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Review Article

Systematic literature review on the holistic integration of e-learning in universities: Policy, human, financial, and technical perspectives

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ABSTRACT

This systematic literature review (SLR) explores the integration of e-learning in universities, emphasizing a comprehensive approach that intertwines various mainstream perspectives. Despite numerous studies on e-learning implementation evaluation, few have holistically considered financial, human, technical, and policy factors. This review used PRISMA guidelines and sources from Scopus, Google Scholar, ERIC, SAGE, and ProQuest. Of 26 analyzed studies, seven core themes emerged: Policy, financial, technical, human, institutional factors, others, and an integrated perspective, further distilled into 13 sub-themes. Findings highlight the importance of an integrative framework for evaluating e-learning, underscoring the interplay between macro and institutional policies. Additionally, the authors recommend cross-national comparisons and data synthesis from stakeholders, including students, educators and directors, to fully grasp e-learning implementation dynamics. Distinctively, it adopts an integrated perspective, filling the research gap by emphasizing overlooked financial considerations and presenting a comprehensive view through an SLR. By drawing insights from human, finance, technical, and policy perspective, the study provides a multidimensional lens on e-learning. This forward-looking approach not only captures the current state of e-learning integration but also charts future research directions, establishing its originality and significance in higher education.

Keywords: an integrated perspective, holistic integration of e-learning, systematic literature review, universities

INTRODUCTION

E-learning, a popular and widely adopted digital educational method, is based on internet-based training activities designed specifically for educational purposes (James, 2021). This mode of education harnesses a range of IT technologies, including web-based technology, cloud computing, artificial intelligence, and machine learning (Oyetade et al., 2020), to provide a solution to the challenges posed by the rapid advancement of IT in the field of education. The broad potential of e-learning has been extensively researched and studied, revealing its ability to provide access to diverse populations, offer a competitive advantage for universities in global research community, and modernize the entire education system (Garrison & Kanuka, 2004; Klein & Ware, 2003; Price & Kirkwood, 2014; Renes & Strange, 2010; Rooney, 2003; Waller et al., 2019).

E-learning has gained popularity for its ease of use, adaptability, and availability, making it an attractive option for learners. Its importance in higher education is widely acknowledged (Valverde-Berrocoso et al., 2020). However, the success of e-learning is contingent upon a number of critical perspectives, including policy

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(Cook et al., 2007; Czerniewicz & Brown, 2009; Holt & Challis, 2007), financial considerations (Bacow et al., 2012; Bell & Federman, 2013), instructor and student characteristics (human factors) (King & Boyatt, 2015; Soong et al., 2001; Volery & Lord, 2000), institutional (also named as organizational factors) or technology factors: infrastructure, e-learning environment & ease of use (King & Boyatt, 2015; Soong et al., 2001; Volery & Lord, 2000), and technical factors: technical support, help desk, information availability & library (Selim, 2005; Soong et al., 2001; Volery & Lord, 2000). A thorough understanding of how these factors together affect the adoption of e-learning is vital to effectively leverage e-learning as a valuable tool in education and learning.

The implementation of e-learning encompasses various interconnected dimensions, including technological platforms, curriculum design, technical support, instructional policies, faculty and learner perspectives, and socio-cultural contexts (Bernard et al., 2009; Dabbagh & Kitsantas, 2012; Jonassen & Reeves, 1996; Piccoli et al., 2001; Selwyn, 2007). Existing frameworks like SAMR model, eMM, and TPACK attempt to address these complexities by emphasizing the interplay of technology, pedagogy, and curriculum content (Mishra & Koehler, 2006). SAMR model delineates technology's role from mere substitution to transformative redefinition of learning (Puentedura, 2006), while the e-learning maturity model tracks institutional growth in e-learning endeavors (Marshall & Mitchell, 2007).

However, the downsides of existing models such as SAMR model, eMM, and TPACK framework highlight limitations in their applicability and effectiveness in addressing the complexities of e-learning implementation. Cepeda-Moya and Argudo-Serrano (2022) critique SAMR model for its linear approach to technology integration, which may undervalue foundational stages like substitution and neglect attention to pedagogy. Hamilton et al. (2016) emphasize that the model may overlook diverse educational contexts, failing to consider individual student needs, available resources, and technical nuances. Similarly, the straightforward nature of eMM might trivialize the intricate facets of e-learning and overlook pedagogical aspects. Ally and Samaka (2013) caution about eMM's static structure, which may become obsolete amidst rapid technological evolution. TPACK's downsides include its complex measurement due to traversing multiple knowledge spheres, potentially biased assessment, and variation based on context (Voogt et al., 2013). Archambault and Barnett (2010) question TPACK's fundamental premise, suggesting it may not always align with educators' expertise in technological, pedagogical, and content domains. Voogt et al. (2013) emphasize the need for TPACK to better account for contextual variables, as its effectiveness may fluctuate based on teaching environment, learner demographics, and subject nuances. These limitations underscore the need for an integrative perspective in e-learning implementation to address the diverse challenges effectively, considering the dynamic nature of technology, the nuanced interplay of pedagogy with technology, and the unique contexts of educational institutions.

Further, higher education institutions face challenges both theoretically and practically when implementing e-learning (Arkorful & Abaidoo, 2015; Kattoua & Alrowwad, 2016; Mosa et al., 2016; Naresh & Reddy, 2015). While various theoretical frameworks and e-learning models (SAMR, eMM, & TPACK) have been developed to address these challenges, it remains a mystery to implement e-learning (Aung & Khaing, 2016; Basak et al., 2016; James, 2021; Khan et al., 2021). Several literature review studies have explored the implementation of e-learning at universities, including the integration of cloud computing and artificial intelligence into education programs (Dima et al., 2022; Gera & Chadha, 2021; Qasem et al., 2019), e-learning tools applied at universities (MOOCs, Moodle, social media, learning management systems (LMS), and mobile-learning) (Al-Nuaimi & Al-Emran, 2021; Alsswey & Al-Samarraie, 2019; Bettayeb et al., 2020; Mustafa & Ali, 2023; Sharifov & Mustafa, 2023; Ziraba et al., 2020), the application of e-learning models and frameworks (Al-Maroof et al., 2021; Al-Nuaimi & Al-Emran, 2021; Cader, 2022; Kaushik & Verma, 2020; Kristy et al., 2022), the adoption of e-learning in specific countries and regions (Alsswey & Al-Samarraie, 2019; Bizzo, 2021; Siddiquei & Khalid, 2020), and particular studies of e-learning during the COVID-19 pandemic (Abdelfattah et al., 2022; Fauzi, 2022; Ozdamli & Karagozlu, 2022; Seraji et al., 2022). Above studies on e-learning implementation have contributed to our understanding of topic both theoretically and empirically, but picture is still incomplete.

Existing review studies have not systematically synthesized the research on the integration of e-learning into universities from an integrated perspective that combines financial, human, technical, and policy factors. Instead, these studies have either focused on human factors such as students' and faculty's characteristics and determinants of students' satisfaction (Mohamed et al., 2021), faculty's ICT professional development (Lidolf & Pasco, 2020; Modise, 2022; Shahzad, 2023), and users' acceptance of e-learning (Mousa et al., 2020)

Table 1. Systematic reviews conducted on topic between 2018 & 2023

Author	Research purpose
Lidolf and Pasco (2020)	This study presents a systematic literature review of empirical research in the emerging field of faculty members' educational technology professional development.
Modise (2022)	The objective is to investigate preparedness of academics for online teaching in higher education in developing countries in Africa.
Mohamed et al. (2021)	This study intends to examine the published work on student satisfaction with e-learning in Malaysian higher learning institutions.
Mousa et al. (2020)	This study aims to systematically review literature and categorize relevant studies using technology acceptance model (TAM) to provide an overview of measuring e-learning adoption user acceptance.
Ntorukiri (2022)	The goal of this study is to analyze empirical literature that identifies a significant technological gap among ICT policies and infrastructure, which significantly impacts ICT implementation.
Shahzad (2023)	It will contribute a valuable addition to existing literature & provide decision-makers with a benchmark for developing tools & techniques to enhance professional competencies of library professionals.

or policy, and technical factors (Ntorukiri, 2022) (**Table 1**). While these systematic reviews provide valuable insights, there is a need for a comprehensive literature review that examines the integration of e-learning into universities from an integrated perspective.

