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# Challenges and opportunities in strategic educational planning: a systematic literature review

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**ABSTRACT**

Strategic educational planning is essential for adapting to the evolving landscape of education, driven by socio-economic, technological and exceptional global health crisis. This systematic literature review explores the complex challenges and opportunities in strategic educational planning, synthesizing insights from diverse studies to provide a comprehensive understanding. The problem statement addresses the necessity for effective strategic planning to ensure educational resilience, quality and inclusivity amidst changing external conditions. To achieve this, we conducted an extensive search of scholarly articles from reputable databases such as Scopus and Web of Science, focusing on studies published between 2020 and 2024. The flow of study based on preferred reporting items for systematic reviews and meta-analyses (PRISMA) framework. The database found (n=33) final primary data was analyzed. The finding was divided into three themes which is: i) educational strategies and innovations; ii) organizational and strategic management in education; and iii) impact and adaptation to external challenges in education. The review indicate that strategic educational planning must prioritize flexibility, stakeholder engagement and continuous improvement to navigate future challenges effectively. This review underscores the fundamental role of strategic planning in transforming educational systems to be more adaptive, inclusive and forward-thinking, ultimately enhancing their capacity to meet the diverse needs of learners in an ever-changing global context.



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## 1. INTRODUCTION

Strategic educational planning is a basis of effective educational administration, playing a critical role in shaping the future of learning environments worldwide [1]–[3]. It involves the systematic process of envisioning a desired future, translating this vision into broadly defined goals or objectives, and formulating a sequence of steps to achieve them. As educational institutions and systems face unprecedented challenges and opportunities in an era marked by rapid technological advancements, globalization, and shifting socio-economic landscapes, the importance of strategic planning has never been more pronounced. One of the primary challenges in strategic educational planning is the need to balance immediate demands with long-term goals [4], [5]. Educational leaders must navigate a complex array of factors including budget constraints, evolving educational standards, and diverse stakeholder expectations. Additionally, the unpredictability of political climates and economic conditions can significantly impact the stability and

effectiveness of educational plans. For instance, policy changes and funding cuts can derail even the most meticulously crafted strategies, necessitating a flexible and adaptive planning approach. While digital tools and online platforms have the potential to enhance learning experiences and accessibility, their effective implementation requires substantial investment in infrastructure, professional development for educators, and ongoing support [6], [7]. Moreover, the digital divide poses a critical barrier, particularly in under-resourced and rural areas, where access to technology remains limited. Globalization further complicates strategic educational planning by introducing a need for curricula that not only adhere to national standards but also prepare students for global citizenship. This involves fostering skills such as critical thinking, cultural awareness, and adaptability. However, implementing such comprehensive curricula can be challenging, requiring substantial revisions to existing educational frameworks and pedagogical practices [8]–[10]. By leveraging data analytics and evidence-based approaches, educational planners can make more informed decisions that enhance student outcomes and operational efficiency. Collaborations and partnerships with stakeholders, including government agencies, private sectors, and international organizations, can provide additional resources and insights, fostering a more holistic and inclusive approach to education [11]–[13]. Furthermore, the ongoing advancements in educational research and pedagogical innovations offer opportunities to reimagine traditional learning models. Personalized learning, competency-based education, and experiential learning are just a few examples of approaches that can be integrated into strategic plans to cater to diverse student needs and learning styles.

Strategic educational planning plays a vital role in shaping the future of academic programs and institutions. However, challenges such as environmental unpredictability and the alignment of technological advancements pose significant barriers. For instance, Dowsett *et al.* [14] discuss the destabilization caused by emerging technologies, like robotics and artificial intelligence (AI), which not only transform construction but also disrupt planning structures within educational institutions. The ambiguity surrounding technology adoption presents a challenge in integrating these innovations into educational planning. Similarly, Lozano-Nieto [15] highlights the limitations of institutional-level strategic plans in accommodating the specific needs of academic programs, particularly in technical fields such as electrical engineering. These limitations underscore the necessity of developing strategic plans at the program level to foster relevant educational outcomes. Moreover, Evis [16] examines how the popularization of interdisciplinary research in British Higher Education Institutions, while beneficial for some academic disciplines like archaeology, often receives minimal financial backing. The lack of substantial funding for interdisciplinary initiatives further complicates strategic planning in educational contexts. Opportunities for improvement exist in adopting more targeted strategic planning approaches. Walker *et al*. [17] emphasize the importance of strategic planning in supporting the implementation of physical activity approaches in elementary schools. Their research reveals that comprehensive strategic plans, when combined with appropriate training and support mechanisms, can significantly improve the effectiveness of educational interventions. This finding is further supported by Rahim *et al*. [18] whose work on strategic planning for physical education in Iranian schools using the quantitative strategic planning matrix (QSPM) demonstrates how well-structured plans can prioritize key educational strategies despite resource limitations. These studies suggest that, when strategically executed, planning can lead to enhanced educational performance, even in resource-constrained environments.

