



The Challenges of Mobile Learning in Kenyan Universities: A Systematic Literature Review

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Abstract : Information Technology plays a significant role in the current era. The ease with which business operations are done has made Information Technology to be embraced widely. It brings with it low cost of operations, and a low learning curve. The education sector has benefited from Information Technology (IT) significantly, especially use of mobile phones in learning.

The main objective of this paper is to represent a systematic literature review on M-Learning in Kenyan universities with the underlying aim of investigating the challenges facing mobile learning in Kenyan Universities. The findings point to the need to focus on improving the ease-of use and effectiveness of mobile learning in Kenyan universities. Systematic literature review is one of the most commonly used method to review technology content in information technology and computer science since 2006. In total, 250 articles have been collected that were written between 2005 and which were published in the EBSCO, Elsevier, Google Scholar, Science Direct, and, ProQuest One Academic were screened. After the articles were screened and selected, 50 were selected to be included in the study. The data were assessed to identify the independent and dependent variables in the study that help the researcher to identify the challenges of using mobile phones for learning in Kenya Universities.

Key words: University, m-learning, challenges, student, mobile technology

1. INTRODUCTION

The developments that are seen in technology have had a direct impact on the education system of countries, and also on the direct elements of human life[1]–[3]. There is a growing popularity in the use of mobile technologies by institutions of higher learning to deliver teaching materials to students. The model of distance learning was first mentioned in the early 19th century where it was described as the mode of learning where students and instructors were located in different locations and that the learning materials were accessed in electronic means. From the 1990s, researchers have put a lot of efforts in ensuring that mobile learning is common and that the mobile intervention is adopted so that it becomes easy to implement technology in writing. Mobile learning (M-Learning) is a new technique in which students use mobile phones to access educational material. This mode of study is easy to undertake because a majority of students own smart phones which they use in their research.

Research shows that mobile learning plays a crucial role in higher education because it enables students to access learning materials with ease[4]. According to Shehadeh [4], students have been motivated in the university with the use of mobile learning. Further research that was done by Al Dmour [4] cites that the use of mobile phones will depend on the quality of the system that has been adopted.

2. METHOD

The approach of this study is systematic literature review. In searching for literature that focus on use of mobile technology in learning, the systematic literature review (SLR) investigated the critical effectiveness indicators that are useful in adopting mobile learning. The design of the research questions was meant to be exhaustive so that they would act as a guide in the study.

2.1 Research Question

The research questions identified were as follows:

RQ1: What is the theme/context of the study?

RQ2: What are the likely factors that are associated with the m-learning players (students and/or instructors) on m-learning perceptions?

In respect to RQ1, the concern of the study was to see the patterns and any developments that have been seen in the use of technology to facilitate learning. It was important to know the year that the study was done and how technology has



been used since inception. To address this question, the study focused on papers that have been published from the year 2005 onwards as it is the year that mobile learning became common. To address RQ2, the study sought to arrange the articles based on the database in which it had been retrieved from, authors and whether or not they had been articles or conference proceedings. The study looked at the trends that have been recorded in using technology to enhance learning and how this has changed over the years. The use of technology in education has been in tandem with that of the development of technology. The SLR also focused on the issues that affect students and instructors in the use of m-learning in higher learning institutions.

2.3 Inclusion and Exclusion Criteria

The study focused on many articles from relevant computer/engineering/technology online journal databases. In order to maintain the required quality, an inclusion and exclusion criteria was followed.

Inclusion criteria

- studies focused on use of m-learning in Kenyan universities
- The studies have some mention on the challenges of using m-learning in Kenyan universities
- The studies have been written in English language
- The studies have been peer-reviewed
- The studies have been published within 5 years

Exclusion criteria

- The article does not address the use of m-learning in education in Kenya
- The article addresses general aspects of technology use in education
- The studies have been written in other languages than English
- The studies do not fall in the timeframe in which they were to be picked

2.4 Quality Assessment

The SRL was evaluated using the Centre for Reviews and Disseminations (CDR) criteria which has been developed basing on the quality assessment questions as below:

QA1: Has the author described the inclusion and exclusion criteria that he has used in the study adequately?

QA2: Has the researcher covered all the relevant studies that are related to m-learning in Kenyan universities?

QA3: Did the researcher describe the validity and quality of the study?

QA4: Did the scholar describe all the fundamental data in the review?

2.5 Data Collection

The study used Mendeley software to save the research findings that were collected in the study.

