Students Perception of Mobile Learning during COVID-19 in Bangladesh: University Student Perspective

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ARTICLE INFO	ABSTRACT
	The aim of this study is to measures the student's perception of using mobile for learning during COVID-19 in Bangladesh especially at the university student's perspective. During the COVID-19 pandemic period, mobile learning may help the students to fulfill the study gap. Due to COVID-19 pandemic 213 countries, higher education has affected all over the world of June 2020. Although all of the developed countries considered mobile learning as an effective tool for education, it is not used properly in Bangladesh. This survey method conducted on 416 students from different university students in Bangladesh to understand the student's perception of using mobile phones as a learning system. The findings of this study show that most of the students at the university level have a positive perception of m-learning. This study revealed that m-learning is very helpful to recover the study gap during this COVID-19 pandemic time and the findings of this study will help the education policymaker as well as the educational institutions to incorporate mobile learning technology for the whole system where social media may enhance the process of teaching and learning. **Keywords:** mobile learning, students' perceptions, COVID-19, Bangladesh

INTRODUCTION

Nowadays, Mobile learning (m-learning) has become a popular learning system for education especially higher education all over the world because of its multi-functionality characteristic and effectiveness. Bangladesh is one of the fastest countries of mobile spreading in the world has around 8 million smartphone users which ranked out of the 50 countries in the world (Ash, 2019). Bangladesh already initiated a project on National ICT policy-2009 to make the country as a middle-income nation in the year 2021 by emphasizing the application of ICT based education from primary to tertiary level will help to accomplish the goal ("Digital Bangladesh: dreams and reality", 2015). Under the ICT policy-2009, the government had provided laptops and multi-media projectors around 20,000 institutions in Bangladesh within 2014 (Chandan, 2015). Also, the government has taken the initiative to provide free Wi-Fi connection to all of the public universities. On the other side, the total number of Mobile Phone subscribers had reached 159.780 Million at the end of March 2019 (BTRC, 2019). Most of the students at the tertiary level have a smartphone which they can easily use for their academic purpose both offline and online. M-learning reflects remote teaching tactics for

teachers as well as learning strategies for students at the university level because it helps to learn anytime from anywhere. It also may help the students to reduce the study gap that could play an alternative learning methodology during COVID-19 (Naciri et al., 2020). After declaring COVID-19 as pandemic disease, many countries including Bangladesh have taken initiative to close their educational institutions to reduce the effect of the virus (World Health Organization, 2020b). Bangladesh had closed all of the educational institutions from the 18th of March, 2020 which became a cause of affecting the quality of education and also the student's future life (Usak et al., 2020). So for overcoming this situation, an innovative learning methodology becomes very important nowadays (Toquero, 2020) and M-learning could play a vital role for the mobile devices uses in the educational sector (Sönmez, Göçmez, Uygun, Ataizi, & Learning, 2018, Aubusson, Schuck, & Burden, 2009).

For the COVID-19 pandemic time, the education system of the world has affected extremely. Many countries of the world have closed their educational institutions to reduce the spread of this virus which become the cause of many challenges (Naciri et al., 2020). The scenario is not different for Bangladesh. Every educational institution of Bangladesh including the higher educational institutions remains closed from 18 March 2020. So, for optimizing the effects of the

pandemic in the education sector, the University Grant Commission (UGC) has opted for online teaching to all the universities. And, some teachers have already started to participate in the online classes to reduce the study gap of the students. At this stage, m-learning might be a helpful tool for both the students and teachers. Before claiming that "m-learning is a helpful tool for learning", we should know about the perception of mobile learning of students during this pandemic situation. This novel study focuses on the perception of students' mobile learning during this pandemic situation. This study comes up with various literature on mobile learning in numerous respects. As a developing country, like Bangladesh where the majority belongs to the youth age group, there have a few studies of using mobile phones among university students' perception of their studies. This study aims to look at the students' perception of using mobile phones in informal education. Many researchers found that mobile learning always supports teaching and learning. Although many developed countries used to m-learn as an effective tool for education (Fuegen, 2012), there is a lack of studies that focus on examining students' perceptions of mobile learning, particularly in the context of Bangladesh. Education for all is now a common concern most of the developing countries including Bangladesh. The governments of Bangladesh are spending and investing a lot of money to develop the use of ICTs at all levels of educational institutions. As mobile devices would be a potential tool for education at the higher studies in Bangladesh so it has now become important and essential to measures the perception of students using mobile phones as a learning tool during this pandemic time.