The integration of sustainable strategic planning practices also holds promise for enhancing educational outcomes. Sucuoğlu and Erdem [19] demonstrate how sustainable planning in Turkish primary schools positively impacts total quality management (TQM) practices. This finding highlights the potential for strategic educational planning to contribute to broader organizational goals, such as quality management, by aligning strategic objectives with sustainability principles. Additionally, Wendling and Evans [20] emphasize the role of community engagement in institution-level strategic plans. Their analysis of strategic plans from American higher education institutions shows that institutions integrating community engagement into their strategic objectives are better equipped to address the evolving needs of their communities, creating new opportunities for collaboration and growth. Despite these opportunities, several systemic challenges hinder the effective implementation of strategic plans in educational settings. Al-Twijri *et al*. [21] identify a moderate level of strategic information system implementation in emerging universities, largely due to issues with environmental analysis and goal setting. The study highlights the need for improved technical support, training, and clearer adoption regulations. Moreover, Abdulaal *et al*. [22] argue that financial sustainability remains a major challenge for higher education institutions, which necessitates accurate prioritization of investment initiatives to maintain long-term viability. These findings illustrate that while strategic planning offers significant potential, its successful implementation requires addressing technical, financial, and regulatory challenges.

The studies analyzed here provide insights into how educational institutions can navigate the complexities of strategic planning to enhance their overall effectiveness and adaptability in an ever-evolving educational landscape. Strategic educational planning faces several challenges, including technological

disruptions, resource constraints, and insufficient interdisciplinary support. However, opportunities exist to overcome these challenges by adopting targeted, sustainable and community-engaged strategic planning approaches. To further explore the opportunities and challenges of strategic planning in education, this study is guided by the following research questions:

i) How can innovative educational strategies be effectively integrated into existing frameworks to enhance student outcomes?
ii) What are the key factors influencing successful organizational change management in higher education?
iii) How has the COVID-19 pandemic influenced educational strategies and outcomes across different regions and educational levels?

The primary aim of this article is to identify the key challenges that educational institutions face in strategic planning, particularly in response to socio-economic, technological, and global disruptions such as the COVID-19 pandemic. Additionally, the article seeks to explore opportunities for integrating innovative educational strategies into existing frameworks to enhance student outcomes and institutional adaptability. The article also provide actionable insights for educational policymakers and leaders on incorporating flexibility, stakeholder engagement, and continuous improvement into strategic educational planning processes.

## 2. METHOD

This section detailing the preferred reporting items for systematic reviews and meta-analyses (PRISMA) publication standards. Further, the authors provide an in-depth discussion on the formulation of the research question, the methodologies used for identifying, screening and determining the eligibility of systematic searches, together with the approaches for quality assessment, data collection and analysis.

### 2.1. Identification

To choose a sizable volume of relevant literature for this investigation, several crucial phases in the systematic review process were used. Following the selection of keywords, a search for associated terms was conducted through the use of dictionaries, thesauri, encyclopedias, and prior research. Search strings for the Scopus and Web of Science (WoS) databases were created, and all pertinent phrases were presented in Table 1. Two databases were successfully used to extract 2,429 publications that were pertinent to the study issue during the first phase of the systematic review.

Table 1. The search string

| Source | The search string |
|---|---|
| Scopus | TITLE-ABS-KEY ( ( "Strategic planning" OR "strategic educational planning" OR "strategic planning in education" OR "educational strategic planning" ) AND ( "challenges" OR "opportunities" OR "barriers" OR "benefits" ) AND "Education" ) AND PUBYEAR > 2019 AND PUBYEAR < 2025 AND ( LIMIT-TO ( SUBJAREA , "SOCI" ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) ) AND ( LIMIT-TO ( EXACTKEYWORD , "Strategic Planning" ) OR LIMIT-TO ( EXACTKEYWORD , "Higher Education" ) OR LIMIT-TO ( EXACTKEYWORD , "Education" ) OR LIMIT-TO ( EXACTKEYWORD , "Strategic Plan" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) ) AND ( LIMIT-TO ( OA , "all" ) ) Date of access: Jun. 2024 |
| WoS | ( ( "Strategic planning" OR "strategic educational planning" OR "strategic planning in education" OR "educational strategic planning" ) AND ( "challenges" OR "opportunities" OR "barriers" OR "benefits" ) AND "Education" ) (Topic) and Open Access and 2020 or 2021 or 2022 or 2023 or 2024 (Publication Years) and Article (Document Types) and Education Educational Research or Social Sciences Interdisciplinary (Web of Science Categories) and English (Languages) Date of access: Jun. 2024 |