The data that were extracted from each study were based on the following:

- The source (whether journal or conference proceeding) and the full reference for the source
- The classification of the type of study, that is, whether it was SLR or meta-analysis, and the scope
- The main topic area was also a focus
- The authors and their countries of origin and the institutions that they live
- A summary of the study was also done including the research question that was used
- The quality of the evaluation was also done
- Whether the study proposed an evidence-based approach
- The number of primary studies that were used in the research

Extracting the data was not enough. More analysis and evaluation were needed after extraction so as to assess the quality of the research. A total of 50 articles were included in the study to be used in the research process. The study also used the quality of the article as another criteria for evaluation besides what have been described in the inclusion/exclusion criteria. The duplication of several databases that have used the article also contributed to whether the article would be included or not. The full-screen process also looked at the relevance of the article to the research questions and the similarity of the studies helped to select the most appropriate tool.

2.6 Data Analysis

The data was tabulated so that it was able to capture the following information:

- The number of SLRs published per year
- The affiliations of the authors and the institutions that they are based
- The quality score for each article
- Whether the SLR has been published in Google Scholar, or Elsevier



3. RESULTS

This section will highlight the summaries of the results from the primary studies that have been made. It also includes the details about the articles that were studied.

3.1 Selected primary studies

In the study, fifty primary studies were selected to make an evaluation of use of mobile devices to help in learning in the Kenyan universities. The table of the studies selected are highlighted in the appendix.

A total of 76 articles were retrieved for the study from Google Scholar, IEEE, Sagepub, and Elsevier. In the search process, the word combination of “Mobile learning” OR “university education” OR “challenges” OR “higher education” OR “Kenya”. The study did not strictly use documents from Kenya alone. Any document that touched on mobile learning in the world was included in the study. The study sought to exclude duplicates, where 28 duplicates were found among 13 sets. After checking for duplicates using the citation tool, 13 articles were merged so as to remain with only 61 articles as sources. On further analysis, 3 articles were further excluded because they did not meet the search strategy and criteria that was sought.

3.2 Data sources and research strategies

The study utilised the PRISMA guideline and strategy and a multidisciplinary search of articles from various disciplines was conducted. To be able to get the most relevant articles for this study, the Google Scholar, Springer, IEEE, and EBSCO databases were used. In the initial stage, 76 articles were found from the mentioned databases were identified. During the stage of screening, duplicates were removed where 13 articles were merged. We remained with 61 articles. On further screening, 6 more articles were removed so as to remain with 56 articles. This removal was from further screening where the title and abstract were looked.

TABLE 1 NUMBER OF STUDIES

Databases	Number of Studies	Number of Studies	Number of Studies	Number of Studies
	Phase 1	Phase 2: Remove duplicates	Phase 3: Scan title/abstract	Phase 4: Scan whole article
Google Scholar	42	36	33	33
IEEE	15	12	11	8
Springer	10	8	7	6
Elsevier	9	5	4	3
Total	76	61	55	50

