

Academic Self-Efficacy and Use of Mobile Technology based Library Services by Undergraduates in Universities of South-West Nigeria

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***Abstract** - Many university libraries are adopting innovative ways of providing mobile interfaces and their applications so as to be effective in terms of delivery of service to patrons. Are undergraduates maximizing the use of these services and could underutilization of mobile technology-based library services by undergraduates be attributed to low academic self-efficacy? This study investigated academic self-efficacy and use of mobile technology-based library services by undergraduates in universities in South-West Nigeria. The design for the study was survey, involving multistage sampling technique. Two questionnaires were used to sample 1,086 undergraduates across three faculties in six universities in South-West Nigeria. 1,045 responses were analysed statistically. The study found that academic self-efficacy of undergraduates in universities in South-West Nigeria is high. Undergraduates in South-West Nigeria use Short Messaging Services (SMS), e-books, mobile websites and databases to a large extent. There was low positive (Pearson $r = 0.084$) relationship between academic self-efficacy and use of mobile technology-based library services. This study concluded that it is expedient for undergraduates in universities in South-West Nigeria to increase their academic self-efficacy for greater use of mobile technology-based library services.*

Keywords: Academic self-efficacy, Mobile technology-based library services, Electronic resources, Undergraduates, University libraries, South-West Nigeria.

Introduction

The age long complimentary role of academic libraries to faculties in the delivery of efficient and effective knowledge to students is changing due to changing formats and media in which information can be acquired or provided. This is in addition to changing information seeking behaviour of students and the growing importance of the digital information products and services (Umukoro & Tihamiyu, 2017). The library is no more seen as just repository of information, but rather as a resource centre in a digitized world where information can be delivered to patrons via mobile platforms.

As the acquisition and use of portable electronic devices are on the increase among undergraduates across the globe, librarians in universities are coming up with innovations

that will enhance the academic self-efficacy of students. Such innovations have led to significant growth and popularity of mobile technology-based library services in the form of e-books, mobile websites, mobile databases, mobile online public access catalogue (OPAC), short messaging service (SMS), quick response (QR) codes and augmented reality that are delivered by academic libraries and made available to students (Hyman, Moser and Segala, 2014).

The use of various mobile digital technologies by university students may have positive or negative effect on their academic success (Chen et al., 2013; Mashhadi and Kargozari, 2011; Brown, 2011 and López, 2010). The effect may be negative if students spend most of their time online accessing resources that will not benefit them academically. In the use of mobile technology-based library services, individual can also display a level of self-efficacy; those with low academic self- efficacy may likely shy away from the use of these technologies. Even when they do, they may likely see it as a laborious exercise, whereas, even when use of mobile devices skills are not perfect, the individual with high academic self-efficacy may be pushed to keep using the mobile technology-based library services, believing that he or she is capable of utilising it, thereby, enhancing personal skills through practice.

Students with high academic self-efficacy are more likely than others to explore new technologies, software or databases. In the use of mobile technologies based library services, it can, therefore, be assumed that students with high academic self-efficacy would be more likely to take advantage of mobile technologies when compared to students with low academic self-efficacy, as the later may lack the confidence or shy away from using mobile technologies based library services.

Today, Nigerian university students scarcely visit the libraries regularly like in the 1980s when there was no prevalence of mobile devices and internet. Academic libraries the world over are adopting technology in their operations since client satisfaction is greatly enhanced by the removal of the barrier of physical location (Tess, 2013). Many libraries are adopting innovative ways of providing mobile interfaces and their applications so as to be effective in terms of delivery of service to patrons.

Studies by Abubakar and Adetimirin (2015), Olawaseye and Abraham (2013) revealed that practical uses of e-resources are not up to the worth in comparison to investments made in acquiring these resources. The question to ask therefore is: could underutilization of mobile technology-based library services by university students be attributed to low academic self-efficacy? This study investigated academic self-efficacy and use of mobile technology-based library services by undergraduates in universities in South-West Nigeria.

Objectives of the study

The main objective of this study is to investigate academic self-efficacy and use of mobile technology-based library services by undergraduates in universities in South-West Nigeria. Specifically, this study is to:

- examine the level of academic self-efficacy of undergraduates in universities in South-West Nigeria;
- find out the extent of use of mobile technology-based library services by undergraduates in universities in South-West Nigeria;

- determine the relationship between academic self-efficacy and use of mobile technology-based library services by undergraduates in universities in South-West Nigeria;

Research Questions

The following research questions guided the study

1. What is the level of academic self-efficacy of undergraduates in universities in South-West Nigeria?
2. What is the extent of use of mobile technology-based library services by undergraduates in universities in South-West Nigeria?
3. What is the relationship between academic self-efficacy and use of mobile technology-based library services by undergraduates in universities in South-West Nigeria?

