

Digital Sustainability for Business Education: Literature Review



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1 Introduction

During global crisis higher education institutions (HEIs) faced a tremendous challenge to survive in terms of delivery, recruitment of new students and intellectual operations. Most HEIs globally reacted to the crisis by using digital tools in order to continue performing. In some cases, the utilization of digital tools was a learning curve for the faculty members specifically while delivering online courses and described as Do it Yourself (DIY) method (Abad-Segura et al., 2020). Several HEIs did not utilize digitalization prior to the COVID-19 pandemic which is a step prior to digital transformation, and hence with the COVID-19 pandemic a radical change took place to all HEIs in terms of academic delivery and administrative operations (El Hilali et al., 2020). Innovative models towards digital transformation in HEI context were proposed by researchers, for instance Rof et al. (2020) emphasized that digital transformation is beyond digitalization of specific aspects such as academic operations, and digital transformation should be considered at an institutionalized level covering digitalization of processes in academic and non-academic, connectivity, data-informed decisions, and digital innovation. There have been several assumptions by HEIs towards resisting digital transformation, for instance Kopp et al. (2019) stated that HEIs assume that digitalization is costly and exceeds their budget without any return in terms of change. On the other hand various studies were conducted to investigate the effectiveness of digitalization in terms of virtual learning and assessment (Deev et al., 2021) alongside several academic standards which were established to support HEI adaptation for virtual delivery and

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sustainability (UNESCO, 2021). Although HEIs have taken initiatives towards digitalization, the initiatives are focused on academic delivery and covering the overall operations of HEIs. In this context, a research study by Guandalini (2022) argued sustainability could be achieved through digital transformation by setting a clear strategy covering different aspects such as policy, procedures, process and owners to be digitalized and used for reporting and decision making. The definition of digital transformation is not yet well-defined and consistent in HEIs as there is a clear overlap between the terminology used “digitalization” and “digital transformation”. For instance Gartner (2021) defined digitalization as the use of digital tools and techniques towards activating some processes that could lead to digital business. In similar context Hanelt et al. (2020) defined digital transformation as an organizational transformation that covers a clear strategy for implementation which could lead to innovation. In this context, Guandalini (2022) argued that there is a clear relationship between sustainability and digitalization. However, Del Río Castro et al. (2021) argued that the definition of sustainability has lost its identity with various views, whereas Caputo et al. (2021) stated that sustainability definition is hard to define as it includes multidisciplinary and other behavioural and influencing socio-economic organizations. This paper argues that business schools and HEIs must consider digital sustainability in order to contribute to the United Nations Sustainable Development Goals (UNSDGs) specifically for business education as it produces graduates that are serving the economic growth directly.

2 Business Education Overview

According to Charroin et al. (2022) business schools worldwide need to change in order to sustain and create a positive impact to the world. Business schools must reconsider its vision and focus on different methods of teaching and delivery, and emphasis on interdisciplinary academic delivery and research and frugal innovation was highlighted. In similar context, Bryant et al. (2022) stated that business schools are facing unprecedented challenges specifically from external stakeholders as the market demand is dynamically changing; therefore, business schools must consider a serious transformation in order to produce top-notch graduates to serve the society. International accreditation standards are used as a driver towards the change. Dudley and Cairney (2021) stated that although business schools were able to perform during the pandemic, it is time that business educations rethink of its vision and strategy to address global challenges and societal needs. Business schools were described as a hub for change and innovation, and therefore, business schools must consider digitalization for sustainability from multiple aspects related to the three core functions: teaching, research and societal engagement. Association to Advance Collegiate Schools of Business (AACSB) revised the Accreditation Standards in 2020 with inclusion of various dimensions including the use of ICT and digitalization as part of teaching and learning. With consideration of sustainability as often considered as part of academic curricular in HEIs, several research papers

investigated the need of integrating specific competencies as part of academic curricular to support producing graduates serving the society—competencies related to research and business ethical standards. For instance, Peterlin et al. (2018) highlighted the need to develop a strategic process that is aligned with the business schools' vision towards integrating specific competencies to support sustainability. Research papers investigated integrating sustainably through specific competence within the academic curricular; however, most of research papers are restricted to academic delivery and linkage of UNSDGs to curricular and does not cover financial risk or HEI effectiveness sustainability (Abad-Segura et al., 2020).