The PRISMA flowchart is as shown in figure 1

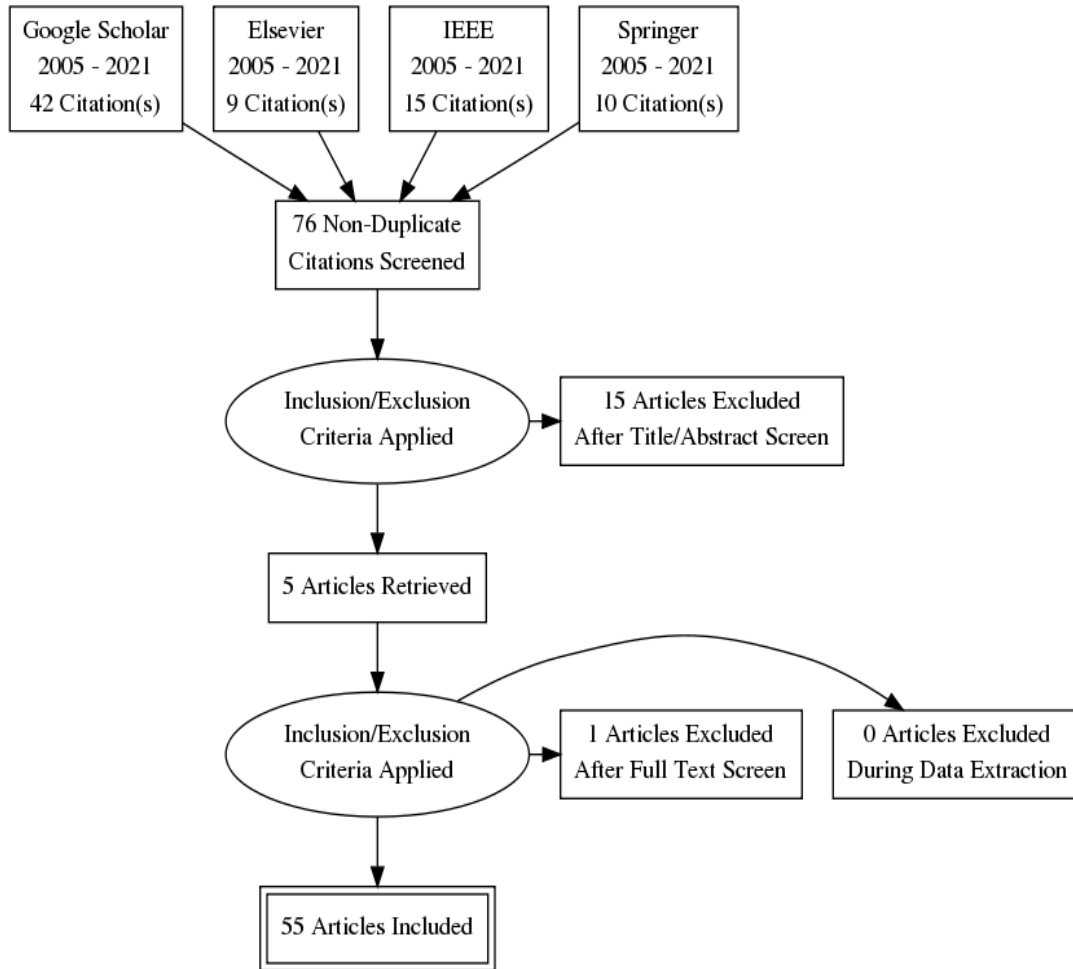


Figure 1 PRISMA flowchart

The total number of articles that were used for synthesising the results after the final inclusion/exclusion criteria applied were 50. The article sources helped in the assessment of the themes that were needed in the study. The common variables noted in the studies were motivation, self-efficacy, suability, and usefulness. It helps to show that these are the common independent variables that are seen in many studies.

3.3 Data coding and analysis

In the remaining articles, the analysis of the data sources was done according to the research questions identified at first.

RQ1: What is the theme/context of the study?

RQ2: What are the likely factors that are associated with the m-learning players (students and/or instructors) on m-learning perceptions?



Distribution Of Countries

The figure 1 shows the distribution of the countries in which the articles were published.

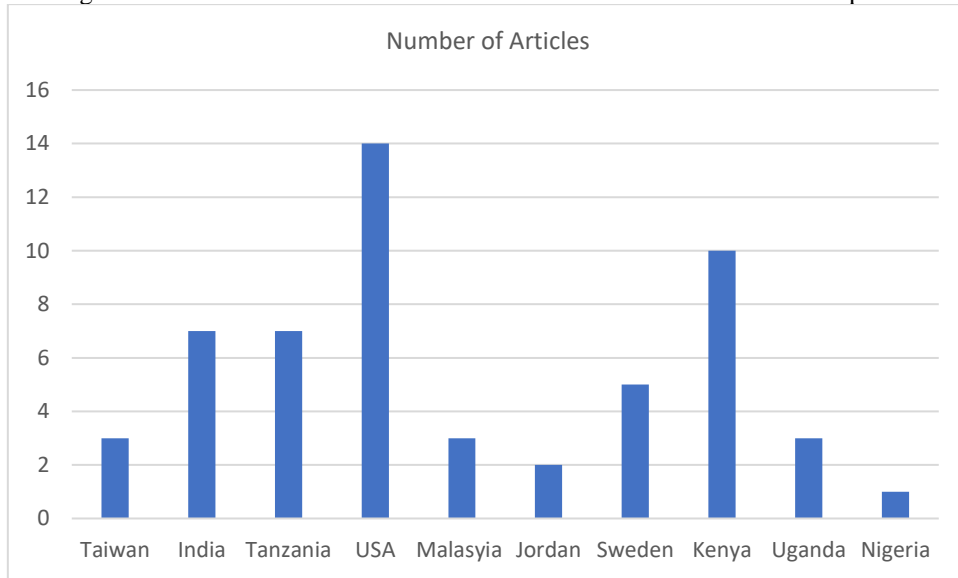


Figure 1: Distribution of articles in countries

Distribution of year of publication

Figure 2 shows the number of articles that were published each year. It shows that there were a significant number of articles in mobile learning that were published in 2017. The number of articles published between 2005 and 2008 were the lowest. The sources included articles that were published between 2005 and 2021.