Literature Review

Self-efficacy Theory postulates that people generally will only attempt things they believe they can accomplish and will not attempt things they believe they will fail. People with a strong sense of efficacy set challenging goals and maintain strong commitment to them. In the face of impending failure, they increase and sustain their effort to be successful. They approach difficult or threatening situation with confidence that they have control over them. Individuals with high self-efficacy set challenging goals and maintain strong commitment to them (Bandura, 1994). Conversely, individuals who doubt their ability to accomplish difficult tasks see these tasks as threats. People are proactively engaged in and responsible for their own development toward goals, and their progress is related to their self-beliefs.

The reciprocal causation-effect relations among personal factors, environment, and behavior form the foundation of self-efficacy theory (Puzziferro, 2008). The theory introduces the idea that the perception of efficacy is influenced by four factors: mastery experience, vicarious experience, verbal persuasion and somatic and emotional state. (Bandura, 1994, 1997; Pajares, 2002). Mastery Experience -This occur when people try to do something and are successful. Much research shows that self-efficacy influences academic motivation, learning, and achievement (Bong, 2001; Pajares,1996). Self-efficacy beliefs influence task choice, effort, persistence, resilience, and achievement (Bandura, 1997; Britner & Pajares, 2006). A significant number of researchers have described academic self-efficacy as being a strong and consistent predictor of academic success (Steel, 2007; Van-Eerde, 2003). Seo's (2008) findings suggested that students with self-oriented perfectionism perform better than others. Tuckman and Sexton (1992) concluded that self-beliefs mediated between external conditions and self-regulated performance, in a way that a lack of academic self-efficacy led to academic low performance.

Mobile technology-based library services are services that have been created to make dissemination of information available to library patrons on mobile devices. According to La Counte (2013), mobile devices are electronic devices that one uses on the go. Smart phones, netbooks, tablet computers, e-readers gaming devices and iPods are examples of mobile devices that are used by undergraduates on university campuses. Mobile devices can also be defined as electronic devices that are networked, portable and easy to use (Barnhart and Pierce, 2012). The increasing popularity of mobile technology-based library services is as a

result of the prevalence of mobile devices. Mobile devices serve as platforms on which the end users components of mobile technology-based library services are situated.

Mobile technology-based library services are to stimulate the interests of information seekers such that they see the library as a place they can always turn to in meeting their information needs. Mobile technology-based library services can be delivered to users through the use of various ICTs (information and communication technologies). Recently, more and more digital libraries are adopting existing mobile technologies to provide mobile services to meet their users' diversified and personalized needs (Zha, Xiao and Zhang, 2014). Mobile communication has many merits such as mobility, convenience and wide service scope.

Miltiadou and Yu (2000) opined that the level of the students' self-efficacy in internet competencies, synchronous interaction and asynchronous interaction may affect academic success. It therefore means that university students' academic self-efficacy may have a lot of influence on the use of mobile technology-based library services. Supporting this thought, Chang et al. (2014) have come to the decision that students whose academic self-efficacy is higher can reach information more easily and learn better than the students whose academic self-efficacy is lower. These results are to the effect that academic self-efficacy seems to be of great importance for students in the use of mobile technology-based library services and by extension their information needs satisfaction. A student with a high level of academic self-efficacy is more successful in learning environments equipped with mobile digital technologies (Wang, Shannon and Ross, 2013).

Methodology

The research design adopted for this research work is the survey research design. 372,000 undergraduates (2019/2020 academic session) of the 42 universities in 6 states of South-West Nigeria constituted the population of this study. The multi-stage sampling technique was adopted to choose the sample for this study. A purposive choosing of six universities with one university per state was carried out. This purposive selection included two federal universities, two state universities and two private universities. These universities were chosen because of their year of establishment and developed state of information and communication technology infrastructures. The selected universities are those established not later than year 2001 and have Internet connectivity for their students.

Proportionate random sampling technique was used to choose 1.5% of the total population of undergraduate in each of the six universities. Proportionate random sampling method was considered suitable for the study because of the heterogeneous nature of the number of undergraduates in the six universities as some have large number of undergraduate while others have not too large number. The 1.5% fraction is considered adequate for this study because Dierckx (2013) recommended that for an investigative study at 95% confidence level and high response rate the sample size can be between 1% and 5% of the total population.

