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A framework for higher education institutions sustainability: A multi-method study

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Abstract: The COVID-19 pandemic provided a unique opportunity for educators and policymakers to reconsider education systems and rethink what is essential, necessary, and desirable for future generations. A sequential generic qualitative approach was used in this study. Based on the systematic literature review, a content analysis was conducted to identify dimensions that contribute toward higher education institutions sustainability. Subsequently, the Expert Opinion method that involved five professors holding key positions in respective universities from Malaysia, the Netherlands, India, and Bangladesh was applied to propose a post-COVID-19 sustainable framework. Four themes: 1) educational reform; 2) digital transformation; 3) resilience and change management; and 4) sustainability coupled with agility and flexibility formed the framework for HEIs' sustainability during the post-COVID-19 pandemic. We propose that the themes be examined from an integrated perspective to ensure HEIs can be sustainable in the long run. Finally, other scholars are recommended to conduct a tracer study as well as develop qualitative instruments based on the themes and dimensions identified from the systematic literature review and the Expert Opinion Method to better understand the phenomenon of HEI sustainability.

Keywords: educational reform in developing countries; expert opinion method; post-COVID-19; higher education institutions; sustainability; systematic literature review

1. Introduction

The COVID-19 pandemic had impacted the psychological and physical health-related quality of life among university students and academics in universities in Europe (Allen et al., 2023), America (Buckner et al., 2022) and Asia (Horita et al., 2022). Notwithstanding the chaos brought by the pandemic, a positive trend was reported by Marinoni et al. (2020) in the form of incredible innovative approaches to issues faced and the educational sector's resilience and competitiveness, as well as the increased interest of policymakers worldwide in higher education competence. Educators and policymakers are now re-evaluating the existing education systems and envision and conceptualize the essential and beneficial aspects for the future. For example, the COVID-19 pandemic has changed and adjusted the application of technology in education while forcing educators to review future pedagogy strategies. Moreover, during the post-COVID-19 era, Higher Education Institutions (HEIs) are

more concerned with the job-readiness of students and sustainable digital transformation to prepare graduates to adapt to the current dynamic societal needs and also become the blueprint for creativity and innovation for the near future (Pérez-Sanagustín et al., 2022). While digitalization has the potential to increase HEI sustainability, we feel that other variables should be investigated. As such, the research questions of the study are as follows: 1) what are the dimensions that contribute towards HEI sustainability? and 2) what framework can best promote post-COVID-19 HEI sustainability?

2. Background of the study

The unprecedented challenges to HEIs since March 2020 due to COVID-19 have accelerated digital transformation and innovation in the teaching and learning process, while HEIs quickly try to exploit all available resources to help staff and students cope with the shifting norms, engage methods to enhance the development of academic staffs' digital competencies to conduct classes online (Hai et al., 2021; Paudel, 2021; Zarei and Mohammadi, 2021). On the other hand, students in HEIs encounter serious challenges as well. Based on the findings of Zalite and Zvirbule (2020), students discovered that their workloads and personal responsibilities in the learning process had increased significantly after being forced to conduct remote studies during the COVID-19 pandemic. Compounding the problem are the internet access and technological problems that also impact all the stakeholders.

How has HEIs transformed after the “new normal” phase? COVID-19 pandemic has created serious negative impacts on interpersonal interaction and individuals' well-being while causing socio-psychological problems in HEIs (Nandy et al., 2021; Neuwirth et al., 2021; Semo and Frissa, 2020) but also presents a global wake-up call to change our paradigms. The virtual environment and stressful psychological experience in HEIs since March 2020 have created immense difficulties in rebuilding higher education systems post-COVID-19 recovery period (Alghamdi et al., 2021). A study on the transition back to a “new normal” by Charbonneau-Gowdy et al. (2023) highlighted two key themes in their analysis: 1) Exposure to traditional pedagogy, knowledge transfer, and assessment-driven designs, as well as online technology obstacles, left students dissatisfied with their learning progress and dismissive of their future workplace readiness, and 2) Students who engaged in learner-centered activities online, supported by current learning theory and community-building course designs and technologies, reported transformative shifts in their learning and identities, as well as a sense of confidence in their post-graduate jobs.

Health experts have warned that similar health crises may occur in the future (Desmond-Hellmann, 2020). However, some best practices and innovative approaches can be implemented in higher education systems to adapt to global crises. Firstly, digital opportunities in today's world inspire a new level of integration between technological and human capabilities, resulting in more innovative and efficient methods to address the unexpected challenges posed by global pandemics (Gyimah, 2022; Pichardo et al., 2021). The integration with digitalization is the key to creating sustainable higher education because the COVID-19 pandemic and the post-COVID-19 recovery period played a significant role in changing academicians' perceptions of

the role of technologies in developing a sustainable educational system (Navarro-Espinosa et al., 2021). As such, HEIs need to quickly transform their teaching and learning process and sustain their digital resilience to satisfactorily meet different stakeholders' needs (Desmond-Hellmann, 2020; Karakose, 2021). However, the findings by Charbonneau-Gowdy et al. (2023) should always be considered in any drive to implement digital or technology strategies. We believe that the "new normal" today seems to be reverting to traditional face-to-face teaching with technology as a supporting tool, not as the main driver.