### 2.2. Screening

The collection of possibly pertinent research items is assessed in the screening process to see whether or not they are consistent with the predetermined research questions. Choosing research topics pertaining to the use of challenges and opportunities in strategic educational planning is one of the content-related criteria that are frequently employed in this stage. Duplicate papers are now eliminated from the search results. A total of 2,355 publications were eliminated in the first screening stage, and 74 papers were reviewed in the second stage using different study-specific exclusion and inclusion criteria as shown in Table 2. Since research papers are the major source of actionable advice, the literature was the key criterion that was used. This also included conference papers, novels, book series, reviews, meta-syntheses, and meta-analyses, as well as materials that were not included in the latest study. Additionally, the review was limited to publications in English. Due to duplication, 12 articles in total were rejected.

Table 2. The selection criterion in searching

| Criterion | Inclusion | Exclusion |
|---|---|---|
| Languages | English | Non-English |
| Time line | 2020-2024 | <2020 and <2025 |
| Literature type | Journal (Article) | Conference, Book, Review |
| Subject | Social science | Besides Social Science |

### 2.3. Eligibility

In the third phase, termed the eligibility assessment, 74 articles were collected. During this phase, the titles and main content of these articles were carefully scrutinized to ensure they met the inclusion criteria and were relevant to the study's research goals. This led to the exclusion of 29 articles that either fell outside the field, had insignificant titles, had abstracts unrelated to the study's objectives, or lacked full-text access supported by empirical evidence. Consequently, 33 articles were retained for the next stage of the review.

### 2.4. Data abstraction and analysis

An integrative analysis was used as one of the assessment strategies in this study to examine and synthesize a variety of research designs (quantitative methods). The goal of the competent study was to identify relevant topics and subtopics. The stage of data collection was the first step in the development of the theme. Figure 1 shows how the authors meticulously analyzed a compilation of 33 publications for assertions or material relevant to the topics of the current study. The authors then evaluated the current significant studies related to challenges and opportunities in strategic educational planning. The methodology used in all studies, as well as the research results, are being investigated. Next, the author collaborated with other co-authors to develop themes based on the evidence in this study's context. A log was kept throughout the data analysis process to record any analyses, viewpoints, riddles or other thoughts relevant to the data interpretation. Finally, the authors compared the results to see if there were any inconsistencies in the theme design process. It is worth noting that, if there are any disagreements between the concepts, the authors discuss them amongst themselves.

The generated themes were eventually refined to ensure consistency. Two experts in human resource development and management conducted the analysis to assess and confirm the validity of the issues. During the expert review phase, significance, the clarity and relevance of each subtheme were validated to establish domain validity. In order to reconcile any differences in the theme generating procedure, the authors carefully compared the results. The authors worked together to resolve any divergences that might have emerged between the topics. In order to guarantee coherence, the developed themes were finally modified. Two specialists, one with expertise in strategic planning, performed exams to verify the accuracy of the difficulties. By establishing domain validity, the expert review step guaranteed the significance, sufficiency, and clarity of each sub-theme. Changes were implemented according to the authors' judgment and the experts' input.

