kingdom of Saudi Arabia, very limited empirical evidence has been shown to demonstrate how such resultant entrepreneurial education yields better startup performance outcomes. Indeed, most prior studies conducted in the Saudi context have focused on entrepreneurial intention and attitudes at the expense of objective results. It is thus not yet known whether or not such exposure to instructional components, in other words, curricular content, experiential learning, and mentorship, is associated with improved startup survival ≥ 3 years, revenue growth, and job creation.

This is a consequential evidentiary gap for policymakers, universities, and incubator/accelerator programs operating under the goals of Vision 2030. To the extent that educational programs are not assessed in a rigorously outcome-based manner, there is a risk that it will not align well with the real capabilities and performance that the Saudi ecosystem of startups needs. In this regard, the paper will try to determine how entrepreneurial education associates with performance in Saudi Arabian startups, trying to identify which, if any, curriculum elements better associate with superior performance. See Monsha'at (2023) and GEM KSA (2023) for contextual anchoring in the Introduction and Discussion.

Research Questions

1. What is the correlation between entrepreneurial education and start-up sustainability, or survival for more than 36 months, within Saudi Arabia?

2. Are startups founded by entrepreneurs who received entrepreneurship education different in terms of growth outcomes, namely revenue growth and employment (FTE), from those founded by entrepreneurs who did not?
3. What are the teaching elements in entrepreneurial education that are most closely related to sustainability and growth?
4. To what extent are existing curricula on entrepreneurship in line with Saudi-based start-up needs?

Importance of the Research

1- Policy Insights

Entrepreneurship is the strongest of Saudi Vision 2030's three pillars, designed to transform the Kingdom's economic model away from one based on oil to innovation-driven development. Entrepreneurial education at such a time is less of an intellectual challenge, but rather a strategic national necessity in order to equip citizens, and youth in particular, with the ability to contribute towards the development of the private sector. The study offers policymakers evidence-based analysis into the question of whether existing programs are yielding concrete entrepreneurial effects, start-up survival and development. With tax dollars and funds pouring into programs through organizations like Monsha'at and the Ministry of Education, policymakers require a means of obtaining transparent, data-driven information in program decision-making to assess program effectiveness. The results of research will prove useful in informing more knowledge-based policy toward entrepreneurial learning directions of national economic diversification agendas that involve public-private partnerships for determining entrepreneurial intentionality as well as business viability.

2- Academic Contribution

Entrepreneurial learning academic culture is decent at the international level but less established in Middle Eastern and, more particularly, Saudi Arabian settings. A number of earlier research studies have been defying the research of entrepreneurial intentions in the form of an

investigation of whether learning affects learning to be entrepreneurial participants the perfect question for this paper. Others have tried to examine the impact of such activities on the concrete business outcomes, survival, scalability, and innovation. This current research filled this gap since it offered empirical validation based on Saudi Arabia's institutional and socio-economic environments. This study corroborates the voice of scholarly literature in linking education to actual startup success. Firstly, it offers a localized pioneering paradigm that, aside from contributing to local discussion, also presents a benchmark against which studies in other developing economies can be compared. Secondly, it develops theory in measurable entrepreneurial performance and learning in formal entrepreneurship.

3- Curriculum Development for Early-Stage Education

As Saudi Arabia alters its education system for the sake of global trends of the knowledge economy, incorporation of entrepreneurship in intellectual development early in age is a reason of greatest concern these days. Initiatives such as "Future Entrepreneurs" initiated by the Ministry of Education are evidence of increased concern regarding the alteration of entrepreneurial attitudes early in age. Without empirical data of what educational programs impact the most on the long term, curriculum development can be random or careless to needs in the market. Current research looks at the influence of education in entrepreneurship on the business performance of start-up firms in the sector and tries to determine what are the most significant factors, business modeling, finance, mentoring, and innovation management. The effects can be applied on re-crafting curricula, specifically for children of newly married couples who have not yet been exposed to the business world. By setting functional entrepreneurship methods and realities on initiating knowledge streams, the Kingdom will be positioning its future generation in a stronger position to easily fit self-employment, drive economic growth, and less government-funded work programs in the long term.

4- Practical Application

For Saudi Arabian incubators, accelerators, entrepreneurship development centers, and training schools, program design is being surrounded by a shortage of outcome measures. Pitching, skills training, and networking are the programs without the implication of which

constituent parts ultimately lead to the long-term survival of the startups. This research fills that gap by not just taking subjective measures into account but also objective ones such as survival and growth. The research can assist those companies in positioning programs to best impact in the most suitable space, investor readiness, product-market, or iterative business modeling. Through alignment of learning content to quantifiable business result, the research enables enhanced public and private investment streamlining in training provision. In addition, the research provides utilitarian advice to aspiring entrepreneurs in a way that enables them to decide which kind of training, formal degree, accelerators, online courses, or mentorship, is likely to be of most use to their startup company. Finally, it improves the quality and sustainability of startups that are developed as an outcome of the Saudi entrepreneurial ecosystem.