In this study, policy, financial, human and technical factors constitute an integrative perspective. E-learning in higher education is shaped by a multifaceted blend of human, technical, policy, and financial factors, making it crucial to look beyond just learning outcomes when evaluating its success. Adopting an integrative perspective provides a comprehensive view, illustrating how e-learning intertwines with broader societal dynamics. By delving into the economic landscape, we can identify potential funding avenues, gauge affordability, and discern opportunities for post-study employment (Daniel, 2016). Additionally, influences of financial, human, technical and policy play a pivotal role in determining the nature of feedback, affecting student interactions with content, peers, and educators. Such insights can drive institutions to craft more effective feedback mechanisms (Selwyn, 2011). For policymakers, a deep grasp of this integrative context is invaluable, ensuring the formulation of supportive policies for all stakeholders in the e-learning sphere (Bates, 2015). In systematic literature reviews (SLRs), this broader viewpoint not only facilitates a more thorough analysis of existing studies but also pinpoints research gaps and sets the direction for future inquiries.

This study endeavors to address the research gap in the evaluation of the integration of e-learning in higher education institutions by conducting an SLR to answer the following questions:

1. What is the current state of research on the evaluation of e-learning implementation in higher education institutions from an integrative perspective?
2. What are the key findings from previous studies on this topic?
3. What are the research gaps in the existing literature?

SLR will provide a comprehensive summary of current knowledge in the field and enable the identification of potential knowledge shortages, leading to prospective research directions (Xiao & Watson, 2019). We add to the literature on e-learning integration from an integrative perspective in higher education institutions by:

1. Providing structured and up-to-date information on previous studies and their application areas.
2. Extracting important information for further analysis and studies.
3. Aiding in the recognition of research gaps that require further investigation to advance the implementation of e-learning in higher education institutions.

RESEARCH METHODOLOGY

Five sections in this part are PRISMA, databases, time frame for research articles, process of SLR for screening articles, and data extraction and analysis.

PRISMA

PRISMA, preferred reporting items for systematic reviews and meta-analyses, is a set of instructions for writing thorough literature reviews. These instructions include a 27-item checklist and a four-step flow diagram, designed to enhance the reporting quality of systematic reviews and meta-analyses (Moher et al.,

2009). PRISMA is initially designed for undertaking random trials, but PRISMA is flexible, and it can be utilized in many research fields, as it outlines precise research questions and sets criteria for including or excluding studies (Knobloch et al., 2011).

More importantly, not only PRISMA enables a comprehensive evaluation of scientific literature over a certain time frame, but also it can be valuable in evaluating the reliability of already published articles. This study applied PRISMA for conducting an SLR. In SLR, we employed a structured approach to manage and process the 729 articles. For reference management and collection, EndNote was utilized due to its efficient integration with Microsoft Word, facilitating seamless citation during the writing phase. During the critical phase of article screening and selection, Rayyan served as an invaluable tool, fostering collaboration among researchers and streamlining the assessment of the vast volume of articles. The subsequent stage of quality assessment and data extraction was facilitated by EPPI-Reviewer, which provided comprehensive support in data management, article screening, extraction, and qualitative synthesis. Lastly, for the analysis and visualization stage, NVivo was chosen for its proficiency in qualitative coding, enabling the team to discern themes and patterns within the literature.

Databases

This study employed two robust databases, Scopus and Google Scholar, for its review methods. Scopus, known for its rigor and comprehensiveness, indexed several thousand educational journals from various areas within the field of education, including both international and regional journals from diverse publishers, from large academic publishers to smaller, niche publishers. Google Scholar, a broad database covering numerous academic disciplines, including education, indexes a greater number of educational journals compared to Scopus. It also collects and indexes a wide variety of scholarly content, such as articles, theses, books, conference papers, and others, from diverse sources, including academic journals, conference proceedings, and institutional repositories.

Despite the vast coverage of these two databases, they may not encompass all relevant studies related to the research topic. To address this, three additional databases, ERIC, ProQuest and SAGE, were employed to supplement the main databases (Scopus and Google Scholar). ERIC, ProQuest and SAGE are reliable databases that index a range of educational journals. Composing reliable literature review, the researchers employ rigorous strategies to mitigate potential data distortion. They validate search strings through pilot searches, fine-tuning them to optimize precision and recall. Including synonyms and variants accommodates diverse terminologies across databases, ensuring a comprehensive search. The researchers also address publication bias by acknowledging database preferences, enabling a nuanced interpretation of findings.

Time Frame for Research Articles

The era of the 1980s and 1990s saw a fast-paced expansion and innovation in e-learning and networking across the education spectrum, including tertiary education. As the 21st century began, e-learning received new attitudes, and the introduction of innovative pedagogical approaches, technological advancements, and changed perspectives became evident. This marked a paradigm shift, though subtle, it had far-reaching impacts. A fundamental change in the perception of learning and the definition, design, and delivery of education characterized the late 1990s and early 21st century, and this shift became a global phenomenon as educators and learners worldwide embraced networked e-learning (Harasim, 2006). Therefore, the time-frame for literature search starts from 2003 to 2023.

Process of SLR for Screening Articles

Identification

To select pertinent articles for the current study, the systematic review process was carried out in three main stages. Firstly, a set of keywords was identified, and similar terms were obtained from sources such as thesauruses, encyclopedias, dictionaries, and prior studies. Following this, search strings were developed for Scopus and Google Scholar databases in October 2023, leading to the retrieval of 502 articles. In addition, 227 more articles were obtained by manually searching other databases using comparable keywords. Hence, a total of 729 articles were gathered during the first stage of the systematic review process (**Table 2**).

Table 2. Search strings

Database	Search string
ERIC	(e-learning) AND (model) AND (implementation) AND (university) AND (integrated perspective) OR (digital learning) OR (e-learning adoption) AND NOT (COVID-19) AND NOT (review)
Google scholar	"e-learning" AND "implementation" AND "university" AND "integrated perspective" OR "e-learning adoption" OR "digital learning" OR "electronic learning" AND "review-COVID-19"
ProQuest	(e-learning) AND (implementation) AND (integrated perspective) AND (university) OR (e-learning adoption) OR (digital learning) OR (electronic learning) AND NOT (review) AND NOT (COVID-19))
SAGE	TITLE-ABS-KEY ('e-learning AND implementation' AND (integrated perspective) AND (university) OR (e-learning adoption) OR (digital learning) OR (electronic learning) AND NOT (review) AND NOT (COVID-19))
Scopus	TITLE-ABS-KEY ('e-learning AND model' AND (implementation) AND (university) AND ('integrated AND perspective') OR (e-learning adoption) OR (digital learning) OR (electronic learning) AND NOT (review) AND NOT (COVID-19))

Table 3. Criteria of inclusion & exclusion

Criterion	Inclusion	Exclusion
Language	English	None-English
Publication type	Journal articles	Chapters, books, report, & conference paper
Educational level	Higher education	None-higher-education
Publication date	2003-2023	Before 2003
Subject area	Education & social science	Other than education & social science

Screening

In the process of article screening and selection, Rayyan platform played a pivotal role by enhancing collaboration among the researchers and efficiently handling the extensive volume of articles. Following an initial screening to eliminate duplicates, which resulted in the exclusion of four articles, a detailed evaluation was conducted on 725 articles. The criteria for inclusion emphasized journal articles as the primary sources for empirical data, specifically focusing on those published in English within the time frame of 2003 to 2023. This meant articles from other categories such as systematic reviews, meta-analyses, books, and conference proceedings were excluded. Furthermore, the review prioritized articles within the realms of social science and education. Adhering to these stringent criteria (refer to **Table 3**), a significant number, 621 articles, were subsequently excluded from the review.

