

Applications of Mobile Learning in the Higher Educational Institutions through Statistical Approach

M.Rajathi, R.Arumugam

Abstract: *The aim of this study is to look at the academic uses of mobile learning among the Under Graduate (UG) and Post Graduate (PG) students. A Study was conducted by distributing a questionnaire form among UG and PG students. The mean, median, mode, variance, skewness, kurtosis and ANOVA showed that there's a statistically important distinction at the p level indicating positive views towards academic use of Mobile learning the academic use, advantages and impact of mobile learning are well-trying to be positive. Comparison of students opinion concerning academic uses and impact of victimization mobile learning by gender and age was conjointly distributed using descriptive statistics and ANOVA test. These tools weren't statistically important through that they had positive perceptions towards mobile learning as educational support tool. To check the several level statistical software SPSS is used.*

Index Terms: Smartphone, Students, Significant, Mobile Learning, ANOVA

I. INTRODUCTION

ICT applications alter the educational community to use numerous options offered for enriching the information generally and analysis productivity specifically. Mobile learning are often used for sharing data, emails, chatting, downloading, looking and creating payments and plenty of alternative activities. Recent study and ECAR survey showed that sixty seven percent United States undergrad students' mobile learning and tablets were used for academic functions Dahlstrom, 2012 [1]. Consistent with UAE web, social and mobile statistics 2015 information graphics released in the month February 2015, out of 9.58 million total population of UAE, 7.27 million (76%) are active mobile web users. GSMA intelligence released in 2015 regarding mobile economy according that among all the Arab States, UAE was the top most country attempt that adopted mobile learning with eighty three percent of users. Consistent with polls revealed in American web site "Mashable". UAE graded 1st globally in using mobile learning, wherever three out of four individuals within the UAE owned mobile

learning, during this paper, an effort has been made to research the educational use, advantages and impact of mobile learning among the students within the United Arab Emirates.

Al fawareh and Jusoh, 2014[2] studies the employment of mobile learning among 324 university students of Najran University in Kingdom of Saudi Arabia. Through a form primarily based survey, findings discovered that 94.4 percent of students owned smart phones, and majority of them used like mobile by using as a laptop connected to web and a camera. Whereas an effort was made to review the employment of smart phone for leaning functions, it had been found that 91.7 percent of students used mobile learning to student's portal, 60.9 percent ne'er used for blackboard access. It's pathetic to notice that sixty six percent ne'er used their mobile learning for taking notes in an exceedingly schoolroom, 66.0 percent ne'er went to record category lectures and 46.5 percent has not in any respect used them for downloading materials associated with category .

Kibona and Mgaya, 2015 [3] focused to study the employment of smart phones among the students of Ruaha Catholic University (RUCU) in Tanzania and the way it affected their educational performance. The results exposed that mobile learning bring negative results on students performance academically as a result of the majorities GPAs of the surveyed respondents were found to be below three. Chen and Denouvelles, 2013 [4] explored the potential use and barriers of mobile learning by investigating 809 undergrad and 133 graduate students of University of Central American state and located that students want a lot of educational friendly devices like tablets and extra support to integrate mobile technologies into learning connected activities. In an effort review the academic use of mobile learning by seventy five university students registered in data actuation course, Bomhold, 2013 [5], found that use of search engines was terribly low(10.4%) among most often used apps, where as a major variety(75%) of them used the apps to seek out educational data.

A study of a hundred thirty five university students of Asian nation was done by Nam 2013 [6] to estimate student's satisfaction with smart phones in terms of gender and academic year. The results indicated that the majority of the usage was for time period communication with important distinction in terms of gender and no algebraic difference was found towards smart phone usage.