The main objective of the research is to know the student's perception of using mobile phones as a learning tool during COVID-19 time and also the perception of mobile learning to recover the study gap at this pandemic time and the process of improving their academic performance by utilizing mobile learning.

LITERATURE REVIEW

The mobile device is now a common device which used at all aspect of life both developed and developing countries. Mobile learning helps us to provide the enhancement of teaching and learning capability (Al-Hunaiyyan et al., 2017). It has many advantages. The method of teaching can occur at any place, anytime and anywhere and the process of learning is not limited to a specific place (Corbeil & Valdes-Corbeil, 2007). It assists the students to improve technological skills, to help of sharing knowledge, and also develop their learning capability (AlEmran, Elsherif, & Shaalan, 2016).

"M-learning is also providing us with an opportunity that is to change the existing learning strategies to give students a much flexible approach to managing their learning experiences" (Al-Hunaiyyan et al., 2018). Quinn (2000) defined m-learning is a new learning technique by using mobile devices. Furthermore, Kinash et al. (2012) defined m-learning is useful for educational purposes by using mobile devices. Mobile learning plays a significant role in education in both teaching and learning (Klassen et al., 2013). There has a

difference between e-learning and m-learning. Usually, E-learning is the process of learning without participating in the classroom (Rosenberg, 2001). Sharples (2005) illustrate m-learning is the extension of e-learning (Sharples, 2005). Winters (2006) also concludes that m-learning is a division of e-learning. M-learning can be defined as "the acquisition of any knowledge and skills through the use of mobile technology, anywhere, and anytime" (Hashemi, Azizinezhad, Najafi, & Nesari, 2011, p. 1).

Ozdamli and Cavus (2011) had mentioned a few characteristics of mobile learning such as ubiquitous, portable, blended, private, interactive, collaborative, and instant (Ozdamli & Cavus, 2011). Mobile learning considers as portable because a learner can use it anytime, anywhere (Cavus & Ibrahim, 2009). It is ubiquitous because it changes the classroom pattern from the traditional classroom to anytime and anywhere education (Cavus & Ibrahim, 2009; Kukulska Hulme et al., 2009). Mobile learning is also "blended as the teachers and mentors can blend it incorporates with traditional learning" (Al-Sharhan, 2016), and can ensure the face-to-face and easy access to online interaction (Ocak, 2010); "interactive in which it can provide an interactive learning environment" (Cavus & Uzunboylu, 2009); "collaborative because it creates collaborative learning activities" (Uzunboylu et al., 2009); "immediate, it allows instant access to learning materials and educational instruction" (Eteokleous & Ktoridou, 2009). Furthermore, Chen et al. (2013) find out that "mobile platforms allow learners to collaborate with their classmates, search information, find and search locations" (Chen et al., 2013)

Nowadays, mobile phones are cheaper than other devices like desktop computers or laptops, and hence, it is claimed that mobile is suitable for teaching and learning devices for the students at a low cost (Dawson, 2007; Haug & Tumbo 2016). Many mobile operators have provided 4G services which made the m-learning popular and flexible for the students of the university. M-learning is the learning process through a mobile device (such as mobile/smartphones, iPods, MP3 players, personal digital assistant (PDAs) (Iqbal & Bhatti, 2015) and helps to enhance knowledge and learning outside of the classroom and also helps to develop the student-teacher's relation (Ekamayake & Wishart, 2010; Wishart, 2015).