The following section will describe the research methodology and data analysis, followed by a systematic literature review related to the digital use of ICT in business education and integrating sustainability in business education, which leads to the originality of this paper introducing digital sustainability strategies for business education. This paper aims to provide strategies for implementing digital sustainability for business education which is beyond integrating ICT in curricular, and the discussion and conclusion will provide an insight on how to set a strategy to implement digital sustainability through mission-driven approach and holistic engagement. The findings of this paper will also provide future recommendations that could be practically applied by leaders of business schools and policy makers as well as scholars.

3 Research Methodology and Data Analysis

This paper is developed based on the systematic literature review analysis to build a research case to be investigated by other scholars. This research is conducted by structuring the literature review in the area digital sustainability for business education with creating synthesis that could be used as a written case for authors to review and utilize towards future investigation. According to Patten and Newhart (2017) that creating research synthesis based on a structural literature review is a core basis for research investigation. Therefore, this research used specific keywords in line with Saunders and Lewis (2017) method as part of the systematic review including digital transformation, digitalization, digital sustainability, sustainability, sustainable development, business education, and impact. The keywords enabled to create an overview on the status in relation to digital transformation in business education and propose a new framework “digital sustainability” that could be considered by business schools specifically those seeking international accreditation. The literature review was carefully analysed to propose an overview of the digital use in business education and defines the difference between terminologies including digital transformation and digitalization, followed by the status of integrating sustainability in business education. The proposed framework proposes developing a holistic framework that is derived by mission-driven strategies and decision-making processes. The systematic reviews defined major factors that could be contributing to digital sustainability framework. This research provided a definition of each factor that could be utilized while future investigating the framework.

4 Digital Use of ICT in Business Education

Business education has attracted several researchers, and several research papers share the experience of using digitalization in different aspects. According to Krishnamurthy (2020) the future of the business schools is to create an impact to the society and hence there is a need to transform the university by using ICT and artificial intelligence to multiple operational aspects as well as student support issues in order to lead to the transformation of business schools.

The use of ICT in business education was recommended by multiple researchers for instance Umoru and Okereke (2016) highlighted that business schools must invest in the use of digital teaching and learning to ensure that the graduates are equipped with innovative competencies. Furthermore, the use of e-learning in business education was investigated by Sandybayev (2020) and concluded that e-learning creates a positive impact in terms of education; however, leaders of business schools must set a clear strategy to apply e-learning and motivate the faculty to ensure that regular faculty development sessions are planned.

In addition, several research studies have been calling for the rethinking of the academic curricular of business education. According to Cahapay (2020) there is a serious need to rethink the academic curricular of business education post-COVID-19 covering a set of competencies including the use of ICT. The revision needs to consider innovative teaching methods and tools.

Business education had a rapid change after the COVID-19 pandemic, and several research papers called for developing clear quality assurance standards for virtual learning to maintain quality business education (Gidado & Daramola, 2022). In similar context, Al Dhaen et al. (2022) highlighted the need that leaders of business schools must utilize the practice of COVID-19 and establish clear policies and procedures to sustain quality education. Although several successful practices of virtual learning were investigated, the case of low-income countries such as Nigeria faced a tremendous challenge in the use of ICT or digital education as it lacks several built-in infrastructures at the school level as well as lack of financial support for the students and faculty (Nwabufo & Nuhu, 2022). Therefore, calls for measuring the effectiveness of digital use in business education were questioned although it is a requirement.

It is evident that business schools require using ICT and digitalization for business education; to support producing graduates with innovative skills, business schools seeking international accreditation such as AACSB must rethink its mission in consultation with relevant stakeholders and consider automation of operations leading to the actual impact (Cortes, 2022). According to Qian (2019) business schools seeking international accreditation need to develop a mechanism at strategic level to ensure that the mission is implemented, and the use of digitalization could support measuring the extent of implementation and impact (Table 1).

