

**The Impact of Accessing Digital Library Web Site through Mobile
On the Performance of Distance Learning Process:
Case Study of King Abdul Aziz University - Saudi Arabia**

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Abstract

In the current time, experiencing contemporary society's faces many challenges imposed itself on the nature of life, and its method of work. The most prominent of these challenges that seen in those communities of progress in information technology and modern communications, which contributed to the changing nature of life and the form of institutions including educational institutions radically, concept of education or learning more of the concepts and processes affected by the considerable influence and direct development taking place in this area, and it represents the emergence of many new forms of education systems, education systems, notably mobile. So, this article seeks to shed light on some aspects of using a mobile phone in the processes of education and training as one of the new formulas in education, and constraints of its introduction by trying to identify the factors that helped the emergence and spread of this kind of education, and concepts, and characteristics, as well as the requirements of application, and mechanisms or techniques used in it, the educational benefits of its use in education and training, and the challenges or difficulties faced by the use of these technologies in King Abdulaziz University, Jeddah, Saudi Arabia as a case study. Also, in this study we are too intended in evaluating the Web page through mobile of Association of Research Libraries member libraries for content and design of pages intended for distance learners.

Keywords

Digital library, Distance Learning, E-learning, M-learning, Mobile library, Artificial Intelligent, iPad, Notebook, Oracle, SPSS and Platform.

1. Introduction

Education through using mobile is considered a new form of distance education systems, which is characterized by the separation of the records of students spatially and temporally.

So, mobile learning is a term for the new language refers to the use of portable devices in the

education process. This method is largely related to e-learning and distance education focuses on the use of this term technology available with wireless communication to deliver information outside the classroom. This method was found to fit changing circumstances incident process of education affected by the phenomenon of globalization. This can be achieved using mobile devices. Of the most important characteristics of mobile learning is its ability to take the learning

process away from any fixed point breaking all boundaries of time and place and respected the desire of the learner to interact with the parties to the educational community without having to sit in certain places and certain times in front of computer screens, which gave more freedom in the learning process to be inside and outside the walls of educational institutions as well as to achieve the participation and cooperation among the students themselves and between their teachers, regardless of geographical distance and next to it the whole small size that technology makes it easier to navigate by, techniques for Education mobile lighter and smaller than desktop computers, as well as the possibility of updating the content of courses instruction easily. Among the most important characteristic of mobile learning for e-learning that e-learning is the traditional reliance on the use of electronic

technologies such as wired desktops and laptops. The mobile learning depends on the use of wireless technologies such as mobile phones, personal digital assistants, and mini-computers, and smart phones. Internet access is represented another type of learning techniques with electronic wire, and this requires the need to exist in specific places where phone service is available. As in mobile learning are connections to the Internet wirelessly (via infrared) and this is in place, without any obligation to co-exist in specific places, which makes it easier to access the Internet and browse at any time and any place. As well as the advantage of mobile learning easily exchange messages among the educated each other, and between them and the teacher through messages SMS, e-learning in the matter needs to e-mail may not be seen by the teacher or the students in this case.

Mobile technologies are rapidly growing, and they have played an important role in the management of relations between people in social, economic and in everyday life . Throughout history, people need to have access to information. Previously, they have to obtain information from scientists, clergy, libraries and universities. However, today people can access information without the need for such efforts. The need remains, but the acquisition ways have changed to suit people's needs. With the rapid growth of the means of communication, the learning and education has adopted technology based systems such as E-learning, distance learning (DL) and mobile learning (M-Learning) which is an approach of E-learning. Libraries are considered as the most important tools of education in all stages, whether in high level education or at the school level. Some of library services do not offer electronic loan operations, and others lack complete loan operations. It depends on the library staff to carry out such operations. However, Library systems and e-learning systems actually need to interact in a variety of ways. Consequently, the needs of library users have increased rapidly. And their needs should be available everywhere and every time rather than anywhere and anytime. Thus, to overcome the lack of loan services and to meet users' needs, this paper proposes Mobile-Based Library Loan Service which utilizes mobile technology that allows users to carry out operations everywhere at all time.

The main purpose of this research is to identify the content and design of library Web sites serving distance learners via the mobile. How easy is it for distance learners to determine which library services are available for them via mobile? Do academic libraries provide Mobile Web pages intended specifically for distance learners? To ensure a mobile Web presence for distance learners that communicate information clearly and with details, libraries need to examine the content and design of their Mobile Web sites. Findings from this study should be of interest to distance education coordinators, Mobile Web page developers, and libraries that provide services to distance learners. Also, in this study we aim to introduce a new feature selection which is based on the digital library. Also, this work aims to define the design and the content of the mobile Web page on the digital library. The work will create test sets for validating the proposed mobile Web page of the library. After the work is deployed to the mobile, we will conduct a survey on the distance learning student satisfaction. To achieve this goal, we will design and implement a platform for mobile web page. This research will test this prototype using some artificial intelligence methods.