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Hossain and ahamed, 2016 [7] tried to explore the employment and perceptions of mobile learning among Dhaka University students for accessing educational data. The survey was conducted among 316 students and nearly 2/3 of the respondents utilised their mobile learning as a method to access educational data. Among them, 1/2 of the students used mobile learning to record category notes. Students had positive perceptions towards mobile learning as a tool for academic use. Though there have been some distinction within the terms of gender, age, place of origin and period of use, because the actual fact that mobile learning was unaccustomed them. Though a small and handy devise, it's one in every of the foremost universal, dynamic and complex trends in communication. Students use mobile learning because of wide selection of educational apps that however helpful are smart-phones for learning? Perceptions and practices of library and knowledge sciences among the students. Lepp A., Li, J. & Barkley .J. 2015 [10]. Mobile learning has become integral a part of everyday life since they're hand-held mini computers with complete software system offers computing talents and properly choices, exploring the relationships between school students mobile phone use, temperament and leisure. Sales force 2014 [11] targeted on mobile behaviour report: combining mobile device pursuit and client survey information to make a strong mobile strategy. Smith, A. 2015 [12] tried to review the employment people smart phones in 2015. Opinion poll/ review including a lot of inquire replied by respondents without the closeness of the researcher (Bryman, 2015). Mobile learning that uses cell phones is one of the methodologies that gives extraordinary guarantee to expand access to advanced education inside creating nations (Davison and Lazaros, 2015; Maleko Munguatosha Muyinda Lubega, 2011).

Investigation into the present state shows that versatile advancements bolster the student from various perspectives. Their usefulness ranges from moderately basic utilization of SMS messaging giving a non-compromising and private accessibility of on-request contemplate backing to the further developed utilization of versatile and advanced mobile phones for teaching method. Educational usefulness incorporates content conveyance, task coordinated effort and arranging. Hunting down data evaluation and getting to virtual conditions, for example, discourse sheets (Caudill, 2007; Davison and Lazaros,2015). Much the same as some other innovation, cell phones have restrictions. These can be comprehensively arranged as framework, approach and observation based. Late research reports propose that cell phones are constrained by absence of preparing power in respect to a PC or work station have little screens, low handling rate and capacity, short battery life, substance and programming application challenges (Kukulska –Hulme, 2009). Mathevuula and Uwizeyimana, 2014). As per Isaacs (2012), the explanation behind this seems, by all accounts, to be the absence of the essential learning, aptitude and frame of mind (SKAs) to adjust to the changes. Thusly, the inspiration and certainty to incorporate MT in instructing and separation taking in could just originate from approaching ICT hardware and having the required ICT abilities (Mikre, 2011, p.12). Be that as it may, Rodrigo (2011) contends that with the quick improvement of new versatile items and the propelled capacities and various applications and adornments accessible nowadays, the specialize constraints of cell phones

might be a transitory concern. Portable leaning makes adapting increasingly agreeable, adaptable and intuitive since students are not rendered stationary by the confinements of work station innovation or the customary homeroom settings (Conole, 2007). The ongoing discoveries on the spread and membership to call phones report a gigantic development and entrance of cell phones in both created and creating nations (Johnson, Onwuegbuzie, Turner, 2015). In Zanzibar, versatile learning was accounted for as key to advancing understudy, Turner, 2015). In Zanzibar , versatile learning was accounted for as key to advancing understudy inspiration and expanded commitment (Haji, Shame and Kombo, 2013) while Gachago et.al (2015) found that utilization of portable applications, for example, WhatsApp increment promptness and association among understudies and instructors.

II. PURPOSE

To investigate the impact of mobile learning on **Periyar Maniammai Institute of Science and Technology, Thanjavur, Tamilnadu** between the UG and PG students the following queries were raised:

- Q1: Do university students use mobile learning for academic purposes? (Yes / No)
- Q2: For what type of functions do they use smart phones? (Academic / Non Educational /Others)
- Q3: Is there any advantages of mobile learning in educational activities? (Yes/ No)
- Q4: What reasonably educational impact of mobile learning? (Useful / Not useful)
- Q5: What type learning the students are interested? (M learning / category area/ others)

III. METHODOLOGY

This paper examines the educational use of mobile learning among students of **Periyar Maniammai Institute of Science and Technology, Deemed to be university in Tamilnadu, India**. A study was conducted by distributing three hundred questionnaires among the UG and PG students of different during June 2018 to December 2018 (odd semester).