Table 1 Summary of research papers related to digital use in business education

Authors	Year	Journal	Main key findings
Krishnamurthy	2020	<i>Journal of Business Research</i>	There is a need for digital transformation for business schools
Sandybayev	2020	<i>International Journal of Research in Tourism and Hospitality (IJRTH)</i>	Integration of e-learning in business education and digitalization leads to innovation
Cahapay	2020	<i>Aquademia</i>	The use of digital tools as teaching methods for business education allows creativity and sustainability
Gidado and Daramola	2022	<i>International Journal of Education (KIJE)</i>	The use of ICT and digital tools is important for business education to build the competence; however quality assurance standards are required

5 Integration of Sustainability in Business Education

According to Edwards et al. (2020) business education curricular should be reconsidered with an integration of sustainability-related competence and defined ethics, engagement and creativity. In this regard, Edwards et al. (2020) stated that curriculum should be designed at three stages to achieve sustainable outcome starting with multidisciplinary, interdisciplinary and multidisciplinary moving towards transdisciplinary. In similar context, Junn and Moon (2021) investigated the integration of sustainability related to business education in Korea, and the study concluded that business schools must ensure that sustainability-related courses should be integrated at different levels across the learning, starting with introductory (theoretical courses) at the first and second year of learning and more in-depth courses (practical and outcome based) at the third and fourth year.

Researchers have been calling for sustainability prior to COVID-19; however, business schools have actively engaged in sustainability after the COVID-19 pandemic and various United Nations campaigns. For instance, Barber et al. (2014) stated that one of the methods to include sustainability as part of business education curricular is to engage internal and external stakeholders in different projects serving the society and highlighted that business school leaders should pave the way with industries and be proactive in establishing multidisciplinary projects to serve the society and economic growth. AACSB considers internal and external stakeholders' engagement as part of the accreditation process; in 2020 AACSB revised its standards to include a new standard related to engagement and societal impact. International accreditation such as AACSB could be a driver to integration of sustainability in business education (Aldhaen et al., 2022); however, as identified by Barber et al. (2014), external stakeholders such as employers must be satisfied with the future graduates as they must be equipped with different skills beyond business such as ICT, digital use of specific software and research ethics.

In terms of business disciplines accounting and finance attracted researchers in terms of integrating sustainability. For instance Mburayi and Wall (2018) stated that

accounting and finance differ from management-related academic curricular, and therefore, there are specific skills and competence required in order to ensure that the graduates are produced with sustainable outcomes. These include the use of specific digital software that generate sustainable reporting and auditing such as Bloomberg. Furthermore, Craig et al. (2021) investigated the co-relation of STEM (science, technology, engineering and mathematics) learning in order to procedure graduate with sustainable outcomes. The findings of the study revealed that STEM competencies have a positive impact on sustainable outcomes as it covers multidisciplinary skills.

Researchers argued that aligning the curricular to sustainability through integration of specific competencies and skills including ICT and digital software is vital; however, there is a need to have a clear quality assurance standard in order to ensure it is appropriately delivered and not superficially aligned (Junn & Moon, 2021). In this regard, business schools seeking accreditation must ensure that it is aligned to its mission to accelerate innovation and impact.

In similar context, Painter-Morland et al. (2016) argued that integrating sustainability is beyond curricula integration and proposed a model of ‘Systemic Institutional Integration’ that covers multiple dimensions beyond curricular such as leadership, institutional capacity and infrastructure and internal and external engagement. Considering the status of business schools and the challenge to amplify societal impact, the argument of Painter-Morland et al. (2016) pertaining to institutional capacity and infrastructure is vital; business schools must invest in various ICT and digital platforms to foster engagement at both internal level between students and faculty and external level with relevant stakeholders. Furthermore, Bosevska and Kriewaldt (2020) stated that sustainable education should be mission-driven; therefore, it is beyond curricular changes and it requires to be institutionalized across the business schools and linked to different operations.