The sample for each university was chosen across three faculties (Arts/Engineering, Science and Social Science/Environmental Science) with each faculty having equal representation. These three faculties were chosen because they are common to the six universities. The samples in each faculty were chosen through random sampling technique. The total sample size for this study amounted to one thousand and eighty-six (1,086).

The instruments for data collection are adapted University of Kansas Center for Research on Learning Academic Self-efficacy Scale and researcher-designed use of mobile technologies questionnaire. All items of the instrument for academic self-efficacy was measured at the nominal level using a five point Likert scale of ‘Strongly Agree’, ‘Agree’, ‘Undecided’, ‘Disagree’, and ‘Strongly Disagree’, while those of the instrument for use of mobile technology-based library services were measured using ‘Very large’, ‘Large’, ‘Low’, ‘Very low’ and ‘Not at all’.

To ensure that the instruments yielded valid data, they were assessed for face validity at the initial and modified versions. The internal reliability of the final versions was then assessed and confirmed adequate through the following Cronbach’s alpha test statistics: academic self-efficacy scale (0.786) and use of mobile technology-based library services (0.762).

Results

Response Rate

Table 1: Responses from the six sampled universities

University	Science		Arts/Engineering		Social Science/ Environmental Tech		Total	%
University of Ibadan	62	17.61	59	17.05	61	17.58	182	17.42
Federal University of Technology, Akure	71	20.17	70	20.23	73	21.04	214	20.48
Ekiti State University	72	20.45	73	21.10	70	20.17	215	20.57
Lagos State University	92	26.14	90	26.01	91	26.22	273	26.12
Babcock University	35	9.943	33	9.54	32	9.22	100	9.57
Bowen University	20	5.682	21	6.07	20	5.76	61	5.84
Total	352	100	346	100	347	100	1,045	100

Data collected from undergraduates in the six chosen universities for this study showed a high response rate of 96.2% (Table 1).

Research Question 1: What is the level of academic self-efficacy of undergraduates in universities in South-West Nigeria?

Table 2 Academic Self-efficacy

	N	Minimum	Maximum	Mean	Std. Deviation
Figure out anything	1045	1.00	5.00	4.6325	.72112
Develop just any skill	1045	2.00	5.00	2.2593	.67062
Achieve academic goals	1045	1.00	5.00	3.6593	.55253
Focus on progress	1045	2.00	5.00	4.2794	.63307
Succeed in career	1045	2.00	5.00	3.5990	.66451
Succeed in University courses	1045	1.00	5.00	4.4172	.90215
Hard work pays off	1045	3.00	5.00	4.6813	.57974
Ability grows with effort	1045	3.00	5.00	4.4000	.63336
Brain develops as muscle	1045	2.00	5.00	2.2775	.85069

You can change your level of talent	1045	2.00	5.00	4.4373	.69835
Change basic level of ability	1045	3.00	5.00	4.2995	.64122
i can learn what is taught	1045	3.00	5.00	4.6785	.50852
Keep trying to accomplish a task	1045	2.00	5.00	4.5187	.75613
Valid N (listwise)	1045				

The level of academic self-efficacy of undergraduates in universities in south-west Nigeria is high. Most of the constructs that were used to determine academic self-efficacy returned high mean values (Table 2). Majority of the students believe in hard work (Mean = 4.68), can learn whatever they are taught (Mean=4,67), figure out anything (Mean=4.63), keep trying to accomplish a task (Mean=4.51) and succeed in university courses (Mean=4.41). The mean scores for some constructs such as ability to develop just any skill (Mean=2.25) and brain develops as muscle (Mean=2.27) are however low. This means that the academic self-efficacy of the students in these areas is low.

Research Question 2: What is the extent of use of mobile technology-based library services by undergraduates in universities in South-West Nigeria?

Table 3: Use of Mobile technology-based library services

Extent of use	Mobile Website	E-book	Mobile Database	QR Code	Library App	SMS	Mobile OPAC	Augmented Reality
Not at all	83 (7.9%)	2 (0.2%)	396 (37.9%)	692 (66.2%)	524 (50.1%)	2 (0.2%)	252 (24.1%)	863 (82.6%)
Very low	168 (16.1%)	103 (9.9%)	124 (11.9%)	63 (6.0%)	143 (13.7%)	62 (5.9%)	166 (15.9%)	70 (6.7%)
Low	125 (12.0%)	126 (12.1%)	126 (12.1%)	42 (4.0%)	84 (8.0%)	84 (8.0%)	162 (15.2%)	42 (4.0%)
Large	252 (24.1%)	294 (28.1%)	147 (14.1%)	186 (17.8%)	189 (18.1%)	147 (14.1%)	281 (27.1%)	68 (6.5%)
Very large	417 (39.9%)	520 (49.8%)	252 (24.1%)	62 (5.9%)	105 (10.0%)	692 (66.2%)	184 (17.6%)	2 (0.2%)
Total	1045 (100%)	1045 (100%)	1045 (100%)	1045 (100%)	1045 (100%)	1045 (100%)	1045 (100%)	1045 (100%)

