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Systematic Review of Knowledge Management Integration in Higher Educational Institution with an Emphasis on a Blended Learning Environment

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A systematic review of Knowledge Management Integration in Higher Educational Institution with an Emphasis on a Blended Learning Environment

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ABSTRACT. A knowledge management process is a collection of practices that can work effectively to benefit academicians and foster innovation at Higher Education Institutions (HEI). With the advancement in Information, Communication, and Technology (ICT) capabilities, these institutions are presented with opportunities as well as challenges to keep up with knowledge management. Together with the emergence of Learning Management Systems (LMS), institutions have an unprecedented opportunity to facilitate and improve the quality of teaching-learning resources. Many researchers have investigated the Knowledge management process integration and its implementation in HEIs. Some have also examined the benefits of LMS implementation, the barriers, and underutilization. In addition, researchers are interested in analyzing the best teaching and content delivery methods associated with LMS implementation, such as blended learning environments that integrate online and face-to-face delivery methods. This systematic review investigates knowledge management integration in HEIs and emphasizes the blended learning environment by examining the implementation of the learning management system. The review analyzes 16 studies collected from different databases between 2012 and 2021 dealing with knowledge sharing, and to a lesser extent, with knowledge creation and knowledge acquisition. A key finding of the review was that the knowledge management process could enhance an institution's ability to innovate. Through KM and LMS, an institution can transform the traditional face-to-face environment into a blended, innovative, convenient, flexible, and student-centric mode of delivery, which leads to organizational and stakeholder performance improvements. Unfortunately, the review also identified that implementation to date is not as effective as it should be.

Keywords: Knowledge Management, Higher Education Institutions, Knowledge Management Process, Knowledge Management System, Learning Management System.

1 INTRODUCTION

Knowledge can be acquired or achieved through learning or practice [1]. Higher Educational Institutions (HEI) have an essential role to play in creating, transferring, sharing, and distributing knowledge and making it accessible to their communities and societies [2]. The process of acquiring, transferring, and managing knowledge creates opportunities as well as challenges for HEI to compete and keep pace with the continuous global changes and technological development in today's world. Such a process is critical to endure and ensure success [3]. Furthermore, for success to be sustained and maintained, knowledge needs to be continuously and adequately managed in an organization to achieve the vision, mission, and objectives [4]. The knowledge management process can be perceived as a collection of practices that can effectively benefit academicians and promote innovation for these institutions [5]. In the academic context, knowledge is generated by human resources, which are established through educational and research behaviors and practices. Hence, the HEI knowledge management process would be divided into academic and organization generated by faculties, students, administrators, and researchers. As such, for knowledge to be created, transferred, and shared effectively, this would depend on three factors: Human assets, management process, and well implemented and advanced technology [6]

In addition to advanced technology, A successful knowledge management process requires HEI to be innovative and adopt clear policies and strategies. This would enhance the possibility for knowledge to be created through research, shared through teaching and learning, and transferred through communication [7]. Furthermore, the

emergence of the digital-native generation and a broader internet have created an unprecedented foundation for further advancement that can be efficiently used as a knowledge resource implemented in research and education toward more competitive and innovative HEIs [8]. Information technology's progression enables knowledge sharing to become more feasible, which is further enhanced through collaborative research, where institutions develop a knowledge management system to acquire, create, share and organize knowledge. In essence, the advancing capabilities of ICT allow Learning Management Systems (LMS) to facilitate and improve the quality of teaching-learning resources [9].

Many researchers are interested in investigating knowledge management process integration and its implementation in HEIs, studying the benefit of implementing LMS, the barriers, and the underutilization in some cases [10]. In addition, researchers are also interested in exploring the various and best modes of teaching and different content delivery methods associated with LMS implementation, such as blended learning environments that integrate digital and face-to-face delivery methods [11]. They are studying different aspects of these environments and their association with the knowledge management practices and the LMS implementation towards a blended learning innovation environment; In which the educational approaches implemented in these HEI are more in line with creative and critical thinking approaches that adopt sharing and self-reflective educational methods [12].

This study aims to conduct a systematic review of Knowledge Management (KM) integration in HEIs, with an emphasis on a blended learning environment. Although many previous studies have developed various systematic reviews on similar areas, most previous reviews covered different scopes, locations, or objectives [13] or are in a different time range [2]. Below are the research questions that this study is intended to answer.