Dashti and Aldashti (2015) also had conducted a study on "students' perceptions toward the use of mobile learning at the College of Basic Education in Kuwait" where they had distributed 300 questionnaires among the female students and found 80.3% were satisfied by using mobile devices as a learning tool and they claimed that mobile learning enhances their knowledge of English language (Dashti and Aldashti, 2015). Another study conducted by Nassuora (2013) to examine students' acceptance of mobile learning in Saudi Arabia. The author had found that m-learning acceptance of Saudi Arabia is high at the higher studies level by using questionnaires survey among 80 students (Nassuora, 2013). Another study of mobile phone usage and potential for m-learning based on Panama by Valderrama Bahamóndez and Scmidt (2010) had found that mobile phone usages among school children are going high and teacher and students were all accept using their mobile phone for the purpose of learning. Chinese universities and colleges also used mobile as a

learning and teaching tool that are supported by the government as well as university administration. By using mobile at the higher study level, students may access educational materials and get instructors instructions which help them distance learning and real-time access to learning databases (Xu et al., 2019). Mobile learning is considered as a part of e-learning as well as distance learning. By using m-learning, facilitators may motivate the students to learn from inside and outside the classroom (Hamdani, 2013). Usually, Mobile phone like a smartphone is the device that is used as widely for learning (Ken Nee Chee, Noraffandy Yahaya, Nor Hasniza Ibrahim, & Mohamed Noor Hasan, 2017). A similar study on "Students' Perceptions of Mobile Technology in Higher Education: Preparation to Design Mobile Learning Models" by (Pebriantika et al., 2019) found that students are familiar with mobile learning technology. By using a survey method of 100 students they had also found that the students have a positive perception of mobile technology at higher education in Indonesia. The literature also shows that the use of mobile phone devices is the most popular learning tool in higher education. Mobile learning is potentially the most exciting, innovative, and technologically advanced system that will help the effect of revolutionizing the delivery of the higher education institution in the future. It is regarded as a unique tool in various settings of the educational institution (Ahmad, 2015, 2018, 2019a, 2019b). On the other side, University students are considered as heavy users of mobile phone and it helps to improve the learning outcome at the tertiary level. By using a mobile phone with internet connection student acquire knowledge which helps them to enrich their knowledge while they attend their lectures (Ahmad, 2020)

In the context of Bangladesh, Ahmed and Kabir (2018) An empirical research on smartphone acceptance of undergraduate students especially business studies students as a learning tool of private university perspective in Bangladesh where they use UTAUT2 model. The result found that there has a high degree of acceptance of smartphones as a learning tool in the context of Bangladesh. Hossain and Ahmed (2016) researched on "Academic use of smartphones by university students: a developing country perspective" Out of 316 respondents of the university students found that almost two-thirds of the respondents used their mobile phones to access academic information. They also found one-thirds of the students do not use their mobile phone for learning though around 90% of respondents of this study were interested in downloading various apps for their academic learning. Hossain (2014) found 68.67% of students use smartphones based on the research on university students in Bangladesh for the purpose of social media, entertainment, sports information and listening to music. However, only 23.7% used their smartphone for academic purposes. Therefore, there has a perspective on the perception of students of using mobile for learning at this COVID-19 pandemic time at the tertiary level in Bangladesh.

METHODOLOGY

The research is conducted of quantitative descriptive with survey methods. The Participants of this research were students from the various universities in Bangladesh. Irrespective of gender all the students of the university-level were eligible to take part in this survey. The developed questionnaire based on the previous literature. The structure of the questionnaires was modified from several former studies (Ahmed, 2020; Al-Fahad, 2009; Al-Hunaiyyan et al., 2016; Dashti & Aldashti, 2015; Nassuora, 2013). The questionnaire consisted of three parts. Part 1 collects basic information of students and gathers information about the operating system of students' cell phones, frequency of using the internet, time spending on mobile phones every day, and use mobile phones for academic purposes or not. Part 2 investigates the preference of social networking sites for learning and frequent use of the common social media applications. Part 3 of the questionnaire measures students' perceptions and attitudes towards the effectiveness of mobile learning and social media learning tools during COVID-19 pandemic time. The questions in Part 3 consisted of 5-point Likert Scale ranging from 'Strongly Disagree' (1) to 'Strongly Agree' (5). Before finalizing the questionnaire minor changes were made based on a pilot survey conducted on some students to assess the feasibility of the survey. Unlike some previous research that emphasis only on students' perceptions, this study explores students' perceptions of mobile learning during this pandemic time. This study also focuses on the uses of social media in higher education through mobile learning in Bangladesh.