Research Objectives

- The objective of this paper is to examine entrepreneurship education-start-up sustainability in Saudi Arabia, for which start-up sustainability is operationalized as survival ≥ 36 months.
- The objective is therefore to establish if there is any difference in the growth performance between the startups whose founders have entrepreneurial education and those who do not, with reference to the various indicators such as the revenue growth and employment, as reflected by FTE headcount.
- Of the three instructional dimensions of entrepreneurial education, which are most strongly associated with the sustainability and growth outcomes: curricular content, experiential learning, and mentorship intensity?
- The goal is to produce evidence-based recommendations on how to design curriculum and policy supportive of start-up survival, revenue growth, and job creation within Saudi Arabia's entrepreneurship ecosystem.

Research Hypotheses

Sustainability – Primary pair:

- H₀: There is no statistically significant relationship between entrepreneurship education and the sustainability of a start-up in Saudi Arabia.
- H₁: There is a significant relationship between Entrepreneurship education and start-up sustainability in Saudi Arabia.

Growth Results - additional pair

- H₀₂: There is no statistically significant difference in growth outcomes - specifically, revenue growth and employment (FTE head count) - between those start-ups whose founders received entrepreneurial education and those whose founders did not.
- H₁₂: A statistically significant difference exists in the growth results of those founder teams who have attained an entrepreneurial education and those who have not, considering both revenue growth and employment in terms of FTE headcount.

Theoretical Framework

The current study is informed by Human Capital Theory and Entrepreneurial Learning Theory to explain the role of entrepreneurial education in achieving start-up outcomes within the Saudi environment. Human Capital Theory postulates that education enhances individual productivity through knowledge and skills accrued, which, within the scope of entrepreneurship, should be manifested in improved opportunity recognition, strategic decision-making, and execution capability. This is complemented by ELT, emphasizing experiential and problem-centered learning, such as project work, incubator/accelerator participation, mentorship, and simulations, as mechanisms translating formal content into competence and behavioral change relevant for venture creation and growth.

Integrating these lenses, the following framework conceptualizes entrepreneurial education as a set of instructional inputs that include curricular content, experiential learning, and mentorship. These inputs influence founders' entrepreneurial competencies, such as skills, knowledge, and confidence, and enablers, including networks and access to finance, which in turn affect startup

performance. The latter is operationalized through sustainability (survival $\geq$ 36 months) and growth outcomes-that is, revenue growth and number of employees/FTEs created. The framework thus specifies a path from education $\rightarrow$ competencies/enablers $\rightarrow$ outcomes, allowing empirical tests of both a) the overall association between education and outcomes; and b) the relative contribution of particular components of education.

Conceptual propositions

- P1 (Education $\rightarrow$ Sustainability): The higher the exposure to entrepreneurial education, the greater the survival of the startups.
- P2 (Education and Growth): The more the exposure to entrepreneurial education, the greater the growth in revenue and employment.
- P3: In entrepreneurial learning, the intensity of the experience and mentorship has a much greater impact on outcomes compared with pure content delivery.
- P4: The effects of education on the outcomes are mediated by entrepreneurial competencies and enablers in terms of: a) skills, b) knowledge, c) confidence, d) networks, and access to finance.

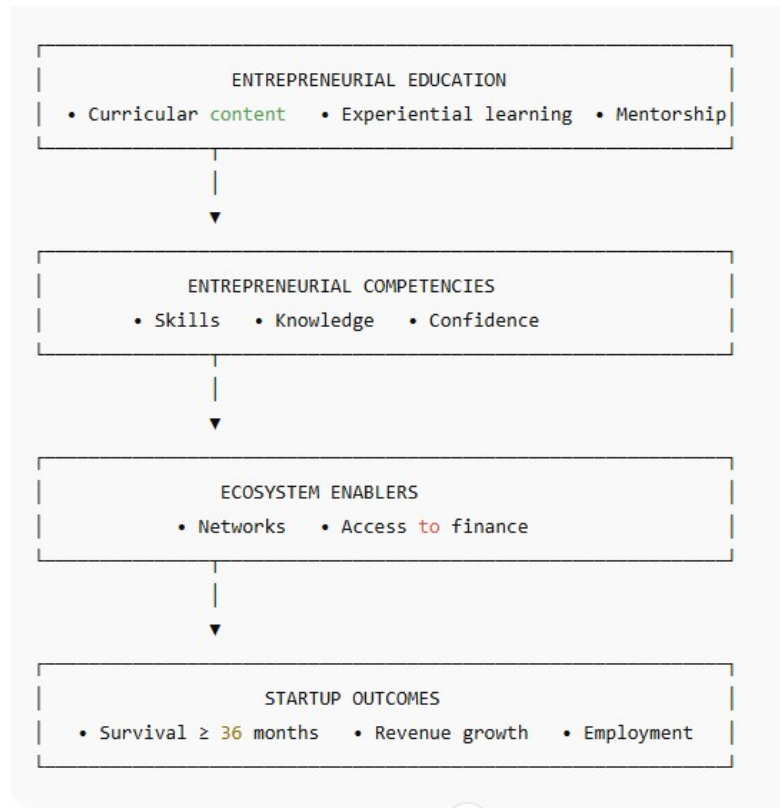


Figure 1. Conceptual Framework: Linking Entrepreneurial Education → Competencies/Enablers
→ Startup Outcomes