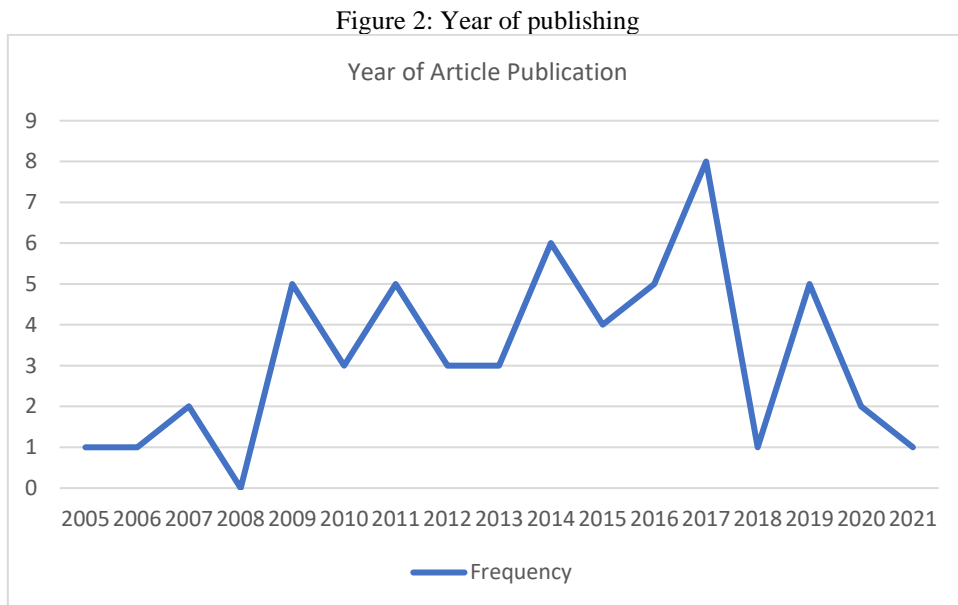


Figure 2: Year of publishing

Distribution of context

As depicted in figure 3, majority of the literature covered m-learning in universities. Most universities have a high propensity to adopt the use of mobile learning because of the uptake of technology in these institutions.

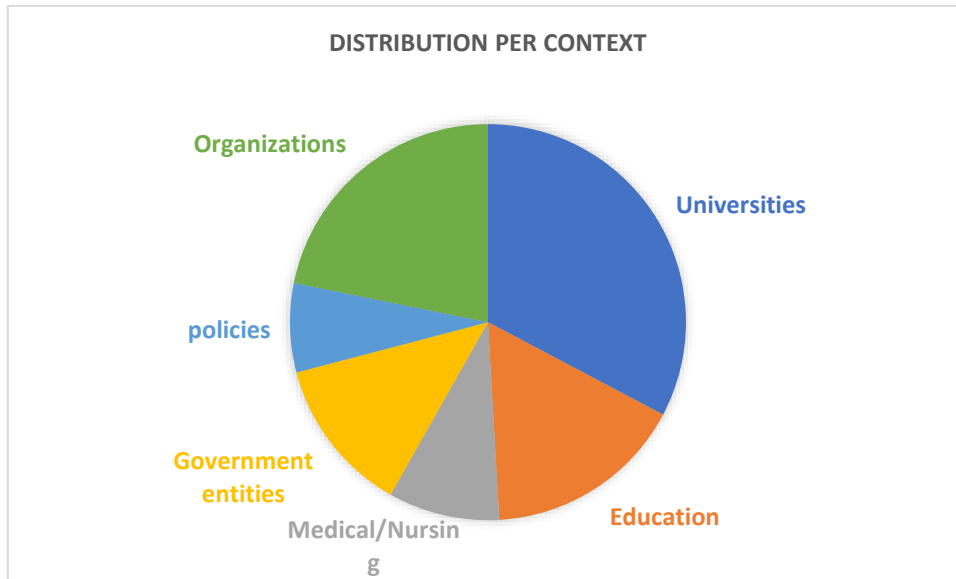


Figure 3: Distribution per context

Distribution of data sample size

Research involves use of data collection where a number of data collection instruments are used. In this study, a majority of the studies had sample sizes of between 100 and 200. The samples were accessed using various data collection instruments.