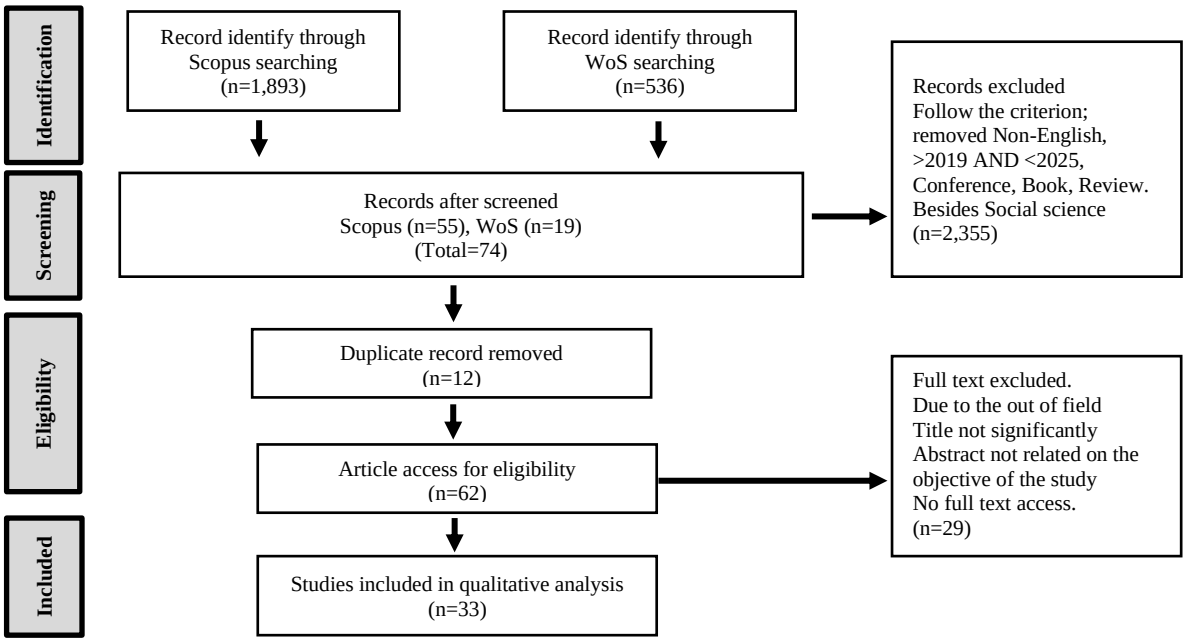


Figure 1. Flow diagram of the proposed searching study [23]

## 3. RESULTS AND DISCUSSION

The review identified three key themes concerning the challenges and opportunities in strategic educational planning. These themes were "educational strategies and innovations", "organizational and strategic management in education", and "impact and adaptation to external challenges in education." The findings, as presented in Table 3, offer a thorough analysis of the challenges and opportunities in strategic educational planning.

Table 3. The research article finding based on the proposed searching criteria

| Theme | No | Study | Title | Year |
|---|---|---|---|---|
| Theme 1: educational strategies and innovations | 1 | [24] | Modern development strategy of Russian education | 2020 |
| | 2 | [25] | Competency assessment of an undergraduate program using a third-party, objective pre-post examination | 2021 |
| | 3 | [26] | Innovative FOCUS: a program to foster creativity and innovation in the context of education for sustainability | 2024 |
| | 4 | [27] | "I don't think the problem's the student...I think it's us": Engaging faculty in curriculum innovation | 2021 |
| | 5 | [28] | Leadership curricula and assessment in Australian and New Zealand medical schools | 2021 |
| | 6 | [29] | Student engagement and barriers to implementation: the view of professional and academic staff | 2021 |
| | 7 | [18] | Strategic planning of physical education and sports in Iranian schools using QSPM matrix | 2021 |
| | 8 | [30] | Enhancing learning in tourism education by combining learning by doing and team coaching | 2022 |
| | 9 | [31] | Investigating participation mechanisms in EU code week | 2024 |
| | 10 | [32] | AI-enabled medical education: threads of change, promising futures, and risky realities across four potential future worlds | 2023 |
| Theme 2: organizational and strategic management in education | 1 | [33] | Organizational change management in higher education through the lens of executive coaches | 2021 |
| | 2 | [34] | Development strategies for higher education institutions based on the cultivation of core competitiveness | 2021 |
| | 3 | [35] | Creating a charrette process to ignite the conversation on equity and inclusion | 2021 |
| | 4 | [15] | Program-level strategic planning for electrical engineering technology programs | 2022 |
| | 5 | [36] | Effectiveness and sustainability indicators in higher education management | 2023 |
| | 6 | [37] | Models for administration to ensure the successful transition to distance learning during the pandemic | 2021 |
| | 7 | [38] | Pandemic, a catalyst for change: strategic planning for digital education in English secondary schools | 2023 |
| | 8 | [39] | Developing the strategic collaboration model in basic education | 2022 |
| | 9 | [40] | Examining the role and challenges of sustainable development goals for the universities in the United Arab Emirates | 2023 |
| Theme 3: impact and adaptation to external challenges in education | 1 | [41] | A case study of two teacher learning communities in Kwazulu-Natal, South Africa | 2021 |
| | 2 | [42] | How district teacher development centres support teachers' learning: Case studies in Kwazulu-Natal, South Africa | 2020 |
| | 3 | [43] | Strategic assessment of COVID-19 pandemic in Bangladesh: comparative lockdown scenario analysis, public perception, and management for sustainability | 2021 |
| | 4 | [44] | Challenges of ELT during the new normal: a case study of Malaysia, Turkey and Palestine | 2023 |
| | 5 | [45] | Understanding the lived experience and benefits of regional cities | 2022 |
| | 6 | [46] | Analysis of importance of and satisfaction with the values and major achievements of urban agriculture | 2023 |
| | 7 | [47] | Navigating the COVID-19 pandemic: learning experiences of an online Sino-Nordic doctoral summer school on aging | 2024 |
| | 8 | [48] | A systematic framework for compilation of critical raw material lists and their importance for South Africa | 2024 |
| | 9 | [49] | How many and which physicians? A comparative study of the evolution of the supply of physicians and specialist training in Brazil and Spain | 2020 |
| | 10 | [17] | Understanding implementation strategies to support classroom-based physical activity approaches in elementary schools: a qualitative study | 2022 |
| | 11 | [50] | E-learning in the department of library science of UIN Alauddin Makassar based on Claroline | 2020 |
| | 12 | [51] | Cognitive underpinnings of COVID-19 vaccine hesitancy | 2022 |
| | 13 | [52] | Strategies for improving the e-waste management supply chain sustainability in Indonesia (Jakarta) | 2021 |
| | 14 | [53] | Higher education in a material world: constraints to digital innovation in Portuguese universities and polytechnic institutes | 2020 |