RQ1: What are the main KM processes implemented in HEI? What is the impact of this implementation?

RQ2: What is the distribution of the selected studies across the countries?

RQ3: What are the main research methods used in the selected studies, and which databases were involved in publishing these studies?

RQ4: What is the relation between the KM process and innovation in HEI?

RQ5: What is the impact of a blended learning environment with LMS implementation on academic performance in HEI?

RQ6: What framework can implement LMS in a more blended learning environment in HEI?

Section 2 captures the problem identification and its analysis. While section 3 explains the methodological approach implemented in the systematic review that analyses Knowledge Management (KM) integration in HEIs with an emphasis on a Blended Learning (BL) environment. Section 4 summarizes the literature reviews' results. Finally, section 5 illustrates the results, followed by Section 6, which covers discussion and conclusions review, and suggestions for future research.

2 PROBLEM IDENTIFICATION

For the Knowledge management process, integration is a valuable and complex process that needs to be investigated and surveyed its implementation in higher educational institutions. Researchers noted that the most significant barriers to implementing KMP in HEI are the lack of a KM defined strategies and institutional approach to KM in general and in particular to LMS.

Due to the growing capabilities of ICT, learning management systems can be used to facilitate and enhance teaching-learning resources and create a more blended collaborative environment. However, the majority of these LMSs tools are mainly used as administrative and content distribution tools rather than effective systems for enhancing teaching and learning and creating an innovative blended environment. Therefore, a systematic review is conducted on KM integration in HEI and examines LMS implementation in HEI to explore strategies and approaches to achieve a more blended innovative learning environment in HEI.

3 LITERATURE REVIEW

3.1 Knowledge management and Knowledge management Process

Knowledge is a synonym for information. It can take different forms such as ideas, opinions, values, facts and skills acquired through experience or education, and many other types [14]. In an organizational context, knowledge is the corporate assets owned by its member. It comprises the practical experience with critical and creative abilities for this organization to be innovative, competitive, and sustainable [14]. Knowledge can be represented in two different forms: tacit knowledge related to the human mind's perception versus explicit knowledge that can be seen [2]. In order to gain new knowledge, individuals need to communicate and share their forms of knowledge with others [8]. In addition, knowledge management processes (KMP) are required to enable sharing. These KMPs include identifying, creating, transferring, processing, interpreting, storing, and sharing knowledge across an organization [14]. Today many organizations use well-managed knowledge to attain their goal and lead in their domain to achieve organizational innovation and compete globally [3].

3.2 Knowledge Management process in higher educational institution

HEIs have always been dealing with Knowledge Management, research, education, and service to their society inherent in their missions [16]. At the heart of the HEI mission are Knowledge Creation, Knowledge Dissemination, and Knowledge transfer [5]. Knowledge Creation is the elaboration of new knowledge, and as such, HEI focuses on expanding the boundaries of their knowledge through research activities, publications, and scientific discovery [7]. Knowledge Sharing occurs in HEI through seminars, conferences, and publications supported by culture and environment to foster knowledge sharing [14]. And Knowledge transfer is achieved through activities of teaching and learning, as well as sharing such knowledge with the public and organizations across different industries. Accordingly, HEI builds reputation and recognition through disseminating knowledge created by researchers to other stakeholders [5].

HEI has three objectives for the Knowledge process: to develop tasks with improved quality and efficiency, then to develop human resources at all levels of the organization, and finally, to develop knowledge bases in sectors to maximize their knowledge investment [14]. In these Institutions, the knowledge management process can be elaborated by performing various human tasks to improve teaching, evaluation, counseling, research, and all administration function [17]. Furthermore, the KM process is crucial for higher educational institutions' success, enabling them to perform more effectively and efficiently and improve their quality and competitiveness [18]. Therefore, HEI must develop strategies to transform tacit knowledge into explicit one to maximize the benefit of its intellectual assets. In addition, HEIs need to develop strategies and policies that encourage knowledge management practices [17].

In contrast, the absence of such KM strategies is one of the critical barriers to KMP implementation [17]. For example, a study by Hawkins shows that the KM process integration in HEIs is very limited, and it is only implemented by librarians [19]. Instead, what is required for an effective organizational KMP, is the efficient integration of all resources that incorporate human resources, management resources, and technological resources. Only then can HEI improve the existence of the KM processes and encourage and exchange information among all stakeholders [4].

