Analysis of M-learning Utilization Challenges, Learning Purposes and Benefits for Improved Business Education Outcomes in Nigerian Universities

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Abstract: The study centered on m-learning utilization challenges, learning purposes and benefits for improved business education outcomes in Nigerian Universities. The study identified 33 critical challenges, purposes and benefits of m-learning utilization that affect business education outcomes. The research question "what are the m-learning utilization challenges, learning purposes and benefits for improved business education outcomes in Nigerian Universities?" was answered. One hypothesis "significant difference does not exist between students and teachers' responses regarding m-learning utilization challenges, learning purposes and benefits for improved business education outcomes in Nigerian Universities" was tested. Descriptive survey design was adopted for the study. M-learning Utilization Challenges, Purposes and Benefits Questionnaire (MUCPBQ) was used to gather data for the study. Cronbach Alpha was used to determine the reliability of the questionnaire which yielded a reliability coefficient of 0.74. The questionnaire items were administered on 281 teachers and 262 students who are registered members of the Association of Business Educators of Nigeria. All the respondents completed and returned their questionnaire. The data collected to answer the research question were analyzed using mean and standard deviation and the hypothesis was tested using one way Multivariate Analysis of Variance (MANOVA) at 0.05 level of significance. It was found that m-learning devices have utilization challenges, learning purposes and benefits and there was no significant difference between teachers and students' responses regarding m-learning utilization challenges, learning purposes and benefits for improved business education outcomes in Nigerian Universities (F (1, 541) = 1.67, P= 0.173). It was recommended, among others, that students, teachers and concerned university authorities should embrace the opportunities offered by m-learning devices by ensuring their effective utilization so that the challenges of utilizing m-learning devices would be overcome and the required business education outcomes achieved.

Keywords: M-learning, Utilization Challenges, Learning Purposes, Benefits, Business Education Outcomes

1. Introduction

M-learning is learning facilitated by mobile devices. According to Sharples and Jeffery (2002), m-learning is an emergent paradigm in a state of intense development fuelled by the confluence of three technological streams, ambient computing power, ambient communication and development of intelligent use of interfaces. Quinn (2007) explained that mobile learning is the intersection of mobile computing (the application of small, portable and wireless computing and communication devices) and e-learning (learning facilitated and supported through the use of information and communications technology). Crumpton (2013) viewed m-learning across multiple contexts through social and content interactions using personal electronic device. What separates m-learning from e-learning is that it enables learning to take place while on the move. It allows learning to take place everywhere and anywhere. Vavoula and Sharples (2002) explained the ways in which learning can be considered mobile: "learning is mobile in terms of space, i.e., it happens at the work place, at home and all places of leisure; it is mobile between different areas of life, i.e., it may relate to work demands, self-employment, or leisure; and it is mobile with respect to time, i.e., it happens at different times during the day, or working days or on weekends" (P.152) What is unarguable

is the fact that m-learning can diminish barriers of space and distance especially physical presence of the traditional classroom. McGuire and Gubbins (2010) agreed that formal learning now plays a greatly diminished role being supplanted by activity based and technology based learning. Device that can be used for m-learning by business education students includes ipods, mp3, personal digital assistants (PDAs), USB drive, e-book reader, ultra-mobile PC (UMPC), Smart phones and tablets. According to Dehlstrom (2012), applications that run on the enumerated devices allow user to consume, discover and produce content. Clearly m-learning devices include all technologies that can be applied to learning that are handy, autonomous and unobtrusive and able to accompany learner's every movement in life.

Across the world teaching and learning have acquired a new meaning and have pushed traditional learning behind the scene. Thus, the purpose of learning will be activity-based where students discover and produce content rather than consume what the teacher has produced. Academic programmes commonly associated with e-learning careers include business education and social sciences (Anon, 1995). M-learning being part of e-learning has the capacity to inspire new approaches and purposes of learning. In a study conducted by Ally and Tsinakos (2014), it was reported that mobile subscription reached 6 billion globally with at least 75% of these being in developing countries and nearly 2.5 billion of the world population now access the Internet through mobile device alone. The purposes m-learning can be put to in the study of business education are varied as according to Kopter, Squire and Jenkins (2002) they possess five properties of portability, social interactivity, context sensitivity, connectivity and individuality. Harnessing these properties therefore implies that devices can be moved about to any site; face-to-face exchange and collaboration with other learners is possible; devices can gather and respond to real or simulated data; connecting mobile devices to other devices or network would create a shared network; and scaffolding for difficult activities can be customized to suit individual learners.