### 3.1. Educational strategies and innovations

Educational strategies and innovations remain pivotal for advancing the effectiveness and adaptability of educational systems. Analyzing various research articles reveals diverse approaches to enhancing education, from competency assessments to innovative teaching programs and curriculum

transformations. This analysis integrates findings from multiple studies to provide a thorough understanding of the current landscape in educational strategies and innovations. The implementation of strategic planning in education is crucial for its development and effectiveness. The study by Mukhametzyanova *et al*. [24] discusses the strategic planning in Russian education, highlighting the absence of a comprehensive national strategy. Instead, regional strategies focus on local challenges without addressing broader national and global educational demands. This lack of a unified strategy hinders the potential for groundbreaking advancements in the Russian educational system. Rahim *et al*. [18] emphasize the need for strategic planning in physical education within Iranian schools, using the QSPM matrix to prioritize strategies that enhance motor literacy and promote a healthy lifestyle. This strategic approach is essential for achieving educational targets amidst limited resources. Research by Crabtree *et al*. [29] on student engagement strategies highlights the importance of strategic planning and senior leadership involvement in overcoming barriers to effective student engagement. These studies collectively underscore the critical role of strategic planning in addressing educational challenges and enhancing system efficiency.

Similarly, innovations in curriculum design and competency assessment have been explored in various contexts. Fulton *et al*. [25] studied competency assessment in undergraduate medical education using a pre-post third-party examination, highlighting the improvements in competencies such as strategic planning and leadership. The findings suggested that repeated assessments are vital for documenting competency attainment, aligning with earlier studies emphasizing the need for comprehensive evaluation methods in educational programs. This approach is further supported by Ross *et al*. [28] who examined leadership curricula in Australian and New Zealand medical schools. Their study revealed gaps in key competencies, such as financial management and strategic planning, while also noting the importance of leadership education being integrated across various subjects. These findings indicate that while educational institutions have made strides in curriculum innovation, there remains room for improvement in ensuring that competencies align with the evolving demands of the educational and professional landscapes.

Innovative programs and methods play a significant role in fostering creativity and problem-solving skills in students. The Innovative FOCUS program, as examined by Haim and Aschauer [26], integrates flexibility, originality, and creative personality development with strategic planning to address sustainability challenges in secondary education. The program's success in promoting innovative thinking and real-world problem-solving among students underscores the potential of such approaches in contemporary education systems. Azanza *et al*. [30] explore the combined use of learning by doing (LBD) and team coaching in tourism education, demonstrating that these experiential learning methods enhance student engagement, communication, and problem-solving skills. The study shows that practical, real-world experiences significantly improve the quality and applicability of students' learning outcomes.

These innovative programs highlight the importance of integrating creativity and practical problem-solving into educational curricula to prepare students for future challenges. Engaging faculty in curriculum innovation is essential for effective educational transformation. The integration of AI into medical education presents another innovative frontier, as explored by Knopp *et al*. [32]. Their study utilized scenario-based strategic planning to envision future worlds influenced by AI, identifying both risks and benefits associated with AI's integration into healthcare education. The study concluded that developing an ethical framework and fostering interdisciplinary collaboration are essential for ensuring that AI is used responsibly in educational settings. This mirrors the findings from Kornegay *et al*. [27] who investigated faculty engagement in curriculum innovation at the University of North Carolina's dental school. The study emphasized the need for collaboration and resources to support substantial curriculum transformations, suggesting that successful innovation in education requires the collective efforts of all stakeholders. The COVID-19 pandemic has also catalyzed significant shifts in educational strategies, particularly in the adoption of digital learning platforms. The pandemic prompted educational institutions to quickly adapt to new modes of teaching [31]. Sirocchi *et al*. [31] explored participation in EU Code Week, emphasizing how digital literacy initiatives can foster engagement in technology, particularly in regions with lower access to digital resources. Both studies highlight how external crises like the pandemic have accelerated digital transformation in education, yet they also reveal ongoing challenges in fully integrating these innovations into long-term educational strategies.