RESULTS AND FINDINGS

The questionnaire shared by the google doc was randomly distributed among undergraduate and postgraduate level students of several universities of Bangladesh through various social networking sites where a significant number of students took part in this online survey. Out of them a total of 416 responses were found valid and considered for data analysis. By using SPSS software, the collected data were analyzed quantitatively. This section presents results of the study including basic information of respondents as well as university students, the operating system of university students' cell phone, frequency of using the internet, time spending on mobile phone every day, use mobile phone for academic purpose or not, preference of social networking sites for learning, university students' frequent use of social media applications, and university students' perception and attitude about mobile learning.

Background Information of Respondents

This section represents some basic information of the university students (416 responses). **Table 1** shows the outputs of the questions related to gender, age and level of education.

Table 1. Basic Information of Students (N = 416)

|	Percentage (%)	
Gender	Male	64.4
	Female	35.6
Age	16-20 Years	65.4
	21-25 Years	33.7
	26-30 Years	1.0
Level of Education	Undergraduate	97.6
	Postgraduate	2.4

In addition, **Figures 1-4** illustrate the operating system of university students' cell phones, frequency of using internet by university students, time spending by university students on mobile phone every day and use of mobile phone by university students for academic purposes or not respectively.

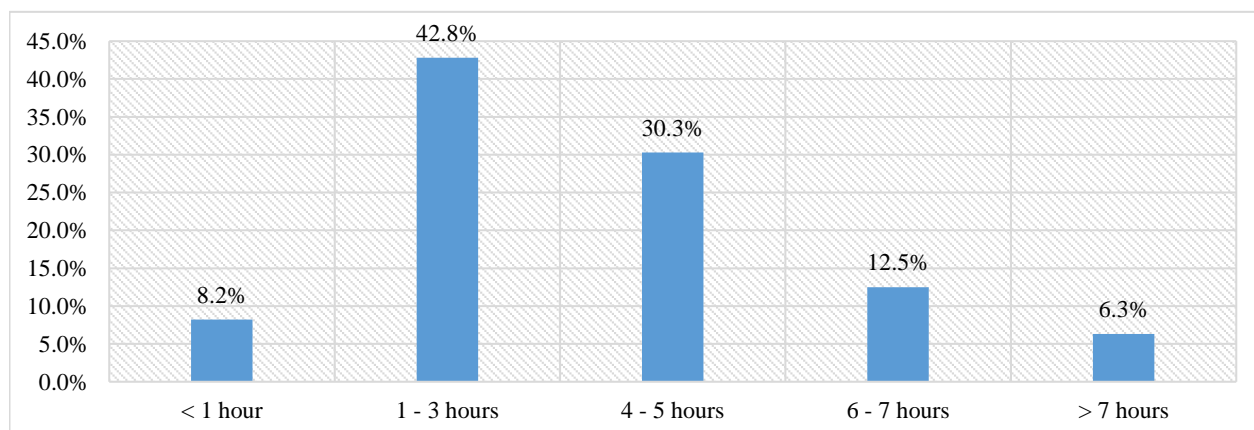### University Students' Use of Social Media Applications

