

Barriers, Opportunities and Strategies in Entrepreneurship Education: A Systematic Review

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Abstract

Entrepreneurship is vital for economic development of countries, driving innovation and for alleviating unemployment. Education is a critical enabler of successful entrepreneurship. This paper explores critical barriers to successful entrepreneurship and identifies opportunities and interventions adopted to overcome barriers and take advantage of opportunities. A systematic review methodology is used to consolidate a single comprehensive source of learning. Research questions are formulated through the **Problem, Intervention, Comparisons, Outcomes (PICO)** framework and the review is conducted following the **Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA)** guidelines. Our findings reveal multiple barriers to entrepreneurship including gender dimension and ableism, risk aversion and fear of failure, education, government policy, entrepreneurial ecosystems and access to funding and capital. Several interventions in the form of education, structured support including funding, conducive policies and mentorship were proposed. A clear preference for experiential education and creativity and innovation tuition was found in literature. Recommendations of vertical integration of entrepreneurship into curricula were also made with clear learning outcomes. The reported works, however, were largely cross-sectional and evaluated the success of interventions based on self-reported objective entrepreneurial intent and self-efficacy. This points to a need for further longitudinal studies to establish correlation and causality of interventions and outcomes in the real world. The literature further showed an evolution of discourse from the 1990s focusing on educational design and delivery to the gender dimension in the 2000s and a focus on factors affecting success and the use of ICT technology leading to the modern Generative Artificial Intelligence.

Keywords

Entrepreneurship, entrepreneurship education, creativity, innovation, venture launch.

1. Introduction

According to the World Bank and International Finance Corporation report on the Micro, Small and Medium Enterprises (MSME) opportunity in South Africa, these enterprises employed between 50% to 60% of the labour force and contributed approximately 34% to South Africa's gross domestic product (GDP) (IFC & WBG, 2018). In the context of high – above 30% - unemployment rate in South Africa in 2025 and inequality above all countries, MSMEs hold promise to remedy some of these social ills. Despite the more nuanced bathtub relationship of entrepreneurship activity and economic development reported by (Naudé, 2008) and shown in Figure 1, MSME contribution to economic activity remain dominant in South Africa.

Many countries in the world acknowledge the contributions of entrepreneurship towards economic development (Naudé, 2008). Research conducted across geographies also highlights challenges towards successful realisation of entrepreneurship citing challenges such as education, policy frameworks, gender barriers, cultural barriers,

ecosystems, technological advances, geographical locations, support structure such as incubation, disabilities, levels of creativity and innovation. In Arica the most comprehensive studies have been conducted in Nigeria followed by South Africa.