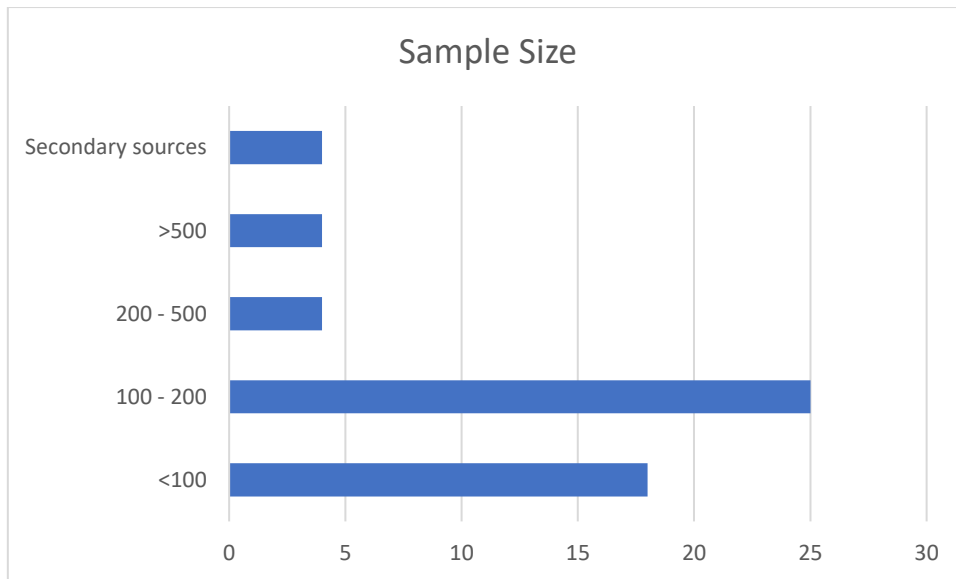


Figure 4: Distributions of Articles by Sample Size

4. FINDINGS AND DISCUSSION

The systematic literature review covered a total of 55 articles from different online databases. The keywords that were used in the search process were “Mobile learning”, “M-Learning”, “Technology learning”, “Kenyan colleges and university”. This systematic review focused on the adoption challenges that mobile learning faced in Kenyan universities and colleges. Most of the articles highlighted the effectiveness of using mobile learning in education in general context. Research studies from 2019 emphasised on the rise of mobile learning adoption among university and higher education students the world over. Different methodologies are encouraged to improve on the efficiency of mobile learning among university students. The literature review established that the independent and dependent variables that are commonly seen in the use of mobile learning in university students in Kenya include motivation, efficiency, usefulness, and infrastructure. This systematic literature review highlighted on the importance of learning the indicators of effectiveness in mobile learning.



The model presented below highlights the four hypotheses that are based on what was found in the study. These four factors are what have been established to be independent factors in the studies.

Hypotheses:

H01: Motivation has a positive effect on success of mobile learning

H02: Efficiency has a positive effect on success of mobile learning

H03: Usefulness has a positive effect on success of mobile learning

H04: Infrastructure has a positive effect on success of mobile learning

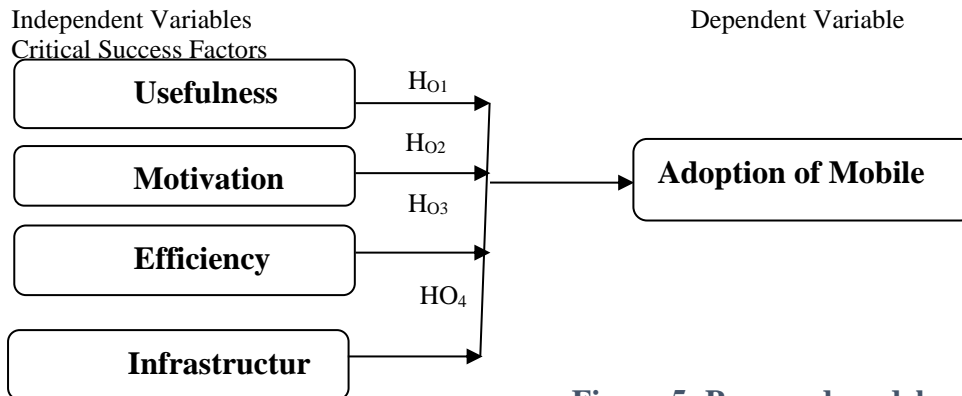


Figure 5: Proposed model

5.0 LIMITATIONS

The systematic literature review has some shortcomings. The first is that most of the articles are restricted to be utilised in some specific domains and therefore cannot be used in any given domain. In this case, they cannot be used as a general concept in other sectors. Another limitation is that most of the resources have not been able to access institutions of higher learning which have enabled this mode of learning and therefore the definition of the study areas have not been done conclusively well.

6.0 CONCLUSION

M-learning is a learning process which emphasis on the happening of learning without a physical location. It is one of the ways in which learning instruction can be offered; this alternative enables learnings interact with their teachers in a virtual environment. The general idea in the selected studies was to find out the challenges that are faced in the adoption of m-learning. Understanding the current challenges in the use of m-learning in higher institutions of learning in Kenya will help improve on the learning process.

