Chapter 15
Systemstic Literature Analysis of Educational Barriers, Opportunities, and Innovation in Science, Technology, and Innovation:
The Case of Potential Female Entrepreneurs in South Africa

Austin Musundire

https://orcid.org/0000-0001-8784-0616

University of South Africa, South Africa

ABSTRACT

Using 73 articles related to educational barriers, opportunities, and prospects in science, technology, and innovation (STI) for potential female entrepreneurs in South Africa, this paper addresses anti-social justice practices disrupting STI advancement among these women. Results indicated that cultural and social barriers, financial barriers, lack of role models, and stereotypes and biases block women's technological and economic advancement. However, cultural and social barriers present opportunities for cross-cultural education and diversity training. Financial barriers can spur innovation in affordable products and services. The lack of role models highlights the need for mentorship programs. Stereotypes and biases can be countered with awareness-raising and diversity initiatives. The paper recommended implementing social justice opportunities and prospects in current policies to enhance women's advancement in STI fields. These efforts create a more inclusive and supportive environment, promoting gender equality and fostering women's technological and economic progress.

INTRODUCTION:

It is academically appreciated that several researchers, including Okonkwo and Malik (2021), Chatterjee and Cooper (2021), and Clarke (2020), have primarily focused on the direct impact of science, technology, and innovation (STI) on industrial growth and development. However, the crucial role played by the education sector in improving technological skills and promoting socio-economic development seem largely overlooked. Furthermore, limited research attention has been given to gender inequalities in technological upskilling, which could hinder economic growth in several African countries, such as South Africa (Cozzens and Reichsman, 2016; Durand and Maystadt, 2020; Craveiro, Fernandez-Mesa, and Marques, 2019). Existing literature indicates that the educational system in South Africa perpetuates inequality, particularly for women who receive less recognition for their contribution to the national economy (Mbatha and Mthembu, 2021; Ngcobo and Tshotsho, 2021; Sibanda, 2020). To address this issue, a comprehensive review of the literature is essential to examine the barriers and identify opportunities for South African women in STI to overcome economic challenges by supporting potential female entrepreneurs. Most studies that attempted to address women's STI challenges used small samples, which may weaken the internal and external validity of the study. Therefore, this study employs a systematic literature review approach to offer broad coverage of research input and output.

Background to the study

The underrepresentation of women in Science, Technology, Innovation, and Development (STID) for entrepreneurial programs in the South African education system is a significant concern. This issue has been widely discussed in academic literature, and statistical data has revealed the extent of the problem. Studies have shown that women are underrepresented in STEM fields in South Africa, with only 30% of STEM graduates being female (Harvey, 2019). This disparity is critical particularly in the fields of engineering and technology, where women account for only 10% of graduates (Harvey, 2019). These statistics suggest that women in South Africa face significant barriers to pursuing careers in STID-related fields. According to the UNESCO Institute for Statistics, women only account for 28% of researchers globally, with the gender gap being particularly pronounced in sub-Saharan Africa, South and West Asia, and the Arab States (UNESCO Institute for Statistics, 2018). Furthermore, studies show that women are less likely than men to choose STEM fields in higher education, with only 18% of bachelor's degrees in computer science, for example, being awarded to women in the United States (National Science Foundation, 2019).

There are several factors that contribute to this underrepresentation. Gender stereotypes and bias can discourage girls and women from pursuing STEM subjects (Chisale, 2019). A lack of role models and mentors can also make it difficult for women to envision themselves in STEM careers (Maphalala & Ngcobo, 2020). Furthermore, a lack of access to resources and funding can limit opportunities for women in STID entrepreneurship (Kabwato, 2020). Efforts have been made to address this issue. The South African government has implemented policies and programs to promote gender equality in education and employment, such as the National Policy Framework for Women's Empowerment and Gender Equality (Department of Women, Youth and Persons with Disabilities, 2020). However, there is still a long way to go to achieve gender parity in STID fields.

26 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/systemstic-literature-analysis-of-educational-barriers-opportunities-and-innovation-in-science-technology-and-innovation/366893

Related Content

A Multi-Agent Decision Support Architecture for Knowledge Representation and Exchange
Rahul Singh (2007). *International Journal of Intelligent Information Technologies (pp. 37-60).*
www.irma-international.org/article/multi-agent-decision-support-architecture/2413

A Fuzzy Logic-Based Method for Incorporating Ethics in the Internet of Things
Sahil Sholla, Roohie Naaz Mirand Mohammad Ahsan Chishti (2021). *International Journal of Ambient Computing and Intelligence (pp. 98-122).*
www.irma-international.org/article/a-fuzzy-logic-based-method-for-incorporating-ethics-in-the-internet-of-things/279587

Cluster-Based Input Selection for Transparant Fuzzy Modeling
Can Yang, Jun Mengand Shanan Zhu (2008). *Intelligent Information Technologies: Concepts, Methodologies, Tools, and Applications (pp. 826-845).*
www.irma-international.org/chapter/cluster-based-input-selection-transparant/24319

Pioneering the Future of Work: AI Strategies for HR Transformation
Sandip Dey (2025). *Harnessing AI to Transform Human Resources in Future Workplace Practices (pp. 143-180).*
www.irma-international.org/chapter/pioneering-the-future-of-work/382642

Exploring the Role of Artificial Intelligence in Enhancing Values-Based Leadership and Its Impact on Workplace Engagement
Fahad Saeed Alsubeia, Muhammed Bin Yusofand Amer Abdulwahab Mahyoub Murshed (2026). *AI in Education, Governance, and Leadership: Adoption, Impact, and Ethics (pp. 221-258).*
www.irma-international.org/chapter/exploring-the-role-of-artificial-intelligence-in-enhancing-values-based-leadership-and-its-impact-on-workplace-engagement/384259