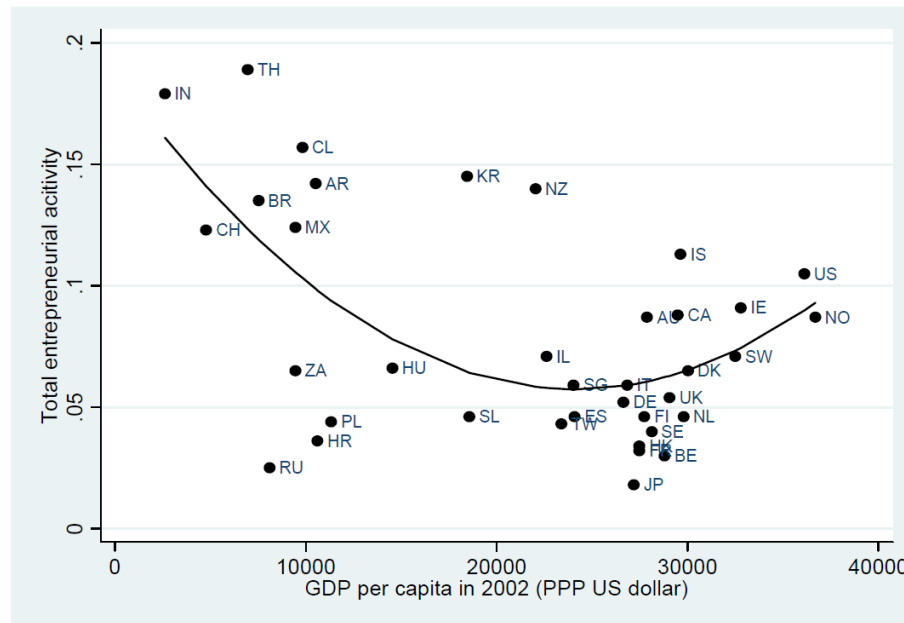


Figure 1. The relationship between entrepreneurship and economic development across multiple countries, showing a bathtub relationship (Naudé, 2008).

Among a plethora of definitions of entrepreneurship (Cunningham, 1991), the following definition is adopted in this paper:

“Entrepreneurship is a dynamic process of vision, change, and creation. It requires an application of energy and passion towards the creation and implementation of new ideas and creative solutions. Essential ingredients include the willingness to take calculated risks – in terms of time, equity, or career; the ability to formulate an effective venture team; the creative skill to marshal needed resources; and fundamental skills of building solid business plan; and finally, the vision to recognize opportunity where others see chaos, contradiction, and confusion.” (Kuratko, 2003).

While formal education is not a pre-requisite to successful education, it is a critical catalyst for instilling knowledge, skills, values and attitudes (KSVA) needed to increase the propensity of university students to create highly technical and impactful enterprises, where technical expertise would be a barrier to the rest of the population. Education, therefore, requires a careful review and transformation to successfully deliver on this promise (Lose & Cheteni, 2024; Matlay, 2008; Rasmussen & Sørheim, 2006; Welsh et al., 2016a).

Toma et al., (2014) developed a conceptual model linking entrepreneurship with economic development. This model also shows education as the catalyst for development of entrepreneurial potential. This is particularly important where the definition of entrepreneurship is linked with newness. J. A. Schumpeter contends that:

“Entrepreneurs are not only innovators and, therefore, agents of change, but also coordinators of production. He suggested that entrepreneurship occurs under five conditions of newness: new goods, new production methods, new markets, new sources of materials, or new organizations” (Toma et al., 2014).

1.1 Problem Statement

Despite the notable benefits of Entrepreneurship, success rates in the form of new businesses launched and those that succeed remains very low (Perry et al. 2018). In 2018, in the United States it was estimated that 505 of new businesses fail within the first 5 years (Perry et al. 2018) and only a third survive past 10 years. The Global Entrepreneurship

Monitor (GEM) report summarised entrepreneurship activity within countries in Figure 2 shows rankings of countries entrepreneurial activity (Hill et al., 2023). New business launched by students during their study careers and after graduation remain low. As a result, a deeper exploration of the relevance of factors influencing students' propensity to start new businesses is needed. The role of entrepreneurship education in improving the intent of students to start new businesses and their knowledge, skills, values and attitudes towards success also needs close examination. Barriers and opportunities to successful entrepreneurship need to be studied along with interventions to mitigate and leverage them respectively.