After we develop and implement our new platform, the major advantages that we achieved it and the most important features that facilitate the exchange of files and e-books among the educated in mobile learning model which can be done via Bluetooth or infrared, and this is not available in e-learning. As well as help the handwriting recognition software in hardware devices and PDAs personal digital Mini-Tablets in improving handwriting skills among students. And handwriting using a pen Stylus Pen is easier to use the keyboard and mouse.

2. Literature Review

Definitions of distance education have become blurred in recent times with the widespread adoption of ICT to support a range of teaching and learning activities including distance education. Several terms including online learning, eLearning, virtual learning and distance learning are used synonymously, further blurring understandings of distance education. For the purposes of this paper, distance learning is defined as all learning that takes place where

there is no face to face interaction between students and between students and teachers. Any interaction between learners and between learners and teachers is mediated by technology [1]. However, this broad definition of distance learning, along with the interchange of terms, overlooks the particular circumstances of the distance learner. For the purposes of this paper, distance learners are defined as those learners who participate in 80% or more of their courses and programs off campus, thus having little opportunity for formal and informal face to face learning opportunities with peers and teachers. In this section, we try to present some of the important works that were presented in the field of distance learning based on digital libraries and mobile learning. [2] Examined Web sites from four- and five-year colleges and universities to find out about interlibrary loan policies, contact information, and holdings. [3] Examined design characteristics of ready reference and e-mail reference pages from ARL libraries. [4] Studied Web sites of science-engineering libraries at forty five universities, using a prototyping model to access content and design. A list of 66 elements was developed consisting of design features such as navigation bar, library photograph/logo, screen lengths, and colors, and content features such as "search this site," electronic resources, user education program, subject guides, and electronic reference. Osorio also identified predominant design features represented in the science-engineering libraries studied. This approach forms the starting point for the authors' methodology regarding distance education pages.

From the distance education literature, [5] recommended the type of content to include when designing Web sites for distance learners. [6] Discussed the essential components of a Web site for off-campus library services, addressing both content and design features that should be included. The research builds upon earlier studies that evaluate the design and content of university and academic library mobile home pages, applying other researchers' methodologies and findings to distance education services. Among the design elements studied are institutional and library logos, graphics, colors, screen lengths, number and types of links, and link headings. Hypertext links have been analyzed for content of services and resources provided by each library for distance

learners. Data collected from the distance education mobile Web pages of each library have been tabulated in order to compare similarities and differences. [7] tested the viability of augmenting an e-learning program for the workplace using mobile content delivery; the multimedia mobile content delivered to learners via smartphones included text, audio and video, a multiple-choice quiz website, as well as links to streaming videos. While the mobile delivery of content was found to offer increased convenience and flexibility, video proved to be the most effective format of presenting mobile content, followed by audio and text. Algonquin College has recently opened the Algonquin Mobile Learning Centre, providing a dedicated space to use mobile computing devices in a collaborative learning environment using mobile and cloud computing technology and thus supporting a seamless transition between working on or off campus [8]. Students are able to bring their laptop, iPad, netbook, smartphone, or any other mobile devices and connect to the college network to collaborate with their peers. According to a survey conducted at the college, 80 percent of Algonquin College students bring their own mobile devices to the college, and this number has been increasing. The College is also piloting "myDesktop" service that remotely delivers computer applications (including Microsoft Office, Oracle, AutoCAD, etc.) directly to a student's personal laptop, netbook, or iPad.

3. Potential Applications of Mobile Technology

Mobile applications increasingly affect the diffusion of information as well as business activity. They gain broad acceptance due to the increased need in supporting the mobile workforce and the rapid improvement in the devices and wireless technologies for communication. Many mobile applications provide personal services such as sending and viewing email, browsing the World Wide Web (WWW), viewing traffic and weather reports, watching movies and chatting with others [9]. Mobile services appear to be an obvious choice for travel and tourism as the travelers are on the move, which is the first criterion for mobile services to be relevant. Nevertheless, based on a study conducted by [10] in 2003; few users have expressed their desire to use their mobile phone

whenever possible. The travel and tourism industry have been undergoing many dramatic changes during the last decade, due to the possibilities offered by Internet technology.