This section of the questionnaire examines university students' preference to social networking sites for learning, as shown by **Figure 5** and to what extent university students' use some selected social media applications such as Facebook,
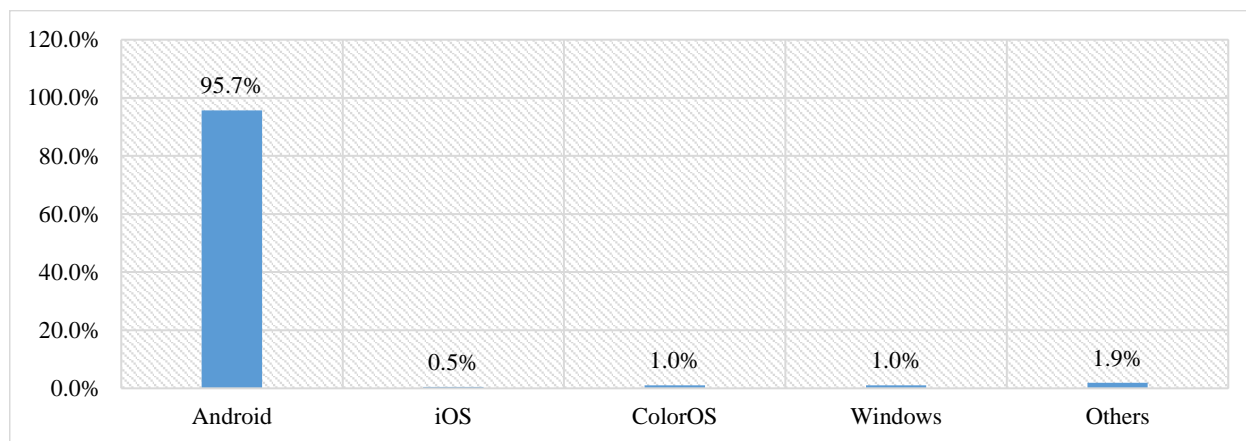
Figure 1. Operating System of University Students' Cell Phone
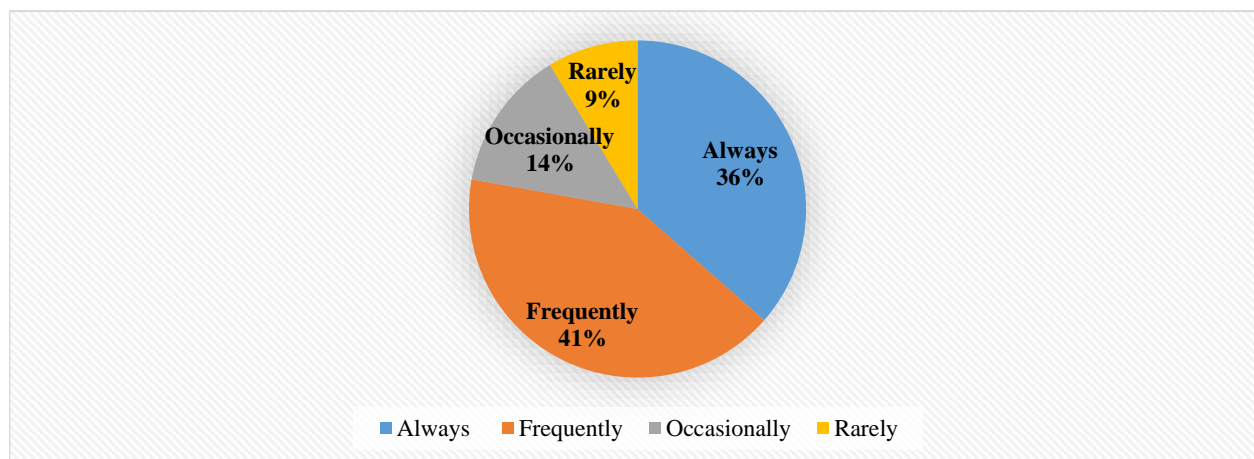
Figure 2. Frequency of Using Internet

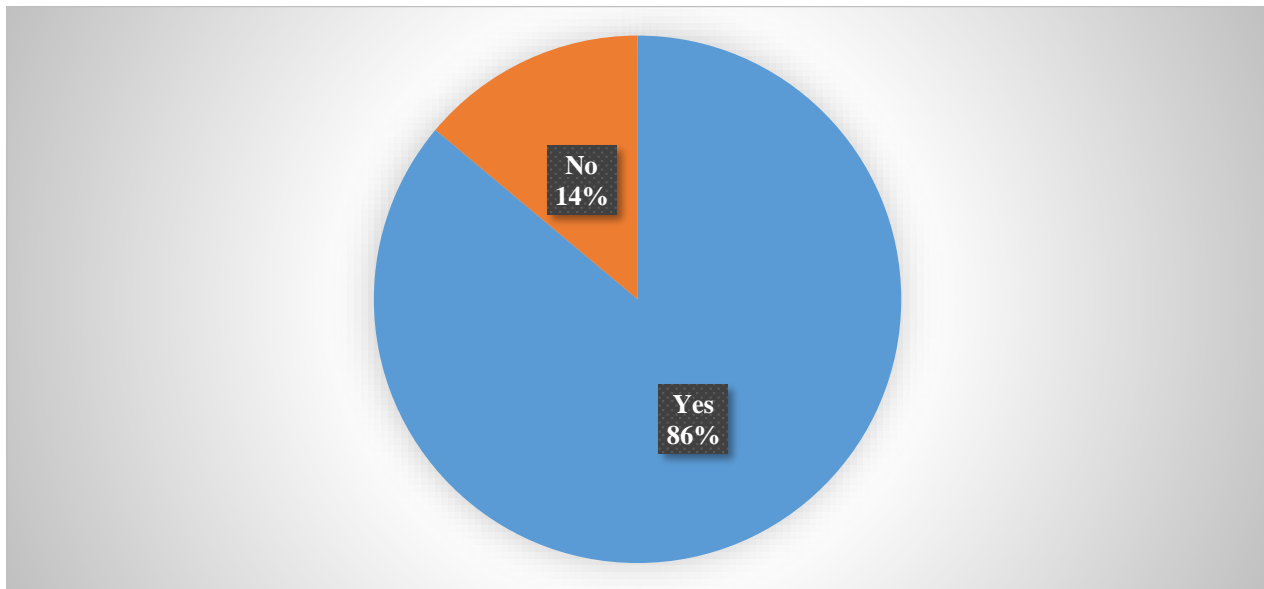**Figure 3.** Time Spending on Mobile Phone Every Day