3.3 Towards a Blended learning environment

Information and communication technologies (ICT) have developed rapidly in recent years, offering HEIs the opportunity to adapt to this advancement and benefit [20]. Blended learning combines face-to-face and online learning primarily conducted through a learning management system (LMS) and other web-based learning modes [21]. As part of a blended learning environment, LMSs can be seen as integrating collaborative and critical interactive platforms for various learning activities [22]. LMSs have gained popularity and have allowed the possibility to blend a learning environment supported by great learning and teaching resources, where lecturers can act more as facilitators or moderators and learners receive more feedback [10]. LMS is used as an optimization feedback-like process to improve

blended learning effectiveness in such an environment. A standard LMS incorporates mediators within an interactive learning environment, enabling tools for managing inter/intra-action, coordination, and cooperation between learners [22]. More importantly, researchers advocate that LMSs become more adaptable and responsive and advance instructional and learning practices [23]. Unfortunately, some LMSs are used to distribute information and facilitate administration instead of ameliorating teaching and learning [22]. Many studies examine the different barriers related to technology or an institution that prevent reaching this objective, such as staff development, policy, and administrative support [12]. One such example is unfortunate evidence that faculty members underuse LMS tools for various reasons, including but not limited to resistance to change, time management, and training requirements [24]. Hence, the criticality to transform educators into "digitally literate" [12].

4 RESEARCH METHODOLOGY

For any progression in research development, a detailed critical review is needed to lay and create a foundation for any possible development or expansions, to foresee any issue, and reveal any hidden research areas and challenges. That would be in addition to presenting a complete view of certain research areas with all the latest and the critical updates in this field [25]. This systematic review follows the review guideline, general strategy, and general protocol suggested by [2] and [25]. In addition, the systematic review is conducted on the integration of Knowledge Management in Higher Educational Institutions with an emphasis on a Blended Learning environment.

This review was conducted in four different steps that include:

- An identification of the inclusion and exclusion criteria,
- Clear identification of the data sources
- Search strategies for selecting the articles, and
- Finally, data coding and analysis are used to analyze and summarize the results.

These steps are elaborated in the following sections:

4.1 Inclusion-*Exclusion Criteria*

The articles are analyzed and selected according to the inclusion-exclusion presented in (Table. 1):

Table 1. Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
Studies that discuss the KM, KM process.	Studies that are not related to Knowledge management, or Learning Management system
Studies must be in English	Studies Not in English
Available studies	
Limiting to Journals.	
Studies must be between 2012 and 2021	
Studies that discuss traditional or blended learning	

4.2 Data Source and Data Extraction

The articles were selected according to a vast and extensive range of searches that were done against various databases, such as Emerald, ACM Digital Library, Google Scholar, and Scopus.

Search strategies/search keywords. Articles selected in this systematic review were chosen and narrowed down according to the following keywords or a combination of these keywords***:***

- "Knowledge management" and "Higher Educational Institutions"
- "Higher Educational Institutions" and "Knowledge management "
- "Learning management system" and "Higher Educational Institutions."
- "Higher Educational Institutions" and "Learning management system"
- "Learning management system" and "Blended learning environment."
- "Blended learning environment" and "learning Management system"

- “Blended learning environment” and “Knowledge management”
- “Blended learning environment” and “Higher Educational Institutions”

A total of 325 articles were retrieved by applying the above search keywords, of which 70 articles were duplicates. By applying the inclusion and exclusion criteria for each article, the analysis process ended with 16 articles. The search and analysis were performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) [30]. Fig. 1 is a presentation of the PRISMA flowchart.

