

# The Acceptance of Smartphone as a Mobile Learning Tool: Students of Business Studies in Bangladesh

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## ABSTRACT

Mobile devices have become attractive learning devices for education. It is common to assume that our current undergraduates are digital natives who are naturally proficient and expert in the use of technology so do mobile devices such as Smartphone. Smartphone has become more of a computing device and are multi-functional, hence, its use as a learning tool needs to be assessed for its effectiveness. Researchers in the field of technology acceptance have been consistently improvising the technology acceptance models to fit in different contextual parameters. Unified Theory of Acceptance and the Use of Technology model 2 (UTAUT2) has gained a lot of credibility in this area and hence better suited for this study. This research is an attempt to understand the potentials of the acceptance of Smartphone underpinning the UTAUT2 model for the undergraduate Business students of a reputed private University in Bangladesh.

**Keywords:** *Mobile learning, Smartphones, Learning perception, Business studies, UTAUT2 model.*

## INTRODUCTION

Over the past two decades, technology devices have become mobile — portable and networked in such a way that they have become pervasive in everyday life. The use of mobile devices has gone to optimum among a wide range of age groups due to affordability and easy accessibility (Newhouse, Williams, & Pearson, 2006). Significant investments have been made to provide infrastructure, content, and resources related to the integration of mobile devices into learning environments and researchers have long had an interest in this evolving landscape (Kukulska-Hulme, Sharples, Milrad, Arnedillo-Sánchez, & Vavoula, 2009). However several limitations exist, such as lack of theoretical and pedagogical underpinnings, sustainable integration into formal educational contexts, and, particularly, lack of teacher support and training (Kukulska-Hulme & Donohue, 2015; Peng, Su, Chou, & Tsai, 2009).

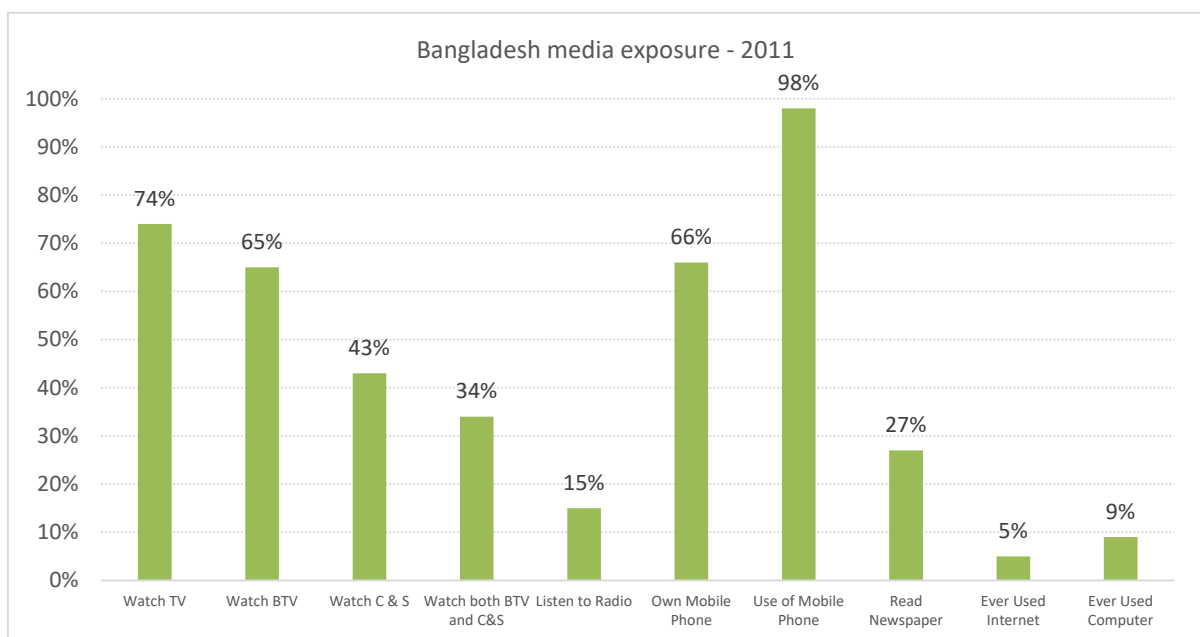
The focus of this research is on the potentiality of a smartphone as a learning tool for the business students in a private university of Bangladesh. Therefore, it is important here to identify relevant capabilities of the smartphone. The most important features of a smartphone which include availability with user, long battery life, SIM (Subscriber Identity Module) card, touch screens, millions of downloadable applications, a large spectrum of communication possibilities (phone calls, video conferencing, text messaging, social networking and accessing email), as well as a relatively high computing power, to list a few merits (Godwin-Jones, 2011). As students keep the Smartphone with them, they are able to carry it with them anywhere they like to. By having the access to internet, they can browse any particular academic site related to their course contents or course lessons in anytime and in anyplace. Seralidou & Douligeris (2016) further posit that Smartphone gives the opportunity to its user to use it both inside and outside of the institution for learning and it can provide a continuous learning environment if the learners are connected to their Smartphone