REFERENCES

- [1] B. Al Kurdi *et al.*, "An empirical investigation into examination of factors influencing university students' behavior towards elearning acceptance using SEM approach," *Int. Conf. Adv. Intell. Syst. Informatics*, vol. 90, pp. 36–53, 2015.
- [2] B. Al Kurdi, M. Alshurideh, S. Salloum, Z. Obeidat, and R. Al-dweeri, "An empirical investigation into examination of factors influencing university students' behavior towards elearning acceptance using SEM approach," 2020.
- [3] M. Alshurideh, B. Al Kurdi, and S. A. Salloum, "Examining the main mobile learning system drivers' effects: A mix empirical examination of both the Expectation-Confirmation Model (ECM) and the Technology Acceptance Model (TAM)," in *International Conference on Advanced Intelligent Systems and Informatics*, 2019, pp. 406–417.
- [4] I. I. Shehadeh, "The Effectiveness of Using Children's Songs in Developing Elementary Graders' English Vocabulary and Pronunciation in Jerusalem," 2014.
- [5] J. Traxler and A. Kukulska-Hulme, "Evaluating mobile learning: Reflections on current practice," pp. 25–28, 2005, Accessed: Aug. 23, 2021. [Online]. Available: <http://oro.open.ac.uk/12819/>.
- [6] J. Traxler, ... J. L. U. T. in E., and U. 2006, "Innovative and sustainable mobile learning in Africa," *ieeexplore.ieee.org*, 2006, Accessed: Aug. 23, 2021. [Online]. Available: https://ieeexplore.ieee.org/abstract/document/4032531/?casa_token=W05nqsvyl10AAAAA:BJgIDU6LKovHdOp7AXJ_eAYf0MV Au08Md5hWN_AeXAVzpsED1JodmFvyTPjgJsgG15d2oPaqZKX_gKo.
- [7] A. Kukulska-Hulme, M. Sharples, ... M. M.-... and B. L., and undefined 2009, "Innovation in mobile learning: A European perspective," *igi-global.com*, vol. 1, no. 1, pp. 13–35, 2009, Accessed: Aug. 23, 2021. [Online]. Available: <https://www.igi-global.com/article/innovation-mobile-learning/2755>.
- [8] A. Tsinakos and M. Ally, "Global mobile learning implementation and trends," 2013, Accessed: Aug. 23, 2021. [Online]. Available: https://www.academia.edu/download/36240447/global_Mobile_Learning.pdf.
- [9] P. A. Danaher, B. Moriarty, and G. Danaher, "Mobile learning communities: Creating new educational futures," *Mob. Learn. Communities @IJARCCE*