Based on a study by [11] which focuses on the improvement of organizational infrastructure for campus and student needs, it indicates that there are still many weaknesses in the current version of Wireless Application Protocol of its benefit for daily use. At present, mobile phones have been popular worldwide. Mainly it is ubiquitous and customers can make calls anywhere for transaction. Mobile phone market shares have grown up dramatically. Mobile commerce (m-commerce) attracts various relative companies such as mobile handset manufacturers to develop technologies to generate added values for their mobile sphere [12]. Developments in telecommunication technology provide new facilities and interfaces for students and staff of universities. In order to improve the organizational infrastructure for students and staff, every new technology arriving on the market has to be investigated of its benefit for daily use. In the case of the WAP, the consortium of Mobile Services for Campus and Student needs "Campus Mobil" was founded in order to investigate innovative services based on this technology [11]. Ubiquitous is an important factor in mobile-based which means present everywhere as well as at same time. However, online teaching and learning has been providing great opportunities to increase flexibility in time and location of study, in terms of availability of information and resources, synchronous and asynchronous communication and various types of interaction via the WWW. Moreover, M-Learning is enabled by the use of portable devices, such as notebooks, smart phones, PDAs over wireless networks. A key benefit of M-Learning is its potential for increasing productivity by making learning available anywhere regardless the time [12]. Moreover, mobile-based can be used in many fields of work to manipulate and share data, in libraries [13], clinics [14], museums [15] and home as well as in the classroom [16].

A study [15] designed and implemented a prototype that uses mobile devices to help patrons to museum or zoo to obtain information about places where they viewed. In particular, the system provides services for people with special

needs (limited hearing, vision and mobility) and introduce these solutions to help them, each and everyone according to the need and suitable manner: images with high contrast of artifacts allow personal viewing, Audio descriptions with adjustable audio delivered via headphones, Text in bold sans serif font with user adjustable font size. The system identified the place where patron stand and thus determines the artifacts closest to him and introduce historical information and image about this patron. Mobile learning (M-Learning) can be considered a lifelong activity that can take place in changing communities and mixed with everyday life situations where people repeatedly enhance their knowledge and skills [17]. It is an emerging form of distance learning that offers both teachers and learners the opportunity to interact and gain access to educational material using a wireless handheld device, independent of time and space [18]. Research in M Learning for higher education is steadily progressing. In a survey of young adults (16 – 24 years) usage of mobile phones in the UK, almost half expressed an interest in using their mobile phone to improve their reading, spelling, and math's or language skills. Although only 50% currently use palmtops, 55% stated that they might use one under other conditions, especially lower prices [19].

4. Process and Methods Applied in Statistical Analysis of the Proposed Work

Through this research, the researcher discusses the statistical analysis to prove the hypothesis, objectives, as well as male and female students. In addition, statistics is a branch of mathematics which includes a wide range of applications in various areas. It starts with the identification process and the methods of statistical analysis, the researchers applied with a (descriptive statistics) which analyzes the facts to be sorted and classified, as well as to be displayed through charts and graphs to help describe defects and literature. It will also show the Finder (inferential statistics), which are the methods to know what distinguishes a group through a random sample of this group, and this depends on the specific statistics methods, which depends on the analysis and interpretation of the facts as well as to study

the causes and its derivatives, as well as the positive and negative factors.

Then, based on the descriptive statistical analysis, the researcher discussed along the weighted averages, standard deviation, coefficient of variation, and system level to adjust the features of the sample search items and the extent to which we can agree to use mobile with distance education in King Abdulaziz University. Then, he uses the correlation coefficient Spearman methods to measure the strength and direction of the relationship between the dimensions of research. To exit with alpha kronbakh test to demonstrate that the content of the questionnaire is correct. This research aims to demonstrate the main research hypothesis that is true: "there is a positive impact for mobile phones, digital library is a student". In this study, the researcher followed the initial steps to complete statistical analysis through statistical package for Social Sciences (SPSS), and these steps as follows:

We resort to use the SPSS as it is an statistical software package and the most comprehensive as well as the most common statistical programs, which can be used in the analysis of the questionnaires, samples can also call and export files to and from other statistical programs easily. Feature package, comprehensive and easy-to-use literacy statistics, and from posts that sing other, function analysis of statistical data in the field of scientific research of Humanities or social. SPSS statistical system is of particular importance to its features, it became indispensable tool to the large category of users, researchers and analysts, as well as university students and other workers in the fields of scientific research and human studies.

(A) Data Entry and Processing Stage

In this section, we are intended in reviewing the questionnaire form to check if it needs any addition and that it is valid to enter the data and the statistical analysis, so as to exclude the invalid forms. Then, he created codes to the variables and data by (Coding System), and he unloaded it to the computer to be entered in (Data Editor Page).

A.1. Selected Variables Applied in the Analysis

We choose the appropriate statistical test for the analysis. In this respect, the following variables are created:

- ✓ **Variables of Demography like the following parameters:**
 - Gender.
 - Age.
 - Education.
 - Position.
 - Nationality.
- ✓ **Independent Variables:** It includes the dimensions of students' practices through the distance education regarding like:
 - Distance education, which includes phrases (1-2) through the questionnaire.
 - Digital library via mobile phones, which includes phrases (3-10) through the questionnaire.
- ✓ **Dependent Variable:** It includes variables of performance improvement for distance students, concerning like the following:-:
 - Mobile phones availability for students.
 - Usability of digital library via mobile phones.
 - Specifications of the digital library via mobile phones.