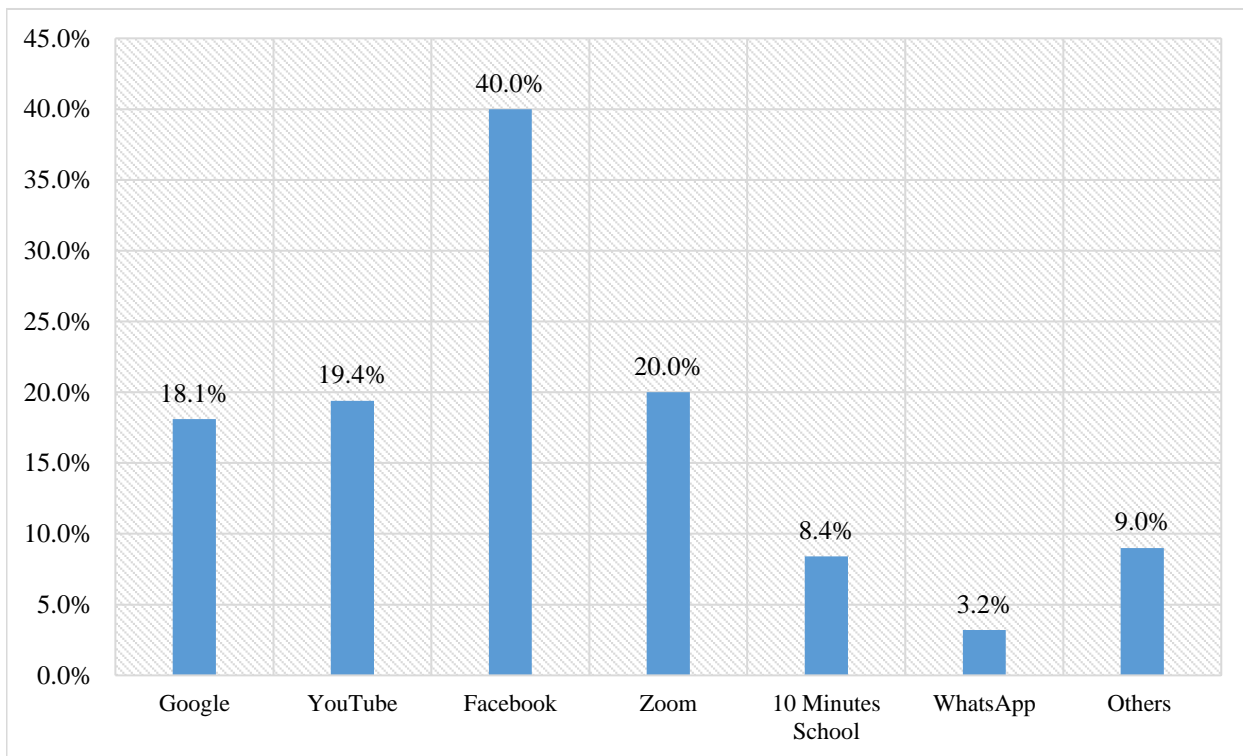**Figure 4.** Use Mobile Phone for Academic Purpose or Not

Figure 5. Preference of Social Networking Sites for Learning (Multiple Response)

Table 2. University Students' Use of Social Media Applications

Application	Always	Frequently	Occasionally	I don't use it
1. Facebook	36.1%	44.7%	18.3%	1.0%
2. Twitter	0.5%	6.3%	7.2%	86.0%
3. Instagram	5.3%	13.0%	13.9%	67.8%
4. LinkedIn	1.9%	4.3%	6.3%	87.5%
5. YouTube	24.5%	45.2%	25.0%	5.3%
6. WhatsApp	13.5%	27.5%	27.4%	31.7%
7. Google+	20.2%	31.8%	20.2%	27.9%

Twitter, Instagram, LinkedIn, YouTube, WhatsApp and Google+, which are shown in **Table 2**.