- Creat. New Educ. Futur.*, pp. 1–210, Jun. 2009, doi: 10.4324/9780203879405/MOBILE-LEARNING-COMMUNITIES-PATRICK-ALAN-DANAHER-BEVERLEY-MORIARTY-GEOFF-DANAHER.
- [10] M. Ally, *Mobile learning: Transforming the delivery of education and training*. 2009.
- [11] J. Keengwe and M. Bhargava, “Mobile learning and integration of mobile technologies in education,” *Educ. Inf. Technol.*, vol. 19, no. 4, pp. 737–746, Dec. 2014, doi: 10.1007/S10639-013-9250-3.
- [12] M. El-Hussein, J. C.-J. of E. T. & Society, and undefined 2010, “Defining mobile learning in the higher education landscape,” *JSTOR*, vol. 13, no. 3, pp. 12–21, 2010, doi: 10.2307/jeductechsoci.13.3.12.
- [13] A. Kukulska-Hulme, “Mobile learning as a catalyst for change,” *Open Learn.*, vol. 25, no. 3, pp. 181–185, 2010, doi: 10.1080/02680513.2010.511945.
- [14] M. O.-T. E. S. of Africa and U. 2021, “Open, Distance, and E-learning Education in Kenya,” *Springer*, 2021, Accessed: Aug. 23, 2021. [Online]. Available: https://link.springer.com/content/pdf/10.1007/978-3-030-44217-0_38.pdf.
- [15] K. Zhampeissova, I. Kosareva, and U. Borisova, “Collaborative Mobile Learning with Smartphones in Higher Education,” 2020, doi: 10.3991/ijim.v14i21.18461.
- [16] D. Mugo, K. Njagi, and B. Chemwei, “Technological Preferences, Levels of Utilization and Attitude of Students Towards Mobile Learning Technologies in Chartered Universities, Kenya,” 2017, doi: 10.7575/aiac.ijels.v.5n.4p.98.
- [17] D. Mugo, K. Njagi, B. Chemwei, and J. Motanya, “The technology acceptance model (TAM) and its application to the utilization of mobile learning technologies,” 2017, Accessed: Aug. 23, 2021. [Online]. Available: <http://41.89.230.28/handle/20.500.12092/2444>.
- [18] E. Ifinedo, M. Kankaanranta, P. N.-... I. Learning, and undefined 2017, “Exploring Nigerian university students’ perception towards mobile learning,” *learntechlib.org*, 2017, Accessed: Aug. 23, 2021. [Online]. Available: <https://www.learntechlib.org/p/178392/>.
- [19] J. Chaka, I. G.-S. A. J. of Education, and undefined 2017, “Students’ perceptions and readiness towards mobile learning in colleges of education: a Nigerian perspective,” *journals.co.za*, vol. 37, no. 1, 2017, doi: 10.15700/saje.v37n1a1282.
- [20] D. Mugo, K. Njagi, and B. Chemwei, “Staff Factors Influencing the Adoption and Utilization of Mobile Learning Technologies in Chartered Universities in Kenya,” *J. Env. Sust. Adv. Res.*, vol. 5, pp. 42–58, 2019, Accessed: Aug. 23, 2021. [Online]. Available: <http://repository.must.ac.ke/handle/123456789/819>.
- [21] S. Isaacs, N. Roberts, G. S.-S.-S. A. J. of Education, and undefined 2019, “Learning with mobile devices: A comparison of four mobile learning pilots in Africa,” *ajol.info*, vol. 39, no. 3, 2019, doi: 10.15700/saje.v39n3a1656.
- [22] M. Sharples, I. Arnedillo-Sánchez, M. Milrad, and G. Vavoula, “Mobile learning: Small devices, big issues,” *Technol. Learn. Princ. Prod.*, pp. 233–249, 2009, doi: 10.1007/978-1-4020-9827-7_14.
- [23] T. Lim, M. Fadzil, N. M. R. in O. and D. Learning, and undefined 2011, “Mobile learning via SMS at Open University Malaysia: Equitable, effective, and sustainable,” *erudit.org*, vol. 12, no. 2, 2011, doi: 10.19173/irrodl.v12i2.926.
- [24] B. Onguko, “Design, implementation and institutionalization of mobile learning in higher education,” 2010, Accessed: Aug. 23, 2021. [Online]. Available: <http://dspace.col.org/handle/11599/2121>.
- [25] L. R.-E. R. International and U. 2011, “Will mobile learning bring a paradigm shift in higher education?,” *hindawi.com*, 2011, Accessed: Aug. 23, 2021. [Online]. Available: <https://www.hindawi.com/journals/edri/2011/528495/>.
- [26] J. T. mobile educational technologies and applications and U. 2013, “Mobile learning: Starting in the right place, going in the right direction?,” *igi-global.com*, 2013, Accessed: Aug. 23, 2021. [Online]. Available: <https://www.igi-global.com/chapter/content/69646>.
- [27] A. Oluwadara, B. Kolapo, and I. Esobi, “Designing a Framework for Training Teachers on Mobile Learning in Sub-Sahara Africa,” *J. Educ. Pract. www.iiste.org ISSN*, vol. 11, no. 32, 2020, doi: 10.7176/JEP/11-32-07.
- [28] R. Kaliisa, P. M.-A. J. of E. Technology, and undefined 2019, “Mobile learning policy and practice in Africa: Towards inclusive and equitable access to higher education,” *ajet.org.au*, no. 6, p. 35, 2019, Accessed: Aug. 23, 2021. [Online]. Available: <https://ajet.org.au/index.php/AJET/article/view/5562>.
- [29] M. Denk, M. Weber, ... R. B.-J. of M. L., U. 2007, and R. Belfin, “Mobile learning – challenges and potentials,” *Int. J. Mob. Learn. Organ.*, vol. 1, no. 2, pp. 122–139, 2007, doi: 10.1504/IJMLO.2007.012674.
- [30] J. Willemse, K. Jooste, V. B.-N. education Today, and U. 2019, “Experiences of undergraduate nursing students on an authentic mobile learning enactment at a higher education institution in South Africa,” *Elsevier*, 2019, Accessed: Aug. 23, 2021. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0260691718310785>.
- [31] R. Kaliisa, E. Palmer, J. M.-B. J. of Educational, U. 2019, and J. Miller, “Mobile learning in higher education: A comparative analysis of developed and developing country contexts,” vol. 50, no. 2, pp. 546–561, Mar. 2019, doi: 10.1111/BJET.12583.
- [32] A. Khan, H. Al-Shihi, Z. Al-Khanjari, M. S.-T. and Informatics, and undefined 2015, “Mobile Learning (M-Learning) adoption in the Middle East: Lessons learned from the educationally advanced countries,” *Elsevier*, vol. 32, pp. 909–920, 2015, doi: 10.1016/j.tele.2015.04.005.
- [33] R. Kaliisa, ... M. P. E., undefined 2017, M. P.-T. The, and undefined 2017, “A systematic review on mobile learning in higher education: The African perspective,” *researchrepository.murdoch.edu.au*, vol. 16, no. 1, 2017, Accessed: Aug. 23, 2021. [Online]. Available: <https://researchrepository.murdoch.edu.au/id/eprint/56285/>.
- [34] S. Oyelere, J. Suhonen, ... G. W.-E. and L., and undefined 2018, “Design, development, and evaluation of a mobile learning application for computing education,” *Springer*, vol. 23, no. 1, pp. 467–495, Jan. 2018, doi: 10.1007/s10639-017-9613-2.
- [35] R. Cobcroft, S. Towers, ... J. S.-... of the O. L., and U. 2006, “Mobile learning in review: Opportunities and challenges for learners, teachers and institutions,” *eprints.qut.edu.au*, 2016, Accessed: Aug. 23, 2021. [Online]. Available: <https://eprints.qut.edu.au/5399>.
- [36] R. A.-R. of R. in O. and D. Learning and undefined 2017, “Applying UNESCO guidelines on mobile learning in the South African context: Creating an enabling environment through policy,” *erudit.org*, vol. 18, no. 7, p. 18, 2017, doi: 10.19173/irrodl.v18i7.2702.
- [37] H. Lamprey, ... R. B.-J. of E. and, and U. 2017, “Mobile learning in developing countries: A synthesis of the past to define the future,” *publications.waset.org*, 2017, Accessed: Aug. 23, 2021. [Online]. Available: <http://publications.waset.org/10006532/mobile-learning-in-developing-countries-a-synthesis-of-the-past-to-define-the-future>.
- [38] I. Kibwage, M. Masika, G. Omondi, ... D. N.-P. A. M., and U. 2015, “Use of mobile learning technology among final year medical students in Kenya,” *ajol.info*, 2017, doi: 10.11604/pamj.2015.21.127.6185.
- [39] W. J. -, U. Government, U. Healthcare, and H. Education, and U. 2015, “Bridging the learning gap in Kenya with mobile learning: Challenges and future strategies,” *learntechlib.org*, 2015, Accessed: Aug. 23, 2021. [Online]. Available: <https://www.learntechlib.org/p/152170/>.
- [40] S. Oluwatobi, O. O.-A. at S. 2606562, and U. 2015, “Mobile learning in Africa: strategy for educating the poor,” *papers.ssrn.com*, 2015, Accessed: Aug. 23, 2021. [Online]. Available: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2606562.
- [41] M. M. M. Terras, J. Ramsay, J. R.-B. journal of Educational, and U. 2012, “The five central psychological challenges facing effective mobile learning,” vol. 43, no. 5, pp. 820–832, Sep. 2012, doi: 10.1111/J.1467-8535.2012.01362.X.
- [42] J. Traxler, S. V.- Prospects, and U. 2014, “Introduction: The prospects for mobile learning,” *Springer*, 2014, doi: 10.1007/s11125-014-9296-z.
- [43] U. Imtinan, V. Chang, T. I.-I. J. of Learning, and U. 2012, “Characteristics of mobile learning environments in developing countries,”