(B) Descriptive Statistics Level

Now, we describe the statistics of the features of research sample items variables. Then, we describe statistics for both dependent and independent research variables that are aforementioned. The descriptive statistics includes: Weighted averages, standard deviation, standard coefficient of variation, and the order, and all are on the basis of the values that are minimum in dispersion and maximum in homogeneity. Most of studies refer to the weighted average items according to agreement and disagreement criteria in **Likert Scale** used in this research as follows:-:

Table 1 Likert Scale

Item	Response
1.00-1.79	Strongly disagree
1.80-2.59	Disagree
2.60-3.39	Neutral
3.40-4.19	Agree
4.20-5.00	Strongly agree

We used "Likert scale" as it is actually the sum of responses to several Likert items. These items are usually displayed with a visual aid, such as a series of radio buttons or a horizontal bar representing a simple scale. In a "good" Likert scale, the scale is balanced on both sides of a neutral option, creating a less biased measurement. The actual scale labels, as well as the numeric scale, may vary. A "Likert Item" is a statement that the respondent is asked to evaluate. In the example below, this item, "The checkout process was easy" is a Likert item and the table as a whole is the Likert scale.

(C) Response Level

The following statistics tools have been used to achieve our research goals:

- ✓ **Descriptive Statistics:** This includes the weighted averages, standard deviation, standard coefficient of variation and the order, so as to set the features of research sample items and how far we can agree to the usage of mobile with distance education in Abdulaziz University, in addition to improving of distance student performance.

- ✓ **Stepwise Multiple Linear Regressions:** This is to find out the effect of common practices dimensions on the variables of students' performance improvement, in King Abdulaziz University.
- ✓ **Cronbach's Alpha Test** is to measure the internal consistency of independent and independent dimensions, and the face validity of questionnaire content.
- ✓ **Reliability and Validity of the Research Variables Content:** Table 2 and figure 1 show that the reliability coefficient (Cronbach's alpha), which is to measure the reliability of the content and the internal consistency of common practices' dimensions as well as its effect on the efficiency improvement of distance education and the digital library via mobile phones, reached (0.841) to indicate that the research sample is highly reliable, which reflects the intrinsic validity of trend scale content for questionnaire applicants which is (0.893). The maximum reliability of the research dimensions content results between: distance education and the digital library via mobile phones. This is resulted by reliability coefficients, (0.811), (0.923), and (0.871) respectively.

Table 2 Values of Cronbach's alpha

Serial	Independent and Dependent Variable Dimensions	Reliability Coefficient	Validity Coefficient
1	Distance Education Efficiency	0.811	0.901
2	Digital Library via Mobile Phones	0.871	0.884
Total Research Variables		0.841	0.893

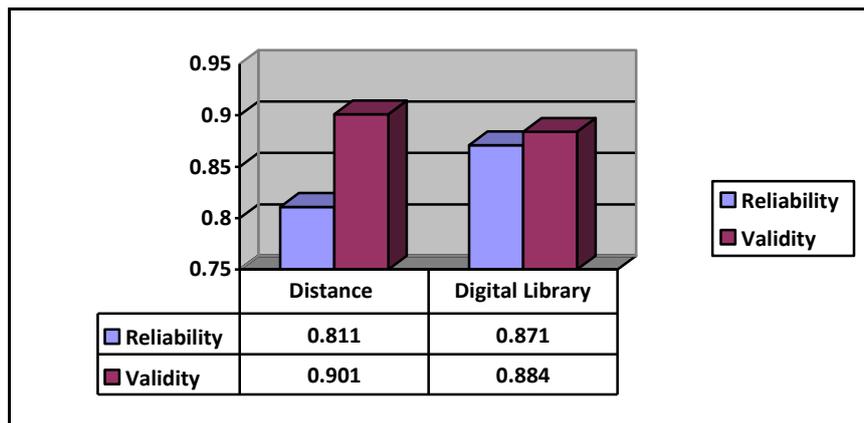


Fig. 1 Independent and Dependent Variable Dimensions

(D) Descriptive Statistics of Demographic Variables

Descriptive statistics of demographic variables includes (gender, age, education, position, and nationality), and this is shown in tables (1-2) to (1-8). We resort to descriptive statistics as it is used simply to describe the sample you are concerned with. They are used in the first instance to get a feel for the data, in the second for use in the statistical tests themselves, and in the third to indicate the error associated with results and graphical output. Many of the descriptions or "parameters" such as the mean will be familiar to you already and probably use them far more than you are aware of. For instance, when have you taken a trip to see a friend without a quick estimate of the time it will take you to get

there (= mean)? Very often you will give your friend a time period within which you expect to arrive "say between 7.30 and 8.00 traffic are depending". This is an estimate of the standard deviation or perhaps standard error of the times taken in previous trips. The more often you have taken the same journey the better the estimate will be. It is the same when measuring the length of the forelegs of a sample of donkeys in a biological experiment.