IV. DATA COLLECTION AND ANALYSIS

The form had five sections: a) students demographic data b) Usage of mobile learning c) advantages of mobile learning for academic purpose d) Impact of mobile learning and e) In the learning preference of the students. Three hundred questionnaires are distributed and picked up from the students the information analysis was done using SPSS package. Descriptive and quantitative statistics was obtained with five point likert scale.

Table 1: Students Information

Gender	Total (n= 300)	Percent
Male	197	65.67
Female	103	34.33
Age	Total (n= 195)	Percent

18-21 years	217	72.33
22-25 years	78	26.0
Above 25 yrs	5	1.67

Results:

Table 1 shows that, out of three hundred respondents, 197 (65.67%) were males and 103 (34.33%) were females. The 217 respondents (72.33%) were between 18-21 years followed by seventy eight from the people between 22-25 years (26%) and exclusively five respondents belong to the age group of higher than twenty five years (1.67%). It had been remarkable to say that everyone the three respondents (100%) were using mobile learning.

Table 2 Overall Statistics

		Q1	Q2	Q3	Q4	Q5	Mobile_Learning_in_Academic_Activities
N	Valid	300	300	300	300	300	300
	Missing	0	0	0	0	0	0
Mean		1.20	1.40	1.00	1.30	1.40	
Std. Error of Mean		.023	.028	.000	.026	.038	
Median		1.00	1.00	1.00	1.00	1.00	
Mode		1	1	1	1	1	
Std. Deviation		.401	.491	.000	.458	.665	
Variance		.161	.241	.000	.209	.442	
Skewness		1.508	.396		.895	1.390	
Std. Error of Skewness		.141	.141	.141	.141	.141	
Kurtosis		.274	-1.856		-1.208	.605	
Std. Error of Kurtosis		.281	.281	.281	.281	.281	
Range		1	1	0	1	2	
Minimum		1	1	1	1	1	
Maximum		2	2	1	2	3	
Sum		360	421	300	389	421	
Percentiles	25	1.00	1.00	1.00	1.00	1.00	
	50	1.00	1.00	1.00	1.00	1.00	
	75	1.00	2.00	1.00	2.00	2.00	

Table two shows that the students opinion concerning mobile learning for academic functions, usage of sensible phones, advantages of mobile learning in academic activities, academic impact of mobile learning, students interested concerning the mobile learning. Mean, median, mode and variance showed that there's statistically important distinction and also the skewness and kurtosis indicating that they had positive views towards academic use of mobile learning.

Table two shows that the students opinion concerning mobile learning for academic functions, usage of sensible phones,

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Table 3: Students' Opinion about mobile learning for academic purposes

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	240	80.0	80.0	80.0
No	60	20.0	20.0	100.0
Total	300	100.0	100.0	

Figure 1: Students' Opinion about mobile learning for academic purposes

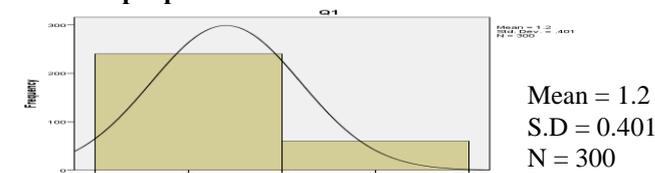


Table three and figure one shows that the students opinion regarding mobile learning for academic purposes. Mean, standard deviation and cumulative percentage showed that they are positive views towards academic use of mobile learning.

Table 4: Students' Opinion about the usage of smart phones

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Academic	179	59.7	59.7	59.7
Non Academic	121	40.3	40.3	100.0
Total	300	100.0	100.0	

Fig.2: Students' Opinion about the usage of smart phones

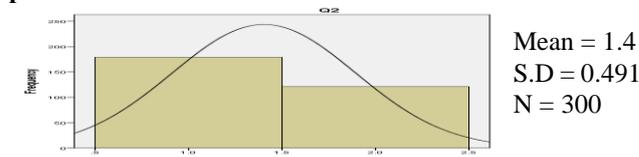


Table four and figure two shows that the students opinion concerning usage of smart phone for mobile learning. Mean, variance and proportion worth showed that they had positive impact for usage of smart phone for the academic activities victimizaion mobile learning.