espace.curtin.edu.au, 2012, Accessed: Aug. 23, 2021. [Online]. Available: <https://espace.curtin.edu.au/handle/20.500.11937/5686>.

[44] C. Pimmer, P. Brysiewicz, S. Linxen, ... F. W.-N. education, and undefined 2014, "Informal mobile learning in nurse education and practice in remote areas—A case study from rural South Africa," *Elsevier*, vol. 34, pp. 1398–1404, 2014, doi: 10.1016/j.nedt.2014.03.013.

[45] J. Keengwe, *Advancing higher education with mobile learning technologies: Cases, trends, and inquiry-based methods: Cases, trends, and inquiry-based methods*, no. 3. 2014.

APPENDIX

TABLE 1: INDEPENDENT AND DEPENDENT VARIABLES

Citations	Independent variable(s)	Dependent variable
[5]	Achievement scores	Mobile learning Traditional learning
[6]–[8]	Perceived Innovation Perceived enjoyment	M-learning acceptance Learning motivation
[9]–[11]	Perceived usefulness	Learning effectiveness
[9], [12]–[19]	Student's usability Student's availability Student's perception Student's awareness Internet penetration	Mobile learning uptake
[20]–[26]	Student control Consistency Recovery errors Efficiency of use Flexibility	Usability problems
[17], [20], [27], [28]	Technology acceptance System success Learner satisfaction	M-Learning effectiveness
[28]–[34]	Challenges Advantages Learner preferences	Mobile learning
[21], [27], [28], [30], [31], [33]– [36], [28], [34], [37]– [40]	Motivation Framework	Learning practices
[13], [22], [23], [41]	Achievement motive Self-confidence Learning disability	Scalability development
[6], [40], [42]	Sustainability Country readiness	Mobile learning
[11], [41], [43]–[45]	Infrastructure	Mobile learning