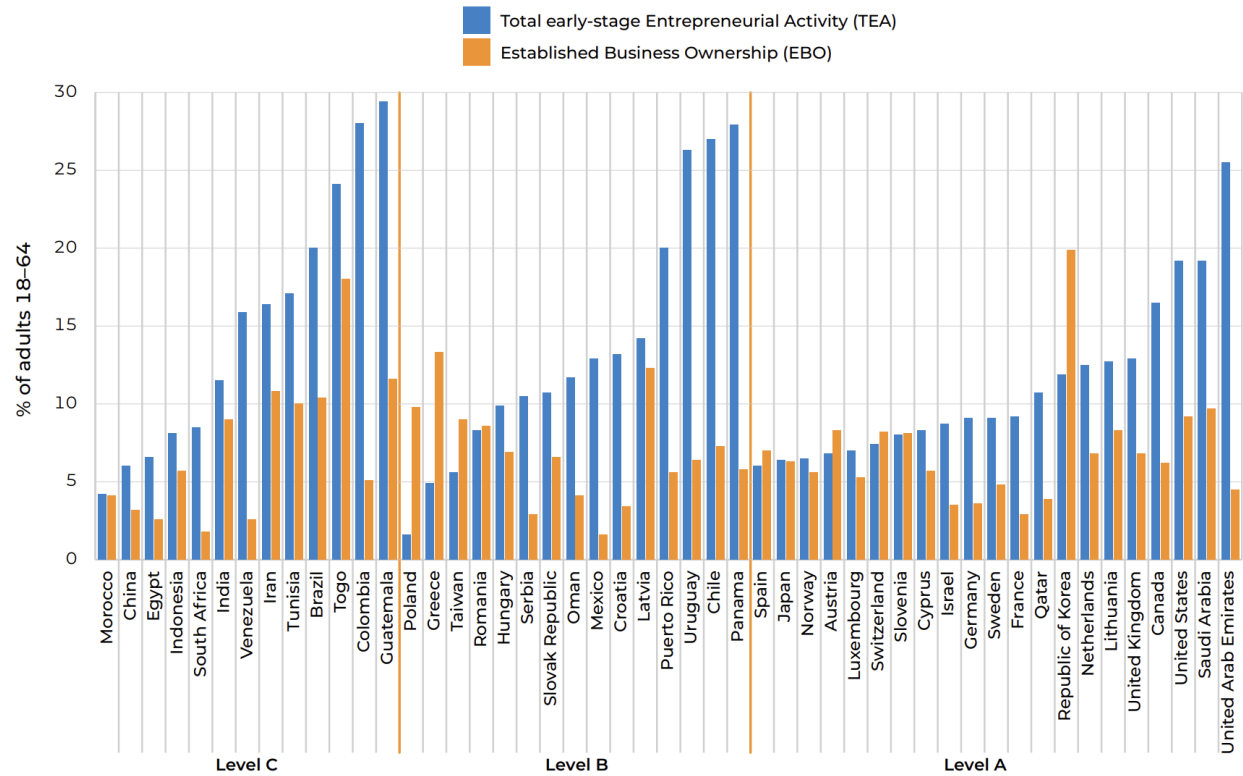


Figure 2. Percentage entrepreneurship activity of adults between ages 18 and 64 across countries showing higher levels of business launch and lower levels of established ownerships (Hill et al. 2023).

1.2 Research Objectives and Questions

This paper examines the factors affecting the propensity towards entrepreneurship of university students focusing on engineering education and barriers that prevent them from launching new businesses and succeeding. Strategies for overcoming the barriers are explored and compared for relevance and success. Opportunities and strategies for leveraging them are also compared for relevance and success. Through a systematic review of scholarly literature, this paper consolidates a single comprehensive source of information on successful entrepreneurship and the role of education in it.

1.3 Paper Outline

This paper begins with the introduction section that provides background into the importance of entrepreneurship and formulates the research problem, objectives and questions. Section 2 presents the methodology followed in this paper followed by a rigorous review of literature in section 3. Section 4 consolidates the reviewed literature to answer the research questions and make recommendations. Section 5 concludes the paper and summarizes recommendations for future implementation and research.

2. Methodology

The paper follows a systematic review methodology to answer questions around the lack of success of innovation and entrepreneurship among university students and alumni. It employs the PRISMA and PICO frameworks. The following questions are posed:

2.1 Paper Outline

1. What are the challenges to successful entrepreneurship in South Africa and Globally?
 - 1.1. Which of these challenges can be addressed through formal education?
 - 1.2. What are the education deficiencies, challenges and opportunities for the development of entrepreneurship potential?
2. What interventions – standards, programmes, curricula, pedagogy and assessment - and educational strategies can universities implement to increase the propensity students to launch successful new ventures?
3. What measures of entrepreneurship education success are there and how do existing approaches to compare to each other in different contexts?
4. What are the outcomes of some of the successful approaches to entrepreneurship education, and in which contexts were these attained?