### 3.2. Organizational and strategic management in education

Organizational and strategic management in education is a multifaceted domain, requiring a blend of visionary leadership, strategic planning, and adaptability to external changes. In higher education, effective management is essential for fostering academic excellence and ensuring institutional sustainability. Leadership plays a critical role in navigating organizational change in higher education. Vlachopoulos [33] highlights that a lack of strategic vision and clarity in decision-making processes hinders effective change management. The study emphasizes that executive coaching can significantly enhance leaders' capabilities, enabling them to inspire their academic communities and implement positive changes. Leaders equipped with

soft skills such as honesty, resilience, and creativity are more effective in managing transitions and promoting inclusivity. Furthermore, the study underscores the importance of leadership development programs that focus on strategic planning and decision-making clarity. These programs help leaders address challenges proactively and implement changes that align with the institution's long-term goals.

The dual aspect of the implications-addressing observed challenges and leveraging coaching for skill development-provides a comprehensive approach to enhancing leadership effectiveness in higher education [33]. The cultivation of core competitiveness is vital for the development of higher education institutions. Wu and Zhang [34] discuss that core competitiveness, encompassing intangible abilities like innovation in management models and academic production capacity, is crucial for improving talent training quality. The continuous improvement of educational resources, funding, and scientific output are indicative of enhanced core competitiveness in Chinese higher education institutions. The study proposes several evaluation indexes for core competitiveness, including school-running philosophy, campus culture construction capacity, and human resource management innovation capacity. Wu and Zhang [34] provide a framework for institutions to assess their strengths and identify areas for improvement, thus guiding strategic development and enhancing their overall competitiveness. Equity and inclusion are central to the strategic planning processes in educational institutions. Carlson *et al*. [35] illustrate this through the designing for success initiative at Borough of Manhattan Community College, which uses a charrette process to address gaps in graduation and retention rates among different ethnic and gender groups. This initiative engages the entire college community in discussions and action planning, fostering a collaborative environment that prioritizes equity and inclusion. The charrette process is particularly effective in higher education as it encourages public scholarship and active participation from all stakeholders, moving beyond mere discussions to actionable strategies. This method helps identify critical barriers to equity and inclusion and develop comprehensive plans to address them, thereby promoting a more inclusive educational environment [35]. Strategic planning at the program level can address specific needs and challenges that might be overlooked at the institutional level. Lozano-Nieto [15] argues that strategic plans developed at the program level, particularly for disciplines like electrical engineering, can provide detailed and actionable strategies that strengthen individual academic programs. This approach ensures that the unique requirements of each program are met and facilitates meaningful dialogue among faculty and academic staff. Program-level strategic planning allows for greater specificity and adaptability, addressing particular challenges and opportunities within a discipline. It also encourages collaboration among stakeholders, fostering an environment where strategic goals are aligned with the program's needs and objectives [15].

Sustainability and management effectiveness are increasingly important in higher education. Mattos *et al*. [36] utilize the Baldrige excellence model to analyze these factors at the Federal University of Santa Catarina. The study finds that leadership, a focus on students and society, and strategic planning significantly influence management effectiveness. Transparency and competency-based management are also crucial for improving work processes. The study highlights the need for higher education institutions to adopt quality management models that emphasize sustainability and continuous improvement. By focusing on these areas, institutions can enhance their performance and achieve long-term sustainability [36]. The transition to distance learning during the COVID-19 pandemic posed significant challenges for educational institutions. Jusas *et al*. [37] developed several models to guide the strategic planning and implementation of distance learning. These models address various aspects, including infrastructure, competencies, and virtual learning environments, providing comprehensive guidelines for institutions to navigate the complexities of distance education. The study emphasizes the importance of strategic planning in ensuring successful distance learning experiences. By adopting these models, institutions can better prepare for and manage the transition to online education, ensuring continuity and quality of learning during disruptions [37].