Eligibility

In the stage of eligibility, the researcher assessed a total of 104 articles. During this stage, the researchers meticulously examined the titles, abstracts, and main contents of all the articles to ensure that they met the inclusion criteria and were appropriate for use in the current study. Following the thorough examination, a total of 78 articles did not meet the inclusion criteria and were excluded. As a result, only 26 articles were available for further analysis (**Figure 1**).

Data Extraction & Analysis

This study uses a systematic review approach, which involves analyzing and synthesizing different types of research designs (qualitative, quantitative, and mixed methods). The authors interpret all the selected data, which involves transforming quantitative data into qualitative data or vice versa. This study uses thematic analysis to develop appropriate themes and sub-themes. The first phase of theme development involved compiling data from 26 selected articles and carefully analyzing statements or data that answer research questions. In the second phase, the authors used coding to create meaningful groups based on the nature of the data. This phase involved converting raw data into usable data by identifying themes, concepts, or ideas used to identify patterns in key findings. The authors categorized the 26 chosen articles into seven primary themes, and subsequently, they identified sub-themes associated with each theme, resulting in a total of 13 sub-themes. To address any inconsistencies in the development of these sub-themes, the authors reviewed and revised them at their discretion. This process was undertaken to uncover commonalities and trends among the articles and create a framework for understanding the subject matter. Although there may be overlaps in several instances, the categories present a promising means to move forward in a cohesive manner.

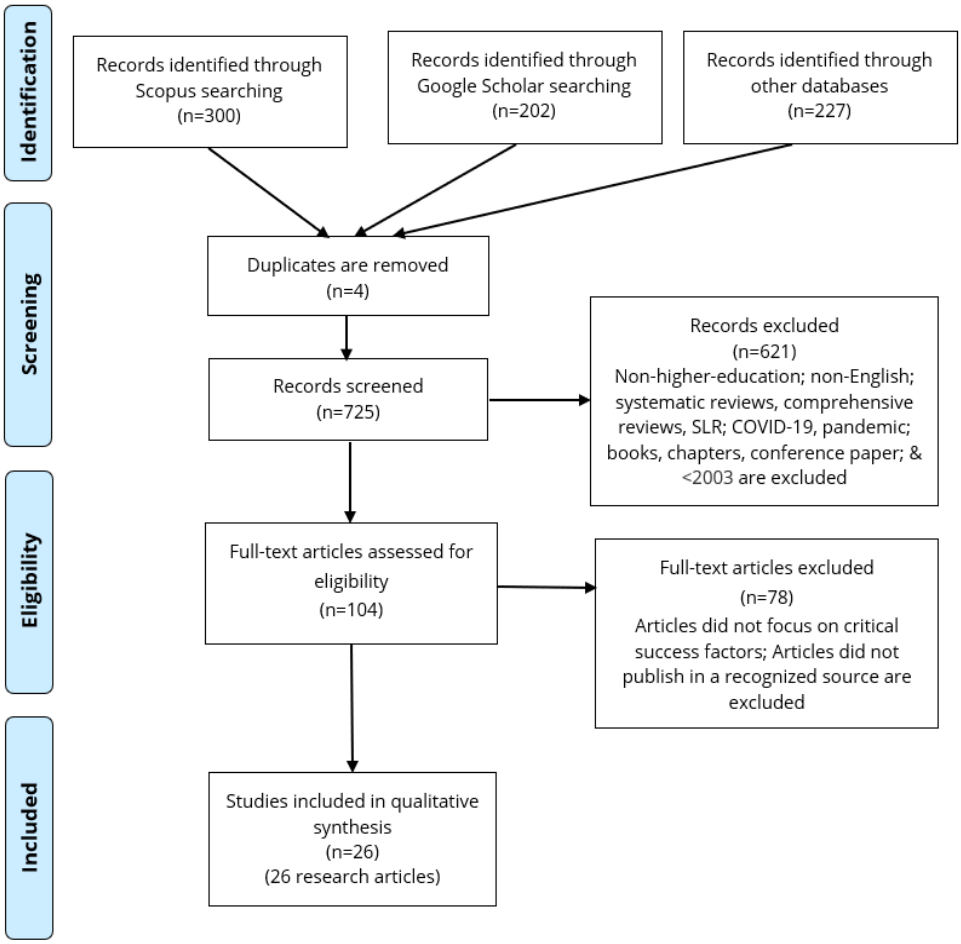


Figure 1. Screening model for study (adopted from Moher et al., 2009)

Validation of Review Protocol Using PRISMA

Within the scope of this systematic review, the authors recognize the potential introduction of biases due to factors such as constricted database exploration, the omission of non-English literature, ambiguous selection criteria, variability in data extraction methodologies, and the potential for subjective evaluations. To mitigate the limitations imposed by database search biases, an extensive search was conducted utilizing esteemed databases, including Scopus, Google Scholar, ERIC, ProQuest, and SAGE. Concentrating primarily on English-language studies, while beneficial in obviating linguistic biases, may inadvertently overlook pivotal insights inherent in studies from diverse linguistic backgrounds, thus potentially circumscribing the universality of our conclusions. It is imperative to note that the translation of non-English studies necessitates considerable resources and expertise, with an inherent risk of nuance dilution and the potential introduction of translating inaccuracies. Given the primary linguistic orientation of our target audience, the authors accorded precedence to English-language studies to ensure methodological congruence. To guarantee rigorous data extraction, the authors instituted a meticulous protocol, wherein two co-authors independently evaluated the data, subsequently harmonizing their findings. Advanced tools, such as EPPI-Reviewer and NVivo, were employed to effectuate a standardized data extraction process. The synthesis, derived from an analysis of 26 scholarly articles, elucidates the determinants of e-learning efficacy within higher education institutions, delineated into seven principal themes accompanied by 13 corresponding sub-themes. The legitimacy of this synthesis is anchored in its comprehensive and practical approach, embodying a spectrum of academic perspectives. Our strategic incorporation of subgroup analysis further augments our findings, facilitating a granular exploration of the confluence of determinants, ranging from policy to financial considerations, upon e-learning success, thereby amplifying the pertinence and adaptability of our findings across heterogeneous academic contexts.