Secondly, HEIs can utilize an all-inclusive and sustainable resilience model to rebuild strategies. Nandy et al. (2021) proposed an integrative resilience model that creates opportunities for management, administrative staff, academicians, researchers, students, family members, community members, and government to interact with one another. The resilience model, which consists of a combination of stakeholders and their behaviours related to tasks in HEIs, can be applied at the institutional level rather than just at the individual level. HEIs should also actively look for new collaborators to help with recovery, identify skills or resources that can be used for rebuilding strategies, and boost stakeholder confidence in adapting to the "new normal" phase while focusing on the environment and benchmarking with others to identify best management practices. As such, a more inclusive, resilient model should consider empathy, care, good understanding, high prediction ability and clear principles from leaders, and excellent collaboration and networking with external parties (Buitendijk et al., 2020; d'Orville, 2020) to cope with any emerging threats and thrive in the future.

3. Literature review

3.1. Digital transformation

In higher education, digital transformation is defined as a process of disruption and change in which institutions strategize to create value-added programmes and activities. Blended learning has become the way forward for some institutions. The evolution of teaching tools for blended learning have seen several trends that challenge educators, namely Big Data and Data Mining, Artificial Intelligence, Machine Learning, Data Science, STEM Education, Education 2.0, 4.0, 5.0; Neurotechnology in the classroom, Bioinformatics, Hybrid Classrooms or Hy Flex, Intelligent Tutoring, and TPACK (Deroncele-Acosta et al., 2023). The situation also demands training for lecturers on numerous educational tools that might help engage, challenge, stimulate, and boost learners' knowledge (Zairul et al., 2023). However, the authors believe that technology adoption must be combined with a review of the educators' work, i.e., they must be trained to create a creative, collaborative, personalised, and supportive learning environment.

Interestingly, while some educators are accepting these educational tools with open arms, others are reverting to the traditional option. The transition to online and blended learning has been problematic for students, academics, and university management, particularly in universities who have previously relied heavily on on-campus teaching. The United Kingdom began to push higher education institutions to resume face-to-face instruction (Department of Education, 2022) forcing students to readjust to a reverse transfer from online to offline learning. A study by Lomer and

Palmer (2023) at a British university shows that students preferred face-to-face instruction and reported an increase in expectations of independent learning. Students questioned the connection between online components and evaluation. It is apparent that blended learning has some drawbacks and shortcomings. Access and slow internet connection, power outages, and software errors can all impair online learning, causing frustration and hindering learning. Blended learning can limit social interaction among students as well as between students and teachers, which can have an impact on the development of interpersonal skills and peer relationships (Nijakowski et al., 2021; Adarkwah and Huang, 2023). Due to the availability of many digital devices and social media, online learning can be distracting, making it difficult for some students to stay focused and involved in learning (Li et al., 2023). Blended learning can be difficult to assess students' understanding and development (Lomer and Palmer, 2023) with increasing cases of cheating during assessment (Yazici et al., 2023).

3.2. Stakeholders renewed interest in HEI competencies

Preparing for the post-COVID-19 recovery period necessitates a review of current competence in order to build resilience and develop long-term advantage (Close et al., 2020). Policymakers all over the world have expressed a strong desire to improve higher education competency (Marinoni et al., 2020). Different tactics are suggested to increase competence. For instance, HEI stakeholders are expected to develop new strategies to help students and academics adjust to the “new normal” environment discussed earlier. With more staff working from home, HEI stakeholders must examine current workplaces and successfully implement hybrid work models in accordance with HR strategies. Training and development programs need to be developed so that university will be competent in new technologies while learning new methods for effective student assessment for online, blended, and face-to-face learning. Learning has to be student-centric with options to switch to technology-based learning when needed.

The pandemic has brought many valuable lessons learned especially for presidents and vice chancellors of HEIs. Competencies in leadership and making critical decisions as well creativity and innovation during disruption can make or break a HEI. While the closures of some HEIs are due to unprofitable operation and/or offer low-quality services (Geryk, 2023) as in the case of some private HEIs in Malaysia, we believe that the aforementioned competencies could help HEIs to sustain their operation during disruptive times.

3.3. Retooling the education systems: Reimagine what is important

The unprecedented challenges created by COVID-19 have accelerated HEI transformation. The transformation is more than simply shifting from a traditional face-to-face curriculum to an online learning environment by simply transitioning contents and delivery methods online (Bhagat and Kim, 2020). It calls for educational reform and making structural changes. The COVID-19 pandemic is thus a powerful agent of change, and the transformation during this period is the appropriate time for policymakers to rethink and retool academic pedagogy (what to teach), curriculum (how to teach), and organization (where and when to teach) in HEIs in order to enhance

long-term competitiveness and survival (Crawford and Cifuentes-Faura, 2022; Zhao and Watterston, 2021). However, transforming to new higher education systems is costly and time-consuming, and HEIs in developing countries may lack the necessary fundamental infrastructure and skills to move forward (Zarei and Mohammadi, 2021).