1.3 Search Strategy

The search phrases “entrepreneurship education, barriers, opportunities, strategies, interventions” are used to source the relevant literature. An initial search was performed through Google Scholar. Popular publication databases were identified through the Google Scholar search and searched directly with the same search phrases. Only papers explicitly mentioning entrepreneurship, in their titles were selected for download. Initial search resulted in 325 000 hits on Google Scholar.

1.3 Screening and Selection

Only articles specifically mentioning “entrepreneurship” in their titles were selected, the titles were further filtered to focus on those focusing on challenges or barriers, opportunities and interventions and citing entrepreneurial education. This resulted in the selection and download of 368 papers from diverse databases without any clear emergence of a dominant database.

The papers were screened to remove duplicates, which resulted in the removal of only 5 articles. Abstract reviews of the papers were conducted, resulting in the elimination of 63 papers that did not focus on the barriers and opportunities towards entrepreneurship, papers that did not focus on entrepreneurship education and student entrepreneurship were also eliminated. Books were also eliminated from the review process, resulting in 20 eliminated records. Medium length reports were included in the study.

A methodological review of the papers was conducted to establish and eliminate papers whose methodology, starting with sampling, followed by analyses. 31 papers were eliminated due to unsound methodology. The resulting 249 papers were critically read and analyzed to answer research questions. The PRISMA flowchart in Figure 1 summarizes the screening and selection outcomes.

As a last screening method during the comprehensive review, articles that did not contribute any new knowledge due to theoretical saturation were also eliminated from the study. This resulted in the elimination of 194 articles, mainly focusing on the gender dimension of entrepreneurship and those focusing on the impact of entrepreneurship education on entrepreneurial intent and self-efficacy of students. Only 55 papers remained for thorough review.

3. Literature Review

3.1 Thematic Analysis

Thematic analysis of the selected literature shows strong focus on the key search phrases for relevance. There is also a strong dominance on the gender dimension of entrepreneurship. Most of the literature on gender is concentrated around the Arab regions (Figure 3).



Figure 3. Word cloud of the most prominent subjects in the sourced literature, showing a strong dominance of students, women, intention, entrepreneur, barriers, learning, opportunities, university, and notably the country Nigeria.

Further thematic analysis revealed similar themes, summarized in Table 1.

Table 1. Table of themes in literature and their analysis.

Theme	Theme Category Barrier (B) Opportunity (O) Intervention (I)			Theme Description
	B	O	I	
Gender	X			Gender has been extensively studied showing that while women show greater entrepreneurship potential they face more barriers, including, lack of access to education, finance, and cultural subjugation.
Entrepreneurship Education		X	X	Greater emphasis has been given to the agency of education, largely towards improving entrepreneurial intent among students. Experiential, student-centered education for entrepreneurship not about entrepreneurship is advocated.
Funding	X			Funding is cited as a barrier for both males and females, especially in emerging markets where disposable income and investing are low.
Risk aversion	X			Risk aversion is attributed to low entrepreneurial activity, requiring mentorship, coaching and education.
Culture	X			Culture plays a critical role in determining the entrepreneurial intent of students with students coming from entrepreneurial families showing more intent.
Government policy	X		X	Government policy can be both a barrier if it stifles entrepreneurship, through bureaucracy and punitive provisions. It

