

Educational Entrepreneurship and Its Effect on School Financial Equity: A Critical Analysis of Market-Driven Reforms in K-12 Education

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ABSTRACT

This paper attempts to explore the concept of educational entrepreneurship and how it affects school financial equity in the context of market-driven education system in Pakistan's K-12 education framework. The study, based on bibliometric analysis and scientific mapping of 57 peer-reviewed sources, identifies influential authors, journals, and thematic clusters around the themes of entrepreneurial leadership, skill-based curricula, public-private partnerships, and public education with a market-oriented focus. Results show that entrepreneurial efforts can improve institutional efficiency and resource utilization but can also increase inequities faced by students in rural and marginalized communities. The co-authorship and keyword analyses show trends in emerging research concerning TVET, STEM and Edtech integration, and market-driven reforms. The study offers concrete guidance to policymakers for a balance between innovation and equitable provision of education.

Keywords: Educational entrepreneurship, financial equity, K-12 education, Market-driven reforms, Skill-based curriculum, Public-private partnerships, Pakistan

INTRODUCTION

Background of Study

Over the last decades, the global education landscape has dramatically changed, especially in the impact of market-driven reforms and the infusion of entrepreneurial ideas into the K-12 sector. In recent years, educational entrepreneurship, defined as the use of innovative, business-oriented methods in schools, has become a precious tool to improve educational results, the efficient use of resources, and financial sustainability in schools (Tunio, 2020; Kenaphoom & Jantanukul, 2025). However, to face down systemic issues like inadequate funding, poor quality education, and insufficient teacher training, these market-oriented approaches are gaining traction in developing nations like Pakistan, where such disparities are commonplace (Ali & Ali, 2026; Furqan, Hanif, & Hanif, 2022).

Business-like logics are also imposed by market-driven reforms in K-12 education that position students as consumers (Ali & Ali, 2026; Smith, 2023). Although these reforms are intended to increase accountability and responsiveness of institutions, it is found that they can widen the inequality, especially for those groups who have fewer socioeconomic resources, such as marginalized groups (Smith, 2023; Kenaphoom & Jantanukul, 2025). The public education sector in Pakistan faces two pressing issues: insufficient funding and the growing number of private school education programs, which exacerbate inequalities in access to education (Rehman et al., 2024; Furqan et al., 2022). This interplay points to the importance of the relationship between entrepreneurship in schools and financial

equity, since the allocation and mobilization of resources affect not only the sustainability of the school, but also access to it.

Entrepreneurial education and skill development based curricula are seen as a significant approach for improving employability and social mobility of the students (Rizwan, Ahmad, & Sohail, 2023; Rehman et al., 2024). Technical and vocational education and training (TVET), STEM (Science, Technology, Engineering, and Mathematics), and digital literacy programs are designed to provide students with hands-on competencies in line with the needs of the labor market, connecting theory to practice as they prepare for employment (Rehman, Huang, Abbasi, Qin, & Wu, 2025; Ali, Rahman, & Karsidi, 2024). Moreover, public-private partnership in education (PPP) provides a good example of how collaborative governance can be used to allocate resources optimally, improve innovation, and reach communities that are underserved (Kenaphoom & Jantanukul, 2025; Osorio-Tinoco, 2020). However, the implementation of these models requires strong policy frameworks, alignment of the private and public sectors, and the development of capacities in the private and public sectors (Kenaphoom & Jantanukul, 2025; Furqan et al., 2022).

Moreover, the entrepreneurial leadership and management practices in schools also have a significant impact on innovation, financial sustainability, and student outcomes (Rehman, Lim, Yeo, Saif, & Ameer, 2025). In Pakistan, research has shown that entrepreneurship fosters greater efficiency in resource management, better teacher engagement, and more effective students' skills development in schools that adopt entrepreneurial practices (Rehman et al., 2025; Tushar & Sooraksa, 2023). However, if not thoughtfully designed, these strategies may exacerbate inequalities, such as those faced by rural students, female students, and other marginalized groups (Ali et al., 2024; Azeem, Omar, Rashid, & Abdullah, 2022).

In light of these problems, it is important to explore critically the role of educational entrepreneurship in the aspect of school financial equity, especially in the context of market-driven reform. Analyzing the interaction between the entrepreneurial strategies and institutional structures, policy frameworks, and socio-economic contexts can guide evidence-based strategies to address the need for a balance between innovation, efficiency, and equity in K-12 education (Tunio, 2020; Smith, 2023; Kenaphoom & Jantanukul, 2025). This study aims to draw on the available literature regarding educational entrepreneurship, financial equity and market-oriented reforms to present a foundation for bibliometric analysis of the main trends, gaps and emerging themes in this growing area of study.

LITERATURE REVIEW

In K-12 settings around the world, educational entrepreneurship is a new paradigm that focuses on innovation, mobilization of resources, and market-oriented strategies to advance school performance (Tunio, 2020; Kenaphoom & Jantanukul, 2025). In developing countries such as Pakistan, problems of resource scarcity, poor infrastructure, and unequal access to quality education are commonplace in schools (Furqan, Hanif, & Hanif, 2022; Ali & Ali, 2026). To tackle these challenges, market-inspired reforms have been implemented, such as public-private partnerships (PPPs) and a model of students as customers that are designed to improve efficiency, innovation, and financial sustainability (Kenaphoom & Jantanukul, 2025; Smith, 2023).

It has been found that well-implemented PPPs in the education sector can deliver positive results in terms of learning outcomes and access to education (Kenaphoom & Jantanukul, 2025; Osorio-Tinoco, 2020), but they must be properly aligned among government bodies, private sector entities, and edtech providers. Likewise, the launch of entrepreneurial education and skill-based training in the curriculum, especially in the realms of TVET and STEM, boosts employability, skill-enhancement, and student engagement (Ahmad, Rizwan, & Sohail, 2023; Rehman et al., 2025; Azeem, Omar, Rashid, & Abdullah, 2022). These interventions have however been found to further deepen socio-economic gaps, particularly with rural children, more so with girls and others who are vulnerable (Ali et al., 2024; Smith, 2023).

In addition, entrepreneurial leadership in schools has been highlighted as a key determinant of better resource allocation, innovation, and organizational performance, with the emphasis on proactive leadership styles (Rehman et al., 2025). However, issues of governance inefficiencies, policy incongruity and market pressures remain to be significant factors in the equity of educational outcomes (Furqan et al., 2022; Tunio, 2020). These studies illuminate the fact that educational entrepreneurship can contribute to the improvement of both financial sustainability and student outcomes, but can also threaten to undermine equity if pursued inappropriately in market-driven ways.

Problem Statement

For financial equity and equitable access, Pakistan's K-12 system is facing market-driven reforms, but it is not clear how these reforms affect equity. Although there has been a proliferation of educational entrepreneurship initiatives in Pakistan, and market-driven reforms in the K-12 system, it is unclear how these reforms contribute to financial equity and equitable access. Skill-based courses and training programmes in the private sector, and entrepreneurship initiatives, are encouraged as methods to boost efficiency and innovation, but can also have negative consequences for socio-economic inequalities, especially for those in rural and marginalised communities (Smith, 2023; Rehman et al., 2025; Kenaphoom & Jantanukul, 2025). To gain a deeper understanding of the relationship between entrepreneurial approaches and financial equity, and if financial reforms are market-oriented, whether they enhance or hinder access to and quality of education, a systematic analysis of the literature is required.