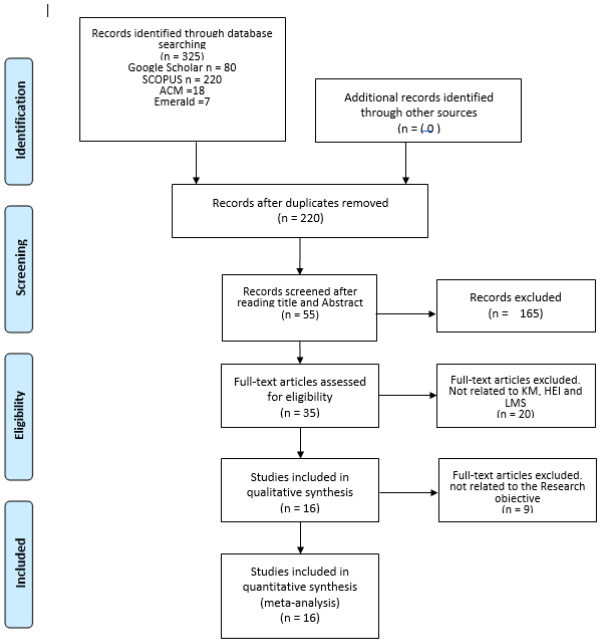


Fig 1. Process of selected Papers

4.3 Quality *Assessment*

Blackboard's The quality assessment is a critical and valuable type of appraisal implemented along with the inclusion-exclusion criteria. For this systematic review, A checklist of six quality assessment questions was designed to evaluate the quality of selected research articles, as shown in Table 3.

Table 2. Quality Appraisal Checklist

1-Are the research aims clearly identified?
2-Are the KM processes integrated by the study clearly identified?
3-How suitable are the methods and the analysis?
4- How relevant is the main aim of the study to our Study?
5-Are the studies' results adding value to the literature?
6-Are the objective of LMS implementation clearly identified?

Each checklist question is given a score on a three-point scale: 1 for “yes,” “0” for “No,” and 0.5 for “partially.” As such, each article will have total score between 0 and 6. Then the result of the assessment shows that all the articles passed and qualified for more assessment

Table 3. Quality Appraisal Results

Study	Q1	Q2	Q3	Q4	Q5	Q6	Total	%
S1	1	0.5	1	0.5	1	1	5	83.33%
S2	1	1	1	1	1	1	6	100%
S3	1	1	1	0.5	0.5	1	5	83.33%
S4	1	0	1	1	1	0.5	4.5	75%
S5	1	1	1	0.5	1	1	5.5	91.66%
S6	1	1	1	1	1	1	6	100%
S7	1	1	1	1	1	1	6	100%
S8	1	1	0.5	0.5	1	0.5	4	75%
S9	1	1	1	1	1	0.5	5.5	91.66%
S10	1	1	1	0.5	1	0	4.5	75%
S11	1	1	1	1	1	0	5	83.33%
S12	1	1	1	1	1	0	5	83.33%
S13	1	1	0.5	1	1	0	4.5	75%
S14	1	1	1	0.5	0.5	1	5	83.33
S15	1	1	1	0.5	1	0	4.5	75%
S16	1	1	1	1	1	0.5	5.5	91.66%

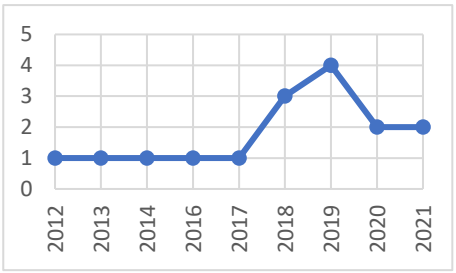
4.4 Data analysis and coding

The study will also analyze and code all features related to the research methodology and the method types used in the selected studies. In addition, the review will examine where and in which field the study is conducted. There was a formal approach to confirm the selected studies and exclude studies that do not clearly describe HEI knowledge management integration nor emphasize a blended learning environment. An analysis of the selected studies is conducted in detail in the following sections. Appendix A provides a more comprehensive codebook, which includes all attributes along with the assessment coding; Appendix B presents the journal ranking, the number of citations, and the impact rate of the journal.

5 Results and Discussion

This systematic review analyzed sixteen studies between 2012 and 2021 that were selected and filtered according to the strategies mentioned above. As a result, it is evident that research on knowledge management is prevalent and is progressing. Therefore, the findings are based on the research questions presented in this section.

Figure-2 below presents the number of studies per year, showing that most selected studies are between 2012 and 2021. While Figure 3 depicts the vox views presenting the five different clusters/ keywords examined in these studies: knowledge management, higher educational institution, LMS, academic performance, and study. This confirms the strong relationship between Knowledge management and higher educational institution, as well as academic performance and LMS. Other predominant keywords used in these studies include innovation, cloud computing, employee empowerment, research, sharing, and effectiveness.