mobile technology-based library service that is used to a very large extent by undergraduates in universities in South-West Nigeria is the SMS (66.2%) (Table 3), followed by e-book (49.8%), mobile website (39.9%), mobile database (24.1%), mobile OPAC (17.6%), library app (10.0%), , QR code (5.9%) and Augmented reality (0.2%). In terms of the services the undergraduates have never used, 82.6% have never used Augmented reality, 66.2% have never used QR code , 50.1% have never used library app, 37.9% have never used mobile database, 43.9% have never used mobile OPAC, 41.7% have never used SMS, 39.9% have never used The mobile website and 29.9% have never used e-book.

Research Question 3: What is the relationship between academic self-efficacy and use of mobile technology-based library services by undergraduates in universities in South-West Nigeria?

Table 4: Pearson r on relationship between academic self-efficacy and use of mobile technology-based library services

Source of Variation	N	Academic Self-efficacy	Use of Mobile Technology-based Lib Services	Remarks
Academic Self-efficacy	1045	1	.084	Very low positive relationship
Use of Mobile Technology-based Lib Services	1045	1	.084	

In an attempt to find answer to the research question, Pearson correlation coefficient was used. The analysis procedure involves pooling respondents' scores on each items measuring academic self-efficacy to arrive at the composites score; the same procedure was applied for use of mobile technology-based library services. The composite scores on both academic self-efficacy and use of mobile technology-based library services were subjected to test of relationship; the analysis result is summarized and presented in Table 4. The result shows that there is a very low positive relationship between academic self-efficacy and use of mobile-technology based library services.

Discussion

The result obtained from data analysis on the level of academic self-efficacy of undergraduates in universities in South-West Nigeria shows that their academic self-efficacy is high. The fact that academic self-efficacy of undergraduates in Nigeria is high is not surprising because South-West Nigeria have some of the high ranking universities in Nigeria where interventions for students are high. This result of high academic self-efficacy is in agreement with Banks, Hsiao, Gordon and Bordelon (2019) who found out that there was high academic self-efficacy among students with high school interventions. The finding of Celik (2015) revealed that students who are given necessary supports have high academic self-efficacy.

The findings to research question two indicate that there are some mobile technology – based library services that undergraduates in universities in South-West Nigeria use often. Such mobile technology-based library services include SMS, e-books, mobile websites and mobile databases. Two factors are majorly responsible for use of mobile technology-based library services, availability of the services and derivation of satisfaction by users of the services. According to Wang (2003), the level of mobile technology-based library services' use will be high if users derive maximum satisfaction from previous use.

The result for research question three reveals that there is a very low positive relationship between academic self-efficacy and use of mobile-technology based library services. This means that undergraduates' academic self-efficacy has direct relationship with their use of mobile technology-based library services. In other words, as academic self-efficacy of undergraduates increases, the more they make use of mobile technology-based library services. It can also be said that the more undergraduates use mobile technology-based library services, the higher their academic self-efficacy. This result is not surprising because it is expected that in an age where mobile technology is becoming part of lifestyle of undergraduates, increase in their academic self efficacy should increase their use of mobile technology-based library services and vice-visa. This result is in agreement with the findings of Oyewole and Oladepo (2017) that self efficacy significantly predicts use of electronic

resources. However, one would have expected a high positive relationship to exist between academic self-efficacy and use of mobile technology-based library services. A high positive relationship would have been in agreement with the finding of Wen-huan (2000) in a study of students' self-efficacy and the use of library electronic sources.

Conclusion

The findings of this study showed that there can be improvement in the level of academic self-efficacy of undergraduates. This can be achieved with better learning environment for the students. The extent of use of some mobile technology-based library services are low probably because they are yet to be deployed by most university libraries in South-West Nigeria. University libraries in South-West Nigeria should do more in provision of library services using mobile platforms.

The findings showed that undergraduates' confidence in their academic ability is related to their level of mobile technology-based library resources use. It is expedient for undergraduates in universities in South-West Nigeria to increase their academic self-efficacy for greater use of mobile technology-based library services.

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