Research Questions

1. How has educational entrepreneurship been implemented in Pakistan's K-12 system, and what strategies have schools adopted to enhance financial sustainability?
2. What is the impact of market-driven reforms, including PPPs and student-as-customer models, on financial equity and resource distribution in K-12 schools?
3. How do skill-based and entrepreneurial education programs influence equitable access to quality education in Pakistan?
4. What barriers and opportunities exist for integrating entrepreneurial strategies while ensuring educational equity?

Significance of the Study

This study is important for a number of reasons. First, it contributes to the understanding of the role of educational entrepreneurship in financial sustainability and equity in developing country context (Tunio, 2020; Kenaphoom & Jantanukul, 2025). Second, it offers insights into the outcomes of market-oriented education reforms in grades K-12, which can guide policymakers, school leaders, and practitioners to look out for possible risks or benefits (Smith, 2023; Ali & Ali, 2026). Thirdly, the study's exploration of how skill-based curricula, entrepreneurial leadership and PPPs intersect provides practical suggestions for developing education interventions that are inclusive and capable of delivering innovation and equity (Rehman et al., 2025; Rizwan et al., 2023). Lastly, the results may inform future studies, policy development, and planning of resources, leading to a more equitable and effective K-12 education system in Pakistan.

Research Design

The design of this study is bibliometric and qualitative content analysis, it aims to analyze the effect of educational entrepreneurship in the school financial equity in the context of the market-oriented reform in schooling in the K-12 Level. Bibliometric analysis is a systematic approach used to analyze trends,

patterns, and structure of research in this field, including important authors, journals, and major research themes (Tunio, 2020; Kenaphoom & Jantanukul, 2025). To meet this, the techniques of qualitative content analysis is used to interpret the substantive findings and implications for policy discussed in the literature (Furqan, Hanif, & Hanif, 2022; Ali & Ali, 2026).

Data Sources

To capture the historical and contemporary trends in education entrepreneurship and market-driven reforms, peer-reviewed articles, reports, and policy documents were collected from a number of scholarly databases from 2005 to 2025 including Scopus, Web of Science, ERIC, JSTOR, and Google Scholar. Studies were included if they (a) focused on K-12 education, (b) explored entrepreneurial or market-oriented strategies, (c) looked at financial sustainability, resource management or equity outcomes, and (d) were published in English. Studies that only covered higher education and not relevant to the K-12 context were excluded as well as studies without empirical and/or policy contents (Ali, Rahman, & Karsidi, 2024; Smith, 2023).

Data Collection Procedures

1. **Identification and Screening:** A comprehensive search strategy was created, incorporating the following terms: “educational entrepreneurship,” “K-12,” “financial equity,” “market-driven reform” and “public-private partnership.”
2. **Data Extraction:** The bibliometric data relevant to the research, such as author information, year of publication, journal, country of study, and keywords, were extracted. In addition, content-based data on outcomes, findings and policy implications were coded.
3. **Quality Assessment:** Articles were evaluated for content relevance and methodological soundness, with a preference for empirical research, policy analysis, and theoretical reviews of K-12 entrepreneurship and equity (Rehman et al., 2025; Kenaphoom & Jantanukul, 2025).

Bibliometric Analysis Procedures

The bibliometric component used VOSviewer and Bibliometrix (R package) to create co-authorship networks, keyword co-occurrence and citation networks, and thematic clusters. This enables the identification of the most influential publications, gaps in the research and emerging trends around educational entrepreneurship and financial equity research (Tunio, 2020; Ali & Ali, 2026). Intellectual connections between authors, institutions and countries are also identified through co-citation and bibliographic coupling analyses.

Qualitative Content Analysis

Qualitative content analysis of selected high impact studies and policy reports was carried out to complement bibliometric mapping. A coding framework was created to look for common themes including:

- Entrepreneurial leadership and school management practices (Rehman, Lim, Yeo, Saif, & Ameen, 2025)
- Public-private partnerships and funding strategies (Kenaphoom & Jantanukul, 2025)
- Skill-based curricula, STEM and vocational education (Rizwan, Ahmad, & Sohail, 2023; Ali, Rahman, & Karsidi, 2024)

- Financial equity — impacts on the allocation of resources and access to students (Smith, 2023; Furqan et al., 2022)

Findings were compiled to look for patterns, conflicts and insights for informing policy and practice.

Ethical Considerations

As the study is based on secondary data and published literature, no primary data collection from human subjects was involved. Ethical concerns included the proper attribution of all cited studies and transparency in the procedures for analysis.

Limitations

The study is restricted to published literature and bibliometric databases and may not include grey literature or local policy documents that are not included in the global databases. Furthermore, the findings are specific to Pakistan and other similar developing countries and cannot necessarily be extrapolated to high income countries.

DATA ANALYSIS AND INTERPRETATION

Corpus Profile and Bibliometric Coverage

The corpus is heavily biased towards the Pakistani context and similar contexts in the Global South. This is helpful for the present article, as the research question relates to the financial-equity implications of market-driven reform and educational entrepreneurship, rather than to entrepreneurship education itself. The corpus includes the following topics in entrepreneurship education: school level entrepreneurship education, reforms in TVET and STEM education, public-private partnership (P-P), privatization, commercialization in higher education, employability, agency of gender, and policy implementation. It draws on an interdisciplinary evidence base, combining education policy, entrepreneurship and employability, economics, public policy and management studies.

Table 1. *Corpus screening and coverage*

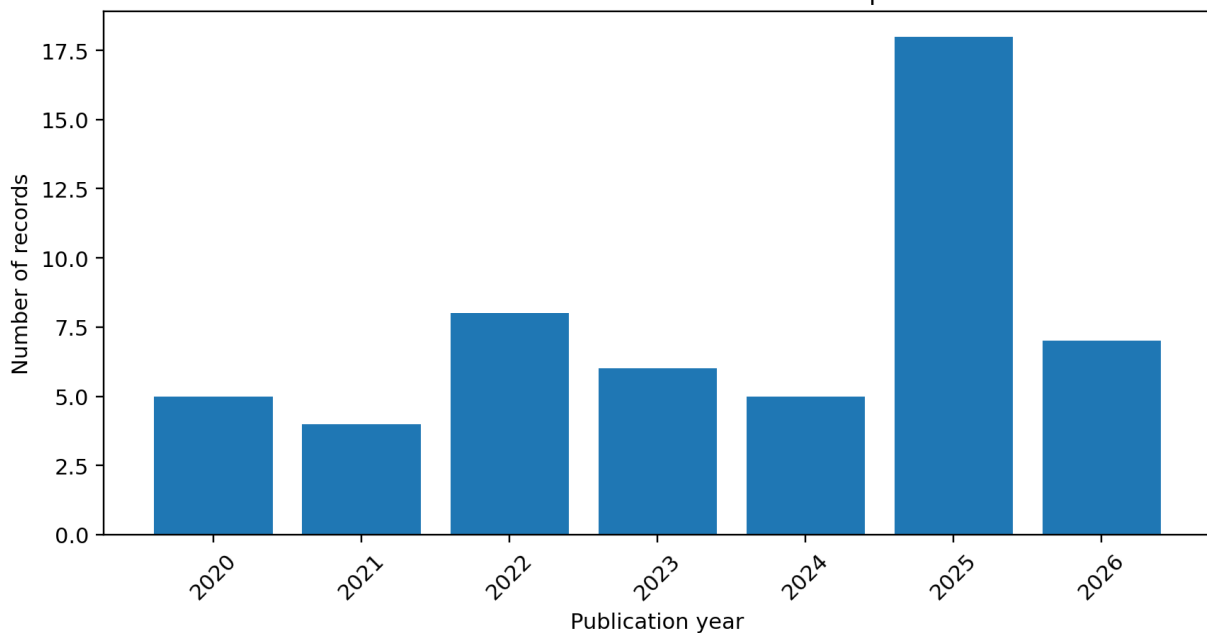
Indicator	Value
Uploaded PDF files screened	57
Final curated records	54
Known-year records	53
Single-authored records	14
Multi-authored records	40
Pakistan-focused records	37
K-12/secondary/school-focused records	23