				can also stimulate entrepreneurship through incentives and structured support.
Entrepreneurship Ecosystems		X	X	The establishment and coordination of ecosystem structures such as education, funding, incubators, government structures and mentorship can yield improvements.
Technology		X		Technology is a lever for accelerating entrepreneurial activity. However, technological inequality remains a challenge in most geographies.
Creativity and Innovation		X	X	Recommendations to educate for, instead of about entrepreneurship advocate for creativity and innovation education, through experiential learning, design thinking, project-based learning in a student-centered manner.
Success indicators			X	Shifting the focus from educating about entrepreneurship towards outcomes-based education point to awareness of entrepreneurship impact, entrepreneurial social intelligence, basic to advanced business acumen and technological literacy as success indicators.
Knowledge, Skills, Values, Attitudes			X	Knowledge can be developed through both formal and informal education, skills are cultivated through experience, from training or social environment. This is true for values and attitudes. The lack of these attributes reduces the intent and self-efficacy for entrepreneurship.
Socio-economic Factors	X		X	Socio-economic factors are both inhibitors and can also be levers. Gender inequality, poverty and socio-economic inequality, technological divide, and access to education are barriers. Mentorship, role modeling, crowd funding and social learning are viewed as interventions.
Entrepreneurial intent and self-efficacy	X		X	Intent and self-efficacy are factors that can be developed through education, training and mentorship. However, these can be barriers if not developed, such as in women and individuals without education and social background in creativity, innovation and entrepreneurship.

Gartner and Vesper (1994) summarized some of the successful practices in entrepreneurship education, most of which remain relevant in the current time. Their strength is in the diversity of learning styles that cater to students learning preferences; their balance of theoretical, practical and experiential learning as well; the balance between reception of knowledge, skills and values versus self-study and self-directed learning that leverages existing knowledge of students. These strategies further leverage ecosystems of entrepreneurship such as intellectual property offices, financiers, mentors and communities of practice:

“Business plan for a good rather than a service required. Former students-become-entrepreneurs back to speak. Entrepreneurial financial planning software used. Speakers contribute \$5k and fundraise for entrepreneurship endowment. Early/preliminary b-plan presentation good early warning/feedback. Business plan for a product rather than a service. Entrepreneur “living cases” and then dinner afterward. 5 strangers exercise, documenting interviews re: b-plan. Financing simulation in class, bidding on b-plans, negotiations. Micromatics software used b/c class weak on financial analysis. Family Business Academy, boot camp for future family business leaders. Television course “Own Your Own Business” successful in Quebec. Negotiating exercise to buy or sell a company. Alumni meeting and alumni questionnaire re: activities. Student presentations on their own entrepreneurial experiences. Field trip to Patent Office to “search” ideas Experienced alumni acting as paid “mentors”. Encouraging students to develop business plans for employers. Focusing on new and local cases; weeding out old established cases. Doing crazy “right-brained” stuff to examine barriers to creativity. Contests, puzzles, etc. with cash prizes to get and keep attention. Two or three remedial sessions on financial pro formas and budgeting. Students select and consult for an existing non-start-up company. Visits to money management firms, then students manage real portfolio. Subdividing course into 16 topical modules around a lecture format. Biweekly self grading by students and preliminary b-plan presentation. Personality test instruments to develop strength and weakness awareness. Use of mentors after groups choose industry or theme for b-plan area”

Gnyawali and Fogel (1994) developed a framework showing environmental factors that affect successful entrepreneurship which included Government policies and regulation that can discourage entrepreneurship, socioeconomic barriers, financing difficulties, knowledge and skills gaps and non-financial support summarized. This suggests that developing economies should focus on developing policies that encourage rather than stifle entrepreneurship and structures to support and regularize challenges of entrepreneurs. The importance of role models pointed out by Gartner & Vesper (1994) is also highlighted by Henderson & Robertson (1999), for their benefit in improving attitudes and alleviating anxieties such as risk aversion and lack of self-confidence. This points towards the need for collaborative and streamlined entrepreneurial ecosystem structures such as education, innovation hubs, incubators, funding hubs, mentorship programs, ongoing skills development and communities of practice.