In case we refer to demographic variable by-Gender:: Table 3 shows that the distribution of by-gender research sample items indicates that male samples reached (46%) versus (54%) of total females, and this is shown in Fig.2.

Table 3 Distribution of By-Gender Research Sample Items

Serial	Gender	Frequency	%	Order
1	Male	97	46	2
2	Female	115	54	1
	Sum	222	100	0

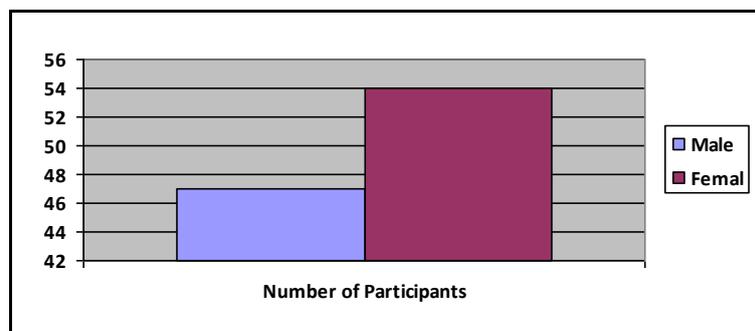


Fig. 2 Gender Distribution

✚ In case we refer to demographic variable By-Age: Table 4 shows that the distribution of by-age research sample items indicates that students that are less than 30 years old is the biggest sample

with (64.3%), followed by whose age ranges between 30-40 years with (32.4%), and then whose age ranges between 40-50 years with (3.3%) of total sample items.

Table 4 Distribution of by-age research sample items

Serial	Age	Frequency	%	Order
1	Lower than 30	137	64.3	1
2	30 - Lower than 40	69	32.4	2
3	40 - Lower than 50	7	3.3	3
4	50 or More	0	0	0
	Sum	136	100	0

✚ In case we refer to demographic variable By-Education: Table 5 shows that the distribution of by-education research sample items indicates that bachelors score (62%) followed by whom takes

diploma or less certificate with (32.9%), and then whose degrees are master with only (5.1%) of total sample items.

Table 5 Distribution of By-Education Research Sample Items

Serial	Education	Frequency	%	Order
1	Diploma or lesser degrees	70	32.9	2
2	Bachelor Degree	132	62	1
3	Master Degree	11	1.5	3
4	Doctoral Degree	0	0	4
	Sum	136	100	0

✚ In case we refer to demographic variable By-Position: Table 6 shows that the distribution of by-position research sample items indicates that jobless samples are the biggest percentage (74.2%), followed by jobless students whom with (12.7%) and whose positions

are section heads in a company with (8.0%), then students whose positions are unit in-charge with (2.8%), also programmer students with (1.4%), as well as laborers in factories with (0.9%) of total sample items.

Table 6 Distribution of By-Position Research Sample Items

Serial	Position	Frequency	%	Order
1	Unit In-Charge	6	2.8	4
2	Section Head in a Company	17	8.0	3
3	Laborer in a Factory	2	.9	6
4	Programmer	3	1.4	5
5	Technician	27	12.7	2
6	Jobless	158	74.2	1
	Sum	213	100	0

- ✚ In case we refer to demographic variable By-Nationality: Table 7 shows that the distribution of by-nationality research sample items indicates that Saudi distance students in King Abdulaziz University score (87.8%), and non-Saudi students represent (12.2%) of total sample items.

Table 7 Distribution of By-Nationality Research Sample Items

Serial	Nationality	Frequency	%	Order
1	Saudi	187	87.8	1
2	Non-Saudi	26	12.2	2
	Sum	213	100	0

(E) Descriptive Statistics of Research Variables:

Below, scholar discusses the descriptive statistics of independent research variables. Through data shown in the tables of such variables, he shows the phrases that recorded highest, lowest or zero points of agreement, and this is according to the response of research sample items. Then, he shows the general trend of the research item responses regarding each variable.

Descriptive Statistics of Independent Variables:

Independent variables include common practice dimensions with distance education in King Abdulaziz University, which are:-

- ✚ Distance Education Efficiency
- ✚ Digital Library via Mobile Phones

Below, every dimension will be illustrated separately: Table 8 shows that the dimensions of research sample items indicate that there is a global trend towards the agreement to the distance education efficiency dimension. This is resulted by an arithmetic mean (5.0) along with a standard deviation (.067). The most significant phrases in answers are in the following order: Do you think that a mobile phone is important to education? Do you think that a mobile phone can facilitate the accessing of digital library in distance education?, resulted by, two standard deviations (0.69) (0.65), respectively.