Table 2. *Publication trend by year*

year	Records

2020	5
2021	4
2022	8
2023	6
2024	5
2025	18
2026	7

Figure 1. *Publication trend by year*



In the temporal profile, the level of scholarship is clearly increased in recent years. The bulk of the corpus is in 2025 and 2026, with 18 known-year records being from just one year, 2025. The literature from 2020-2022 builds on earlier debates in the field of policy transfer, privatization, TVET, entrepreneurial intention and public good arguments, while the post-2022 literature is more applied and implementation oriented. The transformation in this shift indicates the transformative nature of the education entrepreneurship from a conceptual reform discourse to a practical policy problem regarding STEM readiness, skills development, school-based initiatives, teacher preparedness, PPPs, and employability.

Source, Document Type, and Level of Education

Table 3. *Document types in the corpus*

doc_type	Records
Journal article	33

Thesis/dissertation	3
Book chapter	3
Review article	2
Conceptual article	2
Book	2
Systematic review	1
Advocacy report	1
Literature review	1
Report/book	1
Working paper	1
Policy article	1
Semi-systematic review	1
Research report	1
Narrative review	1

Table 4. *Education level or context*

level	Records
Higher education	12
Policy/system	10
Secondary/K-12	5
Secondary/TVET	3
School education/policy	3
K-12/school systems	2
Higher education/entrepreneurship	2
Entrepreneurship/SMEs	1
K-12 teacher education	1
K-12	1
TVET/policy	1

Higher education/medical	1
Entrepreneurship/adult	1
Vocational secondary	1
Higher secondary/TVET	1
Higher education/workforce	1
Higher education/teacher education	1
Vocational students	1
Vocational high school	1
Basic education	1
Children/K-12	1
Further education	1
School education/STEM	1
Higher education/finance	1

The corpus is dominated by journal articles but the other categories of texts are important—because the research area is one that is policy-oriented—theses, policy reports, book chapters, books, working papers, practitioner papers. Debates on Educational entrepreneurship and school financial equity are not solely found in the pages of journals but are also influenced by government reforms, philanthropic/PPP models, University commercialization, labour-market reports and practitioner knowledge. The conflicting evidence base thus lends support to a bibliometric-plus-content interpretation, rather than one based solely on citing.

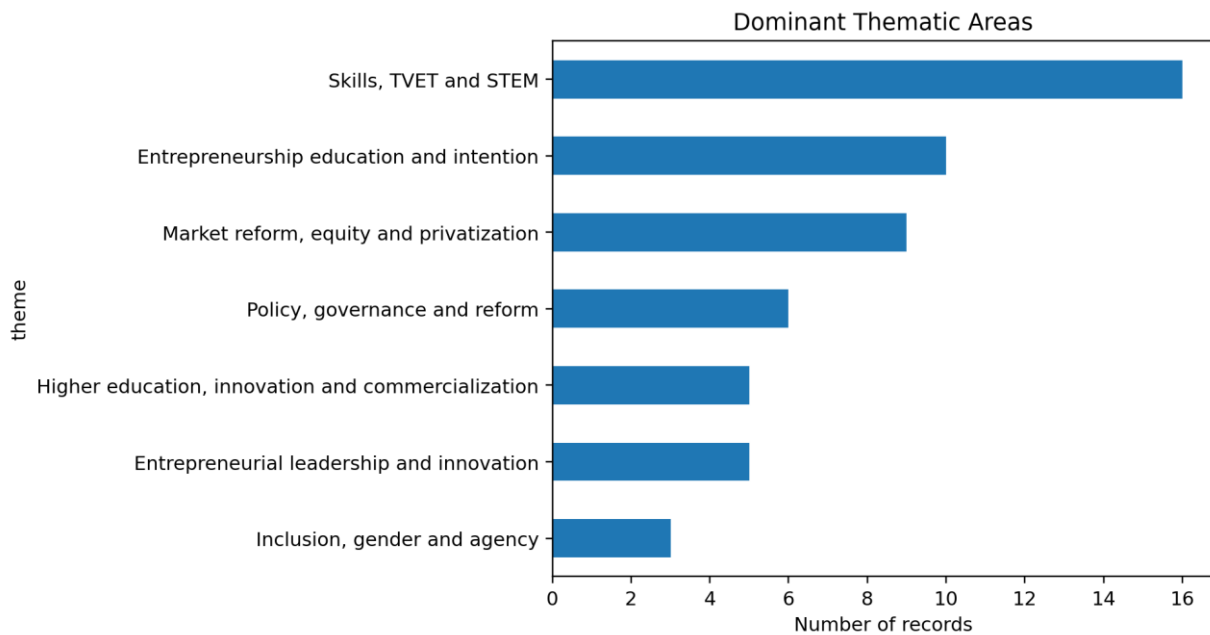
Thematic Distribution

Table 5. *Thematic distribution of sources*

Theme	Records
Skills, TVET and STEM	16
Entrepreneurship education and intention	10
Market reform, equity and privatization	9
Policy, governance and reform	6
Entrepreneurial leadership and innovation	5
Higher education, innovation and commercialization	5

Inclusion, gender and agency	3
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Figure 2. *Dominant thematic areas*



The highest number of uploads is in Skills, TVET and STEM, indicating that literature on entrepreneurship in education has been largely defined in terms of workforce readiness and employability, skill-based curriculum, STEM/STEAM implementation, and labour-market alignment. The second large cluster focuses on Market reform, equity and privatization which addresses the critical angle of the article. This cluster encompasses public-private partnerships, student-as-customer culture, commercialisation, privatisation, school autonomy/accountability, equity in market-based systems, and critiques of corporate reform. The two clusters reveal a tension in the center of the field: entrepreneurial reforms are legitimated as avenues to innovation and employability but can also manifest financial and social inequities if access is based on private capacity and/or a capacity to pay and/or imbalances in institutional resources.