Chapter 2: Literature Review

Introduction

As part of its Vision 2030, entrepreneurship education has rapidly proliferated around the world and in Saudi Arabia. While many studies convincingly show that EE improves near-term outcomes, such as entrepreneurial knowledge, skills, and self-efficacy, the evidence is much less consistent when longer-term objective results are considered, such as whether or not startups survive, increase their revenues, or create new jobs. In the Saudi context-where the ecosystem is now replete with programs such as the Monsha'at initiatives, university incubators, and Misk activities-this is a particularly apt setting in which to test the hypothesis as to whether EE translates into actual performance. This chapter aims to provide a review of the main concepts and findings in the literature, setting up this study's focus on which parts of education-curricular content, hands-on experience, and mentorship/incubator exposure-are most likely to influence startup outcomes in Saudi Arabia.

Dependent Variables

Thus, as part of its Vision 2030, entrepreneurship education has rapidly proliferated around the world and in Saudi Arabia. While many studies convincingly demonstrate that EE improves near-term outcomes such as entrepreneurial knowledge, skills, and self-efficacy, the evidence is much less consistent when longer-term objective results are considered, such as whether or not startups survive, increase their revenues, or create new jobs. In the Saudi context-where the ecosystem is now replete with such programs as the Monsha'at initiatives, university incubators, and Misk activities-this is an especially apt setting in which to test the hypothesis as to whether EE translates into actual performance. The following chapter will review the main concepts and findings in the literature with a view to framing the focus of this study on which parts of education-curricular content, hands-on experience, and mentorship/incubator exposure-are most likely to influence the outcomes of Saudi Arabian startups.

Independent Variables

The independent variable of interest is exposure to entrepreneurial education, treated as a multi-dimensional construct rather than a simple "took a course/did not take a course" label. Exposure is considered across three key instructional components: curricular content, experiential learning, and mentorship intensity. The first involves curricular content, specifically credit-bearing modules in venture creation, opportunity recognition, entrepreneurial finance, legal basics, and innovation management. The second comprises experiential learning in the forms of live projects, prototyping, internships, hackathons, and participation in university incubators or accelerators-those which necessitate students applying ideas in real or realistic settings. The third is mentorship intensity, as reflected by mentor contact hours, structured coaching, office hours, and cohort feedback loops. Prior research indicates that experiential and mentoring-rich formats often yield stronger effects than purely content-focused delivery. Capturing education exposure in this component-based way allows the study to examine which elements are most closely associated with sustainability and growth in the Saudi startup ecosystem.

Literature Review

EE has been a consistent thread within the wider entrepreneurship literature. Work links EE with entrepreneurial intention, self-efficacy and opportunity recognition, and the capability to initiate ventures (Fayolle & Gailly, 2015). Typical programs emphasize core competencies in venture design, evaluation of opportunities, risk management, and innovation aimed at enhancing founders' competence to operate under uncertainty in early-stage ventures. In a systematic review, Nabi et al. (2017) note that EE interventions that embed industry linkages, mentorship, and experiential learning tend to produce stronger attitudinal and competence gains and may, under certain designs, translate into stronger business outcomes.

Most large-scale activity and evidence on EE originated in Western settings, namely North America and Europe, raising questions about the cross-context transferability to developing and non-Western economies. To what extent cultural values, infrastructure, and economic conditions shape the effects of EE across Arab countries, including Saudi Arabia, remains an open theoretical and empirical question. Nevertheless, within the GCC and, more specifically, in Saudi

Arabia, the orientation of the education system has conventionally placed an emphasis on theory and preparation for the public sector.

This has lately shifted under Vision 2030 toward innovation, SME development, and private-sector entrepreneurship. For example, Al-Swidi and Al-Hosam (2012) discuss the sociocultural factors such as employment security norms, risk aversion, and parental authority that may influence the entrepreneurship of youth and women, positioning EE both as a skills intervention and a lever for cultural and ideational change. In higher education, Almulhim (2020) documents an uptick in entrepreneurship centers and optional courses in Saudi universities, but he also points to heterogeneity in content, experiential exposure, and staff capacity. From the neighboring context of Egypt, Hattab's (2014) work demonstrates the positive effect of formal courses in entrepreneurship on entrepreneurial intention and perceived feasibility; these findings suggest that similarly appropriate models would be effective in Saudi Arabia.