Table 5: Students’ Opinion about advantages of mobile learning in academic activities

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	300	100.0	100.0	100.0

Figure 3: Students’ Opinion about advantages of mobile learning in academic activities

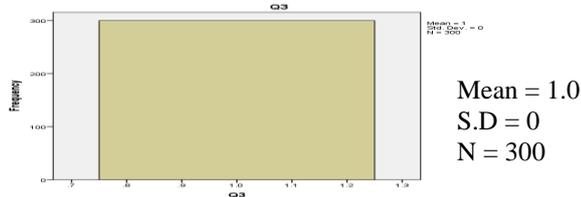


Table five and figure three shows that the students opinion concerning the advantages of mobile learning for educational use mean, standard deviation and percentage value shows that they had positive views towards mobile learning and its advantages for academic purposes.

Table 6: Students’ Opinion about academic impact of mobile learning

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Useful	211	70.3	70.3	70.3
Not Useful	89	29.7	29.7	100.0
Total	300	100.0	100.0	

Figure 4: Students’ Opinion about academic impact of mobile learning

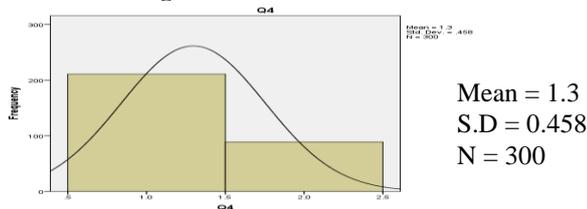


Table six and figure four shows that the students opinion regarding academic impact by victimization mobile learning. Mean, standard deviation and cumulative percentage showed that they had positive impact once victimization mobile learning.

Table 7: Students’ Opinion about the interest of the Mobile learning

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid M_Learning	209	69.7	69.7	69.7
Class room learning	61	20.3	20.3	90.0
Others	30	10.0	10.0	100.0
Total	300	100	100.0	

Figure 5: Students’ Opinion about the interest of the Mobile learning

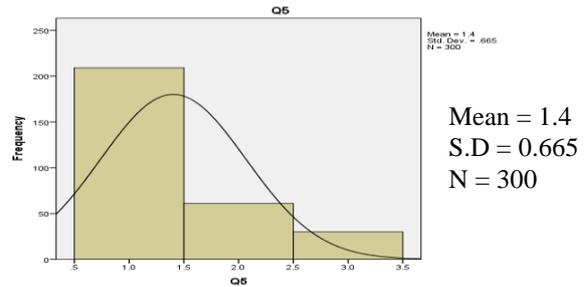


Table seven and figure five shows that the students’ opinion concerning the interest of the mobile learning. Mean, standard deviation and cumulative percentage showed that they had positive impact for the mobile learning compared to the class room learning.

Table 8: Students’ Opinion about Mobile Learning in the Academic Activities

	Freq	Percent	Valid Percent	Cumulative %
Valid Enter the students login	50	16.7	16.7	16.7
Black- board Usage	51	17.0	17.0	33.7
To download subject materials	36	12.0	12.0	45.7
To access library information	38	12.7	12.7	58.3
to Capture the notes taught in class	43	14.3	14.3	72.7
To access the materials	29	9.7	9.7	82.3
to Communicate with friends and faculty	27	9.0	9.0	91.3
To use academic Websites and links	26	8.7	8.7	100.0
Total	300	100.0	100.0	

Table 9: Students' Opinion about Mobile Learning in the Academic Activities (Comparison)