These new purposes can only be achieved with the increased use of technology based training methods such as online simulation, mobile learning, social network and podcasts to complement traditional methods (Patel, 2010). The challenge however is the absence of business education curriculum interlaced with these new technologies. Though informal and lifelong activities are believed by many educators to be superior and for this reason encourage activities which promote learning outside dedicated learning environment and formal curriculum. However, these observed properties which m-learning possess can be matched with theories of learning. The first is the behaviorist theory that sees learning as a change in observable action. In this case, drill and feedback activities together with other classroom response systems can be employed. Secondly, the constructivists see learning as taking place only when learners can construct new ideas. This happens when learners are encouraged to participate in creating contents from past and present experiences. Thirdly the collaborative, as the name

suggests, collaborates in social interaction activities using their mobile computer supported collaborative learning. Finally, the situated learning theorists try to create activities that promote learning within the authentic context and culture, and Perry (2003) referred to this as the problem and case-based learning and context awareness. Business teachers believe that technology rich activities can sustain high level of student engagement and peer collaboration (West, 2013).

This syllogistically brings to the fore the issue of business education outcomes. Business education graduates are believed not to possess the requisite work skills. A situation as obtainable in Nigeria where business education graduates are not found fit for employment is no longer acceptable. It is no longer the current business education outcome resulting from the rote knowledge that helps students answer examination questions that we need now but such skills, attitudes and competencies that are essential for, and often developed at work. Innovation in business education learning based on m-learning linkage to the above mentioned theories of learning as espoused by the behaviorists, constructivist and the collaborative will surely engender an outcome of real-world relevant skills. This is what employers seek in would-be employees, that is, the ability to analyze, solve problems and communicate effectively through collaborative efforts. Furthermore, universities could develop a symbiotic relationship with captains of industries that have valuable experiences in assessing these cherished skill-related outcomes and then link them with curricula in business education.

The benefits of m-learning in bus education teaching and learning are immense. Shawe (2013) identified some benefits of m-learning devices to include the following:

- Access to content, peers, experts and previous thinking on relevant topics.
- Performance of knowledge.
- Increased collaboration with access to the cloud, all data sources and project materials are constantly available.
- Transparency through natural products of connectivity, mobility and collaboration.
- Learning by doing.
- Asynchronous learning which allows educational environment to move anywhere, anytime.
- Self-actuated where learners plan topic, sequence, audience and application.
- Divergent thinking where audiences are diverse, thinking is diverse as are the environment.
- Evidence storage and management where learners adopt these technologies, store files, compare and evaluate, publish, think and connect learners.
- Blending the learning style through physical movement, personal communication, learning styles and digital interaction.
- Always-on-classroom never full where 24hr learning is self-activated, spontaneous and interactive.
- Authentic learning which enables experiences that are truly personalized.

2. Statement of the Problem

There is no doubt that m-learning in developed countries has taken root. Nearly all students and teachers of business education in Nigeria own m-learning devices. Unfortunately these m-learning devices are under-utilized as they are used to make and receive calls, to play music for entertainment and download obscene images. Yet, according to Valk, Rashid and Laurent (2010), of the many different forums of information and communications technology, mobile phones are thought, for several reasons to be a particularly suitable tool in advancing education in developing regions. Furthermore, the nature of work has changed and there is hardly any employment position not requiring above average skill in utilizing the mobile phones for business activities. Similarly, most educational institutions in Nigeria lack consolidated and comprehensive curriculum for training of learners. This study therefore, aimed at answering the question, "what are the m-learning utilization challenges, learning purposes and benefits for improved business education outcomes in Nigerian universities?

2.1. Research Question

What are the m-learning utilization challenges, learning purposes and benefits for improved business education outcome in Nigeria universities?

2.2. Hypothesis

Difference does not exist between students and teachers' responses regarding m-learning utilization challenges, learning purposes and benefits for improved business education outcomes in Nigeria Universities.

3. Methods

3.1. Population of the Study

The population of the study consisted of 1770 business education teachers and students who are registered members of the Association of Business Educators of Nigeria (ABEN). While Business Teachers were 1010 the remaining 760 were students.