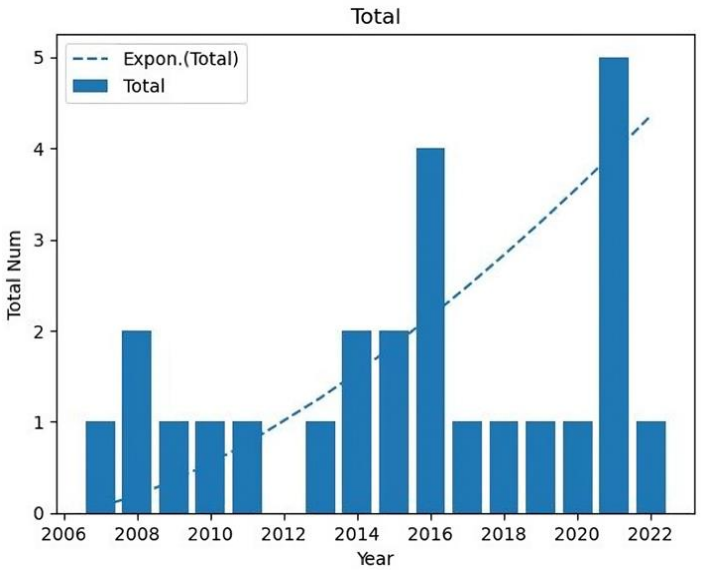


Figure 2. Distribution of studies by date (Source: Authors)

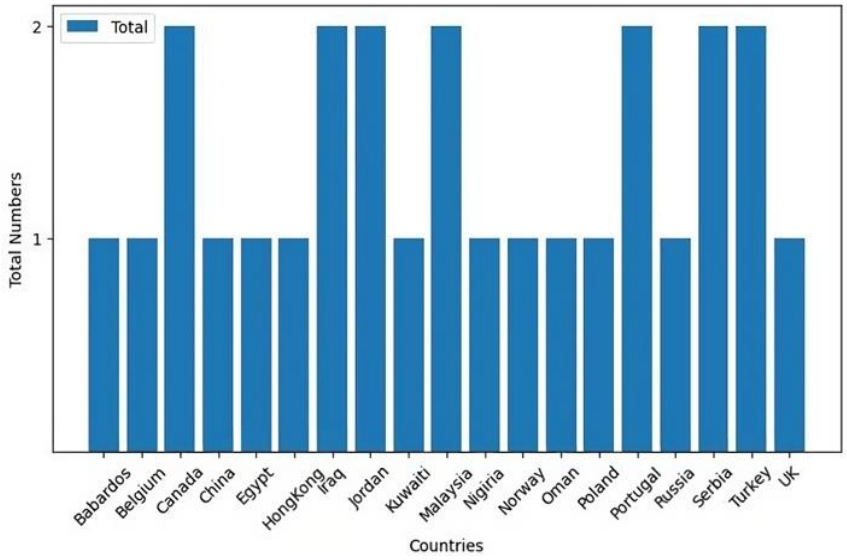


Figure 3. Distribution of studies by countries (Source: Authors)

RESULTS

General Research Outcomes & Contextual Information of Studies in Review

Research question one: What is the current state of research on the evaluation of e-learning implementation in higher education institutions from an integrative perspective?

Between 2003 and 2006, there were no studies focused on e-learning implementation at universities from an integrative perspective (**Figure 2**). However, from 2007 to 2011, a study was conducted each year (Duan et al., 2010; Kelland & Kanuka, 2007; McNaught et al., 2009; Stefanovic et al., 2011), except for two (Abdelwahab, 2008; Bell & Farrier, 2008) published in 2008. In 2012, no study was conducted, but one paper (Bidarra et al., 2013) was released in 2013. In 2014 and 2015, two papers were released each year. Between 2016 and 2022, apart from one article published in each of the years 2017, 2018, 2019, and 2020, the majority of studies were published in 2016 (Alfelaij, 2016; Aparicio et al., 2016; Cigdem & Ozturk, 2016; Topal, 2016) and 2021 (Anthony Jnr, 2021; Anthony Jnr et al., 2021; Ejdys, 2021; Mihai et al., 2021; Sidhu & Gage, 2021).

Notably, implementing e-learning from an integrative perspective was researched by universities in nineteen countries and regions from 2003 to 2023 (**Figure 3**).

Table 4. Primary & sub-themes

Reference	Country	P	HF		FF	TF		IF				O	AIP		
		L	IC	SC	C	TA	IA	EE	I	EU	QA		CB2	CB3	CB4
Kelland and Kanuka (2007)	Canada		√						√				√		
Bell and Farrier (2008)	UK		√	√							√		√		
Abdelwahab (2008)	Egypt			√											
McNaught et al. (2009)	HK-China		√					√	√				√		
Duan et al. (2010)	China			√											
Stefanovic et al. (2011)	Serbia			√				√					√		
Bidarra et al. (2013)	Portugal					√						√	√		
Alnabhan et al. (2014)	Jordan			√				√					√		
Iskander (2014)	Oman			√											
Aboderin (2015)	Nigeria			√											
Toktarova and Ivanova (2015)	Russia							√							
Alfelaij (2016)	Kuwait											√			
Aparicio et al. (2016)	Portugal			√								√	√		
Topal (2016)	Turkey			√											
Cigdem and Ozturk (2016)	Turkey			√											
Chipere (2017)	Barbados	√	√	√	√										√
Nejkovic and Tosic (2018)	Serbia			√			√	√		√				√	
Al-Araibi et al. (2019)	Malaysia		√			√		√						√	
Al-Azawei (2019)	Iraq			√											
Karkar et al. (2020)	Iraq		√												
Anthony Jnr (2021)	Norway		√									√	√		
Anthony Jnr et al. (2021)	Malaysia		√												
Ejdys (2021)	Poland			√											
Mihai et al. (2021)	Belgium		√		√	√		√	√						√
Sidhu and Gage (2021)	Canada	√	√										√		
Al-Adwan et al. (2022)	Jordan			√											

Note. P: Policy; HF: Human factors; FF: Financial factors; TF: Technical factors; IF: Institutional factors; O: others; AIP: An integrative perspective; L: Leadership/institutional plan + committee involvement/university-level policy; IC: Instructors/teachers/faculty characteristics; SC: Students'/learners'/users' characteristics; C: Cost-effective; TA: Technical assistance/student support/teacher support/pedagogical support; IA: Information availability/digital learning contents; EE: E-learning environment/technological factors; I: Infrastructure/availability of technology; EU: Ease for use/ease of use; QA: Quality assurance; CB2: Combination of two key perspectives; CB3: Combination of three key perspectives; & CB4: Combination of four key perspectives

Of these, universities in Canada (Kelland & Kanuka, 2007; Sidhu & Gage, 2021), Iraq (Al-Azawei, 2019; Karkar et al., 2020), Jordan (Al-Adwan et al., 2022; Alnabhan et al., 2014), Malaysia (Al-Araibi et al., 2019; Anthony Jnr et al., 2021), Portugal (Aparicio et al., 2016; Bidarra et al., 2013), Serbia (Nejkovic & Tosic, 2018; Stefanovic et al., 2011), and Turkey (Cigdem & Ozturk, 2016; Topal, 2016) published two articles each. And universities in Barbados (Chipere, 2017), Belgium (Mihai et al., 2021), China (Duan et al., 2010), Egypt (Abdelwahab, 2008), Hong Kong (McNaught et al., 2009), Kuwait (Alfelaij, 2016), Nigeria (Aboderin, 2015), Norway (Anthony Jnr, 2021), Oman (Iskander, 2014), Poland (Ejdys, 2021), Russia (Toktarova & Ivanova, 2015), and the United Kingdom (Bell & Farrier, 2008) conducted one each.

An in-depth review of 26 studies was undertaken to discern the primary focus of each (**Table 4**). The principal objective of these studies largely revolved around the adoption of e-learning from an integrated viewpoint. Through a meticulous analysis of the core essence of these studies, discernible patterns emerged. It became evident that these studies were either anchored in a single perspective or spanned multiple perspectives, derived from a set of variables identified as critical success factors for implementing e-learning.

Such recurrent patterns, which spotlight variables influencing the successful adoption of e-learning, reveal the domains frequently broached by researchers. As a result, seven primary thematic categories were delineated: policy, human factors, financial factors, technical factors, institutional factors, an integrative perspective, and a category termed 'others'.