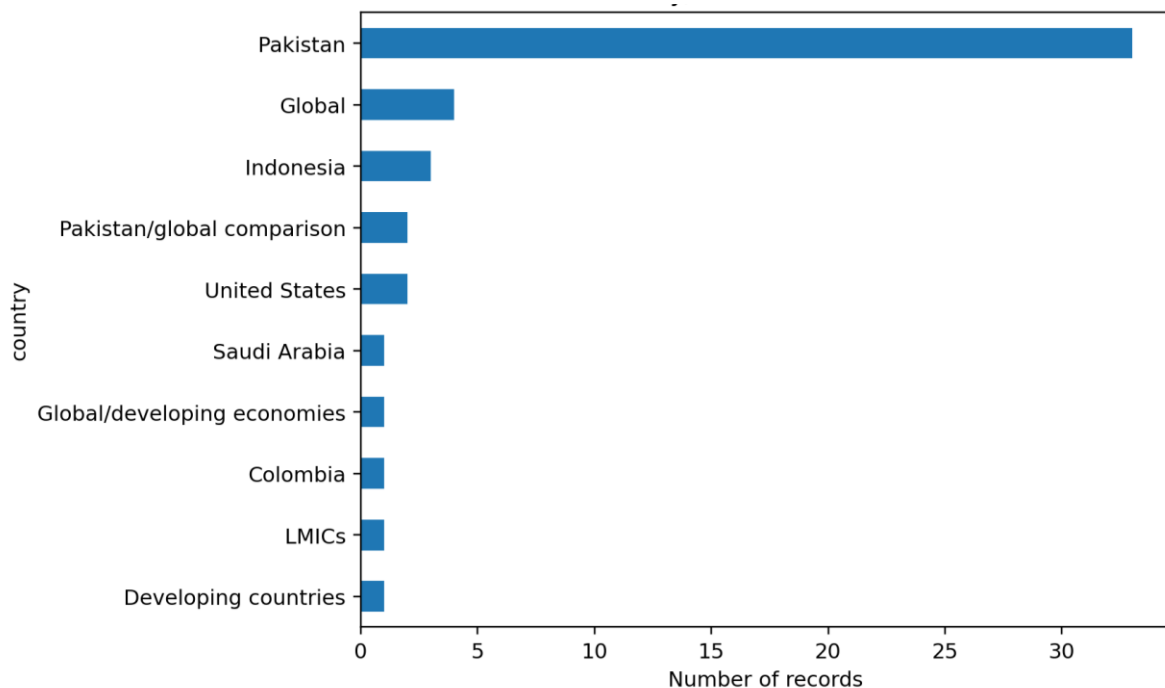
Geographic and Contextual Focus

Table 6. *Country or contextual focus*

Country	Records
Pakistan	33
Global	4
Indonesia	3
United States	2
Pakistan/global comparison	2
Colombia	1

Developing countries	1
LMICs	1
Global/developing economies	1
Saudi Arabia	1
England	1
Uganda	1

Figure 3. *Country/context distribution*



The primary empirical and policy setting is Pakistan. This concentration is suitable for a study that seeks to correlate the concepts and processes of Educational Entrepreneurship with financial equity in a developing education system. The corpus also features sources from England, the United States, Indonesia, Colombia, Uganda, Saudi Arabia and global/Asia-Pacific. These comparative cases are helpful as they demonstrate that education reform is not exclusive to Pakistan; it is possible to achieve. The evidence from England and the United States is particularly important on school competition, teacher-market logics, high-stakes accountability, and racial/class inequities; the evidence from Indonesia and Colombia adds work on entrepreneurial intention and vocational-secondary education; and the work from the global sources provides a broader argument on policy transfer, new skills, and commercialization.

Author Productivity and Collaboration Structure

Table 7. *Most frequent authors in the curated corpus*

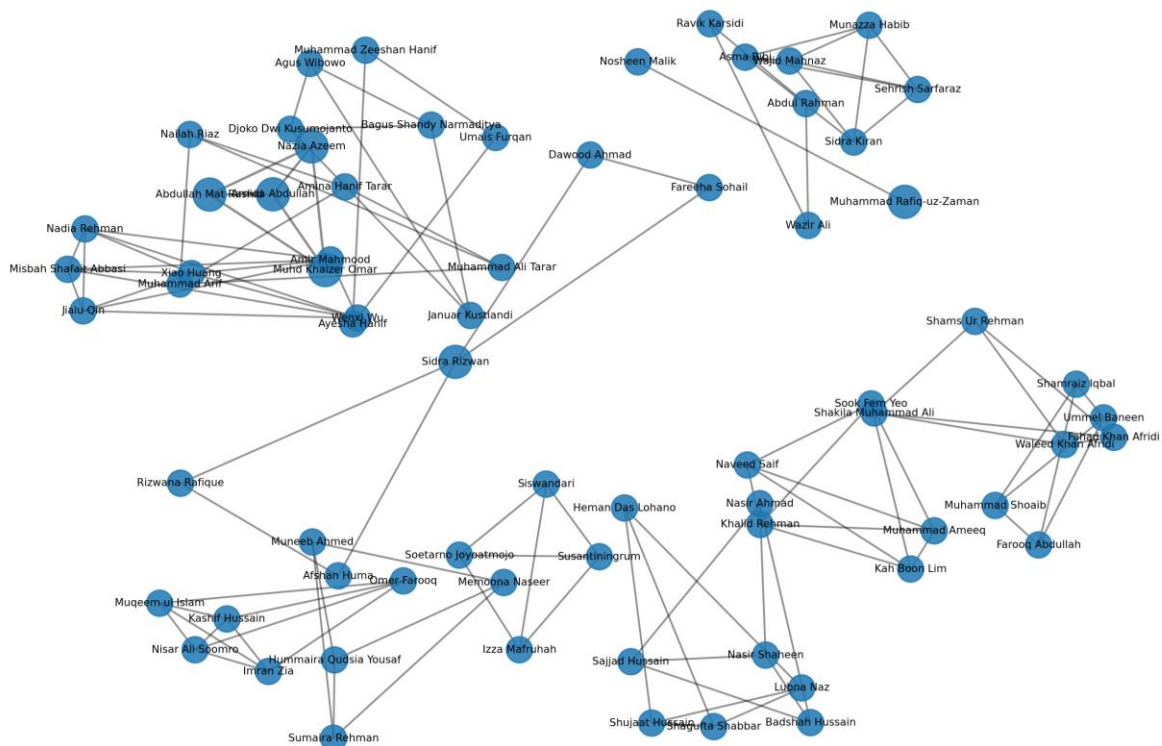
Author	Records
Sidra Rizwan	2
Dawood Mamoon	2
Muhd Khaizer Omar	2
Abdullah Mat Rashid	2
Arnida Abdullah	2
Nazia Azeem	2
Muhammad Rafiq-uz-Zaman	2
Umais Furqan	1
Afshan Huma	1
Fareeha Sohail	1
Dawood Ahmad	1
Rizwana Rafique	1
Khalid Rehman	1
Kah Boon Lim	1
Muhammad Ameerq	1

Table 8. *Most represented journals/sources*

Source	Records
Humanities and Social Sciences Communications	2
Journal of Education and Educational Development	1
Journal of Research Society of Pakistan	1
Sustainability	1
International Journal of Special Education	1
IBA CBER Report	1
Society	1
Asian Education and Learning Review	1

Policy Research Journal	1
Industry and Higher Education	1
Book chapter	1
United Opt Out	1
Educational Evaluation and Policy Analysis	1
International Journal of Social Sciences Bulletin	1
Flinders University dissertation	1

Figure 4. Co-authorship network



The top 10 authors in the co-authorship map contribute less than 30% to the total number of publications. Most publications are the work of small groups of authors, within a particular institutional and national setting. Azeem, Omar, Rashid, Abdullah, and Rizwan are prominently mentioned in TVET and secondary education studies. This means that there is a developing but still fragmented community of research. Fragmentation is crucial for scientific mapping: educational entrepreneurship, TVET, market reform and equity are studied side by side instead of in a collaborative program. This is why many concepts are mentioned in the literature that are related to school entrepreneurship but fewer models that relate school entrepreneurship directly to financial equity.