The pandemic has accelerated the need for strategic management in digital education. Study by Baxter *et al*. [38] examined the impact of the COVID-19 pandemic on the strategic planning processes of secondary schools in England. Their research identified a significant shift in how schools approached digital learning, noting that the pandemic had forced leaders to innovate and adapt their strategic plans. However, barriers such as material constraints and cultural resistance remained, showing the complexity of integrating digital strategies into traditional educational settings. Strategic collaboration is a powerful approach for overcoming challenges in basic education. Tahili *et al*. [39] explored the development of a strategic collaboration model in Indonesia, which includes school collaboration networks, strategic leadership, and innovation in school culture. This model aims to improve education quality through collaborative planning and innovation. The study highlights the benefits of strategic collaboration in achieving sustainable education improvements. By fostering partnerships among schools, teachers, and local governments, this approach facilitates the sharing of resources and best practices, leading to enhanced educational outcomes [39]. Higher education institutions have a pivotal role in advancing the United Nations sustainable development goals (SDGs). Singh and Blessinger [40] examine the integration of SDGs in universities in the United Arab Emirates, identifying challenges such as prioritization, environmental footprint reduction, and collaboration.

The study suggests that governmental policy changes can support the adoption of SDGs, while highlighting the limited impact of current research and collaborative projects. This study underscores the importance of strategic planning in aligning university initiatives with global sustainability goals. By addressing these challenges, institutions can contribute more effectively to sustainable development and societal progress [40].

### 3.3. Impact and adaptation to external challenges in education

The educational landscape has faced numerous external challenges, necessitating adaptive strategies to maintain and improve educational outcomes. These challenges range from the global COVID-19 pandemic to socio-economic and technological shifts. This analysis delves into various studies addressing the impact and adaptation strategies employed by educational institutions to navigate these external challenges. The COVID-19 pandemic has significantly impacted educational systems worldwide, prompting a swift transition to online learning. Research by Assaiqeli *et al*. [44] examine the challenges faced by English language faculty in Malaysia, Turkey, and Palestine during this transition. The study identifies key issues such as the effectiveness of online teaching, difficulties in implementation, and student engagement. Faculty members noted that while online learning was essential during the pandemic, its success was contingent on addressing these challenges through strategic planning and professional development. Xu *et al*. [47] highlight the experiences of doctoral students in an online Sino-Nordic summer school on aging. The study reveals that while students gained valuable insights, they faced challenges such as limited social interaction and scheduling conflicts, emphasizing the need for improved strategic planning and communication in online education.

In South Africa, the formation and operation of professional learning communities (PLCs) have been pivotal in supporting teachers' professional development. Zulu and Mukeredzi [41] explore the functioning of two teacher learning communities in KwaZulu-Natal, revealing that effective PLCs require meaningful stakeholder involvement. Ajibade and Bertram [42] further investigate the role of district teacher development centers (DTDCs) in KwaZulu-Natal. Their findings indicate that while DTDCs provide valuable resources for professional development, their potential remains untapped due to underutilization of available facilities. These studies underscore the importance of strategic support and resource utilization in enhancing teacher learning and development in challenging contexts. The strategic management of educational institutions during crises is crucial for maintaining sustainability and effectiveness. Research by Shammi *et al*. [43] provide a strategic assessment of the COVID-19 pandemic in Bangladesh, focusing on lockdown scenarios and public perception. The study suggests that maintaining partial lockdowns with economic activities, guided by health protocols, is the best strategy for managing the pandemic's socio-economic impacts. This approach highlights the importance of strategic planning and public communication in crisis management. Similarly, Crommelin *et al*. [45] explore the lived experiences of residents in regional Australian cities, noting the need for long-term strategic planning to address population growth and regional development challenges. This research emphasizes the necessity of place-based policies tailored to local contexts to enhance the benefits of regional living.

The global COVID-19 pandemic brought a range of challenges that required educational institutions to adopt digital learning models rapidly. The shift to e-learning was particularly challenging for institutions that had limited infrastructure, as evidenced by the case of Universitas Islam Negeri Alauddin Makassar in Indonesia. Mathar *et al*. [50] highlighted that, while students embraced e-learning with platforms like Claroline, faculty members faced difficulties implementing these digital solutions due to a lack of prior experience and insufficient training. Similarly, Vicente *et al*. [53] identified the constraints faced by higher education institutions in Portugal, where digital innovation was hindered by inadequate infrastructure, limited funding, and a conservative academic culture. Both studies underscore the importance of institutional support and infrastructure development to navigate external challenges effectively. Vicente *et al*. [53] examine the barriers to digital innovation in Portuguese universities and polytechnic institutes, identifying limited infrastructure, funding, and technological resources as major obstacles. The study calls for modernization efforts to overcome these constraints and support regional development.