3.2. Sample and Sampling Technique

The Taro Yamane formula was used to determine the sample which yielded 281 and 262 teachers and students respectively who are registered members of the Association of

Business Educators of Nigeria. Subsequently, a simple random sampling technique was carried out before selecting the sample from the population. All the respondents totaling 543 were given the questionnaire which were all completed and retrieved with the help of ten research assistants during the National Conference of the Association of Business Education of Nigeria held from 14th to 17th October, 2014 at Kwara State University, Malete, Ilorin, Nigeria.

3.3. Instrumentation

The instrument used was *M-learning Utilization Challenges, Purposes and Benefits Questionnaire (MUCPBQ)* of 33 items which the researcher constructed after review of related literature to the study. The instrument was validated by three colleagues in the Department of Business Education. Cronbach Alpha was used to determine the reliability of the instrument which yielded a reliability coefficient of 0.74. Likert Scale of five categories were used starting from Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree which received values of 5, 4, 3, 2 and 1 respectively. Positive decision rule for this study was established at a mean of 3.50 and above while any mean less than that was regarded as negative. One way Multivariate Analysis of Variance (MANOVA) was used for testing the hypothesis at 0.05 level of significance. If the observed significant value is greater than the significant value of 0.05 (P>0.05), the null hypothesis would be retained and otherwise (P<0.05), it would be rejected.

4. Results

Research Question: What are the m-learning utilization challenges, learning purposes and benefits for improved business education outcome in Nigeria universities?

The data presented in the Table 1 showed that items 1-10 received favourable ratings from respondents with high mean ranging between 3.55 and 4.40. Items 11 and 13 with mean ratings of 3.31 and 3.30 respectively were unfavourably rated as challenge of m-learning utilization. The implication of these responses suggested a convergent of agreement among respondents that the observed challenges in the utilization of m-learning devices are real. Standard deviation scores as observed in the table ranged from 0.50 to 1.28 implying that there was little or no disagreement among the respondents regarding the aforementioned challenges to the use of m-learning devices in business education learning and teaching.

Table 1. Mean and standard deviation of teachers and students' responses on challenges of utilizing m-learning devices.

Item No.	Constructs	5 SA	4 A	3 U	2 D	1 SD	SD	X	Decision
1.	Devices are very costly and screens too small.	203	109	140	78	13	1.17	3.76	Agree
2.	Smart phones keyboards too tiny for efficient inputting	193	135	145	39	31	1.17	3.77	Agree
3.	No interactivity as only one –way communication is possible when using MP player	207	48	209	78	01	1.13	3.70	Agree
4.	E-book reader no yet available in large quality	107	178	169	89	-	0.99	3.56	Agree
5.	Some device like Laptop / Tablet PC cannot actually be used while walking	305	238	-	-	-	0.99	3.56	Agree

Item No.	Constructs	5 SA	4 A	3 U	2 D	1 SD	SD	X	Decision
6.	Evidence of m-learning use for teaching and learning business education subjects is lacking	101	184	171	87	-	0.97	3.55	Agree
7.	Students use m-learning devices for calls and entertainment rather than for study	199	201	-	116	27	1.28	3.79	Agree
8.	Curricula that map out effective use of m-learning in business education subjects are lacking	202	101	197	22	21	1.10	3.81	Agree
9.	Teachers and students require skill building for m-learning devices to be efficiently used for learning	192	199	125	27	-	0.84	4.02	Agree
10.	Energy to power these devices is inadequate	239	304	-	-	-	0.50	4.40	Agree
11.	Encoding and transferring of files from MP player is time-consuming	130	126	100	157	30	0.89	3.31	Disagree
12.	PDAs not efficient for long e-mails and text messages	272	171	60	39	1	0.93	4.24	Agree
13.	Some devices have limited computing capability	-	203	301	39	-	0.60	3.30	Disagree

Table 2. Mean and standard deviation of teachers and students' responses on learning purposes of m-learning devices.