through internet. That is how, Smartphone has a huge potential as a learning tool for the business students here in Bangladesh if the students are willing to accept and use it for learning purposes apart from their daily life usage. However, in this regard, Bangladesh lacks empirical research to know the willingness to accept smartphone for their academic purpose and how to optimize most out of this Smartphone as a learning tool.

### Bangladesh context:

To make Bangladesh as a middle-income nation by 2021, at the time of golden jubilee of its independence, the country has initiated a project named National Information and Communication Science (NICT) policy- 2009 emphasizing on the applications of digital technologies. In this regard, the country realized that without quality ICT-based education from the primary to tertiary level, this goal cannot be completed. (“Digital Bangladesh: dreams and reality”, 2015). Realizing the fact that Information and Communication Technology (ICT) is a driving force which, if it is used appropriately, can augment the quality of overall teaching and learning process. This augmentation of the quality of the education will make overall development of the country including its dream to be an economically solvent country by 2021. In this sense, ICT based-education is associated with ‘development’. For this reason, the government of Bangladesh targeted to make the ICT based educational institutes ranging from primary to tertiary level. The government provided high speed Wifi connections in public universities at free of cost, laptops, and multi-media projectors to more than 20,000 institutions all over the country within 2014. Gradually, the government has a target to bring all the institutions under the project to achieve quality education for its people to face the global challenges of this century (Chandan, 2015).

To optimize the National ICT policy- 2009 to its optimum for educational development, Bangladesh in collaboration with BBC World Service Trust initiated an Educational program for learning English using mobile phone titled as “BBC *Janala*” since 2009 as a part of the project called *English in Action* that was launched jointly by the Ministry of Education of Bangladesh and UK Department for International Development (DFID) in 2008. The locus of the program is to teach the mass adult learners with three-minute mobile lessons on English as a tool of changing their life that will ultimately lead to an acceleration of economic growth of the country. The project “*English in Action*” has already provided training of English teaching via mobile phones to more than 12,500 teachers and over a million students of primary and high schools in Bangladesh (Banks, 2011). That means, if mobile phone can be used in learning English language, it can be used in other learning contexts as well. For this reason, to provide ubiquitous education to all the students, the ICT ministry of the government focused to create different educational apps for mobile phones so that it could reach the people of all walks in the society (Chandan, 2015). Previously, Shaheen & Richard (2013) showed that among all other media, mobile consumers are the maximum.



**Figure 1: Figure 1. Bangladesh media exposure- 2011 (Shaheen & Richard, 2013, p.3)**

In such a context, among all other mobile technologies (portable radio, MP3 players, laptops, tablets, iPods etc.), mobile phone, more specifically smartphone, can significantly contribute to educational developments by reaching people in urban, rural, and urban areas with maximum opportunity with minimum cost. Furthermore, to own and maintain a smartphone is more cost-effective than a refurbished laptop or computer suites donated by others ((Power & Shrestha, 2010). A smartphone can be purchased at 2,595 Bangladesh taka (approx.US\$25) (<http://www.mobiledokan.com/okapia-alo/>) to run the educational apps and mobile learning for the people of Bangladesh. The surprising fact is that mobile technologies pervaded and penetrated rapidly in comparison to other 20<sup>th</sup> Century technologies such as telephone, radio, Television and Satellite channels in Bangladesh (Power & Shrestha, 2010).