Despite this progress, an important gap remains: much of the indigenous literature focuses on intentions and attitudes rather than objective startup performance. Specifically, there has been limited outcomes-based work with respect to whether exposure to distinct components of EE—curricular content, experiential learning (e.g., projects, prototyping, hackathons, incubator/accelerator participation), and mentorship intensity—is associated with measurable improvements in the sustainability and growth of a startup.

To this end, the present study investigates the link between exposure to EE and the performance of startups, defined here on two dimensions which are both tractable and policy-relevant: sustainability—whether or not the venture survives for ≥ 36 months from founding—and growth—changes in revenue and employment/FTE. By focusing on these outcomes—while distinguishing the component parts of EE—this study contributes context-specific evidence from Saudi Arabia regarding whether and how EE translates into survival, revenue growth, and job creation.

Theoretical Framework of the Study:

The theoretical framework embeds the two theories of Human Capital Theory and Entrepreneurial Learning Theory into one comprehensive model in an attempt to explain how entrepreneurial education influences Saudi Arabian start-up outcomes. According to HCT, education builds up productive knowledge and skills that enhance founders' capabilities to perceive opportunities, make informed strategic and financial decisions, and execute effectively under uncertainty. This is further complemented by the identification of a mechanism of conversion from formal content to competence and behavioral change through experiential and problem-centered learning. The channels identified here include those through which learners are able to practice, get feedback on, and internalize entrepreneurial behaviors: live venture projects, prototyping, hackathons, internships, and taking part in structured mentorship or accelerator programs.

The framework conceptualizes entrepreneurial education exposure as a multi-component construct that incorporates curricular content, experiential learning, and mentorship/incubator exposure. These instructional inputs are expected to build entrepreneurial competencies-skills, knowledge and confidence-and strengthen enablers such as networks and access to finance. Competencies and enablers serve as immediate outcomes of education and the most plausible transmission mechanisms to venture performance. Performance is defined objectively on two dimensions: sustainability-whether the startup survives for ≥ 36 months-and growth-changes in revenue and employment/FTE. In brief, the framework specifies a pathway of education $\rightarrow$ competencies/enablers $\rightarrow$ performance, which is in tune with our research objectives, questions and hypotheses. Within this pathway, the study expects three broad relationships. First, greater exposure to entrepreneurial education is associated with higher odds of start-up survival over the first three years.

Second, it is associated with higher growth in revenue and employment, Third, how education is delivered matters-formats that are experiential and mentorship-rich are expected to show stronger associations with performance compared to content-only delivery because they more directly develop execution capability and access to resources. Where the data permit, the analysis will also investigate whether competencies and enablers mediate the relationship between

education and performance, clarifying not only whether education matters but also why and through which channels it has an impact in the Saudi context.