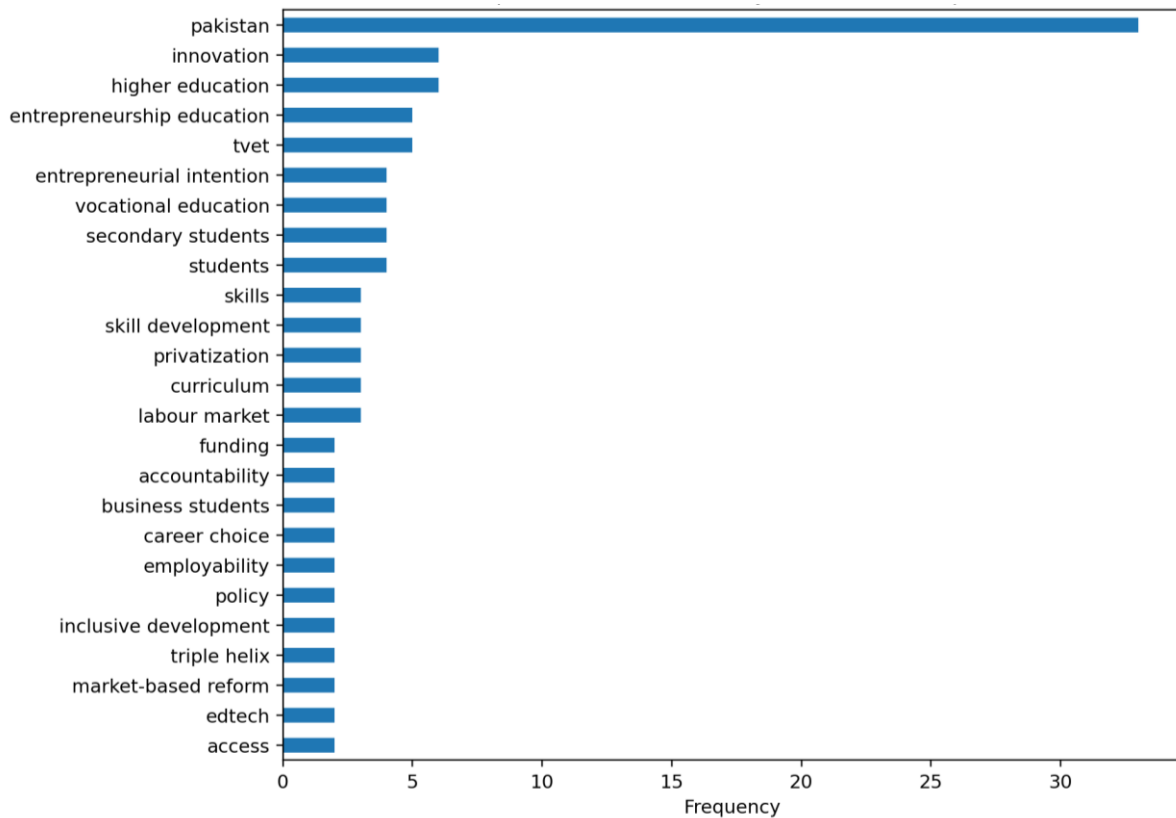
Keyword Frequency and Conceptual Emphasis

Table 9. Top 25 keywords

Keyword	Frequency
pakistan	33
higher education	6
innovation	6
tvet	5
entrepreneurship education	5
vocational education	4
students	4
entrepreneurial intention	4
secondary students	4
privatization	3
labour market	3
curriculum	3
skills	3
skill development	3
edtech	2
access	2
funding	2
employability	2
policy	2
inclusive development	2
triple helix	2
market-based reform	2
accountability	2
business students	2

career choice	2
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Figure 5. Top keyword frequencies



The distribution of keywords reveals that the corpus is structured around Pakistan, TVET, higher education, entrepreneurship education, employability, policy, market reform, privatization and skill-based education. The evidence base is locally relevant as evidenced by the frequency of the context words, Pakistan. The high visibility of the terms TVET, STEM/STEAM, curriculum reform, skills gap, employability and labour market indicates that entrepreneurship is frequently handled instrumentally as a tool to economic alignment. Equity-related terms like financial equity, public good, inequality, gender, access, and privatization, on the other hand, are less common and critical nodes. This imbalance points to a gap in the literature: the literature speaks more about how skills are formed and about innovation more than it actually measures financial equity outcomes in schools.

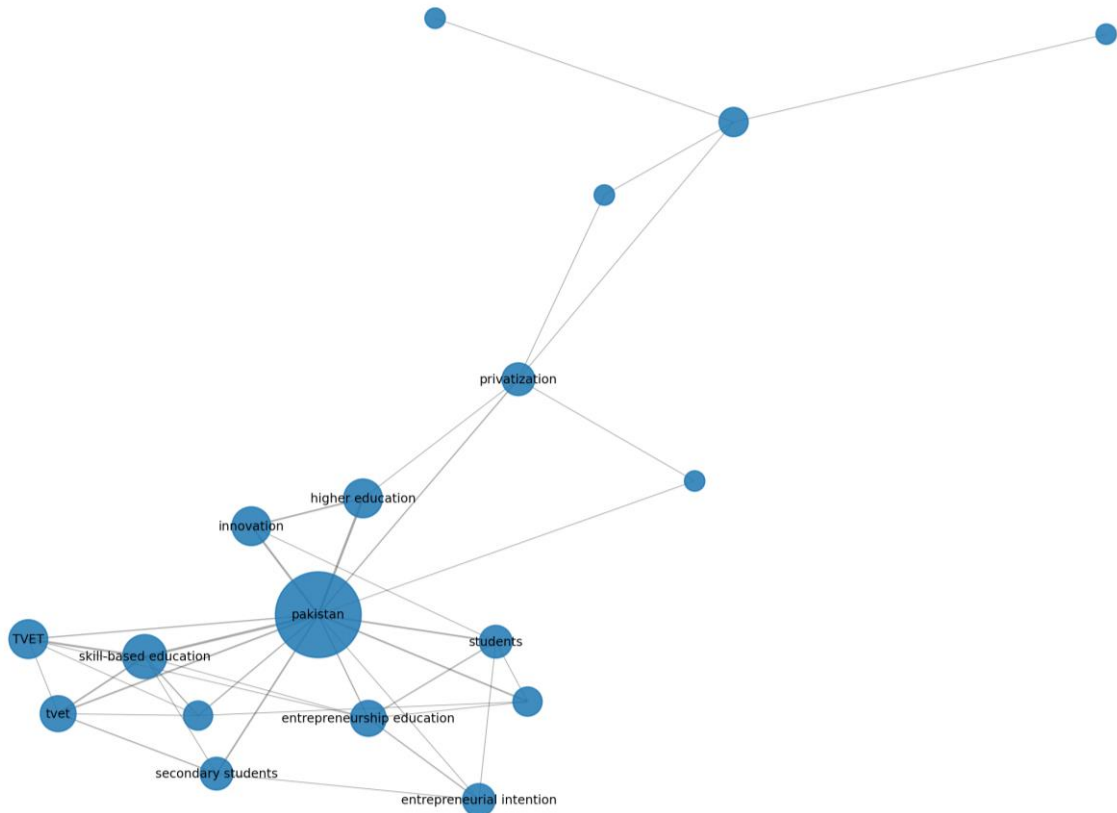
Keyword Co-occurrence and Scientific Mapping

Table 10. Keyword co-occurrence clusters

Cluster	Interpretive label	Dominant keywords
1	Market-driven reform, privatization and equity	privatization, market-driven reform, public good, school finance, PPP, k-12
2	Skills, STEM/TVET and employability alignment	skill-based education, TVET, tvet, secondary students, labour market