Item No.	Constructs	5 SA	4 A	3 U	2 D	1 SD	SD	X	Decision
14.	Apple, iphone are used to access textbooks, course material and videos	161	120	205	57	-	1.01	3.71	Agree
15.	Equipped with front and rear-facing camera which assist someone with limited vision to point the shoot video and pictures	139	113	291	-	-	0.85	3.72	Agree
16.	Teachers can use to instantly share screen content from Tablet or PC screen to an E-board and students' personal devices	131	121	111	180	-	1.18	3.37	Disagree
17.	Has built-in Google technology for purpose of easy access to information	269	274	-	-	-	0.50	4.50	Agree
18.	Kindle five HD allows access to textbooks, educational memo and access to PDFs	150	162	231	-	-	0.83	3.85	Agree
19.	Some provide Wispercast services, a central management system that operates similar to a server therefore allowing a gateway for internet	-	282	261	-	-	0.50	3.52	Agree
20.	Galaxy Note 10 for instance has feature that was the S.Pen representing pen and paper on a large display for taking note in class	28	176	339	-	-	0.59	3.42	Disagree
21.	Apple has a software iBook Authoring which experts of all subjects can use to create interactive books that can be downloaded to the ipad	38	209	296	-	-	0.62	3.52	Agree
22.	Used for man storage and …….. of data	142	401	-	-	-	0.44	4.26	Agree
23.	Used for downloading of data	169	374	-	-	-	0.46	4.31	Agree
24.	Some devices support audio, video and gaming	143	239	161	-	-	0.75	3.97	Agree

Table 3. Mean and standard deviation of teachers and students' responses on the benefits of m-learning devices.

Item No.	Constructs	5 SA	4 A	3 U	2 D	1 SD	SD	X	Decision
25.	Google can deliver up to date research, control scheduling and help manage teachers / students' day	302	329	2	-	-	0.51	4.6	Agree
26.	Allows access of content with peers and experts on subjects	101	207	182	17	36	1.04	3.59	Agree
27.	With increased access to the cloud, collaboration is easy and materials constantly available	112	196	192	27	16	0.96	3.66	Agree
28.	Both teacher and students learn by doing facilitating problem solving skills communication & evaluation of practical issues	281	262	-	-	-	0.50	4.52	Agree
29.	Classroom is never filled which encourages expansion and acquisition of real life situations	172	261	110	-	-	0.71	4.11	Agree
30.	24-hours learning is possible, spontaneous and interactive encouraging everyday life skills	162	159	151	71	-	1.02	3.76	Agree
31.	Asynchronous learning in classroom can move to anywhere anytime	192	281	41	29	-	0.78	4.17	Agree
32.	Authentic learning where experiences are truly personalized	202	219	119	3	-	0.77	4.14	Agree
33.	Allow storage of files and sharing of content	302	200	41	-	-	0.63	4.48	Agree

Grand mean = 3.91
Grand SD = 0.39

For items 14-24, only item 20 that Galaxy Note 10 has a feature that uses the S.Pen representing pen and paper on a large display for taking notes in class received negative rating of a mean of 3.42. The other items were favourably considered by respondents as learning purposes with high mean ratings ranging from 3.50 to 4.50. This implied that there was a high consensus among the respondents regarding the educational purposes of m-learning devices. The standard deviation scores ranging between 0.44 and 1.18 was an indication of low variability in the opinion expressed by all the respondents regarding the purposes which m-learning devices could be put in business education learning and teaching process.

In Table 3, it can be observed that items 25 to 33 were agreed upon by the respondents as benefits of m-learning devices in learning business education skills with very high means ranging from 3.59 to 4.6. This implied that there was no doubt at all that m-learning devices could be of immense benefit to students and teachers regarding the improvement of business education outcomes in Nigerian Universities. The standard deviation scores of 0.50 to 1.04 indicated low variability of the respondents' opinion on the benefits of these m-learning devices. The implication was that there were very little or no disagreements in their view regarding the benefits that could accrue from the use of m-learning devices.

Hypothesis

Significant difference does not exist between the responses of teachers and students regarding the challenges, purposes and benefits of utilizing m-learning for improved business education outcomes in Nigeria Universities.

Table 4 revealed that there was no significant difference between the responses of teachers and students on the challenges, purposes and benefits of utilizing m-learning, F (1, 541) = 1.67, P> 0.05; Wilk's Λ = 0.991, partial η^2 =. 09.This implied that teachers and students did not differ statistically significantly in their responses regarding the three dependent variables (challenges, purposes and benefits of utilizing m-learning) tested in the study.