**Purpose of the Study**

Bangladesh is one of the fastest mobile penetration countries in the world that has exceeded all expectations (Chowdhury, 2015). According to Khan (2013), there are above 1 million smartphone users in Bangladesh and most of them are in the age group of 18 to 25. It means, majority of the University students not only possess or have access to smartphones but also the highest contributors to augment the sale of smartphones (Hossain, 2014), p.2). The rise of smartphone users is so drastic in Bangladesh that by the year 2015, it has increased up to 8.2 millions (Husain, 2016). This radical increase of smartphone users in Bangladesh indicates that the prospective growth of smartphone users in coming year will be very high in the country. Hossain (2014) explored in a research on university students that showed 68.67% students used smartphones to have an access to internet for social media sites, sports information, entertainment, and to listen music. However, 23.7 % students used smartphones to read online articles or text books, or library reference or preparing class note. Therefore, there is a huge potential to explore a line of research on acceptance of smartphone for educational purpose in tertiary level for the students of Bangladesh.

**Smartphones power**

Majority of the applications of Smartphones are primarily for the purpose of entertainment and commercial usage (Lin et al., 2011) and on the other hand, the capacity of the Smartphone as a device for collaborative learning, content creation is secondarily considered. However, due to the availability and self-ownership of this multipurpose mobile device, it is high time for the educators to understand the potential of this device (Smartphone) for teaching and learning, specifically, for the effective learner engagement with the online course contents (Kabir, 2017, October; Dixit et al., 2011).

**Better integration**

It is now accepted through different research findings that use of Smartphone is helpful for effective learning (Seralidou & Douligeris, 2016). Now the issue is to integrate Smartphone, according to the intentional and acceptance behaviour of the students, as a learning tool. Although there are wide variety of Smartphones available with different features and operating system for use and display of information or communication on its screen, it does not make much discordance among students for the usability of the device (Ahmed, Everett and Turnbull, 2017). Earlier in 2009, Huang postulated that learning via Smartphone can be more effective if the Smartphone had the fundamental features of a full QWERTY keyboard and larger LCD touch screen to access, and at the same time, reading and navigating of the course contents were relatively easy to look at. Later on, Lee (2014) claims that the learners of "Y" and "Z" generations learn differently than their previous generations as they are often early adopters of new technologies comparing to their preceding generations. For this reason, both of these groups are extensive consumers of Smartphone as potential tertiary students although there are more researches to be done that probe the adoption of mobile technologies such as Smartphone for online-based learning in different educational contexts (Ahmed, 2016).

RESEARCH METHODOLOGY

This research proposes the acceptance of the Smartphones as a learning tool using the UTAUT2 model. The UTAUT2 is one of the theoretical models on “Technology Acceptance” which is most widely used to explaining an individual’s acceptance of technology (Huang et al, 2015). Exploration of the issues related to technology adoption in a variety of domains is a new arena of research interest for the recent past. In this connection, social psychologists in the past decades developed and proposed different theories as probable framework to analyse consumers’ willingness to adopt new technologies such as, the Theory of Reasoned Action (TRA), the Theory of Planned Behavior (TPB), the Technology Acceptance Model (TAM), the Diffusion of Innovation (DOI), and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Ahmed, 2016). Later on, Venkatesh et al. (2012) developed this model as UTAUT2 model which has been widely accepted and tested in many different types of educational contexts, humanities, technical education, engineering, management and health sciences. For this reason, this makes a rational to test acceptance of Smartphone underpinned by UTAUT2 model for the Bangladeshi tertiary educational context.