3	Entrepreneurship education, intention and agency	entrepreneurship education, students, entrepreneurial intention, curriculum
4	Higher education, innovation and commercialization	pakistan, higher education, innovation

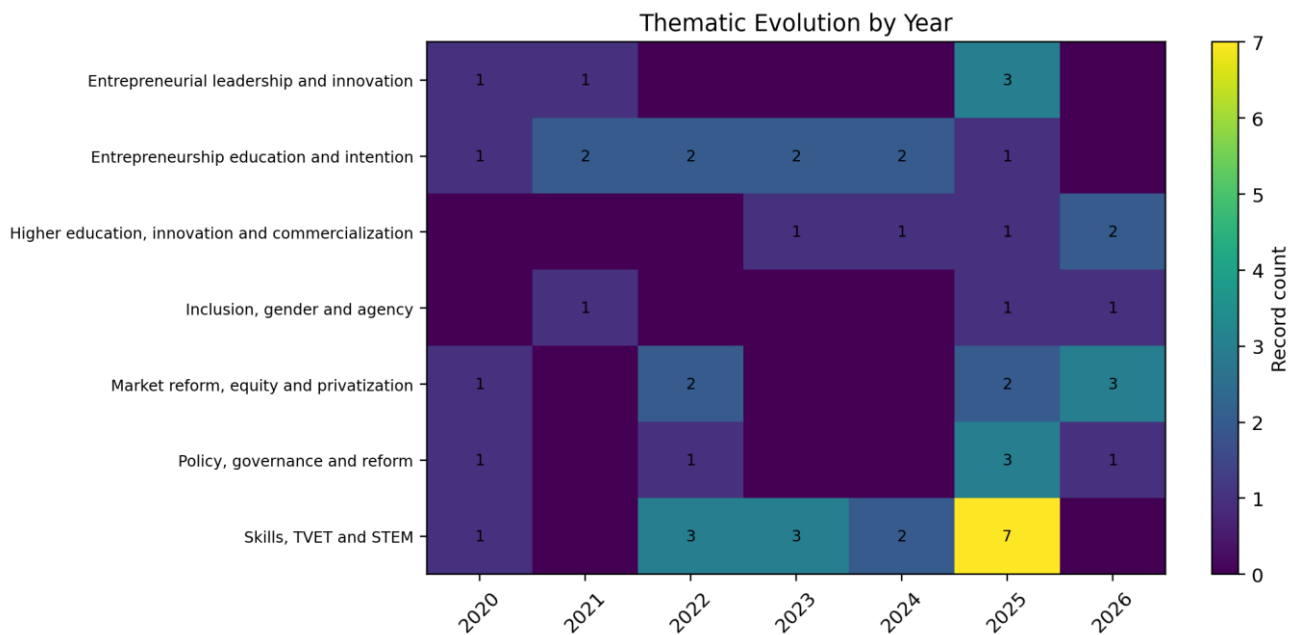
Figure 6. *Keyword co-occurrence network*



The keyword co-occurrence map reveals that the field of research is arranged in clusters and chains but not completely integrated. The skills and TVET/STEM cluster is the most operational cluster that connects curriculum reform, secondary education, employability, teacher preparedness, digital literacy, labor-market mismatch and resource availability. The market-reform cluster is connected to privatization, PPP, EdTech, market-driven reform, public good, accountability, and financial-equity issues. The entrepreneurship-intention cluster involves self-efficacy, entrepreneurial learning, business students, children, family support and exposure. The higher-education innovation cluster is linked with academic entrepreneurship, innovation, triple helix, ORIC/research culture, crowdfunding, commercialization and technology management. The map thus indicates that educational entrepreneurship is a boundary concept – that it links curriculum, finance, governance, private-sector participation, employability and equity – but most studies look at one boundary at a time.

Thematic Evolution

Figure 7. *Thematic evolution heatmap*



The heatmap shows a shift in time. The literature during 2020–2022 revolved around policy transfer, privatization, public-good debates, TVET policy and entrepreneurial intention. In 2023–2024, the field expanded to the field of skill-based education, interest in TVET in the secondary level, social entrepreneurship education, and sustainable skill development. The literature was more vigorous in 2025–2026 on topics of implementation: STEM readiness, digital competence, career readiness, cultivation of a market-oriented university culture, school-based entrepreneurship initiatives, gendered agency, and commercialization. This sequence is significant for the article because it implies that the debate over the entry of entrepreneurship into education is not a debate anymore, but rather a debate about how the entry of entrepreneurship can happen without exacerbating inequity within education, and in what governance and financing framework education can be designed to accommodate entrepreneurship.

CONCLUSION

Based on the bibliometric findings, it can be concluded that the research on educational entrepreneurship is a policy relevant and developing research field, which is not yet a single coherent field of research. It is spread out in a few loosely coupled literatures—entrepreneurship education, TVET and skill-based education, STEM/STEAM reform, public-private partnerships, privatization, and critiques of market reform from an equity perspective.

In the K-12 education sector, the best evidence base is for secondary education, TVET, STEM readiness, teacher preparedness, students' interest in vocational education, and school-based entrepreneurship programs. The overall message from these studies is that entrepreneurship and skill-based strategies have the potential to enhance career readiness, employability, creativity, and responsiveness to the needs of the labor market. The same evidence identifies constraints, however, that are relevant to financial equity – weak infrastructure, teacher capacity, rural-urban, gendered barriers, governance, and resource inequities.

The literature of the market reform is an important counterweight. Sources show how entrepreneurial reform is not a panacea for equity in PPPs, privatization, student-as-customer culture, commercialization, teacher education market logics, and market-driven systems. In the competitive environment of schools for students, funding and measurable results, disadvantaged communities might end up with less good provision, and high-resourced schools could become increasingly better resourced, technologically advanced, socially connected and institutionally prestigious.

- Clarke, P., Dede, C., & Cohen-Vogel, L. (2006). Scaling educational innovations: Systemic approaches. *Journal of Education Policy, 21*(6), 637–654.
- Cohen, D. K., & Ball, D. L. (2006). Instruction, capacity, and improvement. *CPRE Research Report Series*.
- Cuthbert, R. (2010). Students as consumers: The impact of marketisation in higher education. *Studies in Higher Education, 35*(3), 285–297.
- Delprato, M., & Antequera, M. (2021). Structural challenges in low-income schooling systems. *International Journal of Educational Research, 107*, 101738.
- Eagle, L., & Brennan, R. (2007). Market orientation in universities: Implications for faculty. *Higher Education Management and Policy, 19*(2), 1–18.
- Furqan, U., Hanif, A., & Hanif, M. Z. (2022). The struggle to reform higher education sector of Pakistan: Past reforms, recent initiatives, and confronted challenges. *Journal of Research in Social Policy, 59*(2), 138–150.
- Hess, F. M. (2006). Education entrepreneurship and school reform. *Harvard Education Press*.
- Kenaphoom, S., & Jantanukul, W. (2025). Public-private partnerships in education: Design, implementation, and scaling. *Asian Education and Learning Review, 3*(1), 1–15. <https://doi.org/10.14456/aclr.2025.1>
- Kerr, K., & Ainscow, M. (2022). Promoting equity in market-driven education systems: Lessons from England. *Education Sciences, 12*, 495. <https://doi.org/10.3390/educsci12070495>
- Rizwan, S., Ahmad, D., & Sohail, F. (2023). Skill-based education at the secondary school level in an industrial city of Pakistan. *International Journal of Special Education, 38*(1), 81–96.
- Rehman, K., Lim, K. B., Yeo, S. F., Saif, N., & Ameer, M. (2025). Entrepreneurial leadership and technology management processes in SMEs. *Sustainability, 17*, 882. <https://doi.org/10.3390/su17030882>
- Shoib, M., Ali, T., & Kausar, F. (2025). Gendered educational trajectories in neoliberal school reforms in Pakistan. *Journal of Education and Development, 45*(2), 936–958.
- Smith, C. (2023). Why people of color must reject market-based education reforms: Evidence and critique. United Opt Out. <https://www.unitedoptout.com>
- Snilstveit, B., et al. (2015). Evidence for scaling educational interventions in low-income countries. *Campbell Systematic Reviews, 11*(1), 1–72.
- Tunio, M. N. (2020). Academic entrepreneurship in developing countries: Contextualizing recent debate. In *Entrepreneurship and Innovation in Emerging Economies* (pp. 130–145). Edward Elgar Publishing. <https://doi.org/10.4337/9781788973717.00017>
- Verger, A., Lubienski, C., & Steiner-Khamsi, G. (2016). Global education policy and public-private partnerships. *International Journal of Educational Development, 48*, 1–12.
- Wu, S., & Jung, H. (2008). Entrepreneurship education in business curriculum. *Journal of Entrepreneurship Education, 11*(1), 1–20.