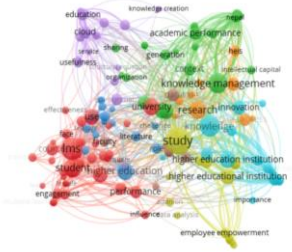


Figure 2. Total Number of studies per year

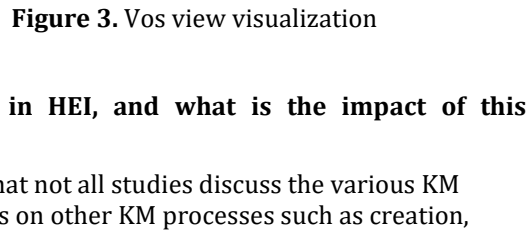


Figure 3. Vos view visualization

5.1 RQ1: What are the main KM processes implemented in HEI, and what is the impact of this implementation

The main KM processes are presented in table 4 below, which shows that not all studies discuss the various KM processes. Instead, the focus was mainly on sharing knowledge and less on other KM processes such as creation, acquisition and transfer, and application, and the least was on knowledge storage. In addition, many scholars investigate the impact of these processes on HEI. For example, Asiedu et al. (2020) debate that sharing knowledge activities when it expands between all institutional levels, i.e., departmental and faculty, would lead to a collaborative environment of sharing resources that enhance creativity. He emphasizes that Knowledge is only valuable if it is shared and integrated among all institutional levels [6]. Knowledge-sharing between faculty members allows institutions to exploit and capitalize on knowledge-based resources [26]. However, knowledge sharing can only happen within an institution with an open culture, nurturing teamwork, networking, and collaboration [17]. Other studies argue that a culture of implicit knowledge sharing exists, which could strengthen the research capacity in these institutions. And despite that it is more individualistic, there is a prevalent protective culture of knowledge assets [7]. The results indicated that institutions must develop policies to manage and share knowledge effectively [4].

Knowledge creation in HEI is the most critical factor in ensuring the survival of organizations and institutions. This, in return, would empower human capital [14]. According to Paudel et al. (2021), there is also a strong correlation between different aspects of the knowledge management process and faculty and academic performance in HEI. Besides, knowledge acquisition, utilization, and application can enhance innovation and performance within an organization [3].

Veer-Ramjeawon et al. (2019) emphasize the effect of transfer and application of knowledge occurring from universities to industry and the public sector, with all concepts of creating jobs, doing consulting, and the idea of continuing professional development. Furthermore, developing knowledge and creating knowledge are key aspects of academic excellence in the educational world, particularly in the areas of research and publishing [5]. In summary, the knowledge management process critically impacts HEI academic performance and organization performance.

Table 4. Main KMP applied in the selected Studies.

Source	Knowledge creation	Knowledge Acquisition	Knowledge Sharing	Knowledge Transfer	Knowledge Storage	Knowledge Application
S1			✓			✓
S2	✓	✓	✓			
S3						✓
S4						
S5	✓	✓	✓			
S6						
S7						
S8	✓	✓	✓		✓	✓
S9	✓	✓	✓	✓		✓
S10	✓	✓	✓			✓
S11	✓	✓	✓		✓	✓
S12	✓	✓	✓			
S13	✓	✓	✓	✓		✓
S14						
S15	✓	✓	✓			✓
S16	✓	✓	✓			

5.2 RQ2: What is the distribution of studies across the countries?

The following graph (figure 4) shows the distribution of the collected articles across the countries where these studies were conducted. As shown in the figure, Malaysia is the leading country in research on KM and HEI (N=3), followed by Pakistan and Iran (N=2). All the other countries are equally distributed: South Asia, Ghana, UK, US, Mauritius, Nepal, Pakistan, South Asia, UK, US, Vietnam. It is essential to investigate the location of the studies; it will provide us with a clear idea of where these studies originated and which countries have an interest in HEI research.

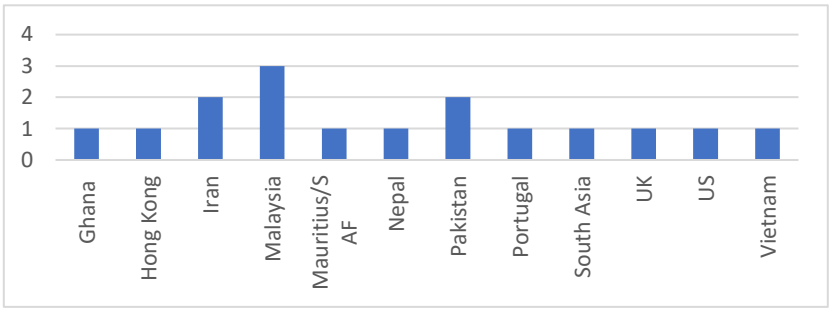


Figure 4. Number of studies on HEI used in the SR by country

5.3 RQ3: What are the main research methods used in the selected studies, and which databases were involved in publishing these studies?