Each primary theme possesses the breadth to accommodate a spectrum of studies. To illustrate, the 'policy' theme comprises studies that delve into rules, regulations, guidelines, and leadership dynamics. In contrast, 'human factors' incorporate research focusing on the attributes of students and instructors. Financial considerations, including cost-effectiveness, initial costs, and operational expenses, are

encompassed under 'financial factors'. The 'technical' theme encapsulates studies pertaining to support mechanisms such as libraries, help desks, and technical assistance. The domain of 'institutional factors' addresses matters like IT infrastructure, collaborations, data security, and quality assurance. The 'integrative perspective' theme entails studies that harmonize diverse viewpoints. Within this category, instances involve the inclusion of at least two sub-themes, each selected from distinct overarching themes such as policy, human, technical, financial, institutional, and others. For instance, Bell and Farrier's study (2008) exemplifies an integrative perspective by assessing success in e-learning through the evaluation of instructors' characteristics (human perspective) and infrastructure (institutional perspective). This study integrates two sub-themes, each derived from separate overarching themes. The 'others' category, vital for its inclusiveness, captures studies not aligning seamlessly with the previously mentioned categories. Examples within this category touch upon factors contributing to e-learning project failures, cultural determinants influencing technology acceptance, emerging tools in mobile learning, and distinct e-learning models assessing blended learning effectiveness.

Upon the establishment of these primary themes, a further, detailed exploration of each was conducted. This in-depth investigation allowed for a clearer understanding of the nuances and specific focal points nested within each primary theme. These nuances or sub-themes, identified as critical success factors, capture distinct research domains or dependent variables nested within the overarching theme. The selection criterion for a sub-theme was its pertinence to the primary theme and its recurring mention across the studies. A specific subject merited the status of a sub-theme if it was referenced in at least two out of the 26 studies. Care was taken to ensure minimal overlap among these sub-themes. Furthermore, synonymous academic terminologies for each sub-theme were identified to enhance clarity and comprehension.

Table 5 shows that 26 studies were categorized into seven primary themes (26 studies centered on either of these seven primary themes), and subsequently, identified sub-themes associated with each theme, resulting in a total of 13 sub-themes. The seven themes are policy (consisting of one sub-theme), human factors (consisting of two sub-themes), financial factors (consisting of one sub-theme), technical factors (consisting of two sub-themes), institutional factors (consisting of four sub-themes), an integrative perspective (consisting of several themes ranging from two to four themes), and others (alternative perspectives other than policy, technical, financial, human, and institutional aspects). This analytical approach ensures the findings are not only thorough but also applicable across diverse university settings, thus enhancing their relevance and applicability.

In 26 studies of implementing e-learning at universities, 13 sub-themes have been identified, and among them, the greatest number of studies (15) pertain to students' characteristics, followed by instructors' characteristics (10), and e-learning environment (seven) (**Table 4**). Notably, four studies focused on the implementation of e-learning that centered on both students' and instructors' characteristics. Only three studies did not examine either students' or instructors' characteristics. The prevailing trend in e-learning research from 2003 to 2023 has been the evaluation of e-learning implementation from students' perceptions and then instructors' perceptions.

Regarding the integration of e-learning into higher education institutions, 9 out of 26 studies analyzed it by combining two perspectives, while two studies focused on three perspectives. Both of them focused on institutional factors, human factors, and financial factors (Nejkovic & Tosic, 2018; Al-Araibi et al., 2019). Two studies examined the integration from the viewpoint of four key perspectives, with one centered on policy (university-level), human, financial and institutional factors (Chipere, 2017) and the other one emphasized human, financial, technical and institutional factors (Mihai et al., 2021).

Merely two studies, namely Chipere (2017) and Sidhu and Gage (2021) have encompassed a policy perspective. Meanwhile, two out of 26 studies, namely Chipere (2017) and Mihai et al. (2021), have integrated financial factors. Similarly, only four studies, namely Al-Araibi et al. (2019), Bidarra et al. (2013), Mihai et al. (2021), and Nejkovic and Tosic (2018) have embodied technical factors. It is noteworthy that two studies, Alfelaij, (2016) and Bidarra et al. (2013), have developed e-learning models without integrating policy, human factors, financial factors, technical factors, and institutional factors. It is also important to note that there have been no studies focused on evaluating e-learning implementation from an integrative perspective that consists of policy, human, financial, and technical factors.

Table 5. Categories of primary themes & its sub-themes

PT	Sub-themes	Description of sub-themes
Policy	L: Leadership/institutional plan + committee involvement/ university-level policy	Within sub-theme L, these terms are interconnected & used interchangeably to emphasize collaborative & comprehensive approach essential for effective governance in implementing e-learning.
Human factors	IC: Instructors'/teachers'/ faculty's characteristics	When adopting e-learning, faculty's perceptions, digital literacy, & pedagogical skills are 3 predominant factors of instructors' characteristics.
	SC: Students'/learners'/users' characteristics	While adopting e-learning, students' perceptions, digital literacy, & level of collaboration are three predominant factors of students' characteristics.
Financial factors	C: Cost-effectiveness	Cost-effectiveness is a pivotal determinant in maintenance of sustainable e-learning. Cost-effectiveness is a valuable indicator that provides information for premium financial management, which is indispensable in process of implementing e-learning.
Technical factors	TA: Technical assistance/ student support/teacher support/pedagogical support	Experience of adopting e-learning can be easily jeopardized when technical issues appear. Degree of TA is heavily relied on quality of support provided by technicians.
	IA: Information availability/ digital learning contents	Whether information is well-structured, & students can easily access to library websites & search for available information determine satisfaction of learners & how students perceive e-learning.
Institutional factors	QA: Quality assurance	QA ensures educational programs meet benchmarks through criteria, guidelines, & continuous monitoring with stakeholder feedback. It profoundly shapes e-learning efficacy, consistently emphasized in literature, with suggested approaches for effectiveness & relevance.
	I: Infrastructure/ availability of technology	Effectiveness of e-learning initiatives hinges on robust technology infrastructure, with technical infrastructure identified as a key institutional factor contributing to challenges & potential failures in e-learning.
	EE: E-learning environment/ technological factors	Promoting e-learning practices at universities, EE is classified into tangible & intangible one. Tangible one: physical environment & resources available to learner, such as technology used, network connectivity. Intangible one: communication, interaction, & multimedia delivery.
	EU: Easy for use/ ease of use	EU pertains to learner's capacity to easily navigate & engage with system, as well as understand its features & functionalities without any prior knowledge or experience.
Others	Alternatives other than policy, human, financial, technical, & institutional perspective (1) A distinct model assessing blended learning effectiveness (Anthony Jnr et al., 2021), (2) Cultural influences on technology acceptance (Aparicio et al., 2016), (3) Emerging tools in mobile learning (Bidarra et al., 2013), & (4) Factors leading to e-learning project failures (Alfelaij, 2016)	1. A learning model involves methodology, learning process, & assessment 2. Individualism & collectivism on technology acceptance 3. Focus on an operational model designed to adopt m-learning 4. Contextual & technical challenges (insufficient human, physical, & financial resources), cultural challenges (gender segregation, social values, & norms).
An integrative perspective	CB2:Combination of 2 key perspectives	Instances involve 2 sub-themes from distinct overarching themes, including policy, human, technical, financial, institutional, & others.
	CB3: Combination of 3 key perspectives	Instances involve 3 sub-themes from distinct overarching themes, including policy, human, technical, financial, institutional, & others.
	CB4: Combination of 4 key perspectives	Instances involve 4 sub-themes from distinct overarching themes, including policy, human, technical, financial, institutional, & others.