The government is considered an integral component of the educational ecosystem to reshape the higher education systems (Blankenberger and Williams, 2020), particularly to support the HEIs in building long-term resilience. Adequate responsiveness from the government can generate positive satisfaction and trust from other stakeholders (Rieger and Wang, 2022). For instance, the simplest way the government can do is to offer students financial aid, such as a computer loaning program, to solve their equipment problem during COVID-19 (Yeung and Yau, 2022). Moreover, the government can provide substantial federal and state funding and an accreditation system with a fair amount of flexibility to support the transformation process and create a future-proof educational system (Whalley et al., 2021). Concurrently, HEI policymakers must ensure accountability and institutional integrity while transitioning to new education systems in the recovery period after COVID-19.

3.4. The essential and preferable attributes for future generations

Transformation in HEIs is necessary to build resilience and adaptability for future generations (d'Orville, 2020). The transformation reshapes education systems and educational experiences to move toward a knowledge society and make lifelong learning skills accessible to future generations (Ashour, 2021). It is essential to reshape the education systems, provide quality education, and promote education for sustainability as the future generations will be the significant agents to create a long-term sustained society that can resolve massive challenges that our world is facing, such as hunger, global warming, social inequalities (Navarro-Espinosa et al., 2021). Furthermore, HEIs need to think from a job market perspective, as students may feel depressed and anxious if they do not have sufficient information about their near future employment (Warrier et al., 2021). The skills of adaptability and resilience will be vital for future generations as future employers need career-ready knowledge workers who have compassion and high emotional intelligence, alongside high skills in creativity, communication, and collaboration (Alam and Parvin, 2021; d'Orville, 2020). Hence, the stakeholders must invest in higher education to encourage long-term planning from policymakers, shape the talents and capabilities of future generations, and create a better tomorrow (Brennan et al., 2021).

4. Methodology

This study applied a qual → qual or generic qualitative method for ease of finding reconciliation (Hammond, 2005). With reference to **Figure 1**, this multi-method approach follows the inductive-sequential design, where both components are qualitative (Morse and Niehaus, 2009). The majority of qualitative research studies adhere to one of several study designs that have rigorous methodological standards and are usually deeply ingrained in the interpretative paradigm.

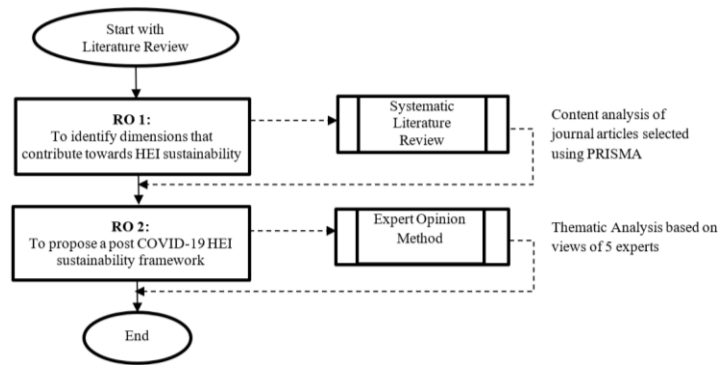


Figure 1. Research methodology flowchart.

In the first phase, we conducted a systematic literature review (SLR) to identify dimensions that contribute towards HEI sustainability. In the second phase, the Expert Opinion Method was used to propose a HEI sustainability framework. Content analysis was conducted to identify keywords that was grouped into dimensions. Critical themes will be identified based on the discussion among the five professors from Malaysia, the Netherlands, India, and Bangladesh. The Expert Opinion Method is more favourable than other alternative techniques mainly because it facilitates the formation of group communication activities by forming a panel of individuals with specialized skills and knowledge experts to collectively create predictions or construct a set of priorities (Dalkey, 1969; Irete and Katane, 2018). This method differs from a focus group, which involves a guided group discussion that “focuses” on a specific topic (Millward, 2000) or interview sessions that limit interaction among experts (Knapik, 2006). Upon completion of the Expert Opinion Method, we conducted the document review as part of the second phase of the generic qualitative method.

A careful selection process resulted in the identification of five experts in early March 2022. The constructive participation of experts in the Expert Opinion Method is ensured by discussing issues such as Education 4.0, the implication of the COVID-19 pandemic from local and global perspectives, and education reforms and technology mobilization strategies. However, only five experts attended the two-hour online Expert Opinion Method session.

5. Findings

5.1. Findings from the systematic literature review

The review was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (refer **Figure 2**). Investigating a Systematic Literature Review (SLR) requires systematic and explicit methods for identifying, selecting, evaluating, collecting, and analyzing data from relevant past studies. In this study, the PRISMA encompasses a broad range of general concepts and issues relevant to any SLR (Moher et al., 2010) based on the themes uncovered from the Expert Opinion Method from 2020 to 2022, which is the peak period of the COVID-19 pandemic.