A framework of factors influencing entrepreneurship education was developed emphasizing career experience, which includes past founding experience; entrepreneurial knowledge which includes theoretical foundations and; transformation that covers exploration and exploitation of business opportunities (Politis, 2005). This study advocated for experiential learning. Kirby, (2004) further advocates that education should stimulate creativity – supported in (Yar Hamidi et al., 2008) - and educate for rather than about entrepreneurship (Binks et al., 2006). In advocating for student-centered entrepreneurship education Robinson et al. (2016) also advocate for experiential and existential knowledge-based education. In all instances, context and background of aspirant entrepreneurs form the foundation for the development of further knowledge, skills, values and attitudes and should never be ignored or taken for granted as equal.

Wilson et al. (2007) found that entrepreneurship was largely perceived to be a male endeavor, which calls for gender sensitive entrepreneurship education, incentives and support structures. Funding and family support are cited as some contributing factors (Winn, 2005). In recognition of this, many countries have dedicated support structures for female entrepreneurs. Male dominated access to higher education in most countries is also a contributor (Petridou et al., 2009). Widening access to higher education is a way to mitigate this gender bias. A study found that in India, self-confidence, funding, social constraints, training and literacy were also challenges for women (Mathur, 2009). Deeper studies of experiences of women and through multiple lenses such as critical feminism and ethnography are needed to better understand their realities and design adequate interventions to level the entrepreneurial play field.

A 2009 report by the World Economic Forum (Wilson et al., 2009) identifies key success indicators of entrepreneurship education are identified as awareness of entrepreneurship and its socio-economic impact, social skills for entrepreneurs, basic business acumen, and advance business management skills. However, it does not emphasize experiential competencies. Information and Communication Technology (ICT) and Artificial Intelligence literacy have not received much attention besides their evolution from being enablers to competitive factors of modern businesses. It is therefore recommended that these be critically considered and added in the entrepreneurial development value chain from information and technology driven education, creativity and innovation, business strategy and decision making, networking and customer relationship management, marketing and general business management.

3.2 Chronological Analysis

Chronological analysis shows that the papers in the 1990 to 1999 decade primarily focused on entrepreneurship education, covering elements of curriculum and programme designs by profiling the number of universities offering entrepreneurial education, number of modules offered, institutionalized business school offerings versus specialist entrepreneurship modules. The findings were that entrepreneurial offerings grew by both programmes within universities and modules offered. Conflicting findings were reported about the advantages of centralized or institutionalized entrepreneurship education versus decentralized and specialist education. The increase in interest is demonstrated by the constant rise in research publications on the subject. This is shown in Figure 4.