Half of the selected studies were conducted using a survey method that used a questionnaire type of research. In contrast, the other half articles adopt different methods such as Survey /interview, Systematic review, and quantitative analysis study. This analysis shows that these studies are conducted using more qualitative analysis. Among the 16 papers that were reviewed, Emerald is the most research database used, where 8 of the 16 were sourced—followed by Elsevier and Google Scholar, Research Gate, and Taylor and Francis.

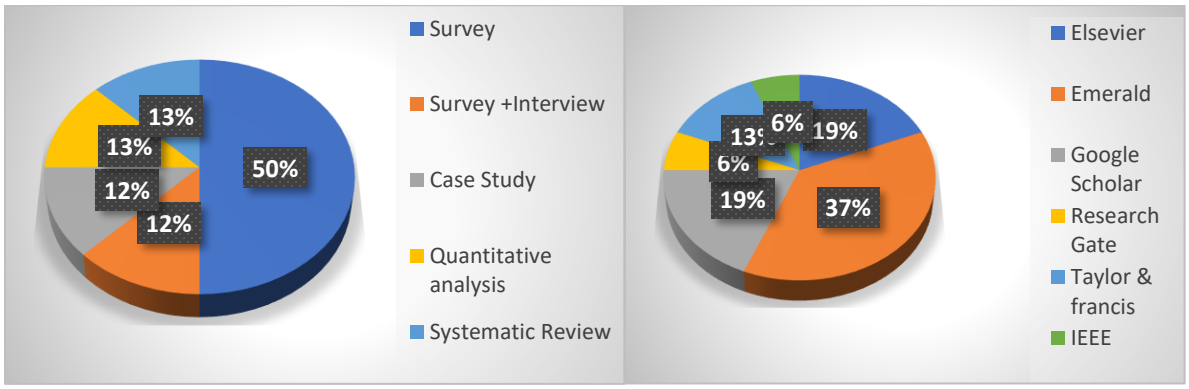


Figure 5. 2 pies display the different implementing research methods used by the studies covered in this review and the database to which these studies belong

5.4 RQ4: what is the relation between the KM process and innovation in HEI?

Innovation is necessary for organizations to improve their performance continuously. Several scholars have contemplated that the knowledge management process can enhance an institution's ability to innovate [14]. More so, many researchers show that KMP has emerged as a crucial trend for innovation in organizational practice [8]. It is a mechanism that addresses the complexities of innovation by helping in managing new and existing knowledge throughout the innovation process [6]. Individuals' innovative approaches are directly impacted by the knowledge creation of KMP [5]. The sustainability of higher education institutions depends on continuous improvement and innovation in curricula and services [6]. The innovation performance of these institutions can be represented by the way they continuously look for potential new ideas. It is mainly driven by their central functions of teaching and

research [8]. In addition, HEI's organizational performance is strongly associated with innovation [8]. As part of HEI's continuous creation processes, knowledge management is similarly expected to enhance resources sharing.
Moreover, with improved innovation, knowledge-sharing has become a key contributor to helping HEI solve their problems through more innovative solutions [5]. Furthermore, Arpaci et al., 2020 have investigated a cross-cultural analysis of the effects of knowledge management (KM) approaches on accepting Massive Open Online Courses (MOOCs). The study shows that KM practices, such as knowledge access, knowledge storage, knowledge application, and knowledge sharing can substantially affect the perceived usefulness of MOOCs.