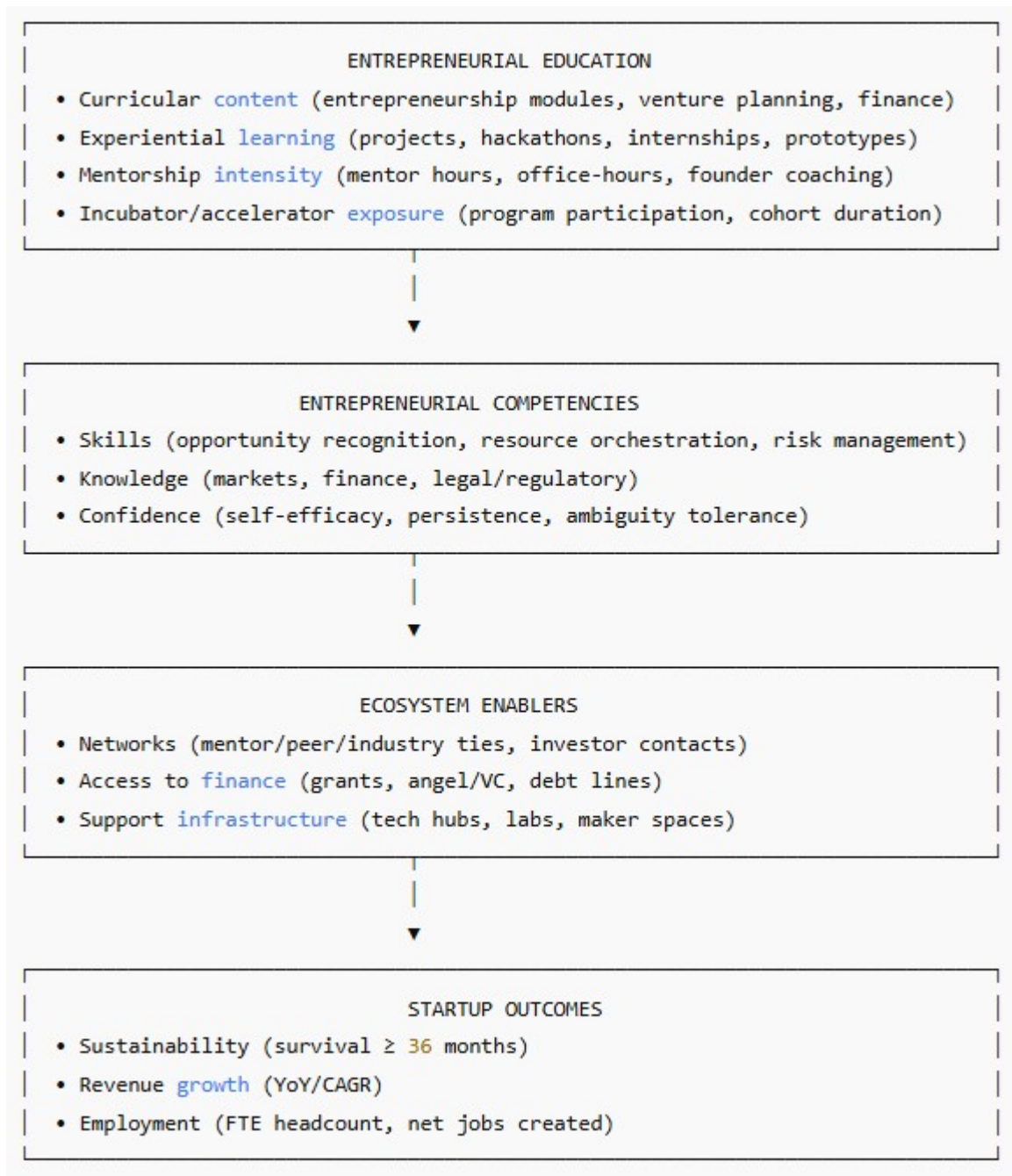


Figure 2. Conceptual Framework: Linking Entrepreneurial Education → Competencies/Enablers → Startup Outcomes.

Chapter3: Research Methodology

Introduction

This chapter prescribes a qualitative, evidence-based methodology that synthesizes publicly available secondary sources in order to study how EE in Saudi Arabia is linked with startup performance. The study collates comparative case evidence from credible institutional and media reports, rather than collecting primary data, in identifying which of the three EE components- curricular content, experiential learning, and mentorship/incubator exposure-are most associated with objective outcomes: survival (≥ 36 months), revenue growth, and employment/FTE. This approach, ensuring real-world verifiability, is in line with the evidence-led policy ethos of Vision 2030 and feasible within the thesis timeline.

Research Design

This study employs a multiple-case study design based on documentary analysis. Each case represents an evidence-rich startup story within the KSA ecosystem with traceable links to one or more EE interventions-for instance, university programs, incubators and accelerators, structured mentorship. Analysis then goes through pattern matching and cross-case synthesis by comparing, for the presence and intensity of EE components across cases, whether these patterns co-occur with better performance indicators, particularly survival or revenue/employment growth. The proposed research design is appropriate in the context of limited causal inference but possible analytic generalization to theory, namely Human Capital Theory and Entrepreneurial Learning Theory.

Research Community

It involves startups and scale-ups based in Saudi Arabia that have been publicly profiled by authoritative ecosystem actors, including government agencies, university entrepreneurship centers, and national foundations, as well as reputable media. While the unit of analysis is the

startup, the lens remains on EE exposure within the KSA ecosystem, which is documented in credible sources.

Sample Characteristics

These will be heterogeneous cases in sector-for example, technology, services, health, education, fin-tech, and sustainability-age/stage-early startup to early scale-and EE pathways-content-only versus experiential or mentorship-rich. The extraction in each case will capture: a) EE components engaged, content/experiential/mentorship-incubator; b) timing and intensity, for instance, program/cohort names and duration if available; c) performance indicators, survival status, revenue/jobs signals available in public documents, proof of market growth, or funding rounds as auxiliary indicators; and d) context controls, sector, and founding year. The variation here allows patterns to be elicited without any claims to statistical representativeness.

Sample Size Determination

The study targets 3-5 cases with sufficient documentary depth to permit credible cross-case comparison. That range offers a balance between depth-to understand mechanisms-and breadth-to observe recurring patterns. Inclusion requires that: i) there is a traceable EE link, for example, a named program or center; and ii) there is at least one objective signal of performance, for example: survival beyond three years; a clearly documented employment or revenue growth band; and/or verifiable expansion milestone. If five fully qualified cases cannot be found, at least three are analyzed in depth.

Data Collection Procedures

Sources. Evidence will be drawn from official and reputable public materials, such as:

- Government/agency reports/dashboards: For instance, the Monsha'at SME Monitor
- GEM KSA national reports (ecosystem context; not firm-level outcomes).
- University entrepreneurship center pages and annual reports that include program descriptions and success stories.