6 Digital Sustainability Strategies for Business Education

According to Bradley (2007) digital sustainability requires an overall life cycle to manage the technology and create an impact. Similarly, Krishnamurthy (2020) stated that the future of business schools is to transform digitally to sustain effective operations. The argument of Abad-Segura et al. (2020) is that higher education sustainable management should be supported by digital transformation. In this context, Budihardjo et al. (2021) stated higher education including business schools should have clear strategies for sustainable management; factors contributing to sustainable management were identified by Budihardjo et al. (2021) covering teaching and learning, research, outreach, campus operations and administration. A study investigated strategies to promote sustainability in higher education; the study concluded that strategies at higher education should be institutionalized and governed by policies and procedures that quality assures consist of the implementation of the strategies (Berchin et al., 2017). In this context, Benavides et al. (2020) argued leaders of

higher education including business schools should rethink their strategies and organizational structure and consider mission-driven approach as part of holistic transformation.

A study in higher education institutions in Turkey identified that digital sustainability should be derived by a clear strategic plan driven by a set of objectives that are aligned with the mission statement of the university (Hakan, 2020). The study also concluded that external engagement with stakeholders is required in order to revisit the strategy. Business schools aiming to attract international accreditation such as AACSB are accountable to reflect their operations in line with the mission statement and reflect clear impact measures. Therefore, leaders of business schools must reconsider and restructure their strategies towards digital sustainability covering different factors that could be vital to create an impact to the society.

7 Digital Sustainability in Strategic Decision Making in Business Education

According to Schiuma et al. (2022) the use of digitalization allows knowledge visualization and supports effectively strategic decision making. It is argued that data visualization allows presenting meaningful data leading to inspirational and sustainable decision making. In similar context, Stone et al. (2020) argued that the use of artificial intelligence leads to effective strategic decisions in business sector and supports sustainable decisions during uncertainty. Furthermore; Nauhaus et al. (2021) stated that there is a need to reconsider strategic decision making in sync with digital age and highlighted that during COVID-19 organizations had to take strategic decisions to cope with the uncertainty. It is argued by Elbanna and Child (2007) that uncertain decisions could be effective due to other contextual factors that allow performing rational strategic decisions. However, strategic decisions formed during uncertainty may be effective to cope with the situation for short term but not sustainable enough as it is not based on enough knowledge and data presentation (Schiuma et al., 2022).

There have been calls to investigate augmentation concept in strategic decision making leading to sustainable decisions (Raisch & Krakowski, 2021). Argumentation concept is calling for interaction between human and machines; this could be integrated through major organizational transformation including revisiting the structure, authorities, defined processes for retrieving and exchange of knowledge (Nauhaus et al., 2021). There have been calls for developing new models to investigate the use of digitalization in strategic decision making covering various contextual factors (Nauhaus et al., 2021).

Business schools seeking international accreditation such as AACSB are evaluated on mission-driven approach which requires strategic decision making. In line with the above-mentioned literature, the use of digitalization towards strategic decision making is expected to lead to sustainable decisions. Business schools must be

the pioneer in establishing digital sustainability models considering a number of factors leading to impact measures. The following section provides a synopsis of identified factors that could be investigated as part of the digital sustainability model of business education.

8 Factors for Digital Sustainability for Business Education

Based on systematic literature review, several factors were identified that contribute to digital sustainability in higher education and hence business schools. This paper proposes a development model investigating the following factors as drivers for digital sustainability.

Identified factors	Definitions	Supporting authors
Teaching and learning	Integration of digitalization as part of teaching and learning, virtual learning and integrating of sustainable development topics	Budihardjo et al. (2021), Dybach (2019)
Research	The use of digitalization for research, interdisciplinary topics related to sustainable development, global research trends, research impact and innovation	Budihardjo et al. (2021), Abad-Segura et al. (2020), Guandalini (2022)
Outreach	Engaging in different projects with external stakeholders, project serving the society, societal impact	Budihardjo et al. (2021), Hakan (2020)
Administration	Considering campus management, infrastructure efficiency, competitive advantage and digital innovation used for academic and non-academic operations	Budihardjo et al. (2021)
Campus operations	Considering organization sustainability in terms of business operations, green campus, smart technology, institutionalized digitalization, staff satisfaction and engagement	Budihardjo et al. (2021)
Quality assurance	Governance of policies and procedures that quality assures the integration of digitalization for sustainable management	Dybach (2019), Berchin et al. (2017)
Human resources	Faculty, support staff and leaders of higher education institutions are the drivers for digital transformation and digital sustainability	Benavides et al. (2020), Abad-Segura et al. (2020)
Impact measures	The use of digital measures that assess impact at holistic manner covering economy and society	Lejeune et al. (2019), Soltanifar et al. (2021)