5.5 RQ5: What is the impact of a blended learning environment with LMS implementation on academic performance in HEI?

Few researchers have explored the blended learning environment and its substantial impact on academic performance in HEIs [12]. Evan et al. (2020) explains that achieving organizational performance can result from the unprecedented enhancements taking the traditional face-to-face environment through a learning management system in a convenient, flexible, and student-centered way to a whole new level of teaching and learning. Hence through LMS platforms, instructors can deliver a wide range of educational new innovative, and distinguished experiences. Thus, LMS can elevate the traditional setting to a more collaborative and interactive mode, creating a blended environment (Rhode et al., 2017). Another scholar emphasizes that LMS systems have been exhibited to offer faculties and students many tools and numerous methods for engaging in active teaching-learning, as well as improving the overall academic performance [21]. Furthermore Arpaci, (2017b) in his study explains that a Learning Management System is an integrated set of software that administers, tracks, reports, documents, and delivers online distance learning courses and blended learning. According to Rhode et al. (2017), a study conducted on student LMS practice, perseverance, and course achievement in a hybrid course indicated that the LMS data could provide a signal of students' academic performance. In addition, many studies suggested that it can be useful to implement IT-based KM intervention in HEIs to enhance the performance of areas of research and administrative services [4].

However, many researchers investigating the blended learning environment and LMS implementation have limited relation with the KMP. This is revealed in table 4, which describes the KMP included in the studies. In Summary, if more strategies and planning and if KMP were critically better integrated into HEI, LMS would allow and achieve a more blended innovative learning environment.

5.6 RQ 6: What framework is needed to implement LMS in a more blended learning environment in HEI?

A framework can be constructed to show the different modes of learning delivery that can be used in a blended learning environment, such as face-to-face learning, i.e., the traditional learning mode, the LMS mode, and the web mode, where learners are allowed online content using the web browser. In this framework, students can interact with the three modes of learning delivery to enable the teaching-learning process to be more interactive, collaborative, innovative, and blended to improve academic performance and student engagement. Several studies have indicated the crucial role of social media can play in enhancing classroom interactions and ensuring timely involvement in teaching and learning processes[10]. In addition, Cloud computing is another technological advancement that gives these experiences a new dimension where students and faculty can communicate in real-time [21]. As an example in the below framework used in this study, students can use the F2F mode of learning as direct interaction and acquiring knowledge, then extend through LMS mode for exchanging thoughts with others web mode for more alternate ideas and views [21].

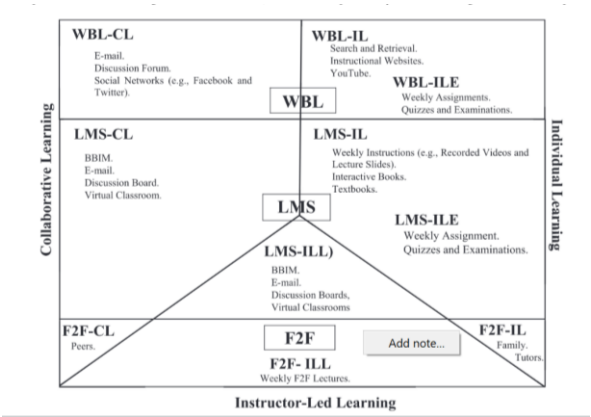


Figure 6. Framework for LMS implementation

6 CONCLUSION

The paradigm shift in ICT technology provides HEIs with a massive opportunity to manage their most valuable resource: knowledge. In HEI, this knowledge is built by researchers, shared through instruction and learning, and finally shared and transferred through communication and employment development [7]. A systematic review was developed to study Knowledge Management (KM) integration in Higher Educational Institutions, with an emphasis on a Blended Learning environment. As per the methodology description, 16 papers were selected. These papers were assessed using a quality appraisal that selected only the high-quality studies. Research questions were discussed and analyzed, and the result concludes that knowledge management process integration is, to an extent, limited in HEI, where not all KM processes are presented entirely in the studies. This study concluded from the reviewed studies that Knowledge management practices and processes do contribute to innovation practices in HEI. And it also found that many studies emphasize that the knowledge management process can enhance an institution's ability to innovate. Also, the result of the study concluded that many studies identified that LMSs are used to distribute information and facilitate administration instead of ameliorating teaching and learning and achieving a more blended learning environment. Also, this study concludes that most of the reviewed studies describe LMS integration as a blended learning environment but didn't associate the blended learning environment with the KM processes. Finally, this study identified that Despite the various conclusions of the reviewed studies, all studies confirm that HEIs must invest in and develop knowledge management strategies, policies, and procedures enabled by innovative, collaborative learnings management systems (LMS) to differentiate the delivery of their mission around knowledge and learning to achieve the foreseen creative blended environment.