University Students' Perception of Mobile Learning

This section of the questionnaire measures university students' perceptions and attitudes about mobile learning during COVID-19 pandemic time. **Table 3** represents the results of this section. Percentage is used to figure out the real picture of this segment especially perception based questions (5 strongly agree to 1 strongly disagree). Moreover, the mean represents the general average of university students' responses, while standard deviation indicates the difference of university students' responses to a question vary or deviate from the mean. The value of standard deviation is around 1, as

Table 3. University Students' Perception on Mobile learning

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Standard Deviation
Q1. The use of mobile is flexible to learn anytime, anywhere	17.3%	51.9%	17.3%	9.1%	4.3%	3.69	1.004
Q2. Mobile learning is a good idea to minimize the study gap during covid-19 pandemic time	18.3%	56.2%	15.9%	6.7%	2.9%	3.80	.918
Q3. Mobile is easier to find relevant information of my studies	17.3%	64.0%	10.6%	6.3%	1.9%	3.88	.818
Q4. Mobile learning helps to improve my study skills	15.9%	63.9%	9.6%	6.7%	3.8%	3.81	.916
Q5. Mobile is easier to access to find my study materials	15.4%	55.8%	16.8%	8.2%	3.8%	3.71	.956
Q6. Mobile is easier to share in class-related discussions both online and offline during covid-19 period	18.3%	54.8%	15.4%	8.2%	3.4%	3.76	.957
Q7. The use of mobile helps to improve knowledge in my field of study	14.9%	66.9%	8.2%	6.7%	3.4%	3.83	.882
Q8. Mobile learning helps to enhance my motivation to finish my studies during this pandemic time	10.1%	56.8%	20.2%	11.1%	1.9%	3.64	.864
Q9. Mobile helps me to solve study related problem	15.9%	67.3%	9.1%	4.8%	2.9%	3.88	.832
Q10. Mobile learning helps me to learn different ways and provide various learning fields	15.9%	64.0%	12.5%	5.8%	1.9%	3.86	.815
Q11. The use of social media applications helps in educational fulfillment during covid-19 period	13.0%	60.1%	16.3%	9.1%	1.4%	3.74	.851
Q12. The use of social media helps to strengthen the communication with others	18.3%	70.6%	8.2%	1.9%	1.0%	4.03	.655
Q13. Mobile learning is a faster way to get feedback	9.1%	54.8%	20.7%	12.5%	2.9%	3.55	.926
Q14. Mobile learning helps to improve interactivity between student and teacher	13.5%	60.6%	15.4%	7.7%	2.9%	3.74	.890
Q15. During covid-19 time, mobile acts as a learning companion	12.0%	66.3%	13.9%	5.8%	1.9%	3.81	.793
Q16. At this pandemic time, high internet charge of mobile network can affect my learning	46.6%	41.3%	7.2%	2.9%	1.9%	4.28	.868
Q17. I think mobile learning will help me to recover my study gap at this pandemic time	17.3%	59.6%	13.0%	7.7%	2.4%	3.89	.893
Q18. Screen size of my mobile does not affect my learning	8.2%	51.4%	16.3%	15.4%	8.7%	3.35	1.106

shown in **Table 3** by which it is clear that the response of each question is close to the average.