External challenges such as vaccine hesitancy during the COVID-19 pandemic demonstrated the broader societal implications of education. Acar-Burkay and Cristian [51] examined the cognitive underpinnings of vaccine hesitancy, revealing how individual differences in executive function, such as attentional control and cognitive flexibility, affected public trust in vaccines. The study suggested that educational institutions could play a significant role in addressing public health crises by promoting critical thinking and reducing susceptibility to misinformation. Similarly, Walker *et al*. [17] emphasized the importance of implementing strategic approaches in education that encourage physical activity in schools. Their findings pointed to the need for strategic planning in addressing health and wellbeing challenges within educational environments, as classroom-based physical activities supported students' overall development during challenging times. Walker *et al*. [17] highlight the implementation strategies needed to support

classroom-based physical activity in elementary schools. The study identifies key strategies such as program champions, staff training, strategic planning, and positive reinforcements, which are crucial for effective implementation. Furthermore, urban agriculture has emerged as a potential solution to urban challenges, including overcrowding and unsustainable development. Park and Shin [46] conduct an importance-performance analysis on urban agriculture, emphasizing its health, social-cultural, environmental-ecological, and economic functions. The study recommends strategic planning to enhance awareness and promote urban agriculture, highlighting its potential to contribute to sustainable urban development.

The pandemic also influenced how education systems responded to societal demands, as seen in Indonesia's need to manage its growing electronic waste (e-waste) problem. Wibowo *et al*. [52] discussed how public education became a critical strategy in addressing e-waste management. Schools and universities played a role in educating the public about sustainable practices, highlighting the intersection of environmental issues and educational policies. While education systems were primarily focused on continuity in teaching, the broader societal role of education in raising awareness of critical issues like sustainability became apparent, particularly in regions facing significant environmental challenges. Similarly, Nwaila *et al*. [48] emphasized the importance of strategic frameworks, such as critical raw materials (CRM), in ensuring sustainability in national economic policies, further demonstrating the crucial role of education in shaping informed and responsible citizens.

The medical education sector has also faced external pressures, notably the growing demand for healthcare professionals amid an ongoing global shortage. Scheffer *et al*. [49] conducted a comparative study of Brazil and Spain, two countries that expanded their medical education capacity to address healthcare demands. Both countries faced challenges in aligning the supply of general practitioners and specialists with the actual health needs of their populations. The study revealed that while expanding medical education institutions increased the number of physicians, it was not sufficient to meet the nuanced demands of healthcare systems. This highlights the complexity of strategic planning in education sectors that are directly tied to essential services like healthcare, where merely increasing the number of graduates does not fully address systemic challenges. The adaptation to external challenges in education requires comprehensive strategic planning, stakeholder involvement, and resource optimization. Studies across various contexts-ranging from pandemic responses to digital innovation and urban development-demonstrate the necessity of tailored strategies to address specific challenges effectively. These findings provide valuable insights for policymakers and educational leaders to enhance resilience and sustainability in education.

## 4. CONCLUSION

A comprehensive approach to advancing educational systems highlights the importance of strategic planning, innovation, and active faculty participation. Successful educational development requires well-defined strategies that address both local and global challenges, with a focus on enhancing creativity, problem-solving skills, and practical abilities through experiential learning and innovative programs. Curriculum innovations that integrate real-world experiences into the academic environment play a critical role in improving student engagement and skill acquisition. Additionally, faculty involvement is crucial in driving curriculum redesign and ensuring that graduates are equipped with essential skills such as critical thinking, leadership, and adaptability. Continuous faculty development and adequate resource allocation further support educational transformations and the effectiveness of these initiatives.

Effective educational management also depends on visionary leadership and strategic adaptability, especially in the face of external challenges such as global health crisis and rapid technological changes. Adaptive strategies, supported by strategic planning, professional development, and enhanced leadership skills, are essential for maintaining educational outcomes in such evolving environments. Continuous improvement in resources, funding, and academic outputs, along with a focus on equity and inclusion, can guide strategic development efforts. Institutions must prioritize collaborative planning at the program level to align academic goals with specific educational needs. Future efforts should focus on enhancing leadership capacities, fostering PLCs and utilizing resources efficiently to ensure the resilience and competitiveness of educational institutions.

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## AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

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C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
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R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
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Vi : **Vi**sualization
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## CONFLICT OF INTEREST STATEMENT

No conflict of interest.

## DATA AVAILABILITY

Data availability is not applicable to this paper as no new data were created or analyzed in this study.

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