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Appendix A

#	Source	Study purposes	Database	Method	Country	Year (publishing)	Study finding
S1	[10]	To evaluate various cloud computing tools in a blended learning environment.	Elsevier	SR	Malaysia	2018	Benefits and limitations of utilizing literature these tools in a blended learning environment
S2	[6]	To study the Influence of transformation leadership on KM processes and their impact on organizational learning and innovation in HEI.	Emerald	Survey	Ghana	2020	Organizational learning and knowledge management positively affect innovation performance.
S3	[21]	Effect of multiple learning modes, including face-to-face and LMS-based learning and web-based learning, on students' academic performance.	Elsevier	Survey	Malaysia	2018	Multiple modes of learning delivery improve learning performance HEI.
S4	[11]	the effect in promoting interactions between students, their teachers, and their learning materials (LMS)	Google Scholar	Survey	Vietnam	2020	Interactions, responses, and benefits of students vary towards blended learning.
S5	[22]	To examine the use of LMSs in blended environments	Research Gate	Survey - interview	Portugal	2014	Optimizes learning performance
S6	[12]	Utilizing the university's LMS is more effective through blended mode learning.	Taylor and Francis	Case Study	Hong Kong	2019	blended learning enhanced learning management systems and made them more effective.
S7	[29]	Research the impact of essential achievement factors on students' experience with the LMS in a blended environment	IEEE	Survey	Malaysia	2018	Guidelines for universities to improve using LMS to facilitate the blended environment
S8	[14]	Examine the relationship between the KM Process and organizational development in HEI	Emerald	Survey	Iran	2016	The significant relationship between KM and professional development in HEI
S9	[17]	Determine if knowledge creation and sharing are related to cultural practices in higher education.	Elsevier	Survey	UK	2013	Knowledge creation, transmission, and sharing in universities play a significant role in human development
S10	[4]	A systematic review of the knowledge management in HEI	Google Scholar	Systematic Review	South Asia	2019	Developing a framework for incorporating knowledge management in higher education
S11	[3]	explore the relationship between Knowledge Management and innovation and Intellectual Capital. and also examine the relationship between KM and organizational	Emerald	Survey	Pakistan	2019	KM affects OP by improving innovation and Intellectual Performance.
S12	[8]	The effect of knowledge management on innovation pace and quality and evaluating the facilitating aspect of the knowledge dissemination process	Emerald	Quantitative Study	Pakistan	2021	innovation speed and quality are affected by knowledge sharing and generation
S13	[5]	Finding the relationship between knowledge management and faculty performance in (HEIs)	Emerald	Survey - interview	Nepal	2021	A Modification in academic methods and in organizational arrangements would impact faculty members' performances and perspectives.
S14	[23]	To understand what LMS do, faculty include their course in a different mode of study	Google Scholar	Quantitative Study	US Midwest	2017	An increase in the use of LMS in their course and learning

S15	[26]	Examine the relationship between (KM) and (OI) in higher education.	Emerald	Survey	Iran	2019	The KM model predicted the aspects of organizational innovation in higher education
S16	[7]	This study aims to develop a model of KM that can be used as a basis for innovation while studying the similarities and differences between the two countries.	Taylor and Francis-	Case Study	Mauritius and SA	2018	A profile that illustrates the similarities and differences was developed

Appendix E

#	Source	Journal	Ranking	Citations	Impact ranking
S1	[10]	Computers and Education	Q1	165	10.88
S2	[6]	Learning Organization	Q2	11	3.01
S3	[21]	Telematics and Informatics	Q1	63	7.45
S4	[11]	Education and Information Technologies	Q1	26	2.917
S5	[22]	Educational Technology and Society	Q1	144	3.52
S6	[12]	Higher Education Research & Development	Q1	29	3.851
S7	[29]	IEEE access	Q1	48	3.367
S8	[14]	Kybernetes	Q2	85	1.75
S9	[17]	International Journal of Information Management	Q1	194	16.6
S10	(Kanwal, Nunes & Arif 2019)	IFLA Journal	Q1	6	1.667
S11	[3]	Journal of Enterprise Information Management	Q1	121	5.17
S12	[8]	Journal of knowledge management	Q1	0	4.745
S13	[5]	VINE Journal of Information and Knowledge Management Systems	Q2	0	2.75
S14	[23]	Online Learning Journal	Q1	98	2.46
S15	[26]	Kybernites	Q2	13	1.75
S16	[7]	Studies in Higher Education	Q1	24	3