***Table 4.** Summary One-way Multivariate Analysis of Variance (MANOVA) of the difference between the responses of teachers and students on the challenges, purposes and benefits of utilizing m-learning.*

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.994	28776.132[a]	3.000	539.000	.000	.994
	Wilks' Lambda	.006	28776.132[a]	3.000	539.000	.000	.994
	Hotelling's Trace	160.164	28776.132[a]	3.000	539.000	.000	.994
	Roy's Largest Root	160.164	28776.132[a]	3.000	539.000	.000	.994
GROUP	Pillai's Trace	.009	1.668[a]	3.000	539.000	.173	.009
	Wilks' Lambda	.991	1.668[a]	3.000	539.000	.173	.009
	Hotelling's Trace	.009	1.668[a]	3.000	539.000	.173	.009
	Roy's Largest Root	.009	1.668[a]	3.000	539.000	.173	.009

***Table 5.** Tests of between subjects effects.*

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	Challenges of utilizing m-learning	.651[a]	1	.651	.790	.374	.001
	Purposes of utilizing m-learning	.158[c]	1	.158	.373	.542	.001
	Benefits of utilizing m-learning	.699[d]	1	.699	1.366	.243	.003
Intercept	Challenges of utilizing m-learning	7961.623	1	7961.623	9662.502	.000	.947
	Purposes of utilizing m-learning	7964.370	1	7964.370	18751.582	.000	.972
	Benefits of utilizing m-learning	9155.990	1	9155.990	17902.088	.000	.971
GROUP	Challenges of utilizing m-learning	.651	1	.651	.790	.374	.001
	Purposes of utilizing m-learning	.158	1	.158	.373	.542	.001
	Benefits of utilizing m-learning	.699	1	.699	1.366	.243	.003
Error	Challenges of utilizing m-learning	445.768	541	.824			
	Purposes of utilizing m-learning	229.779	541	.425			
	Benefits of utilizing m-learning	276.693	541	.511			
Total	Challenges of utilizing m-learning	8422.848	543				
	Purposes of utilizing m-learning	8206.560	543				
	Benefits of utilizing m-learning	9450.211	543				
Corrected Total	Challenges of utilizing m-learning	446.420	542				
	Purposes of utilizing m-learning	229.938	542				
	Benefits of utilizing m-learning	277.392	542				

a. R Squared =. 001 (Adjusted R Squared =. 000)
b. Computed using alpha =. 05
c. R Squared =. 001 (Adjusted R Squared = -.001)
d. R Squared =. 003 (Adjusted R Squared =. 001)

Table 5 revealed that mean scores for challenges of utilizing m-learning were not statistically significantly different between teachers and students (F (1,541) = 0.79 p = 0.374, η^2 = 0.01), the mean score for purposes of utilizing m-learning were also not statistically significantly different between teachers and students (F (1,541) = 0.37 p = 0.542, η^2 = 0.01)

and the mean score for purposes of utilizing m-learning were also not statistically significantly different between teachers and students ($F_{(1,541)} = 1.37$, $p = 0.243$, $\eta^2 = 0.03$).

Table 6 revealed the estimated marginal means of students and teachers responses on the challenges, purposes and benefit of utilizing m-learning. Though, there are mean differences between students and teachers' responses on challenges (0.069), purposes (0.034) and benefits (0.072) of utilizing m-learning, these mean differences were not statistically significant.

Table 6. Estimated Marginal Means.

Dependent Variable	Group	Mean	Std. Deviation
Challenges of utilizing m-learning	Teachers	3.866	0.87
	Students	3.797	0.94
Purposes of utilizing m-learning	Teachers	3.849	0.65
	Students	3.815	0.65
Benefits of utilizing m-learning	Teachers	4.145	0.67
	Students	4.073	0.76