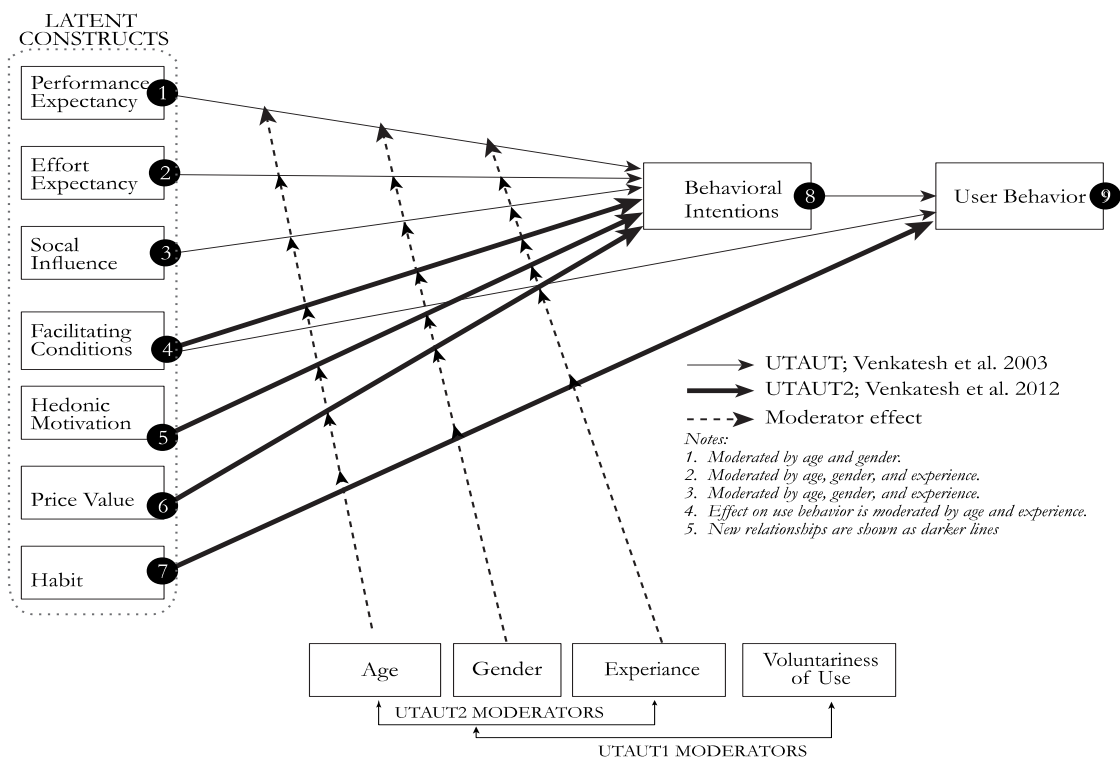


Figure 2: UTAUT2 model, Venkatesh et. al (2011)

This research has adopted the five independent variables of UTAUT2 model and eliminated habit and price owing to the fact that all the students own smartphone and are habituated to using the device for communication, entertainment and computing (Miladinovic & Hong, 2016).

Table 1: UTAUT2 Constructs and its definition

Construct	Definition
Performance Expectancy (PE)	The degree to which an individual believes that using the system will help him or her to attain gains in job performance.
Effort Expectancy (EE)	The degree of ease associated with the use of the system.
Social Influence (SI)	The degree to which an individual perceives that important others believe he or she should use the new system.
Facilitating Conditions (FC)	The degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system.

Hedonic Motivation (HM)	The motivation to do something due to the internal satisfaction
Behaviour Intension (BI)	The degree to which a person has plans to perform or some specified future behaviour

### The research questions

The research questions of this study are formulated based on the need and context to assess the acceptance of smartphone as a mobile learning tool for the business students of Bangladesh.

1. Q1: Are the UTAUT2 model parameters significant predictors of smartphone as a mobile learning tool?
2. Q2: Is there significant difference between the acceptances of smartphone as a learning tool between the two genders of the population?