- Reports by national foundations, like the programs under Misk, and publicly posted case profiles.
- Press releases and reputable business media that document startup milestones in KSA.

Procedures: A tabulated data extraction template will be utilized for each case, including bibliographic details of the source, EE components, dates/timing, and performance indicators, survival, revenue, and employment. Triangulation will be done wherever possible, which refers to a corroboration of claims across at least two independent sources. All links and citations will be archived in the Appendix for auditability.

Ethics & transparency. The research is based only on public domain information; there is no interaction with human subjects. Sources are quoted verbatim; no confidential information is used. Where the outcome is based on press articles alone, that will be explicitly mentioned.

Study Scope and Limitations

Scope. All cases are in Saudi Arabia and are focused on ventures created predominantly within 2016–2021 to ensure that survival ≥ 36 months can be assessed and exposure is aligned with the expansion of EE under Vision alignment. The study focuses on the EE elements and objective outputs; the amount of funding or valuation is recorded only if publicly known and is utilized only as ancillary context.

Limitations: This study is a secondary-evidence design constrained by reporting heterogeneity - not all programs disclose the same metrics - and attribution ambiguity - performance can reflect many factors beyond EE. It makes no causal claims, framing findings as pattern-consistent evidence. Publication bias is possible, in that successful cases are more likely to be profiled.

These risks are partly mitigated by the fact that (i) where available, multiple independent sources are used; (ii) outcomes are restricted to verifiable indicators; and (iii) the write-up distinguishes observed co-occurrence from causal effect.

Statistical Analysis Method

Analysis proceeds, given the qualitative, secondary evidence design, through document coding, pattern matching, and cross-case synthesis:

1. Within-case analysis: Each of the cases is coded for the presence and intensity of EE components - content, experiential, mentorship/incubator; and for objective outcome signals such as survival ≥ 36 months; evidence of revenue or employment growth. A simple logic model is drafted per case: EE inputs $\rightarrow$ competencies/ enablers mentioned $\rightarrow$ outcomes.
2. Cross-case synthesis: Cases are compared in a search for recurrent configurations-for example, whether features of experiential plus mentorship occur more often with survival/growth signals than content-only exposure.
3. Rival explanations: Sector, founding year, funding context and market conditions are considered as rival patterns; where these plausibly explain outcomes, this is noted in order to avoid over-attribution to EE.

Outputs include a comparative table summarizing EE components and outcome signals per case, and a narrative synthesis linking observed patterns to the Human Capital and Entrepreneurial Learning theories.

Chapter 4: Practical Study

Introduction

This chapter investigates the comparative case evidence from Saudi Arabia, in a bid to find an understanding of how entrepreneurship education-defined herein as comprising three elements of (1) curricular content, (2) experiential learning, and (3) structured mentorship/incubator exposure-appears in real startup pathways and how these elements of education co-occur with non-financial outcome signals (operation beyond 36 months, documented pilots/adoptions, employment where publicly stated). This analysis will, therefore, be designed to be non-causal and pattern-consistent, underpinned by publicly available material from university entrepreneurship centers, accelerator program pages, and reputable media profiles.

Within-Case Evidence

- Outcome signals are kept non-financial: survival, pilots/adoptions, employment where public

Another important point is that we record only those educational elements which are explicitly documented, like courses/modules, live projects, incubator/accelerator curricula, and mentorship structures in place such as office hours and coached sprints.