Vesper, K., & Gartner, W. (1997). Measuring progress in entrepreneurship research. *Journal of Business Venturing*, 12(1), 1–30.

Appendix A. Curated Corpus for Bibliometric Analysis

record_id	year	title	authors	source	theme
1	2023.0	Skill Based Education at the Secondary School Level in an Industrial City of Pakistan	Sidra Rizwan; Dawood Ahmad; Fareeha Sohail	International Journal of Special Education	Skills, TVET and STEM
2	2022.0	Comparative Analysis of Policy Perspectives for Technical and Vocational Education	Afshan Huma; Sidra Rizwan; Rizwana Rafique	Journal of Education and Educational Development	Skills, TVET and STEM
3	2022.0	The Struggle to Reform Higher Education Sector of Pakistan: Past Reforms, Recent Initiatives and Confronted Challenges	Umair Furqan; Ayesha Hanif; Muhammad Zeeshan Hanif	Journal of Research Society of Pakistan	Policy, governance and reform
4	2025.0	The Nexus of Entrepreneurial Leadership and Entrepreneurial Success with a Mediation of Technology Management Processes	Khalid Rehman; Kah Boon Lim; Sook Fern Yeo; Naveed Saif; Muhammad Ameer	Sustainability	Entrepreneurial leadership and innovation
5	2022.0	The Secondary School Students' Interest toward the TVET Programs: Demographic Differences	Nazia Azeem; Muhd Khaizer Omar; Abdullah Mat Rashid; Arnida Abdullah	International Journal of Learning, Teaching and Educational Research	Skills, TVET and STEM
6	2024.0	The State of Pakistan's Economy 2024-25: Youth	Heman Das Lohano; Lubna Naz; Shagufta Shabbar;	IBA CBER Report	Skills, TVET and STEM

		Population and Employment Skill Development Programs in Pakistan	Shujaat Hussain		
7	2024.0	Sustainable Skill Development in Pakistan: Bridging Gaps in Vocational and Technical Education Policy	Wazir Ali; Abdul Rahman; Ravik Karsidi	Society	Skills, TVET and STEM
8	2025.0	The Education Public-Private Partnership Model	Sanya Kenaphoom; Watcharaporn Jantanukul	Asian Education and Learning Review	Market reform, equity and privatization
9	2026.0	Students as Customers: An Analytical Literature Review of Market-Oriented Culture of Pakistani Universities	Cheez Ali; Hatim Ali	Policy Research Journal	Market reform, equity and privatization
10	2024.0	The Role of Social Entrepreneurship Education and Corporate Social Responsibility in Shaping Sustainable Behaviour in the Education Sector of Lahore, Pakistan	Muneeb Ahmed; Hummaira Qudsia Yousaf; Memoona Naseer; Sumaira Rehman	Industry and Higher Education	Entrepreneurship education and intention
11	2020.0	Academic Entrepreneurship in Developing Countries: Contextualizing Recent Debate	Muhammad Nawaz Tunio	Book chapter	Entrepreneurial leadership and innovation
12	n.d.	Why People of Color Must Reject Market-	Ceresta Smith	United Opt Out	Market reform, equity and privatization

		Based Education Reforms: A Compilation of the Evidence			
13	2026.0	Profession or Marketplace? Mapping the Competing Logics of K-12 Teacher Education Reform	Maya Kaul	Educational Evaluation and Policy Analysis	Market reform, equity and privatization
14	2025.0	Examining the Employability of University Graduates in Pakistan: A Study of Skills and Competencies	Nailah Riaz; Amina Hanif Tarar; Muhammad Ali Tarar; Muhammad Arif	International Journal of Social Sciences Bulletin	Skills, TVET and STEM
15	2025.0	The Mismatch Between Education and Labour Market Demands and Its Impact on Youth Unemployment in Pakistan	Kabir Hussain	Flinders University dissertation	Skills, TVET and STEM
16	2025.0	Assessing the Role of LACAS School System in Skill Development and Career Readiness of Students in Pakistan	Hira Khan	Centria University of Applied Sciences thesis	Skills, TVET and STEM
17	2026.0	From Access to Agency: Gendered Educational Trajectories in the Era of Neoliberal Reform	Muhammad Shoaib; Shamraiz Iqbal; Ummel Baneen; Farooq Abdullah	Research Consortium Archive	Inclusion, gender and agency
18	2024.0	Mapping the Future in Higher Education	Dawood Mamoon	Book	Higher education, innovation and

					commercialization
19	2026.0	From Credentials to Capabilities: Mapping the Future of Education	Dawood Mamoon	MPRA Paper	Higher education, innovation and commercialization
20	2020.0	Entrepreneurial Career Choice Intentions among Secondary Students in Colombia: The Role of Entrepreneurial Exposure	Fabian Osorio Tinoco; Manoj Chandra Bayon; Guillermo Murillo Vargas	International Journal of Emerging Markets	Entrepreneurship education and intention
21	2026.0	Commercialism in Medical Education in LMICs through a Neo-colonial Lens	Abeera Fawad Khan; Ayesha Junaid; Junaid Sarfraz Khan	Pakistan Journal of Medical Sciences	Market reform, equity and privatization
22	2026.0	The Strategic Role of Higher Education in Promoting Entrepreneurship and Managing Innovation Complexities	Jamiu Agbolade Ogunsola; Ganiyu O. Quadri; Olufemi Timothy Adigun	Journal of Innovation and Entrepreneurship	Higher education, innovation and commercialization
23	2025.0	Policy Implementation Gaps and Institutional Fault-Lines in the Context of Income Inequality and Economic Disparities among Classes in Pakistan	Kashif Hussain; Omer Farooq; Nisar Ali Soomro; Imran Zia; Mugeem ul Islam	Khyber Journal of Public Policy	Market reform, equity and privatization
24	2023.0	Global Employability Skills in the 21st Century Workplace: A	Hasanuzzaman Tushar; Nanta Sooraksa	Heliyon	Skills, TVET and STEM