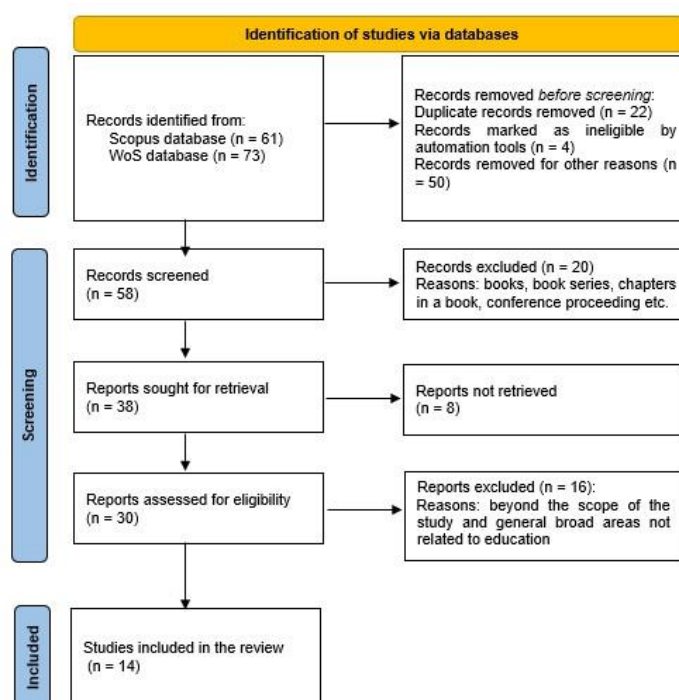


Figure 2. Simplified flow diagram detailing the application of PRISMA 2020 to studies published between 2020 and 2022 (Page et al., 2021).

Fourteen articles were deemed relevant to this study. The article profile review focused on the interplay of the four themes generated earlier, i.e., educational reform, digital transformation, resilience and change management and sustainability (see **Table 1** for reference).

Table 1. Profiles of the articles selected.

No.	Author(s)/year	Title of article	Interplay of themes
1	Bec et al. (2019)	Community resilience to change: Development of an index.	Resilience is an emerging change management approach for sustainable development.
2	Easter et al. (2021)	Moving beyond Sisyphus: Pursuing sustainable development in a business-as-usual world.	Discussion on how actors (stakeholders) develop resilience in their efforts to pursue sustainable development in unresponsive contexts in HEIs in U.S.
3	Trenerry et al. (2021)	Preparing workplaces for digital transformation: An integrative review and framework of multi-level factors.	Illustrate the importance of employee resilience and well-being in adapting to widespread job and technological disruption at multi-level frameworks and factors necessary for digital transformation.
4	Pérez-Sanagustín et al. (2022)	A competency framework for teaching and learning innovation centers for the 21st century: Anticipating the post-COVID-19 age.	Development of a new framework that discusses the competencies that Teaching Learning Centers (TLCs) should consider for adapting to the new societal needs and become the core of the institution's sustainable, innovative digital development. The internal units can promote sustainable transformations and play a key role in facilitating the "emergency online education" transition during COVID-19.
5	Gewerc et al. (2020)	Challenges to the educational field: digital competence the emperor has no clothes: The COVID-19 emergency and the need for digital competence.	This paper highlights the challenges facing the education world in terms of digital competence and similar, with a special focus on teachers' needs for digital competence in relation to Emergency Remote Education brought about by the COVID-19 pandemic.
6	Williamson (2020)	Education technology seizes a pandemic opening.	This article shows how the rapid shift to online teaching and learning during the COVID-19 pandemic has accelerated the penetration of an algorithmic worldview into education systems worldwide. The platforms that use algorithms to structure and monitor teaching and learning have been presented as technical solutions to systemic problems.

Table 1. (Continued)

No.	Author(s)/year	Title of article	Interplay of themes
7	Shirazi and Hajli (2021)	IT-enabled sustainable innovation and the global digital divides.	This article investigates the impact of information and communication technologies (ICTs), human capital, institutional settings, and socioeconomic and environmental parameters on sustainable innovation (SI) using archival data for 127 economies and issues on the digital divide. The results of this study suggest that to tackle the digital divide issues, policymakers and educational institutes need to perform constructive educational reform in higher education curricula, particularly concerning STEM programs, which should reflect the necessary skills and competencies for deploying emergent technologies.
8	He et al. (2023)	Building organizational resilience with digital transformation.	This paper shows how digital maturity influences the dimensions of organizational resilience and how organizational resilience influences the organization's performance and employees' optimism.
9	García-Morales et al. (2021)	The transformation of higher education after the COVID disruption: Emerging challenges in an online learning scenario.	This paper highlights the need for universities to strive to overcome disruption caused by COVID-19 to be competitive and provide high-quality education in a scenario of digital transformation, disruptive technological innovations, and accelerated change.
10	Sakurai and Chughtai (2020)	Resilience against crises: COVID-19 and lessons from natural disasters.	Natural disasters in the past have illustrated the importance of information systems in fostering resilience against crisis and the need for transformational strategies for resilience.
11	Carvalhaes et al. (2020)	COVID-19 as a harbinger of transforming infrastructure resilience.	COVID-19 is revealing several important limitations to how we approach and manage our infrastructure, i.e., particularly on how i) we prepare for concurrent hazards; ii) frame criticality based on traditional infrastructure sectors and not human capabilities; iii) we emphasize efficiency at a cost to resilience; and iv) leadership is largely focused on stable conditions.
12	Shaya et al. (2022)	Organizational resilience of higher education institutions: An empirical Study during Covid-19 pandemic.	Organizational resilience was conceptualized as a process that comprises three successive stages (anticipation, coping, and adaptation), five key antecedents (knowledge, resources availability, social resources, power relationships, and innovative culture), and two main moderators (crisis leadership traits and employee resilience).
13	Rodrigues et al. (2021)	Teaching and researching in the context of COVID-19: An empirical study in higher education.	This article shows the need for academics to be provided with training in e-learning, about technological tools for use in distance learning, and to reconsider how they can carry out their research activities.
14	Raghunathan et al. (2022)	Study of resilience in learning Environments during the COVID-19 Pandemic.	There is a need for educational systems to focus on three facets—internal, interpersonal and external aspects of teachers and strengthen factors such as support for teachers, strong academic leadership, trust of teachers, increased self-motivation, enhanced communication with stakeholders and emphasize systems that enhance student-teacher communication. The future areas of research are also discussed in the work.