Table 8 Descriptive Statistics of Education Efficiency Dimension

Serial	Variables	Weighted Arithmetic Mean	Standard Deviation
Q1	Do you think that a mobile phone can facilitate the accessing of digital library in distance education?	0.5	0.65
Q2	Do you think that a mobile phone is important to education?	0.5	0.69
General Mean		0.5	0.67

Also, Fig.3 refers to the agreement of both male and female distance students to the importance of mobile phones in university, with percentage (93.9%) of total samples. As for Fig. 3, it refers to the agreement of both male

and female distance students to mobile phones can facilitate the accessing of digital library with distance education, with percentage (93.9%) of total samples

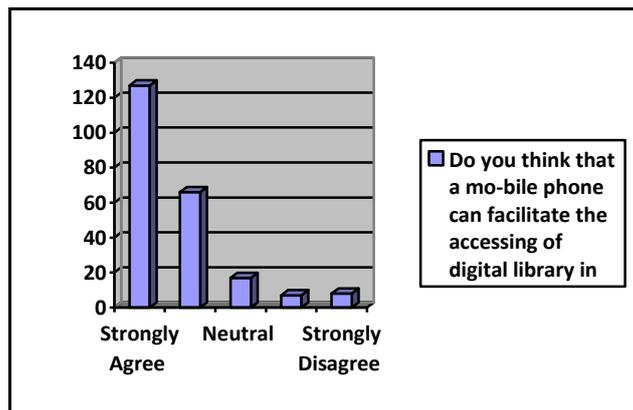


Fig.3 Descriptive Statistics of Q1

Table 9 Descriptive Statistics of Digital Library via Mobile Phone Dimension

Serial	Variables	Weighted Arithmetic Mean	Standard Deviation
1	I can finish my research effectively with a digital library program via mobile phones	3.79	1.036
2	I feel good with cutting some pages with digital library program via mobile phones	3.9	0.995
3	This program looks attractive	3.72	0.943
4	how far you may satisfy with the performance of digital library program via mobile phones	3.81	0.909
5	digital library service delivers an easy way to browse the library	4.07	0.934
6	the user interface of digital library via mobile phones has all capability to browse my research	3.72	0.902
7	how easy you can get what you need of books with the digital library via mobile phones	3.65	0.901
8	digital library program via mobile is an easy for use	3.8	0.842
General Mean		3.81	0.933

Table 9 shows that the dimensions of research sample items indicate that there is a global trend towards the agreement to the digital library dimension. This is resulted by an arithmetic mean (3.81) along with a standard deviation (0.933). The most significant phrases in answers are in the following order: I can finish my research effectively with a digital library program via mobile phones, I feel good

with cutting some pages with digital library program via mobile phones, this program looks attractive, how far you may satisfy with the performance of digital library program via mobile phones, digital library service delivers an easy way to browse the library, the user interface of digital library via mobile phones has all capability to browse my research, how easy you can get what you need of books with

the digital library via mobile phones, digital library program via mobile is an easy for use. All is resulted by a standard deviation (1.036),

(0.995), (0.943), (0.909), (0.934), (0.902), (0.901), in a raw .

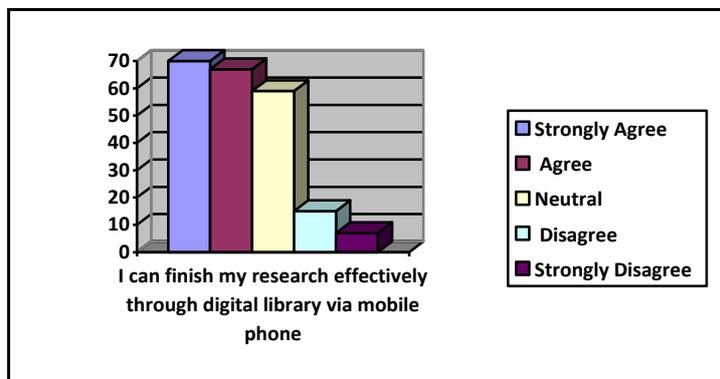


Fig. 4 Effect of Mobile Phones on Effective Research with Digital Library

Figure 4 refers to the agreement of male and female distance student to the distinct effect of the mobile phones on the effective research with the digital library, with (63.3%) of all samples of students, in addition to the obvious

big percentage of neutral (26.8%) Moreover, figure 5, shows that a lot of students are satisfied to use mobile phones to view the digital library, with (71.3%) of total samples.