		Semi-Systematic Literature Review			
25	2023.0	Relationship Between Vocational Education and Leadership Styles of Vocational Instructors at Higher Secondary Level	Asma Bibi; Sidra Kiran; Wajid Mahnaz; Sehrish Sarfaraz; Munazza Habib	Journal of Positive School Psychology	Skills, TVET and STEM
26	2025.0	Assessing Pakistan's Readiness for STEM Education: Teacher Preparedness, Policy Frameworks, and Resource Availability	Nadia Rehman; Xiao Huang; Amir Mahmood; Misbah Shafait Abbasi; Jialu Qin; Wenxi Wu	Humanities and Social Sciences Communications	Skills, TVET and STEM
27	2025.0	The Effect of Psychological, Market, Economic, Socio-cultural, Entrepreneurial Orientation and Educational and Skills Factors on Empowering Women for New Venture Creation	Yaser Hasan Al-Mamary; Aliyu Alhaji Abubakar; Adel Abdulmohsen Alfalah	Humanities and Social Sciences Communications	Inclusion, gender and agency
28	2020.0	Commercialisation and Privatisation in/of Education in the Context of Covid-19	Ben Williamson; Anna Hogan	Education International	Market reform, equity and privatization
29	2023.0	Leveling Entrepreneurial Skills of Vocational Secondary	Susantiningrum; Siswandari; Soetarno Joyoatmojo; Izza Mafruhah	International Journal for Research in Vocational Education and Training	Entrepreneurship education and intention

		School Students in Indonesia			
30	2025.0	A Comparative Analysis of Higher Education Systems in the United States and Sweden: Lessons and Implications for Pakistan	Zul Ul Ane Fatima; Tabassum Shairwani; Syeda Aqsa Bint a Zafar	The Critical Review of Social Sciences Studies	Policy, governance and reform
31	2021.0	An Eclectic Theory of Entrepreneurship : Three-Level Analysis for Developing Entrepreneurship Policy in Pakistan	Nasir Shaheen; Nasir Ahmad; Sajjad Hussain; Badshah Hussain	Journal of Contemporary Issues in Business and Government	Entrepreneurial leadership and innovation
32	2021.0	Do Entrepreneurship Education and Environment Promote Students' Entrepreneurial Intention? The Role of Entrepreneurial Attitude	Djoko Dwi Kusumojanto; Agus Wibowo; Januar Kustiandi; Bagus Shandy Narmaditya	Cogent Education	Entrepreneurship education and intention
33	2025.0	Teachers' Competency in Technology, Digital Innovation, and Creativity and Its Role in Supporting Curriculum Reform	Rizwan Ahmed	Journal of Research, Innovation, and Strategies for Education	Higher education, innovation and commercialization
34	2022.0	Vocational Self-Efficacy as a Moderator between Perceived Social Support and Students' Interest in TVET	Nazia Azeem; Muhd Khaizer Omar; Abdullah Mat Rashid; Arnida Abdullah	Pertanika Journal of Social Sciences and Humanities	Skills, TVET and STEM

		Programmes in Pakistan			
35	2025.0	Factors Affecting Career Choice of Graduates in Pakistan	Kanwal Syeda; Syed Muneer Ahmed Shah	Pakistan Research Journal of Social Sciences	Skills, TVET and STEM
36	2025.0	Education Entrepreneurship in Emerging Contexts: Lessons from Building and Scaling School-Based Initiatives in Pakistan	Saad Sahil	Conceptual/practitioner paper	Entrepreneurial leadership and innovation
37	2022.0	Promoting Equity in Market-Driven Education Systems: Lessons from England	Kirstin Kerr; Mel Ainscow	Education Sciences	Market reform, equity and privatization
38	2026.0	Educational Policy and Reform in Uganda: Historical Evolution, Contemporary Challenges, and Prospects for Inclusive Development	Ronald Nyanzi; Farheen Mahmood	Education Policies and Practices in the Global South	Policy, governance and reform
39	2022.0	Education Reforms and Democracy in Pakistan: The Problem of Privatisation	Gul Muhammad Rind; Kathleen Knight Abowitz	Globalisation, Societies and Education	Market reform, equity and privatization
40	2021.0	The Role of Family Support and Internal Locus of Control in Entrepreneurial Intention of Vocational High School Students	Dewi Niki Annisa; Fatwa Tentama; Khoiruddin Bashori	International Journal of Evaluation and Research in Education	Entrepreneurship education and intention

41	2023. 0	Entrepreneurial Intention among Children: School-Going Children Compared with Children at Workplace	Aamar Ilyas	Asia-Pacific Social Science Review	Entrepreneurship education and intention
42	2021. 0	The Further Education Experiences of Young Males of Pakistani-Origin: A Case Study	Ashiq Hussain	University of Huddersfield thesis	Inclusion, gender and agency
43	2022. 0	The Impact of Entrepreneurial Education on the Propensity of Business Students to Support New Ventures	Shahzad Khuram; Hina Ahmed; Shahzad Ali	Frontiers in Psychology	Entrepreneurship education and intention
44	2025. 0	Evolving Dynamics of Pakistan's Higher Education: Emerging Trends and Future Directions	Syeda Samina Tahira; Asma Aziz; Muhammad Qavi Irshad	Pakistan Social Sciences Review	Policy, governance and reform
45	2022. 0	Influence of Financial Literacy and Education Skills on Entrepreneurial Intent: Young Entrepreneurs of Pakistan	Amna Bibi; Aneela Zulfiqar Ali	Benazir Research Journal of Humanities and Social Sciences	Entrepreneurship education and intention
46	2025. 0	STEAM for the Future: A Comparative Evaluation of Educational Strategies in Pakistan and India	Muhammad Rafiq-uz-Zaman; Nosheen Malik	ProScholar Insights	Skills, TVET and STEM

47	2024. 0	Inclusion of Entrepreneurship Education in Secondary Level Curriculum: Teachers' Perceptions in Pakistan	Syeda Fatima Tajammal; Nosheen Wajid; Jan Alam	Qlantic Journal of Social Sciences	Entrepreneurship education and intention
48	2020. 0	Schooling Reforms: A Challenging Agenda for Government of Pakistan	Fahad Khan Afridi; Shakila Muhammad Ali; Waleed Khan Afridi; Shams Ur Rehman	The Discourse	Policy, governance and reform
49	2025. 0	How Entrepreneurial Learning Drives E-Intention via Creative Confidence and Digital Competence in Pakistan	Madiha Hamid	Journal of Advanced Research in Social Sciences and Humanities	Entrepreneurship education and intention
50	2025. 0	From Chalkboards to Competence: Rethinking Skill-Based Education in Pakistan for a Business-Led Innovation Economy	Muhammad Rafiq-uz-Zaman	Journal of Academic Research for Humanities	Skills, TVET and STEM
51	2025. 0	Time in Education Policy Transfer: The Seven Temporalities of Global School Reform	Gita Steiner-Khamsi	Palgrave Macmillan	Policy, governance and reform
52	2023. 0	An Empirical Investigation of Factors Affecting Perceptions of University Students in Pakistan	Iqra Sarfraz; Huma Ayub; Abida Ellahi	ISRA International Journal of Islamic Finance	Higher education, innovation and commercialization

		Islamic Equity Crowdfunding			
53	2020.0	Introductory Overview: Anticipating and Preparing for Emerging Skills and Jobs	Brajesh Panth; Rupert Maclean	Education in the Asia-Pacific Region	Skills, TVET and STEM
54	2025.0	Assessing the Entrepreneurial Ecosystem in Pakistan: A Review to Finance, Education, and Human Capital for Entrepreneurs	Maryam; Shahid Jan Kakakhail	Social Science Review Archives	Entrepreneurial leadership and innovation