Based on **Table 1**, the SLR confirms that educational reform implies digital transformation. Digital transformation results in resilience and change management, while resilience and change management lead to sustainability. The literature reviewed shows many perspectives on the impact of COVID-19 on all the relevant stakeholders. Firstly, educational reform implies digital transformation. Existing researchers have emphasized the dramatic change in international HEIs caused by the COVID-19 pandemic, which involves radical digital transformation issues, such as 1) digital knowledge and competence of educators in designing curriculum and pedagogy for the “new normal” (García-Morales et al., 2021); 2) self-regulated skills of students during the online learning process; 3) new expectations from different constituents on educators’ technology fluency (Gewerc et al., 2020); and 4) modernization of education systems and infrastructure with current digital technology, for instance the use of algorithm and data-driven education systems (Williamson, 2020).

Next is the digital transformation results in resilience and change management. Digital transformation with strategic technology investment, transformative leadership and multi-level frameworks can foster the resilience of relevant organizational stakeholders (He et al., 2023; Sakurai and Chughtai, 2020; Trenerry et al., 2021). Hence, an appropriate digital transformation can facilitate the transition towards restoring order in the HEI community and strengthening their capabilities to adapt to uncertainties. Educators and policymakers in HEIs should promote resilience with requisite support, as resilience is the power that can cultivate a positive mindset shift in change management through the rise of adaptability, innovation, and effectiveness. Moreover, an empathic and communicative leadership style, employee resilience (internal resilience), interpersonal resilience between lecturers and students, and external resilience (trust and support from all relevant stakeholders) have appeared as essential attributes required in the change management strategy to influence organizational resilience in HEIs (Raghunathan et al., 2022; Shaya et al., 2022). Furthermore, infrastructure resilience is also crucial to support stakeholders' needs by emphasizing the flexibility of institutional and physical attributes of infrastructure to adapt rapidly in the volatile context caused by the COVID-19 pandemic (Carvalhoes et al., 2020).

Lastly, resilience and change management do lead to sustainability. Resilience is an emerging approach to managing structural change. It can be measured from a socio-ecological perspective to ensure long-term sustainability in the community. Resource management, adaptive capacity, vision focus, sustainable practices, community building, and cohesion across the entire community system must be emphasized to attain long-term sustainability (Easter et al., 2021; Bec et al., 2019). From the educational perspective, the change in pedagogical quality and competencies of digital technologies should be developed to support the profound and sustainable transformation of the teaching and learning process in HEIs. For instance, HEIs can emphasize preparing students, such as STEM graduates (Shirazi and Hajli, 2021), to become a skilled workforce with creativity, practical knowledge, and competencies to utilize emerging information and communication technologies (ICTs). In addition, Teaching Learning Centers that emphasize sustainable, innovative digital development (Pérez-Sanagustín et al., 2022) are essential so that the students and staff can continuously adapt to dynamic societal needs. The initiatives above are essential to support global sustainable innovation and economic growth in the next decade (Shirazi and Hajli, 2021; Rodrigues et al., 2021).

5.2. Result of the expert opinion method

Table 2 presents the experts' demographic background. The dynamic results of the Expert Opinion Method are enhanced by the diverse backgrounds of the experts demonstrated by critical dialogue excerpts. As shown in **Table 2**, the first four experts were involved in top management positions at universities in developing countries (Bangladesh, Malaysia, and India). They shared their insights based on institutional teaching approaches and disciplinary ranges, especially in developing countries. The fifth expert was originally from a developing country and currently works in developed country. He compared the two settings and provided his comparative

perspective. The reasons they were chosen for the Expert Opinion Method are: 1) they hold influential top management positions at universities with different institutional size, ranking, and recognition, which provided them with a comprehensive overview of the HEI’s policies and decision-making processes; 2) they represent a diverse set of regional contexts as challenges faced across regions may be different; and 3) they hold different roles and responsibilities at universities that cover different aspects of university management, such as student affairs, international collaboration, administration, academic affairs, and strategic planning.

Table 2. Experts’ demographic information.