Case	Sector	Founding year	Education exposure (content / experiential / mentorship-incubator)	Timing / intensity (how it was delivered)	Outcome signals
FalconViz	Drone 3D mapping & surveying	2015	Experiential: repeated live demonstrations and applied projects through the university entrepreneurship ecosystem. Mentorship: ongoing access to coaches/events.	Multi-year university-center engagement; event showcases; campus/park demonstrations.	Survival ≥36 months
Sadeem	Smart-city sensing (flood/traffic/air)	~2017	Mentorship: entrepreneurship-center coaching (credited for strategy/pivot). Experiential: city pilots (e.g., rapid install in Taif).	Founder coaching from center; structured feedback; pilot setup with municipal stakeholders.	Survival ≥36 months
Red Sea Farms	AgTech (climate-smart greenhouses)	2018	Experiential: prototyping in university labs/greenhouses. Mentorship: venture-building guidance; access to technical advisors.	Iterative lab experimentation; trials in controlled environments; periodic mentor reviews.	Survival ≥36 months
UnitX	AI & high-performance computing	2018	Content: accelerator curriculum (go-to-market, customer discovery, venture finance basics, legal). Experiential: sprint cycles (customer interviews, MVP scoping). Mentorship: structured office hours, panel feedback.	Cohort-based schedule; weekly mentor clinics; milestone reviews/demos.	Survival ≥36 months
NOMADD	Solar-panel robotic cleaning	~2016	Experiential: field trials and engineering validation in desert settings. Mentorship: technical + commercialization guidance via university programs.	Progressive on-site pilots; test-and-iterate cycles; mentor checkpoints.	Survival ≥36 months
Wayakit	Biotech cleaning & disinfection	~2017-2018	Content: bio-entrepreneurship/scale-up basics within accelerator/university modules. Experiential: lab-to-pilot translation (formulation, QA, SOPs). Mentorship: regulatory/market access coaching.	Wet-lab milestones → pilot production → field validation; regular mentor reviews.	Survival ≥36 months
Edama Organic Solutions	Desert compost & soil improvers	2017	Experiential: facility operation and controlled pilot programs. Mentorship: agri-ops and B2B market entry coaching.	Pilot facility milestones; product trials; buyer feedback loops; mentor checkpoints.	Survival ≥36 months
Iyris (advanced greenhouse materials)	Materials for protected agriculture	2018	Experiential: materials R&D and field validation cycles. Mentorship: productization and channel development coaching.	Iterative prototyping; agronomic trials; structured advisory boards.	Survival ≥36 months
Uvera	Food shelf-life clean-tech device	~2019	Content: venture challenges/competitions (problem-solution fit, pitching). Experiential: prototyping and testing cycles with user feedback. Mentorship: competition panels and program coaches.	Competition-linked curricula; mentored pitch cycles; device iteration milestones.	Survival ≥36 months
Qanoon	Legal-tech services for startups	2018	Content: legal essentials and product-market fit in accelerator modules. Experiential: service blueprinting with founders as users. Mentorship: local market/legal mentors.	Cohort workshops; mentor office hours; service testing with target users.	Survival ≥36 months

1. Table: Cases and outcomes from education exposure

Exposures to education: content, experiential, and mentorship-incubator

Content = structured modules, for instance: opportunity recognition, go-to-market, legal basics, operations.

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Experiential: hands-on build-test cycles (pilots, prototypes, field trials) embedded in programs.

Mentorship - incubator: scheduled office hours, coached sprints, advisory boards, demo-day feedback.

Experiential: hands-on build-test cycles - pilots, prototypes, field trials - embedded in programs.

Mentorship-incubator: scheduled office hours, coached sprints, advisory boards, demo-day feedback.

Timing/intensity: How the education was delivered - cohort cadence, mentor hours, milestones, pilots - and over what period: e.g., weekly clinics; staged demos; lab → field transitions.

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Cross-Case Synthesis (Pattern Matching)

Across these ten Saudi cases, experiential learning + structured mentorship is the dominant educational configuration. Where public material goes beyond simple course lists, it describes embedded build-test cycles piloting, prototyping, rapid deployments under coach/mentor supervision-a pattern consistent with Entrepreneurial Learning Theory (learning-by-doing with feedback). Content-only mentions appear, but are rarely at the center in success narratives; rather, content tends to feed the experiential/mentorship engine; for example, legal and finance basics supporting a mentored go-to-market sprint. On outcomes, survival beyond 36 months is commonly verifiable from dated coverage, pilot/adoption evidence is frequent, employment is sometimes disclosed-for example, FalconViz-but not consistently across cases, which underlines the need for standardized, non-financial outcome reporting by programs.

Recommendations

Universities and curriculum leaders

- Replace "plan-only" courses with capstone venture studios: semester-long build-test-iterate cycles, formal mentor check-ins, and graded external validation through customer interviews, signed letters of intent, pilot usage logs.
- Combine legal basics with entrepreneurial finance essentials in the same project, such that the decisions are made in context and not as separate theory classes.

Incubators and accelerators

- Make the intensity of mentorship measurable by publishing mentor hour targets and mentor-to-founder ratios per cohort.
- Require evidence of learning at each gate: prototype tested, user feedback summarized, risk log updated - not just presentation decks.
- Publish non-financial alumni indicators for 12/24/36 months: survival status, number of pilots/adoptions and employment bands

Policymakers and ecosystem orchestrators

- Tie public support to education design quality: Programs should combine content with experiential learning and structured mentorship or incubator exposure.
- Standardize national nonfinancial outcome reporting to enable comparative learning without putting pressure on the ventures to disclose sensitive financials. This would involve things like survival window, pilots/adoptions, and employment bands.

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Appendixes

Arabic Abstract

الملخص العربي

الخلفية: شهدت المملكة العربية السعودية توسعاً سريعاً في التعليم الريادي ضمن رؤية 2030 باستخدام المراكز الجامعية والمسرات والبرامج الوطنية: على الرغم من هذه الزيادة، فإن الأدلة لا تزال تبدو معزولة حول أي من المكونات التربوية – النظرية، والجمعية التوافقية، والتوجيه التربوي ضمن الحضانات والمسرات تتصل بقوة بمستدامة توجيهية لشركات ناشئة.