		Statistic	Bootstrap ^b					
			Bias	Std. Error	BCa 95% Confidence Interval			
					Lower	Upper		
Q 2	Yes	N	240	0	7	226	252	
		Mean	1.38	.00	.03	1.32	1.4	
		Std. Deviation	.486	-.01	.008	.469	.49	
		Std. Error	.031					
		95% Confidence Interval for Mean	Lower Bound	1.32				
			Upper Bound	1.44				
		Minimum	1					
		Maximum	2					
		No	N	60	0	7	49	73
			Mean	1.50	.00	.07	1.34	1.64
	Std. Deviation		.504	-.005	.007	.501	.503	
	Std. Error		.065					
	95% Confidence Interval for Mean		Lower Bound	1.37				
			Upper Bound	1.63				
	Minimum		1					
	Maximum		2					
	Total		N	300	0	0	.	.
			Mean	1.40	.00	.03	1.35	1.46
		Std. Deviation	.491	-.001	.006	.475	.499	
		Std. Error	.028					
		95% Confidence Interval for Mean	Lower Bound	1.35				
			Upper Bound	1.46				
		Minimum	1					
		Maximum	2					
Model	Fitted	Std. Deviation	.490	-.002	.007	.477	.496	
		Std. Error	.028					
	95% Confidence Interval for Mean	Lower Bound	1.35					
		Upper Bound	1.46					
	R	Std. Error	.064					

	a n d o m E f f e c t s	95% Conf idenc e	Lower Bound	.59				
		Inter val for Mea n	Upper Bound	2.21				
		Between- Component Variance		.005				

Q3	Ye s	N		240	0	7	22	25	
		Mean		1.00	.0	.00	.	.	
		Std. Deviation		.000	.0	.00	.	.	
		Std. Error		.000					
		95% Confidence Interval for Mean	Low er Boun d	1.00					
			Uppe r Boun d	1.00					
		Minimum		1					
		Maximum		1					
		No	N		60	0	7	49	73
			Mean		1.00	.0	.00	.	.
			Std. Deviation		.000	.0	.00	.	.
			Std. Error		.000				
	95% Confidence Interval for Mean		Low er Boun d	1.00					
			Uppe r Boun d	1.00					
	Minimum		1						
	Maximum		1						
	Tot al		N		300	0	0	.	.
			Mean		1.00	.0	.00	.	.
			Std. Deviation		.000	.0	.00	.	.
			Std. Error		.000				
		95% Confidenc e Interval for Mean	Lower Bound	1.00					
			Upper Bound	1.00					
		Minimum		1					
		Maximum		1					

Q 4	Ye s	N		240	0	7	22	25
		Mean		1.25	.00	.03	1.2	1.3



		Std. Deviation	.431	.00	.01	.40	.460	
		Std. Error	.028					
	95% Confidence Interval for Mean	Lower Bound	1.19					
		Upper Bound	1.30					
		Minimum	1					
		Maximum	2					
No		N	60	0	7	49	73	
		Mean	1.50	.00	.07	1.3	1.61	
		Std. Deviation	.504	-.0	.007	.50	.503	
		Std. Error	.065					
		95% Confidence Interval for Mean	Lower Bound	1.37				
			Upper Bound	1.63				
		Minimum	1					
	Maximum	2						
Total		N	300	0	0	.	.	
		Mean	1.30	.00	.03	1.26	1.34	
		Std. Deviation	.458	-.001	.011	.437	.476	
		Std. Error	.026					
		95% Confidence Interval for Mean	Lower Bound	1.24				
			Upper Bound	1.35				
		Minimum	1					
	Maximum	2						
Model	Fixed Effects	Std. Deviation	.447	-.001	.012	.423	.467	
		Std. Error	.026					
		95% Confidence Interval for Mean	Lower Bound	1.25				
	Upper Bound		1.35					
	Random Effects	Std. Error	.146					
		95% Confidence Interval for Mean	Lower Bound	-.55				
			Upper Bound	3.15				
Between-Component Variance		.030						

Table 10: Analysis of Variance (ANOVA)

	Sum of Squares	df	Mean Square	F	Sig.
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Q2	Between Groups	.701	1	.701	2.92	.088
	Within Groups	71.496	298	.240	1	
	Total	72.197	299			
Q3	Between Groups	.000	1	.000	.	.
	Within Groups	.000	298	.000		
	Total	.000	299			
Q4	Between Groups	3.101	1	3.101	15.5	.000
	Within Groups	59.496	298	.200	31	
	Total	62.597	299			
Q5	Between Groups	23.801	1	23.801	65.4	.000
	Within Groups	108.396	298	.364	33	
	Total	132.197	299			