Name	Position	Place of work	University status
Dr. A	University Chairman	Bangladesh	Fast-growing private university with 450 collaborating universities globally.
Prof. Dr. H	Deputy Director, International Centre	Malaysia	Top Public Research University in Malaysia. Ranked 158th in QS World University 2024
Prof. Dr. R	Director, Centre of Students Affairs	Malaysia	Top Public Research University in Malaysia. Ranked 159th in QS World University 2024.
Prof. Dr. S	Dean of Academics	India	A private university with campuses in 11 cities in India and 12 globally.
Prof. Dr. L	Chair of Entrepreneurship Hub	Netherland	Public university. Global Top 5 institutions for Hospitality and leisure education.

The following sections present the key excerpts of the discussion with the five experts. We followed the Miles and Huberman (2014) approach to categorise themes and topics into a few tentative major headings for the purpose of data reduction. The thematic analysis was able to uncover four themes and one contextual factor.

5.2.1. Resilience to change management

The facilitator of the Expert Opinion Method initiated the discussion by emphasizing the importance of HEIs constructing a resilient recovery framework that will enhance their ability to comply with pandemic challenges, allowing them to endure, cope, and succeed in the future. Excerpts of key opinions of the experts in the Expert Opinion Method are compiled and presented accordingly.

Given the COVID-19 pandemic, one of the experts stressed the importance of being resilient:

Prof. Dr. A: “A resilient education system is one that can adapt and transform itself in the face of adversity while seeking ways to improve the quality and accessibility of education through investments in technological infrastructure and innovation. Digitalization is the way forward.”

Two experts presented their views on future-proofing the universities, which is a higher level of resilience:

Prof. Dr. L: “Universities must not only be resilient, but also future proof, because the global environment for higher education will only become more complex, interconnected, and challenging than it has been in the past. We have been hit by pandemics before and should be able to overcome any more destructive changes in the future.”

Prof. Dr. S: “I believe that other universities should replicate our plans for the future to be more flexible and provide more choices for our students. We are now

incorporating the online components in the curriculum, having more collaborative efforts with international partners, providing more options and modes in program selections. In addition, we are planning to make the entry-exit and switch-over options available for our students.”

Two experts stressed the significance of adjusting as educational paradigms shift from pre-pandemic to post-pandemic, as well as developing capacity for change management:

Prof. Dr. S: “Universities need also be able to make adjustments to any paradigm shifts to sustain their operation and still be relevant to the stakeholders.”

Prof. Dr. R: “Universities must identify their capacity to change in order to adapt to the “new normal” without disrupting their core activities when navigating the COVID-19 pandemic.”

One of the experts, who is serving as the Head of the Dietetic Program at his respective university, deliberated on the optimal strategies for universities to arrange laboratory-based experiments and research initiatives and collaborate with the industries for life sciences and engineering students:

Prof. Dr. S: “Our university has developed simulation tools to help explain laboratory-based research projects. At the same time, we are seeking industrial partners to help so that the practicality element of the project can be further illustrated.”

5.2.2. Digital transformation and online learning

HEIs are experiencing significant transformations due to the need to digitize education and training processes quickly. This transformation occurred during the COVID-19 pandemic when academicians faced technological challenges such as limited experience and proficiency adapting to online teaching. The significant impact of the pandemic has led to online distance learning and emergency remote teaching becoming the new norm. These changes were adapted to maintain competitiveness and deliver high-quality education characterized by digital transformation, disruptive technological innovations, and accelerated change.

Based on her own university experience, one of the experts stressed the importance of digital transformation:

Prof. Dr. H: “We have developed a collaborative online international learning initiative that was able to increase our university’s education excellence by exposing students to virtual mobility experiences that are embedded into the formal curriculum. Students are provided with the opportunity to interact with peers from international universities in developing intercultural competences and digital skills while working together on subject-specific learning activities.”

When asked to elaborate, the same expert presented the following components of the collaborative online international learning initiative:

Prof. Dr. H: “It is executed as a cross-border collaboration with international partners from different backgrounds and cultures. Students from our university and international universities must co-learn and engage through online for 3 to 6 weeks. It must be guided by a set of learning outcomes aimed at enhancing students’ global perspectives and/or intercultural competencies.”

The mentioned expert provided more insight by further explaining the advanced

benefit of the collaborative online international learning initiative based on her experience:

Prof. Dr. H: “Internationalization through our flexible online teaching delivery approaches encourages diversity and global learning where the lecturers and students from diverse culture, language, and geographical location can benefit from online learning pedagogies. We empower diversity and global learning among partners for co-learning through inbound and outbound virtual mobility and student exchange. This will encourage talent development and global citizenship competency as well as personal and soft skills development especially in communication and problem solving.”

Another expert provided input and explained the importance of preparedness to address challenges and mitigate the damage caused by the pandemic through innovative and collaborative solutions, particularly in such difficult circumstances:

Prof Dr. R: “Overall, the pandemic has increased and hastened the implementation of online, blended, and hybrid courses in tertiary education. We need to implement flexible education and be more creative, innovative, and prepared with alternatives. At the same time, we have to be careful to avoid plagiarism among students.”