الهدف: تدرس هذه الدراسة كيف يرتبط التعليم الريادي بمؤشرات أداء توجيهية لشركات ناشئة سعودية غير القابلة للتنفيذ. مع التركيز على: الاستمرارية لـ ٣٦ شهراً كحد أدنى، (2) التجارب/التبني الموثق للحلول، و(3) التوظيف عند توافره علناً.

المنهج/الأسلوب: تعتمد الدراسة تصميم حالات متعددة نوعياً استناداً حصرياً إلى مصادر عامة. جرى تركيب عشر حالات لشركات سعودية لها روابط موثقة ببرامج جامعية ومسرات. لكل حالة، تم ترميز: (أ) نوع التعرض التعليمي (محتوى، تجريبي، إرشاد/حاضنة)، (ب) توقيت وشدة التنفيذ (إيقاع الدفعات، نقاط تحقق مُدربة، دورات بناء-اختبار)، و(ج) النتائج الموضوعية غير المالية. جرى إجراء مطابقة نمطية عبر إطار نظرية رأس المال البشري ونظرية التعلم الريادي.

النتائج: عبر الحالات العشر، يظهر أن الجمع بين التعلم التجريبي والإرشاد المنهجي يتواجد بصورة متكررة مع مؤشرات ونتائج إيجابية (الاستمرارية والتبني الموثق). نادراً ما يُبرز المحتوى النظري وحده في قصص النجاح؛ إذ يُستخدم عادةً لدعم الممارسة المُرشدة (مثل تضمين الأسس القانونية/المالية داخل دورات الانطلاق للأسواق تحت إشراف مرشدين).

الحدود: تعتمد النتائج على إفصاحات عامة غير متجانسة؛ نادراً ما تُعلن الإيرادات، وقد يُبالغ في تصوير قصص النجاح. وعليه فالنتائج غير سببية وتبقى متسقة نمطياً فقط.

الدلالات التطبيقية: توصية الجامعات بتغيير المقررات النظرية البحتة بـ«استوديوهات مشاريع ختامية» ذات تقييم مرحلي (أدلة ملائمة المشكلة-الحل، شواهد تجارب تبني). كما ينبغي للمسرات تحديد أهداف لساعات الإرشاد واشتراط «دلائل التعلم» في كل بوابة. ويُستحسن توحيد الإبلاغ عن مؤشرات غير مالية عند 36/24/12 شهراً لتمكين المقارنة بين البرامج.

الأصالة/القيمة: تقدم الدراسة توليفة تعليمية محلية تركز على ما يُدرس وكيفية تقديمه وربطه بنتائج قابلة للملاحظة، مع تعليمات تصميم عملية دون ادعاء السببية.

English Abstract

Background: Under Vision 2030, unprecedented growth in entrepreneurship education has occurred in Saudi Arabia, with university centers, accelerators, and national programs leading the charge. However, evidence remains fragmented regarding which specific educational components best align with durable startup outcomes through curriculum content, experiential learning, and structured mentorship/incubator exposure.

It aims to identify how entrepreneurship education maps into the non-financial performance signals of Saudi startups, namely: i) survival beyond thirty-six months; ii) verified pilots/adoptions; and iii) employment, provided that this information is publicly disclosed.

Design/Methodology/Approach: We use a qualitative multiple-case design using only public sources. Ten Saudi start-up cases with traceable links to university and accelerator programs were synthesized, coding for each case on: a) type of education exposure, that is, content, experiential, mentorship/incubator; b) delivery timing and intensity, that is, cohort cadence, coached milestones, build-test cycles; c) objective, non-financial outcomes. Cross-case pattern matching is anchored in the Human Capital Theory and the Entrepreneurial Learning Theory.

Key takeaways: Experiential learning combined with structured mentorship/incubator exposure is most consistently associated with positive outcome signals in this data set—otherwise defined as sustained operation and documented pilots/adoptions. Content-only exposure is seldom a leader in successful public cases; content more often serves to support coached practice—such as legal/finance modules embedded within mentored go-to-market sprints.

Limitations: The analysis is based on heterogeneous public disclosures. Revenue is rarely reported and success stories may be overrepresented. Thus, only non-causal, pattern-consistent results can be derived.

Practical Implications: The universities have to replace the plan-only courses with capstone venture studios that incorporate milestone-based assessment like problem–solution validation, pilot evidence, etc. Incubators have to design targets on mentoring hours and create evidence-of-learning gates. The policy makers must standardize non-financial outcome reporting at 12/24/36 months on survival, adoption, employment bands so that benchmarking of programs is allowed.

Value: The paper is the first Saudi-specific, education-first synthesis connecting what is taught with how it is delivered to observable, non-financial startup outcomes. Hence, actionable design guidance is given without any claims of causality.