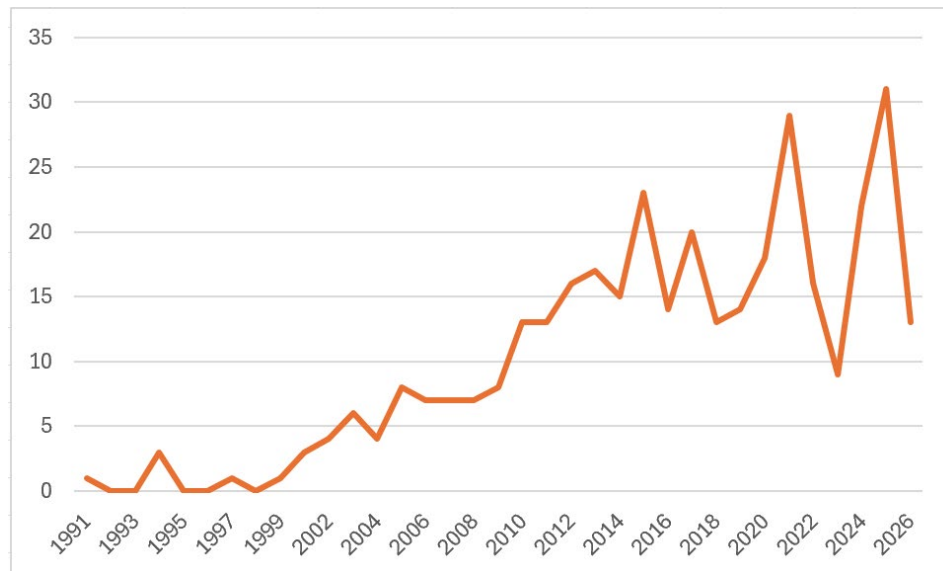


Figure 4. Time trend of relevant literature on entrepreneurship education and its impact on entrepreneurial challenges, opportunities and interventions. Steady growth is demonstrated, pointing to the positive impact and increasing interest in the subject.

The decade from 2000 to 2009 is largely dominated by studies that investigate the impact of entrepreneurship education on entrepreneurial intent and self-efficacy. Majority of the findings indicate a positive correlation between entrepreneurship education and resulting intent and self-efficacy while few have found a negative relationship, which can possibly be attributed to the methods of delivery of such education, in a manner that teaches about and not for, is too theoretical and lacks practical or experiential components, focused on failures and risks instead on avenues to mitigate them. Lessons of the 1990 to 1999 decade are relevant in this regard. The gender dimension of entrepreneurship begins to emerge in this decade and continues into the subsequent decades (Awalia et al., 2025). This is indicative of the human rights activism that began to realize equality for women and demanded redress of past injustices and oppressive systems. This argument can be extended to other previously marginalized groups and identities through race and ableism (Krüger & David, 2020). These dimensions are also critical in the design of entrepreneurship education and interventions.

The decade from 2010 to 2019 shows a continuation of the discourse on the gender dimension and ableism (Krüger & David, 2020) while delving deeper into the critical challenges, opportunities and interventions towards improving entrepreneurial activity. Numerous reports including the IFC and World Bank Group on Micro, Small and Medium Enterprise (MSME). The impact of technological competencies mainly focusing on ICT began to emerge in this decade, driven by big data, digital marketing and business management tools. The technology trend evolves into Generative Artificial Intelligence (GenAI) and large language models in the decade starting 2020. It should also be noted that entrepreneurship education programmes, curricula, pedagogies and standards remain a core part of academic discourse highlighting interventions such as design thinking, project-based learning and experiential learning among other methods.

3.3 Geographic Analysis

Research publications focusing on the Arab region have a strong focus on challenges facing women in entrepreneurship, highlighting challenges such as family life balance, access to finances, access to education and self-confidence as some of the barriers to equitable participation. Within the African continent, the focus of most research has been on Nigeria, which is also the country with the largest population in Africa, which also included the gender dimension with similar challenges to studies in the Arab region.

4. Discussions

This section focuses on consolidating the reviewed literature towards answering the research questions of this study.

4.1 Barriers to Successful Entrepreneurship

Commonly cited challenges to successful entrepreneurship are gender and ableism (Krüger & David, 2020), highlighting the heightened challenges (Awalia et al., 2025). These challenges extend to other previously marginalized groups and individuals. Culture is another dimension that can impede entrepreneurship (Chitsike, 2000; Křížková et al., 2026; Maharaj, 2026), often for women and younger individuals. They highlight the importance of entrepreneurs' backgrounds as predictors of intent and self-efficacy. Secondly, education, which has largely been reported to improve both intent and self-efficacy success is also the missing link for most entrepreneurs, or it is often not designed and delivered adequately. Risk aversion and fear of failure are also cited as barriers intent Hameed & Irfan, (2019), along with lack of finances and difficulties securing business finance and other forms of capital. Government policies, in as far as the impede entrepreneurship have also been cited as critical barriers (Cassia et al., 2012; Huang et al., 2021; Kantis et al., 2020), exacerbated by underdeveloped and uncoordinated entrepreneurship ecosystems such as innovation hubs, incubators, financiers, mentors, communities of practice, education and governmental support (Guerrero et al., 2020; Krüger & David, 2020; Matt & Schaeffer, 2018; O'Brien et al., 2019). Tough competitive landscape where there are large established firms is another contributing factor, compounded by high entry barriers. These can be alleviated by targeted procurement incentives and supplier development programs.