Table eight and figure nine shows that the students opinion concerning the comparison of learning within the academic activities namely black-board usage to transfer subject materials to access library information to capture the notes and materials to discuss with friends in the academic environment and to use academic websites and links using mobile learning. Table ten highlights that the opinion concerning impact on victimization mobile learning by gender was collected using multivariate analysis test like ANOVA test. These results are represented that there is no significant difference at 5% level in terms of opinion concerning of educational use of smart phone in the mobile learning in the academic zone by males or females.

V. DISCUSSION

As so much as student’s opinion concerning academic use of mobile learning, the very best mean score obtained is 1.20 with a standard deviation of 0.401. They will get access to any or all the data concerning the activities and functions of institution. With relevancy the opinion concerning advantages of mobile learning for academic use, the very best mean score obtained is 1.0 with standard deviation of 0.00, the opinion that mobile learning saves time and increase productivity. Another advantage of mobile learning is to extend the searching and learning skills. The lowest mean score was 0.00 with standard deviation of 0.00 and everyone the variables indicates the positive views towards mobile learning and advantages for academic functions.

With regards students’ opinion about academic impact of using mobile learning, as in table four, the maximum mean score recorded was 1.3 with a standard deviation of 0.458 for the opinion that mobile learning have crystal rectifier to improve academic performance. A mean value of 1.26 with standard deviation of 0.667 was recorded for the opinion that mobile learning encouraged the students to attend regular classes and participate in lectures. Mobile learning conjointly helped to make positive feelings among the classmates as an entire also it helps to complete the task within the given time period. So the educational use,

advantages and impact of mobile learning are showed to be positive. Comparison of student’s opinion concerning academic advantages and impact of using mobile learning by gender and age was distributed using multivariate analysis like ANOVA which weren’t statistically significant. Moreover they had positive perceptions towards mobile learning which was to be an instructional support for the same.

VI. CONCLUSION

Mobile learning gains a major place among the students community. There are several applications freely obtainable on-line. Such apps will be simply downloaded and hold on any handy device. This investigative study has emphasized that students might used smart phones for academic functions extensively from easy reading, browsing and downloading academic materials. It’s wide impact on their academic performance which is able to boost their interest through category participation, improvement of learning skills, preparation and submission of assignments on time.

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REFERENCES

1. **Dahlstrom, E (2012)** ECAR study of undergraduate studentss and information technology 2012, EDUCAUSE Center for Applied Research, Retrieved from <http://www.educause.edu/ecar>.