Note. PT: primary themes

KEY FINDINGS

The focus of this section is on seven primary themes, which include policy (leadership), financial factors (cost-effectiveness), technical factors (technical assistance and information availability), human factors (students' and instructors' characteristics), institutional factors (e-learning environment, infrastructure, quality assurance, ease of use) as well as others (other than policy, human factors, technical factors, institutional

Table 6. Research methodology & data collection method used in 26 studies

Research method	Data collection method	Number of papers & percentage (%)	Total & percentage (%)
Qualitative	Interviews or focus groups	4 &15.38%	6 & 23.08%
	Content analysis & review	2 & 7.69%	
Quantitative	Survey	14 & 53.85%	18 & 69.23%
	Experimental	4 & 15.38%	
Mix methods	Interview & survey	1 & 3.845%	2 & 7.69%
	Observation, interview, & survey	1 & 3.845%	

factors, financial factors) and an integrated perspective (an integrative approach that evaluates at least two perspectives). Also, there are 13 sub-themes associated within seven main themes, as indicated in **Table 6**.

Research question two: What are the key findings from previous studies on the topic?

Leadership

Effective leadership in e-learning is pivotal, fostering an innovative culture, continuously improving educational practices, and providing essential resources for faculty development in e-learning methodologies. This leadership is equally vital for offering a clear vision and direction, seamlessly integrating e-learning within educational institutions (Raman et al., 2014). Examining leadership's role in e-learning implementation at the institutional level, insights from Chipere's (2017) study underscore the critical nature of leadership in institutional and university-level policy. Utilizing a student course evaluation survey, Chipere (2017) demonstrated that effective leadership significantly influences the implementation of e-learning. Recent findings from Sidhu and Gage's (2021) study, which employed institutional plans and committee involvement as metrics, reveal positive associations between effective leadership and the adoption of e-learning. Effective leadership in e-learning is not merely a static role but a dynamic and comprehensive strategy that demands visionary guidance, active involvement in policy shaping, heightened awareness of institutional plans, and collaborative efforts with committees.

Instructors' Characteristics

Instructors' characteristics encompass a variety of pivotal variables that contribute to e-learning implementation, such as instructors' pedagogical skills, instructors' digital skills, and instructors' attitudes toward e-learning (McNaught et al., 2009; King & Boyatt, 2015). This particular theme facilitates the comprehension of e-learning adopters regarding instructors' e-readiness and how to effectively introduce e-learning in the teaching and learning process. In total, 10 studies centered on instructors' characteristics during e-learning implementation evaluation. In particular, instructors' attitudes towards e-learning appeared most frequently among these studies (10 studies), followed by instructors' pedagogical skills (two studies) and instructors' digital skills (two studies). The prevailing trend underscores the crucial role of instructors' characteristics, particularly their attitudes towards e-learning. Instructors' attitudes influence their approach and effectiveness in the digital learning environment.

Students' Characteristics

One of the 13 sub-themes for implementing e-learning is students' characteristics, which encompasses students' attitude toward e-learning, digital competency, and level of collaboration (Mohammadyari & Singh 2015; Selim, 2005). Students' attitude toward e-learning refers to their perception of using digital devices to adopt e-learning practices (Mohammadyari & Singh, 2015). Together, 15 studies have evaluated e-learning from students' perspectives, with five studies focusing on variables that affect students' satisfaction with e-learning (Al-Adwan et al., 2022; Al-Azawei, 2019; Aparicio et al., 2016; Stefanovic et al., 2011; Topal, 2016), three studies investigating factors influencing students' intention to adopt e-learning (Abdelwahab 2008; Duan et al., 2010; Ejdys, 2021), and the remaining studies centered on perceived usefulness of technology, user acceptance, and other variables. These studies explore various aspects of students' characteristics, emphasizing the importance of addressing satisfaction, adoption intentions, and perceptions of technology for a comprehensive understanding of e-learning effectiveness from the students' standpoint.

Although all 15 published articles have explored students' attitudes toward e-learning, there has been no research on students' digital competency, and only one study (Chipere, 2017) has evaluated the level of collaboration.

Cost-Effectiveness

Cost-effectiveness is a pivotal determinant in the maintenance of sustainable e-learning, as confirmed by the studies of Rovai and Downey (2010), Shelton (2011), and Stansfield et al. (2009). Online learning consortium also acknowledges cost-effectiveness as a constituent of its five criteria for assessing e-learning quality, as expounded by Moore (2005). Apt financial management is indispensable in the execution of e-learning and giving priority to prudential financial scheming and cost-efficiency is crucial, as highlighted by Chipere (2017). Chipere's (2017) research produced a framework encompassing cost-efficiency among other principles, which resulted in significant financial savings. In a similar vein, Mihai et al. (2021) integrated cost-effectiveness as an objective in their e-learning implementation framework. These findings underscore the critical role of cost-effectiveness in sustaining and optimizing e-learning initiatives.

Technical Assistance

Al-Araibi et al. (2019) and Mihai et al. (2021) both highlight the importance of technical support in the successful adoption of e-learning. Mihai et al. (2021) specifically identified an integrative approach that is supported by technical assistance for both students and teachers as one of the critical factors that enable the adoption of mature e-learning at universities. This approach involves providing technical support to ensure that both students and teachers have the necessary technical skills and resources to fully engage with e-learning platforms and tools. Similarly, Al-Araibi et al. (2019) emphasize that technical skills and support are critical factors that have a significant impact on e-readiness. Without adequate technical support and infrastructure, institutions may struggle to implement e-learning effectively and efficiently.

Information Availability

Nejkovic and Tosic (2018) found that high-quality information and learning materials are essential for successful e-learning systems. Information availability refers to the provision of accurate, up-to-date, and relevant materials, as well as engaging activities and tasks that help learners to better understand concepts and ideas. The study utilized TAM, DeLone and McLean's information systems success model, and confirmatory factor analysis to analyze the factors contributing to success. The results showed that the quality of information and learning materials (information availability) is one of the three critical factors that determine the success of e-learning systems. This research offers crucial guidance for universities involved in designing, developing, and implementing e-learning systems, underscoring the importance of superior quality information and learning materials. Recognizing high-quality information and learning materials as essential components for implementing e-learning, the study highlights the significance of information availability. This involves providing accurate, up-to-date, and relevant materials, along with engaging activities and tasks to enhance the effectiveness of e-learning initiatives.

E-Learning Environment

Researchers examine the characteristics of e-learning environments that promote e-learning practice in higher education. Al-Araibi et al. (2019), McNaught et al. (2009), Nejkovic and Tosic (2018), and Stefanovic et al. (2011) emphasize the importance of communication, interaction, and multimedia delivery in these environments. In contrast, other researchers, including Alnabhan et al. (2014), Mihai et al. (2021), and Toktarova and Ivanova (2015), consider the physical environment and resources available to the learner, such as the technology used, network connectivity, and personal characteristics of the user.

Stefanovic et al. (2011) note that universities in Serbia have successfully integrated e-learning technologies into distance learning activities, with learner satisfaction being influenced by various factors, including interaction within the e-learning environment. Furthermore, Al-Araibi et al. (2019) found that e-learning readiness depends on technological factors, such as software, hardware, connectivity, security, flexibility of the system, technical skills and support, and data center, which are classified as physical environment and

features of the e-learning environment. These factors collectively contribute to e-readiness, a critical determinant of e-learning adoption success.

Implementation of e-learning at universities encounter challenges at various stages, including planning and development, implementation, dissemination, and evaluation, due to human factors such as teachers, students, and support teams, as well as organizational factors, including technology, environment, and culture. These challenges often lead to failures in e-learning projects, many of which go unreported. However, successful cases of complex e-learning projects occur when teachers, students, and support teams collaborate seamlessly in an e-learning environment (McNaught et al., 2009).

Infrastructure

The three studies discuss the impact of infrastructure on e-learning programs. Kelland and Kanuka (2007) found that the availability of technology infrastructure is critical in determining the effectiveness of e-learning, while McNaught et al. (2009) identified technical infrastructure as just one of three organizational factors that can result in challenges and ultimately lead to failures in e-learning programs. On the other hand, Mihai et al. (2021) suggested that a robust infrastructure that is closely integrated with university systems is one of the five essential factors that can aid higher education institutions in effectively implementing blended learning initiatives. While all three studies highlight the importance of infrastructure in e-learning, they differ in their emphasis on its role as a determining factor, a potential challenge, or a critical component for success.