9 Challenges of Digital Sustainability in Business Education

Although digitalization and digital transformation have attracted business schools and higher education sectors during COVID-19, various challenges are still occurring that require attention by leaders of higher education. According to García-Peñalvo (2021) faculty resistance towards the digital transformation is a key factor to reduce the maturity of digital transformation and hence digital sustainability. In similar context, Brunetti et al. (2020) identified cultural issue as a major challenge that needs to be carefully considered. Business schools must consider a dynamic organizational culture that enables dynamic transformation. For instance, Kraus et al. (2022) stated that organization undergoing digital transformation deals with dynamic changes and therefore one of the major challenges is to maintain the quality of the delivered services and the brand name. Sustainable quality education is one of the key aspirations for business schools seeking international accreditation; therefore, business schools aiming for digital transformation and sustainability must develop rigorous policies and procedures that assure equivalent quality is maintained. In addition, García-Peñalvo (2021) stated that maintaining ethical standards and policies is one of the major challenges that could be faced by HEIs including business schools while considering digitalization and hence digital sustainability may be challenging as it requires very rigorous procedures to maintain ethical standards at both academic and non-academic operations. A serious issue was raised by Weiß et al. (2019): digital transformation should ensure engagement and interaction. This matter becomes more acute in business schools as the graduates must be equipped with an extensive level of engagement and communication skills.

This study argues that digital sustainability framework is required to ensure that there is a digital transformation and sustainability to support business education. However, as stated by García-Peñalvo (2021) HEIs are not yet fully matured in terms of digital sustainability. Therefore, measuring the extent of effectiveness of such framework is a challenge itself. The following section will provide an insight on the way forward for business education, including practical recommendations that could be carried out by scholars and policy makers.

10 Conclusion and Practical Application

Despite various research conducted in relation to digital transformation, digital sustainability and digitalization is business education. In support to García-Peñalvo (2021) it is visible that there is a need to ensure a maturity in terms of transformation in the education sector including business education. The need for digital sustainability becomes more acute in business schools as it requires to be implemented with a consideration of mission-driven approach (Junn & Moon, 2021). Business schools are considered the drivers for societal impact and hence they are competing in attaining international accreditation that is considered as a mechanism towards

digital transformation and digital sustainability (Dudley & Cairney, 2021). This paper proposes to develop a digital sustainability framework that could be applied in business schools to serve business education considering factors that are related to academic and non-academic activities; the proposed framework includes factors related to teaching and learning, research, outreach, administration, campus operations, quality assurance, human resources and impact measures. This paper conducted a systematic literature review analysis to narrow the more relevant factors that could be investigated to support digital sustainability in higher education and business schools. However, along with the factors identified there are other contextual factors that may be identified such as regulatory requirements, cultural issues and leadership.

Leaders of business schools need to establish a clear foundation to implement digital sustainability framework; from a practical application angle there is a need to develop a clear mission-driven approach supported by a set of policies, procedures and ownership with defined responsibilities and authorities (Guandalini, 2022).

Policy makers including regulators need to define clear standards to support higher education sector to implement digital sustainability framework that covers ethical standards to maintain the security of data including student records (Nabiosa & Kaar 2020).

Business schools seeking international accreditation could utilize the outcome of the digital sustainability framework to generate reports leading to decision making to support business sustainability. For instance, reporting is frequently required to support risk assessment; therefore, digital sustainability reporting will allow mitigating action and strategic level decision making.

11 Limitation and Future Recommendations

This paper is limited to a systematic review analysis and findings; therefore, it provides a proposed framework with defined factors that are based on literature review analysis and cannot be confirmed as it is not yet investigated. Due to lack of maturity of digital transformation in the education sector, digital sustainability in business schools may require rigorous actions to expedite the integration of digitalization considering institutionalized operations.

This paper identified factors that could be considered as part of digital sustainability; however, other moderating factors may be considered such as regulatory standards, accreditation requirements and cultural issues.

Future investigation could be conducted by applying digital sustainability framework in business schools as a full cycle of implementation and investigate the extent of usefulness in terms of measuring the overall impact.

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