4.2 Interventions for Successful Entrepreneurship

Findings indicate that technology transfer offices need to be elevated to strategic level and capacitated accordingly (Siegel & Phan, 2005) within universities and as part of the entrepreneurship ecosystem. Streeter et al (2002) advocate for university-wide entrepreneurship modules offered by business schools as opposed to departmental in-house modules. This is in disagreement with Johnson et al. (2006). Educational focus on students entrepreneurship attitudes is needed (Liñán et al., 2011; Nabi et al., 2017) and the use of experiential, student-centered learning that takes learners backgrounds into consideration and develops creativity and innovation as ways of teaching for, and not only about entrepreneurship (Robinson et al., 2016). Recommendations to establish collaborative and well-coordinated entrepreneurship ecosystems including innovation hubs, education, incubators, mentorship, funding assistance, intellectual property and legal support as well as other business acumen support (Bischoff et al., 2018). Discussions of a balance between depth versus breadth of business knowledge (Welsh et al., 2016b), have also advocated for broader more holistic knowledge as opposed to deep specialist competencies.

4.3 Outcomes and Comparisons

The most clearly studied and stated outcomes of interventions are within cross-sectional studies that evaluate interventions based on resultant and self-reported entrepreneurial intent and self-efficacy among subjects of study. Most have reported increased outcomes due to education, while few reported the reverse, citing inadequate design and delivery of educational programmes. Most of the interventions such as ecosystems, mentorship, technology transfer offices, conducive policy frameworks among others are reported on an expectation of positive outcome but without tangible correlational results. Thorough longitudinal studies are needed to establish correlation and causality of interventions and outcomes.

5. Conclusions

This study successfully reviews literature on entrepreneurship activity and success, with special emphasis on the role of entrepreneurial education. Literature spans the period 1990 to 2026 indicating a growing trend in number of publications as an indicator scholarly interest in the subject. The literature shows an evolving scholarly focus from entrepreneurial education in the 1990-decade, gender culture and ableism dominance in the decade that follows. The studies of effects of education on entrepreneurship competencies such as self-sufficiency.

Barriers to successful entrepreneurship including gender, culture, ableism funding, risk aversion and fear of failure, lack of support structures and ecosystems, government policies and inadequate education were identified. Other deficiencies include the structuring of educational programmes into institutional and education that teaches about instead of, for entrepreneurship. Governmental policy and regulatory frameworks and those of universities were also cited as mechanisms that can inhibit entrepreneurship. Competition from existing firms also contributed to both risk-aversion and rate of failure of new ventures. These barriers were identified using subjective self-reports of respondents which may be prone to biases. Furthermore, there was no verification or triangulation of factors or responses in most of the literature.

Several interventions in the form of educational design and experiential learning, entrepreneurship ecosystems and support structures are recommended. Pedagogical approaches such as educating for entrepreneurship, experiential and problem/project-based learning and design thinking were also emphasized. There were, however, different views on whether entrepreneurship should be taught as an institutional generic module or within specialized fields. Positive effects of entrepreneurship support structures such as technology transfer offices and incubators were found to improve entrepreneurial activity and success. To mediate risk aversion, mentorships and communities of property were proposed to overcome fear as well as support structures to improve confidence. Gender aware interventions are also needed targeting women, due to multiple intersectional marginalization resulting from factors such as culture and family commitments. Conducive policy and regulatory frameworks were also cited as possible interventions. Like the challenges identified, the bulk of the literature focused largely on cross-sectional research based on subjective self-reports of entrepreneurial intent and self-efficacy. These pointed to a need for longitudinal correlational and causality studies of interventions and outcomes towards addressing challenges.

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