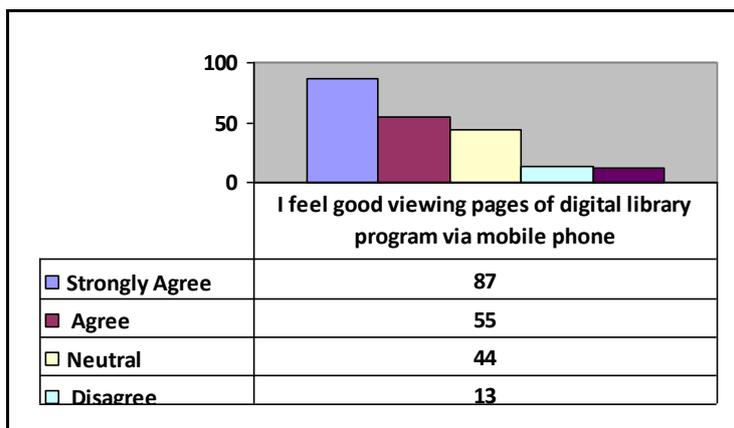


Fig. 5 Student Satisfaction to Mobile Phone Usage Viewing Digital Library

Regarding program appeal and students' satisfaction, the agreement of many students to the appeal with (72.3) of total samples, and 20% of neutral students, indicating that the efficiency and the view of the program should be updated. Moreover, a lot of students are generally satisfied with using mobile phones to view the digital library, with (71.9%) of total samples.

(F) Testing True Hypotheses of the Research

Here, the scholar focuses on testing a main hypothesis, in order to discuss various

dimensions of research topic and objectives: Main Hypothesis is There is a positive effect for the availability of digital library via mobile phones on distance education The main Hypothesis Variables are divided into the following:-

- ✚ Independent Variables: It includes the dimensions of distance students' practices relating:
 - Distance Education and it includes phrases

- (1-2) in the questionnaire.
- Digital library and it includes phrases (3-10).
- ✚ **Dependent Variable:** It includes variables of improving the distance education efficiency by:
 - Mobile phones availability.
 - Facility of digital library usage via mobile phones.
 - Specifications of digital library via mobile phones.

To overcome this challenges , we use the Regression Model of Common Practice Dimension Effect of Studies on Total Dimension of Improving the Students' Performance in Distance Education: Stepwise Multiple Linear Regression is used to measure the positive effect of the common practice in distance education in King Abdul-Aziz University, in order to improve student's performance .Stepwise Multiple Linear Regression (SMLR) is to identify variables affecting student's performance with distance educational process. And therefore we can test the validity of the hypothesis. Stepwise Multiple Linear Regression (SMLR) depends on the following parameters:

✓ **Coefficient of Determination (R²)**

The coefficient of determination is a descriptive measure explaining the outcomes of regression equation by assessing the values. It represents the declining ratio of errors when using the regression equation instead of means. As well as, it predicts variance ratio within the actual values to explain the regression line. In such case, the percentage measures independent variables of variation resulted in dependent variable values. Here, Regression model becomes most reliable when such variable is near 1. And we can find that the independent variables reveal (97.8%) of the total variation resulted in the dependent variable.

✓ **T-Test**

It is used to test hypothesis regarding the difference between two means of independent groups that may give equal or unequal samples. In case of null hypothesis, there is no significant statistic difference between both means. However, with non-null hypothesis, there are significant statistic differences between such means. Accordingly, the significance level will affect both independent variables, separately, in the regression model and will be less than (0.05). According to table (1-9), we can find that the significance level of the independent variable is less than (0.05), indicating the effect of the independent variable. Otherwise, if the significance level is more than (0.05), it will have no effect and will be excluded from the regression model. Also, we can find that the independent variables of significance level in multiple linear regression are: support, educational and research facilities, faculty staff, academic advising, students, public benefits, programs and curriculums, all are at significance level lower than (0.01) respectively.

✓ **F-Test**

F. Test requires significance level to be less than (0.05) to measure the effect of independent variables as a whole in the regression model. However, if the significance level of the regression model is less than (0.01), the independent variables will have significant effects on the regression model and vice versa. As is clear from table (1-10), (F Test) is used to test the significant variables in the model as a whole. We can find value (F Test) is (544.9) whose significant level is lower than (0.001), indicating the independent variables effect upon the dependent variables with significant effect on the total dimension of improving the performance of students in distance education.