Easy for Use

Designing an e-learning environment that is easy to use is crucial for its success. Easy to use (ease of use) refers to the learner's ability to navigate and interact with the system easily, as well as to comprehend its features and functions without prior knowledge or experience (Nejkovic & Tosic, 2018). When developing digital content for e-learning courses within e-learning environments, factors such as user interface design, navigation structure, and help and support options should be considered.

Researchers studied ease of use from students' perception, and they agree that perceived ease of use (PEU) is an important factor that influences students' adoption and use of e-learning systems (Abdelwahab, 2008; Cigdem & Ozturk, 2016; Ejdys, 2021). However, they differ in their definition and measurement of PEU. Ejdys (2021) defines PEU as a user's perception based on prior experience with similar technologies, while Cigdem and Ozturk (2016) include factors such as intuitive navigation and multimedia instruction. Abdelwahab (2008) focuses on students' perception of the ease of use of e-learning technologies as a predictor of their willingness and motivation to use them. Despite these differences, all studies emphasize the importance of designing e-learning systems that are user-friendly and easy to use in order to increase student engagement and adoption.

Quality Assurance

Quality assurance is an imperative methodology for ascertaining that educational programs meet required quality benchmarks. This involves devising criteria and directives for appraising performance and efficacy, as well as implementing uninterrupted monitoring processes to obtain feedback from students and educators. Quality assurance is particularly germane to e-learning programs, and three studies have underscored its significance in this context (Bell & Farrier, 2008; Chipere, 2017; Mihai et al., 2021). Mihai et al. (2021) emphasized the importance of quality assurance in meeting the expectations of universities and other stakeholders with regards to e-learning programs, particularly in the context of blended learning. Chipere (2017) highlighted the significance of collecting feedback from existing e-learning programs to guide the development of new ones, with a focus on stakeholder preferences, cost-effectiveness, and operational efficiency. Bell and Farrier (2008) stressed the need for quality assurance to ensure that online teaching and learning materials adhere to appropriate standards and recommended the continual assessment of quality assurance, enhancement, and evaluation systems to keep abreast of e-learning developments. Despite the variances in the specific emphasis and methodology of quality assurance across these studies, they all concur on its pivotal role in guaranteeing the delivery of first-rate e-learning initiatives.

Others

While the majority of the 26 studies analyzed in this study concentrate on examining various perspectives, ranging from policy, financial, human, technical, to institutional factors, four studies adopt alternative approaches.

Specifically, Bidarra et al. (2013) explore the potential applications of electronic games, simulations, and augmented reality in mobile learning, while concurrently evaluating the merits and drawbacks of various digital technology and game-based approaches to education. In this study, to implement new e-learning technologies, Bidarra et al. (2013) specifically indicate that critical success factors, availability of technology, information availability, initial investment, ease of use, and institutional plans, are fundamental.

Aparicio et al. (2016) investigate the effects of cultural characteristics, namely individualism and collectivism, on the perceived outcomes of e-learning system use. Unraveling the keys to students' success in e-learning demands a nuanced exploration of their characteristics, specifically delving into individualism and collectivism. Those with an individualistic cultural orientation exert a profound influence on user satisfaction, individual impact, and organizational outcomes. The imperative lies in adeptly recognizing and navigating these cultural intricacies to optimize the overarching effectiveness of e-learning initiatives. This study underscores the paramount importance of students' characteristics, offering a transformative perspective that significantly elevates the discourse on e-learning implementation.

Meanwhile, Alfelaij's (2016) study focuses on examining the challenges associated with unsuccessful attempts to integrate technology into classrooms and lecture halls in Kuwait. This study systematically examines challenges in implementing e-learning in Kuwaiti educational institutions, focusing on cultural, technical, and contextual challenges. A notable contribution is the emphasis on Cultural challenges, offering a fresh perspective on issues like gender segregation and conflicting social values. This approach highlights substantial obstacles from cultural factors to widespread e-learning adoption. Technical challenges, including insufficient infrastructure and LMS glitches, are closely linked to critical e-learning factors, while contextual challenges, tied to instructors' characteristics, involve a shortage of trained teachers and difficulties in transitioning materials online.

In the investigation conducted by Anthony Jnr (2021), three pivotal determinants influencing faculty perceptions of e-learning are delineated. Normative pressures, grounded in social norms and professional standards, exert a positive influence on perceptions and are enforced by accreditation agencies and certifications. Coercive pressures, encapsulating governmental and educational regulations, substantially facilitate the integration of e-learning practices, in concordance with societal expectations and regulatory frameworks. Lastly, mimetic pressures suggest that faculty members are predisposed to implementing e-learning when their respective institutions have already adopted such practices, underscoring the consequential impact of institutional factors, including the e-learning environment and infrastructure. This novel perspective augments the existing body of knowledge, contributing to a more comprehensive understanding of the determinants steering faculty attitudes towards e-learning.

Not only each of these four studies provides new perspectives and valuable insights into different aspects of e-learning initiatives, but also their findings strengthen the value of policy, human, financial, and technical factors driving e-learning implementation.

Implications of Implementing E-Learning from an Integrative Perspective

Adopting an integrative perspective is crucial for comprehending how e-learning intersects with broader societal dynamics. This approach considers the interplay of e-learning with economic structures, policy contexts, and social dynamics, offering a nuanced understanding of its role in the broader educational ecosystem. Moreover, adopting an integrative perspective facilitates the assessment of the affordability of e-learning for higher education institutions. This ensures financial sustainability and equitable access. The integrative perspective also considers technical factors, recognizing the evolving nature of technology and its impact on educational practices. It considers the technical infrastructure required for successful implementation, adaptation to technological advancements, and addressing issues related to accessibility and digital literacy, ensuring the longevity and effectiveness of e-learning solutions. This integrative perspective also highlights the importance of leadership while designing e-learning policy, indicating that

Table 7. Limitations & future recommendations

Limitations	Future Recommendations	Bibliography
Lack of generalization	More research should conduct in a way that apply to a broader context.	Abdelwahab (2008), Aboderin (2015), Al-Adwan et al. (2022), Al-Araibi et al. (2019), Alfelaij (2016), Cigdem and Ozturk (2016), Duan et al. (2010), Iskander (2014), Kelland and Kanuka (2007), McNaught et al. (2009), Mihai et al. (2021), & Stefanovic et al. (2011)
Lack of potential critical success factors of e-learning	More research should explore an exhaustive list of e-learning CSR factors.	Abdelwahab (2008), Al-Azawei (2019), Aparicio et al. (2016), Iskander (2014), Mihai et al. (2021), Nejkovic and Tosic (2018), Stefanovic et al. (2011), & Topal (2016)
Data collected from either students, instructors, or directors	More future studies may collect samples from students, instructors, & directors.	Al-Azawei (2019), Aparicio et al. (2016), Iskander (2014), & Topal (2016)
Studies lack of validity	Future studies should replicate previous studies with alternative contexts.	Karkar et al. (2020)
Data collected from either public or private universities	A comparative study between public and privates universities in the future is needed.	Al-Adwan et al. (2022)
Data collecting methods may lead to bias	A future study should collect data using methods that are subjective.	Abdelwahab (2008), Aboderin (2015), Mihai et al. (2021), & Nejkovic and Tosic (2018)
Confined to cross-sectional design	Students' & faculty's learning behavior change overtime, a longitudinal study is needed.	Karkar et al. (2020)
Limited studies on non-adopters of e-learning	Surveys about non-adopters are needed.	Sidhu and Gage (2021)
Limited studies on insights into successful strategies for e-learning implementation	Future studies should research successful strategies of implementing e-learning.	McNaught et al. (2009)

policy formulation should not be based on isolated considerations but should instead consider the holistic landscape of e-learning to ensure its effectiveness and inclusivity for all involved parties. Acknowledging the inherent connection between e-learning and human characteristics, such as teaching styles, learning preferences, and social interactions, helps tailor e-learning approaches to diverse learner needs. Additionally, it incorporates societal dynamics into the design of e-learning initiatives, developing effective feedback mechanisms that consider perspectives from learners, educators, and employers, contributing to continuous program refinement over time. Adopting an integrative perspective is pivotal for informed decision-making, sustainability, and optimizing e-learning initiatives.