2. **Alfawareh, H.M., & Jusoh, S. (2014)**. Smart phones usage among university students: Najren University case. *International Journal of Academic Research*, 6(2), 321-326.
3. **Kibona, L., & Mgaya, G.(2015)**. Mobile learning effect on academic performance of higher learning students: a case of Ruaha Catholic University – Iringa Tanzania. *Journal of Multidisciplinary Engineering science and Technology*, 2(4), 777-784.
4. **Chen , B., & Denoyelles, A.(2013)**. Exploring students mobile learning practices in higher education. *Educausereview*, (2013, Oct 7). Retrieved from : [http://er.educause.edu/articles/2013/10/exploring-students mobile learning practices in higher education](http://er.educause.edu/articles/2013/10/exploring-students-mobile-learning-practices-in-higher-education).
5. **Bomhold,C.(2013)** . Educational use of smart phone technology: a survey of mobile phone application use by undergraduate university students. *Program: electronic Library and Information Systems*, 47(4), 424-436.
6. **Nam, S.Z.(2013)**,Evaluation of university students utilization of smartphone . *International Journal of Smart Home*, 7(4), 162-173.
7. **Hossain M.E., & Ahmed, S.M.Z. (2016)**. Academic use of mobile learning by university students: A developing counan effort perspective. *The Electronic Library*, 34(4), 651-665.
8. **Woodcock, B., Middleton, A., & Nortcliffe , A.(2012)**. Considering the smartphone learner: An investigation into students interest in the use of personal technology to enhance their learning. *Students Engagement and Experience Journal* 1(1), 1-15.
9. **Chiu, D., Dukic D. & Lo,P. (2015)**. How useful are smart-phones for learning? Perceptions and practices of library and information science students from Hong Kong and students' Cell phone use, personality and leisure. *Computers in Human Behaviour*, 43, 210-219.
10. **Lepp. A., Li, J., & Barkley, J.(2015a)**. Exploring the relationships between college students cell phone use, personality and leisure. *Computers in Human Behaviour*, 43,210-219.
11. **Salesforce. (2014)**. Mobile behaviour report: Combining mobile device tracking and customer survey data to build a powerful mobile strategy. Retrieved 5 August from: [http://www.marketingcloud.com/sites/exacttarget/files/deliverables/etmc-2014 mobilebehaviourreport.pdf](http://www.marketingcloud.com/sites/exacttarget/files/deliverables/etmc-2014-mobilebehaviourreport.pdf).
12. Bryman, A. (2015). *Social research methods*, Oxford University press.
13. Naismith, L.(2008). Literature review in mobile technologies and learning. Retrieved on 10.05.2015 from [http://elearning.typepad.com/the learned man/mobile learning/report/future lab_review_11.pdf](http://elearning.typepad.com/the_learned_man/mobile_learning/report/future_lab_review_11.pdf).
14. Davison, C. B., & Lazaros, E.J.(2015).Adopting Mobile Technology in the Higher Education Classroom learning adoption model for Higher education institutions in developing networked learning adaptation model for higher education institutions in developing countries. *On the Horizon*, 19(4),307-320.
15. Maleko Munguatosha, G., Birevu Muyinda, P., & Thaddeus Lubega, J. (2011). A social networked learning adoption model for higher education institutions in developing countries. *On the Horizon*, 19(4), 307-320.
16. Caudill, J. G. (2007). The growth of m-learning and the growth of mobile computing: Parallel developments. *The International Review of Research in Open and Distributed Learning*, 8(2).
17. Davison, C.B., Lazaros, E.J (2015), Adopting Mobile Technology in the Higher Education Classroom *Journal of Technology Studies*, 41(1).
18. Kukulska-Hulme, A., & Traxler, J. (2007). Designing for mobile and wireless learning. In H. Beetham & R. Sharpe (Eds.), *Rethinking pedagogy for a digital age: Designing and delivering e-learning* (pp. 180-192). London, UK: Routledge.
19. Mathevela, M.D., & Uwizeyimana, D.E. (2014). The challenges facing the interation of ICT in teaching and learning activities in South African secondary schools. *Mediterranean Journal of Social Sciences*, 5(20), 1087-1097.
20. Isaacs,S.(2012).Turning on mobile learning in Africa and the Middle East, Illustrative Initiatives and policy Implications, by the United Nations Educational , Scientific and cultural Organization 7, place de Fontenoy, 75352 Paris 07 SP, UNESCO 2012, France Cultural Organization 7, place de Fontenoy, 75352 Paris 07 SP, UNESCO 2012, France.
21. Mikre, F. (2011). The roles of ICT in education. Review article with emphasis to the computer and internet. *Ethiopian Journal of Education and Science*, 6(2). University, Egypt. *The Electronic Library*, 34(3).
22. Rodrigo, R. (2011). Mobile teaching versus mobile learning. *EDUCAUSE Quarterly* 101 Magazine, 34 (2).
23. Conole, G., Latt, M. d., Dillion, T., & Darby, J. (2006). JISC LXP Student experiences of technologies. Draft final report.
24. Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of mixed methods research*, 1(2), 112-133.
25. Haji, H. A., Shaame, A. A., & Kombo, O. H. (2013, September). The opportunities nd Challenges in using mobile phones as learning tools for higher learning students in the developing countries: Zanzibar context. In *AFRICON*, 2013(pp-1-5).IEEE.

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