✓ **Variance inflation factor**

(VIF) is an abbreviation of variance inflation factor and it was calculated to determine whether there is multi-co-linearity between all independent variables and each other, and separately. Table 10, shows that the accepted independent variables within stepwise

multiple linear regression model have not problems of multi-co-linearity with any of these variables. Since the VIF values are less

than (10), there is no serious problem of multi-co-linearity within the model

Table 10 Variance inflation factor

Model	Sig.	t-test	F. Test	Standardized Coefficients		Unstandardized Coefficients		Co linearity Statistics
				Beta	Std. Error	B	VIF	
Fixed Part	0.0044	0.003	0.0011			46.329	15.148	
Gender	0.283	0.004	0.0011	.086	9.820	10.572	1.395	
Age	0.001	0.004	0.0012	.094	8.329	10.501	1.230	
Education	.0019	0.006	0.0012	.170	7.977	18.896	1.136	
Position	0.001	0.004	0.0013	.095	3.520	4.343	1.300	
Nationality	0.001	0.0021	0.0012	-0.013	13.174	-2.489	1.096	
Do you think that a mobile phone is important to education?	0.001	0.0041	0.0012	0.20	8.942	1.764	2.247	
Do you think that a mobile phone can facilitate the accessing of digital library through distance education?	0.001	0.0021	0.0021	-0.69	9.191	-6.492	2.108	
Digital library service delivers an easy way to browse the library	0.0011	0.0013	0.0031	-0.17	7.398	-1.120	2.807	
I can finish my research effectively with a digital library program via mobile phones	0.002	0.0013	0.0031	.175	7.196	10.315	3.254	
I feel good with cutting some pages with digital library program via mobile phones	0.0031	0.0031	0.0031	.087	6.823	5.356	2.695	
Digital library program via mobile is an easy for use	0.0011	0.0012	0.0021	-0.91	8.555	-6.603	3.034	
This program looks attractive	0.0021	0.0021	0.0031	-0.28	6.860	-1.831	2.458	
The user interface of digital library via mobile phones has all capability to browse my research	0.0011	0.0011	0.0021	.170	8.032	11.539	3.055	
How easy you can get what you need of books with the digital library via mobile phones	0.0011	0.0031	0.0021	-1.78	6.908	-12.075	2.270	
How far you may satisfy with the performance of digital library program via mobile phones	0.001	0.0041	0.00231	.029	7.462	1.957	2.691	

(G) Testing the Moderation of Dependent Variable

According to the multiple linear regression theory, the errors are distributed in a standard normal way according to arithmetic average (zero) and a standard

deviation of (one). And this is what we can find when drawing a histogram of standard errors for linear regression where the average of errors equals zero, and the standard deviation (0.963) approaching the value of (one) as shown in Fig.6.

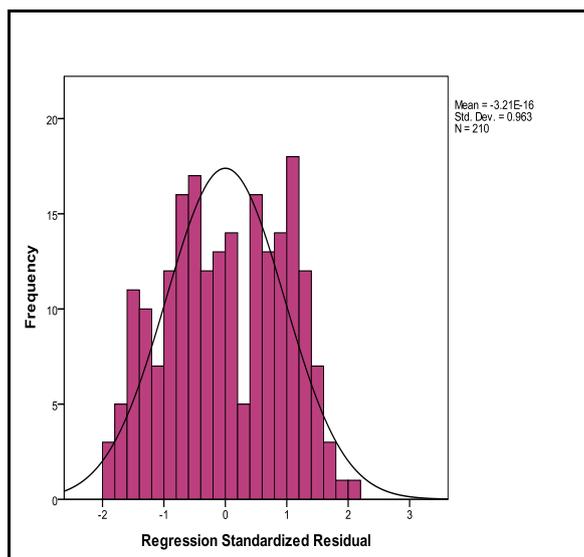


Fig.6 Actual and Expected Values of the Dependent Variables: Total Dimension of Improving the Performance of Students in Distance Education Using Digital Library via Mobile Phones

5. Concluded Comments and Recommendations

The challenges of connectivity in less developed countries have been explored, with wireless technology offering some hope for realistically priced internet access in the future. In the present 'low tech' solutions are more robust and realistic. Once (if we take a positive stance) more widespread internet access occurs, learners may be able to use mobile devices (such as phones) to connect to learning materials and have communications with their teachers and other students. Universities may be able to use freely available open source course management systems in conjunction with community-based learning repositories to have e learning as a significant part of their endeavors. That time is still many years off but perhaps is on the horizon.

In this article, we present a case study for evaluating the impact of using king Abdulaziz university library Web site through Mobile on the student of distance education. Through this study, scholar discusses the process of statistical analysis in order to demonstrate the research hypothesis and objectives, related to male and female distance students. The results proved that the success of the research hypothesis. Moreover, students recommended for activating mobile phones service through the distance education, improving the digital library service for distance students, and updating digital library via mobile

phone site. After studying the statistical analysis and views of students, the scholar recommends:

- ✓ Activating mobile phones service through the distance education.
- ✓ Activating and improving the digital library service for distance students
- ✓ Updating digital library via mobile phone site
- ✓ Delivering various services to digital library via mobile phones.
- ✓ Encouraging faculty staff to use digital library via mobile phones.
- ✓ Training students and faculty staff to use digital library via mobile phones.

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