1. H1: PE will have a positive influence on smartphone acceptance
2. H2: EE will have a positive influence on smartphone acceptance
3. H3: SI will have a positive influence on smartphone acceptance
4. H4: FC will have a positive influence on smartphone acceptance
5. H5: HM will have a positive influence on smartphone acceptance
6. H6: BI will have a positive influence on smartphone acceptance
7. H7: Gender, will moderate the effect of UTAUT2 constructs on behavioral intention, such that the effect will be stronger among men in smartphone acceptance.

### Participants

The Participants of this research were students from the Business studies of a Bangladeshi private university. The survey questionnaire consisted of three Sections. The First section A was designed to collect demographic information and the Second section B was to collect the use of smartphone usage data and Section C was based on UTAUT2 model to collect the main finding of the research. The questionnaire had 63 questions and it was based on 5-point Likert scale with 1 representing "strongly disagree" and 5 representing "strongly agree".

Convenient survey procedure was adopted and total of 315 participants were approached using mobile survey application. A total of 159 successful feedbacks were received. This Data Analysis was conducted using MS XI for descriptive analysis and later IBM SPSS was used for inferential data analysis.

This research adopted the survey instrument developed by numerous studies and was proven to be valid and reliable (Alrawashdeh et al., 2012; Pahnla et al., 2011). The questionnaire was developed on the basis of the UTAUT2 model (Venkatesh et al., 2012) and later this survey questionnaire was modified after the pilot results.

### RESULTS AND DISCUSSION

Demographic description: Among the total number of 159 participants, male and female participated equally. This clearly reflected on the ratio of male and female students in that specific Bangladeshi private university enrolment. Further only 1% of the students enrolled in the university were less than 18%, a total of 13% students accounted for 18-20 age group, the highest number of students were recorded from the 21-

35 year age group with 69%. The second largest age group was from 26-30 years accounting to 15% followed by 31-40 years with just 3% in total as shown in table 1.0.

**Table 2: Demographic description of the study population**

	Male	Female			
Gender	80	79			
	50%	50%			
Age in year	Below 18 Yrs	18-20	21-25	26-30	31-40
	2	19	104	22	4
	1%	13%	69%	15%	3%
I am currently enrolled in	Undergraduate	Post Grad/Masters	PhD		
	89	53	0		
	63%	37%			
Year of study for current program	First	Second	Third	Fourth	
	46	44	29	24	
	32%	31%	20%	17%	
	Smartphone	Tablet	Both		

Form the table 1.0 the data clearly reflects that a total of 63% of students are from the undergraduate program and about 37% are from post graduate / masters and there is no Phd student as a participant to this research study.

A total of 32% of the total percentage of students are from year one enrolment followed by 31% from second year enrolment and about 20% from year 3 followed by 17% from the final year of their study.

I own a Smartphone/Tablet	128	0	14		
	90%	0%	10%		
My Smartphone is (Brand)	32	53	1	54	
	23%	38%	1%	39%	0%
I am using my Smartphone since last	Less than year	1 to 2 Years	3 to 4 Years	5 to 6 Years	7 to 8 Years
	28	38	45	22	6
	20%	27%	32%	16%	4%
My Smartphone Operating System is	Apple iOS	Android	WinOS		
	105	32	1		
	76%	23%	1%		
My skill in using a Smartphone is	Expert User	Good User	Limited User		
	39	87	13		
	28%	63%	9%		
I am aware of the following FREE online learning resources	OCW	OER	MIT OER	KA	None
	9	0	0	17	72
	9%	0%	0%	17%	73%

The descriptive analysis reveals that the population mean in responding all the items of the questionnaire with high reliability and all the standard deviations are less than 1.0. Hence, all the construct are deemed highly reliable to proceed for further inferential analysis.