5. Discussion

The study was conducted to determining the challenges, purposes and benefits of utilizing m-learning devices in teaching and learning in order to improve outcomes of business education in Nigerian Universities. The findings of the study revealed numerous challenges in the utilization of m-learning devices. These challenges include: high cost and small nature of screens; one way interaction; unavailability of E-book Reader; difficulty of using devices while walking; lack of evidence of use of m-learning devices; absence of curricular; skill building before use of devices; lack of energy; and that devices are not efficient for long e-mails. Previous studies (Ezeh, 2005; Nworgu, 2006; Ali, 2006 & Onah, 2013) supported these findings especially as they affect lack of skill of students and teachers in the use of new technology devices in the teaching and learning of business education subjects; absence of energy to power equipment and total unavailability of some of these equipment. The findings of this study also agreed with that of Manir (2009) which revealed that classrooms in higher institutions are not adequately equipped for effective usage of ICT. In another study, Umoru (2013) discovered that due to challenges of fund, poor skill of teachers, lack of appropriate curriculum and students' poor perception of learning purposes of these devices, new technologies were not fully embraced by teachers and students in their teaching and learning of business education subjects in Nigerian Universities. This study also found that m-learning devices could be put to educational purposes just as the US department of Education (2015) explained, technology ushers in fundamental structural changes that can be integral to achieving significant improvements in productivity. Used to support both teaching and learning, technology infuses classrooms with digital learning tools, such as computers and hand held devices; expands course offerings, experiences, and learning materials; supports learning 24 hours a day, 7 days a week; builds 21st century skills; increases student engagement and motivation; and accelerates learning. Technology also has the power to transform teaching by ushering in a new model of connected teaching. This model links teachers to their students and to professional content, resources, and systems to help them improve their own instruction and personalize learning. Sergio (2015) also found in a separate study that m-learning solutions are poised to tap into the vast amount of existing educational materials that could be made accessible via mobile channels. This is especially true with YouTube, Vimeo, and other video-sharing services already providing a critical mass of tips, tutorials, and full-fledged lessons that can be re-aggregated by theme and packaged as educational material. Similarly, m-learning devices have good purposes in the areas of access to course materials, use of camera especially by students with limited vision; provision of Wispercast services; note taking; creation of interactive books, storage; downloading and gaming. These current findings were in line with that of Mandala (2013) whose study revealed high rate of use of these devices in learning by students across universities. Unfortunately, this cannot be said of Nigerian universities where students are known to use these devices prevalently for entertainment and gaming and Chen and Denoyelles (2013) strongly supported this finding when they revealed that there is a gap between owning mobile devices and actually using them. The reason for this may be that teachers and students, according to the findings of Leem and Lim (2007), universities are seriously lacking in preparations for mobile learning. The study also found that the benefits of using m-learning devices in learning and teaching business education subjects are many. They include: devices are mainly beneficial for research; collaboration; practical; encouraging everyday life skill; learning everywhere and anytime; personalization of learning and sharing of content. Shaw's (2013, and Umoru's (2012) studies supported this current study as they reported that most of the identified benefits genuinely assist students and teachers that embrace the usage of m-learning devices in the teaching and learning to improve business education outcome and also instill lifelong survival skills needed for everyday business activities and also management of personal business. Regarding the benefit of learning everywhere and anytime, Wylie (2014) found that students in m-learning environments can make choices as to when to access the resources for learning purpose, where they learn and how they use the learning materials. As regards the sharing of content as a benefit, Dehlstrom (2012) agreed that these devices allow users not only to consume but also discover, produce and share content. Concerning educational values, especially in a developing country like Nigeria where many cannot or do not have exposure to continuous and regular education, Sergio (2015) discovered that with low-priced computers, tablets, and cell phones in the hands of children in resource-challenged communities, many kids who are engaging in technological leapfrogging will have the opportunity to skip past outdated formal school systems, too. This is especially relevant in the case of children living in poverty, who may be denied an opportunity to improve their condition through education because they start working very early to help sustain their families or do not live near schools.

6. Conclusion

The study was about the challenges, purposes and benefits of utilizing m-learning devices in order to improve business education outcomes in Nigerian Universities. It was discovered that these devices when utilized purposefully by students and teachers would improve the intended outcomes. It is very necessary for the findings of the study to be implementedso that graduates of business education would fit into the current world of work which is now global and technology-driven. The intended business education outcomes obviously are those conferring on the students the skills, attitudes and competencies required by industries for office activities and for self-survival and successful living.

7. Recommendations

Based on the findings of the study the following recommendations were made:
1. Students, teachers and concerned university authorities should embrace the opportunities offered by m-learning devices by ensuring their effective utilization so that the challenges of utilizing m-learning devices would be overcome and the required business education outcomes achieved.
2. The University authorities should provide the needed infrastructure and equipment for effective teaching and learning, especially, those necessary for m-learning implementation.
3. The teachers should map out appropriate strategies that match m-learning purposes identified by this study and ensure its implementation.
4. Students of business education should embrace the use of m-learning devices in their learning process.

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