5.2.3. Education reform

The COVID-19 pandemic’s impact on educational institutions and the requirement to prioritize the safety and health of teachers and students has led most countries to transition their teaching from face-to-face to online. The methods employed primarily were pre-recorded lecture videos or live online lectures. The restructuring of laboratory classrooms has shifted towards emphasizing online simulation or small-group physical learning. Regular live online discussions were facilitated to help students with self-directed learning. The “new normal” of online and blended learning approaches encourages learner-centred and self-directed learning. It is hoped to be as effective as traditional classroom learning.

The COVID-19 outbreak has created a once-in-a-lifetime opportunity for curriculum change in higher education that was never fully realized before the pandemic. Curriculum change during a pandemic is more than just modifying teaching methods. The traditional approach of transferring knowledge and skills becomes less important as the curriculum can be more adaptable to support students in developing their learning while focusing on critical thinking, creativity, curiosity, collaboration and entrepreneurship.

For example, one of the experts highlighted the significance of outcome-based education that is more learner-centric to enhance proficiency in knowledge acquisition. The expert posits that this holds particular significance throughout the COVID-19 pandemic:

Prof. Dr. A: “... through continual update of curriculum and focusing on outcome-based education while research and publication should be focused on real-world impact. In addition, industry and academy linkages need to be strengthened so that university graduates can be employed productively.”

Another expert echoed the same sentiment: Prof. Dr. S: “In our university, we value add our curriculum by emphasizing on outcome-based learning to improve

employability and skills development.”

When asked about the shift from outcome-based education to project-based education (PBE) with real-life application, the same expert responded: Prof. Dr. S: “In our university, we also used project-based education for our medical programs.”

An expert raised other opinions on curriculum: Prof. Dr. R: “With the pandemic, we have to customize education by providing precision learning that will enhance student engagement, which is an important component of course function.”

Another expert suggested an alternative viewpoint for future-proofing education in the hospitality business through a personalized approach: Prof. Dr. L: “Our university is embarking on personalized education by creating minor and specialization programs for our students to support hospitality education.”

When queried about initiatives that foster personalized education at his university, the same expert suggested integrating entrepreneurship into the curriculum as follows:

Prof. Dr. L.: “We create business incubators and encourage our students to become part of the start-up community. We connect the start-ups (students, alumni) with coaches (faculty members) and mentors (alumni, industry) to create better university-industry linkages and improve the well-being of all the players concerned.”

5.2.4. Sustainability

The global pandemic’s impact has changed our world and has the potential to alter its trajectory permanently. Policymakers and educators are tasked with deliberating the significance of sustainability education in the near future.

According to one of the experts, long-term educational sustainability encompasses the integration of environmental considerations and the establishment of international networking:

Prof. Dr. A: “I believe that universities need to integrate sustainable development in HEIs by incorporating the issue of sustainable development in the curriculum, encouraging research on sustainable development, green campuses, and support local sustainability efforts and engage and share information with international networks. To show a sustainable way forward, we need active engagement from university leadership and strong partnerships to achieve the 17 Sustainable Development Goals of 2030.”

6. Discussion

We conducted a thematic analysis and identified 17 keywords from the Expert Opinion Method. These 17 keywords were grouped into four themes, i.e. 1) educational reform; 2) digital transformation; 3) resilience and change management; and 4) sustainability as per the framework presented in **Figure 3**. Flexibility and agility were treated as contextual factors that influence the four themes in both the systematic literature review and the Expert Opinion Method. Contextual factors refer to the specific circumstances or conditions that surround a particular situation or phenomenon (Nöhammer et al., 2022).

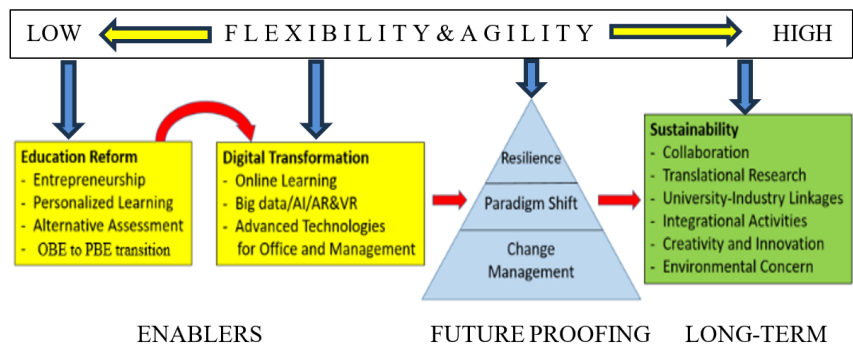


Figure 3. HEI sustainability framework.

6.1. Flexibility and agility in education post-COVID-19

The global pandemic has significantly impacted education, forcing adjustments due to remote learning, social distancing, and health concerns, emphasizing the need for flexibility and agility. From an organization’s perspective, agility requires promptly and flexibly responding to market dynamics while demonstrating adaptability to shifts in the business environment (Nissim and Simon, 2020). This includes the capacity and awareness to acquire knowledge from past experiences and subsequently utilize that knowledge to navigate new environments effectively. The concept of flexibility and agility, including its approaches and strategies, has been implemented in education in the post-pandemic era (Menon, 2020).