This research has explored the acceptance of smartphones as a learning tool in the Bangladeshi context for the students of Business cohort. The primary goal of selecting the school of business was the motivation of both staff and faculty to integrate mobile learning into their curriculum. The main focus of the study is to explore the factors which influence the acceptance of smartphone as a learning tool. With the facts sighted in the literature review that smartphones are ubiquitous and are multifunctional as a communication, learning and skill development makes an ideal device for decapitating mobile learning.

**Table 3: Descriptive Statistics**

Descriptive Statistics							
UTAUT2 Constructs	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Cronbach's Alpha if Item Deleted
PE	159	2	5	3.7673	0.66746	0.446	.897
EE	159	3	5	3.9497	0.62439	0.39	.897
SI1	159	2	5	3.6415	0.70516	0.497	.913
FCT	159	2	5	3.8742	0.61358	0.376	.894
HM	159	2	5	3.9811	0.71575	0.512	.889
BI	159	2	5	4.0314	0.7064	0.499	.885

Hence, this research adopted 10 hypotheses as listed in table 1.0. The results indicate that is shown in table 3.0 that all the independent variables PE, EE, FC, TS, HM are found to be significant predictors of smartphone as a learning tool, hence, the first nine null hypotheses have been rejected.

**Table 4: Regression hypothesis accepting smartphone as a learning tool**

UTAUT2 Constructs	R	R Square	Sig. F Change	Hypothesis
PE	.726	.527	.000	Hypothesis Supported
EE	.448	.201	.000	Hypothesis Supported
SI	.645	.415	.000	Hypothesis Supported
FC	.516	.266	.000	Hypothesis Supported
HM	.733	.538	.000	Hypothesis Supported
BI	.559	.312	.000	Hypothesis Supported

The second research question is focused to know if there is a significant difference in Male and Female gender of the population accepting the smartphone as mobile learning tool. The results illustrated in the Table 4.0 indicates that both Male and Female groups of the study have an intention to accept smartphone

as a learning tool is same and there is no statistical difference among the group acceptance.

**Table 5: Independent Sample Test to prove the gender difference in accepting smartphone as a learning tool**

Independent Samples Test						
UTAUT2 Constructs	Levene's Test for Equality of Variances		t-test for Equality of Means			Hypothesis
	F	Sig.	t	df	Sig. (2-tailed)	
BI	.361	.549	.332	157	.740	Hypothesis Supported
			.332	156.988	.740	
PE	.196	.659	.621	157	.536	Hypothesis Supported
			.620	156.879	.536	
EE	.058	.809	.260	157	.795	Hypothesis Supported
			.260	156.961	.795	
SI1	.195	.659	-.072	157	.943	Hypothesis Supported
			-.072	156.979	.943	
FCT	1.415	.236	.016	157	.987	Hypothesis Supported
			.016	155.946	.987	
HM	.031	.860	1.448	157	.150	Hypothesis Supported
			1.448	157.000	.150	

## CONCLUSION

This study is an attempt to explore the main aspects of UTAUT2 model constructs by studying the acceptance of smartphones as an m-learning because it is still in the early stage in the context of Bangladesh. The revelation of results clearly indicate that there is a high degree of acceptance of smartphone indicating all the constructs as significant predictors of acceptance in Bangladesh context. Hence, the strategies of integrating smartphone as a mobile learning tool can be successfully designed and implemented. Secondly, both women and men see the acceptance of smartphone on equal footing and hence the integration and dissemination of smartphone as a learning tool can be done homogeneously.

This research can be very helpful at the preliminary study for supporting research or developing the use of smartphone as a mobile learning tool for students in the future. The three main objective of this study was to study acceptance in Bangladeshi context as Information Communication Science (ICT) based educational policy adopted by the government, secondly with the fact that Bangladeshi youth account for a total of 30% according to United Nations Population Fund (UNFPA) <http://www.thedailystar.net/rise-of-youth-51048>. The results clearly indicate the majority of studetns are keen to adopt smartphone as a mobile learning tool. Further the UTAUT model parameters Performance Expectantly, Effort Expectancy, Social Influence, Facilitating Condition, Hedonic Motivation, Price and Habit has been proved.

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