Research question three: What are the research gaps in the existing literature?

Prior investigations on e-learning implementation in universities have primarily concentrated on students, instructors, and the e-learning environment. Various factors, including institutional, human, technical, financial, and policy have been considered while incorporating e-learning in higher education institutions. Policy and financial factors of implementing e-learning are the least explored areas among the seven main themes. The research gap emphasizes the necessity to not only give more consideration to the policy and financial aspects of e-learning implementation but also to institutionalize e-learning from a comprehensive perspective that evaluates policy, human, financial, and technical factors together. Future research must investigate the interplay between policy and human, financial, and technical factors and e-learning implementation to comprehend how national and institutional policies determine e-learning practice and support successful e-learning implementation from an integrative perspective. Moreover, future studies should scrutinize the costs associated with e-learning implementation and explore ways to reduce these expenses to ensure the sustainability of e-learning initiatives. Integrating policy and financial considerations with four pivotal perspectives of e-learning implementation offers valuable insights for effectively integrating e-learning in higher education institutions. Adopting this integrative perspective facilitates evaluation of the current e-learning landscape but also identifies research voids, guides future inquiries, and ensures holistic advancement and success in e-learning initiatives.

Critically analyzing the methodological approach of 26 studies reveals a predominant use of quantitative methods (69.23%) compared to a minority application of mixed methods (7.69%) (**Table 7**). However,

considering the complex nature of e-learning initiatives and the multifaceted factors influencing their effectiveness, an integrative perspective necessitates a deeper exploration beyond singular methodological approaches. Qualitative and quantitative methods alone may fail to capture the dynamic interplay among human, financial, technical, and policy factors, crucial for understanding e-learning dynamics comprehensively. Mixed methods research, renowned for its ability to triangulate findings and enhance validity, offers a promising approach to address this complexity (Teddlie & Tashakkori, 2009). By integrating qualitative richness with quantitative precision, mixed methods can provide nuanced insights into the multifaceted nature of e-learning initiatives. This approach fosters methodological rigor and flexibility, enabling researchers to adapt their strategies based on emerging insights (Johnson & Onwuegbuzie, 2004; Morse, 2003). Moreover, the integration of mixed methods advances knowledge across fields by reconciling inconsistencies and offering a comprehensive understanding of phenomena (Creswell & Plano Clark, 2018). Therefore, future e-learning research may use mixed methods within higher education to gain a holistic understanding of the subject matter and inform effective practices.

DISCUSSION

The findings indicate a prevailing trend in research design, wherein the evaluation of e-learning initiatives often involves the adoption of a combined approach comprising two key perspectives, each of them selected from policy, human, technical, institutional, financial, and others. This inclination is centered on addressing critical success factors identified as influential in the adoption of e-learning within higher education, addressing diverse issues from multiple viewpoints. Studies employing this approach elucidate the mechanisms driving change in e-learning adoption and underscore the imperative of assessing its overall effectiveness through a comprehensive examination of varied perspectives. The less frequent studies centered on policy or financial consideration of implementing e-learning. This indicates a potential lack of focus on understanding the regulatory, budgetary, and financial aspects of e-learning initiatives, suggesting a gap in the literature regarding these critical factors essential for effective adoption and sustainability of e-learning programs in higher education. Since 2017, there has been a notable trend towards adopting an integrative perspective in studies involving three or more than three perspectives. This shift reflects a growing recognition among researchers of the importance of considering multiple dimensions in studying e-learning implementation. Incorporating three or more perspectives suggests a more comprehensive analysis, potentially encompassing a broader range of factors. This indicates an increasing acknowledgement of the complexity of e-learning implementation and a desire to capture its multifaceted nature in higher education.

In the 26 studies examined, various theoretical models and frameworks have been developed to address the challenges associated with e-learning adoption, stemming from its inherent complexity and the dynamic nature of e-learning technologies. However, achieving effective e-learning adoption necessitates navigating multiple factors, including technological advancements, pedagogical approaches, institutional policies, and learners' needs. While theoretical frameworks and models are available to assist educators, decision-makers, and instructors in making informed decisions and anticipating potential challenges, the mystery surrounding e-learning implementation persists. This is attributed to the ongoing evolution of technology, the diverse nature of educational contexts, and the intricacies of human interactions within the learning environment.

CONCLUSIONS

This study provides a systematic review of e-learning implementation in higher education, adopting an integrative framework that combines various perspectives and illustrating insights of its existing status, key findings and research gap. Research question one identifies the current state of research into the implementation of e-learning at universities. There have been three significant shifts towards adopting an integrative perspective in e-learning studies. Initially, the predominant trend in e-learning research from 2003 to 2023 has primarily involved evaluating e-learning implementation through students' perceptions, followed by those of instructors' perceptions. However, only two studies have ventured into examining the effectiveness of e-learning from both students' and instructors' perceptions. Subsequently, since 2017, there has been a discernible trend towards adopting an integrative perspective in studies, with a focus on three or more perspectives. Most notably, despite these shifts, there remains a notable absence of studies specifically

dedicated to evaluating e-learning implementation from an integrative perspective that encompasses policy, human, financial, and technical factors. Research question two involves an in-depth analysis of 26 studies centered on e-learning implementation in higher education institutions. It examines seven primary themes: policy, financial, technical, human, institutional, others, and an integrated perspective, encompassing a total of 13 sub-themes. It underscores the complexity of implementing e-learning, influenced by the evolving technology landscape, diverse educational contexts, and intricate human interactions within the learning environment. Importantly, the finding reveals that policy and financial aspects receive comparatively less attention among the seven main themes. Research question three brought attention to several areas that require further research. This part will be further illustrated in the following section.

Recommendations

The current study's results and methodology, combined with **Table 6** contents, suggest several areas for future research. Firstly, to fully understand how to implement e-learning at universities from an integrative perspective, there is a need for more research in the areas of policy and financial perspectives of implementing e-learning, as well as a comprehensive, integrative perspective that considers all four perspectives. Additionally, it is crucial to investigate how macro-level and institutional-level policies interdependently affect the integration of e-learning from an integrative perspective that evaluates human, financial and technical factors. Moreover, since many studies only focus on samples within their own countries and use variables that are suitable for their status, it is necessary to conduct a comparative study that investigates a exhaustive list of influencing factors across countries and regions. Finally, considering the ongoing evolution of technology, the diverse nature of educational contexts, and the intricacies of human interactions within the learning environment, future research should synthesize and analyze data collected from students, instructors, and directors.

Limitations

Although the present study generated significant findings, it is not without limitations. For instance, the study's sampling strategy involved retrieving articles from five eminent digital databases, with a focus exclusively on journal, disregarding book chapters, conference publications, and other publication forms. Furthermore, the study's emphasis primarily centered on e-learning implementation in the context of education and social science, overlooking other domains of education, such as sciences and applied technologies. Addressing these constraints is essential for future research endeavors, and this can be accomplished by incorporating relevant keywords about diverse educational fields.

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