Flexibility and agility in education refer to the ability of institutions, teachers, and students to quickly adapt to changing circumstances, challenges, and opportunities, allowing for customization and personalization of learning experiences to maximize student engagement and achievement (Menon and Suresh, 2021; Nissim and Simon, 2020; Trinh-Phuong et al., 2012). The flexibility in the education systems supports different learning styles, learning pace, and circumstances. The concept of agility in education extends beyond flexibility. It emphasizes promptly and efficiently addressing unforeseen interruptions or crises (Nissim and Simon, 2020). Numerous academics have commonly identified agility as an ability that requires proactive utilization (Goodarzi et al., 2018). It implies that the type of teaching and learning should demonstrate the implementation of transformative change, embracing creativity and innovation while breaking from conventional behaviours and modes of thinking.

Gales and Gallon (2019) argue that adopting an agile mindset requires a shift in the internal culture of learning institutions, requiring nimbleness in the face of change despite the development of various methodologies. Agile educational systems have resilient contingency plans, advanced technical infrastructure, and supportive policies to maintain uninterrupted learning and minimize potential interruptions. Promoting student-centred learning, fostering creativity, and preparing students for the dynamic demands of the 21st century necessitate using both flexibility and agility in education. Educational institutions are empowered to respond to changing societal demands, technological progress, and economic circumstances, guaranteeing continued relevance and efficacy.

This study examines the concepts of flexibility and agility in education to achieve sustainability. It proposes establishing a conceptual framework within the post

COVID-19 pandemic. In this framework, flexibility and agility are connected to a set of constructs that act as enablers and future-proofing of HEI. The enablers or drivers include the flexibility of HEI (education reform and digital transformation). Future-proofing includes the agility of HEI (resilience, paradigm shift, change management), and the long-term target of HEI includes sustainability.

6.2. Sustainability of higher education institutions

Based on this study, HEI sustainability is a complex and multifaceted subject with far-reaching ramifications for the future of education and society as a whole. Higher education institutions have an important role in influencing future generations of leaders, scholars, and citizens, and their commitment to sustainability is critical for creating a more equitable and resilient world. COVID-19 has been a blessing in disguise. HEIs which are committed to achieving sustainability will survive and become stronger. The HEIs which are struggling will be out of business due to their unpreparedness and poor business model. Only the strong will survive and sustain its operation.

Unfortunately, we tend to look at sustainability of HEIs only from the economic aspect while environment and social sustain abilities are equally important. Economic sustainability tends to be intrinsic as the objectives are to attain financial stability (Jaafar et al., 2023), support innovation and entrepreneurship (Adhikari and Shresta, 2023) as well as investment in the local economy (Gratton and Jones, 2023). But environmental and social strategies are more crucial for long term sustainability.

7. Conclusion

This multi-method uncovered four themes, i.e., 1) educational reform; 2) digital transformation; 3) resilience and change management; and 4) sustainability as well as agility and flexibility as a contextual factor which was consolidated into a HEI sustainability framework. A general conclusion drawn is that the three themes leading to HEI sustainability have to be looked at from an integrated perspective, i.e., sustainability is the endgame for HEIs, and in order to achieve this, HEIs must be bold enough to make structural educational reform, collaborate in the digital transformation process, fool-proof its operation to be resilient to be sustainable. The starting point is structural education reform, which could be difficult due to the political interests of some of the main stakeholders. At the same time, HEIs should genuinely be the base for knowledge workers who dare to embrace technology to conduct teaching and learning. Finally, the fool-proofing process starts with change management, leading to paradigm shift and resilience in operation. The most critical agenda will be to get the right visionary people to lead HEIs and the institutional community to subscribe to the revised mission.

8. Recommendations

The way forward for HEIs in the endemic phase of COVID-19 is to study and apply the best practices of universities that seem to be back on track. Logically, HEIs that have successfully faced the pandemic have built into their system the three components leading to sustainability. We believe that HEIs can play a crucial role in

achieving the Sustainable Development Goals (SDGs) by 2030 by integrating economic, social and environmental strategies, thus acting as hubs for knowledge creation, innovation, and societal transformation (Shava et al., 2023).

The universities are most often in collaborative efforts that go beyond digital transformation. However, HEIs need to be careful and not be too technology-centric. The human touch is still important as some universities are reverting to face-to-face education.

Inter-university and university-industry collaborations should also be expanded to ensure win-win outcomes for all parties involved. Coopetition strategies practised in specific industrial research and development (R&D) projects can also be pooled to develop common critical components and platforms for HEIs. The R&D output will be shared with the participating institutions, companies and strategic partners.

This exploratory study has limitations. The Expert Opinion Method is based on only five academics and may not be comprehensive. However, the findings are useful for scholars to further this study by conducting tracer studies based on the dimensions identified to obtain an in-depth understanding of the issues related to HEI sustainability. Qualitative instruments could be developed based on the themes identified from the systematic literature review and the Expert Opinion Method. Further studies using quantitative methods could be conducted to measure and relate the dimensions accordingly.

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