DISCUSSIONS

Nowadays mobile phone has been playing an important role in students' everyday life especially for their educational purpose (Rahman, 2014). Availability of mobile phone among students are also paving the way for shifting focus to mobile learning to continue their study (AlHajri, Al-Sharhan, & Al-Hunaiyyan, 2017) especially in an unexpected situation such as COVID-19 pandemic. **Table 1** shows respondents as well as university students' background information, in which 64.4% are male and 35.6% are female, 65.4% are aged 16-20 years whether 33.7% belong to 21-25 years and remaining 1.0% comes from 26-30 years age group, and almost all the respondents (97.6%) are currently studying at the undergraduate level and the remaining (2.4%) belong to postgraduate level. **Figure 1** reveals that more than 95 percent (95.7%) cell phones of university students are being operated by android operating system and the remaining consist of iOS (0.5%), colorOS (1.0%), windows (1.0%) and others (1.9%). **Figure 2** displays the frequency of using internet by university students in which more than one-third (36.5%) always use the internet, 41.4% use the internet frequently, 13.5% occasional users and 8.7% use the internet rarely. **Figure 3** illustrates time spending scenario on the mobile phone by university students in a day in which 42.8% spend 1-3 hours on mobile phone in a day, 30.3% spend 4-5 hours, 12.5% spend 6-7 hours, 8.2% spend less than one hour and 6.3% spend more than seven hours on mobile phone in a day. But, it is a matter of fact that, despite having access to mobile phone as well as internet 13.9% respondents cum university students do not use mobile phone for their academic purpose, as shown by **Figure 4** that indicates reservation prevails among some students in terms of using mobile phone for educational purpose.

In recent times, mobile devices are getting more preference in terms of getting easy access to different social networking sites and using various social media applications. For that reason, students including university level are utilizing these opportunities of mobile devices through collaboration, engagement and interactivity among them that help themselves to easily share any type of academic documents or reading materials by using these social media platforms (AlHajri, Al-Sharhan, & Al-Hunaiyyan, 2017). **Figure 5** displays that 40.0% of university students show preference on Facebook for learning, 18.1% on Google, 19.4% on YouTube, 20.0% on Zoom and so on. Various studies identified that there is an increasing demand for academic apps among the students for its learning support (Hossain and Ahmed, 2016). Social media applications are also playing a crucial role in this case. **Table 2** also shows the frequency of use of social media applications by university students. It is interesting to mention that in the context of Bangladesh 80.8% university students are frequent user of Facebook, followed by YouTube (69.7%) and Google+ (52.0%), while mild interest in WhatsApp (41.0%) and did not show much interest in Instagram, Twitter and LinkedIn. So, policy-makers of the education sector of Bangladesh should focus on students' preferential social media applications such as Facebook, YouTube and Google+ while initiating any policy related to mobile learning.

Table 3 reveals that university students' have shown positive attitudes about mobile learning. In response to perception-based questions, more than two-thirds of students (69.2%) think that mobile gives them the flexibility to learn anytime and anywhere. 74.5% university students seem that mobile learning is a good idea to minimize the study gap during COVID-19 pandemic time, while 78.3% believe that mobile can act as a learning companion in any situation and be very relevant in any unexpected situation like COVID-19 pandemic period. 81.3% university students mention that mobile is easier to find relevant information, while 71.2 % state that it is easier for them to find out study materials through mobile phone and 73.1% mention that they can easily share class-related documents and discussions both online and offline by using their mobile during COVID-19 period. Mobile learning helps students in many ways such as 79.8% university students mention the assistance of mobile learning to improve their study skills, 81.8% express that it is possible to improve knowledge in their field of study by mobile learning, 83.2% have faith that mobile learning can easily solve study-related problems and 79.9% have trust that mobile learning helps them to learn different ways and provide various learning fields, while 66.9% agree that mobile learning helps to enhance their motivation to finish their studies during this pandemic time. Besides 74.1% university students have belief that mobile learning helps to improve the interactivity between student and teacher and 63.9% focus that mobile learning is a faster way to get feedback such as students can get a response at any time, be it office hour or not, from their teachers by using mobile devices, while 88.9% think that the use of social media helps to strengthen the communication with others. Interestingly, 59.6% of university students seem that the screen size of their mobile does not affect their learning. Furthermore, 73.1% of university students feel that the use of social media applications helps in educational fulfillment during COVID-19 period. Despite having enthusiasm for mobile learning, 87.9% of university students argue that mobile learning can be negatively affected by high internet charge of mobile networks at this pandemic time which is a matter of serious concern.

Based on the outputs of this study and findings of related existing studies conducted by AlHajri, Al-Sharhan, and Al-Hunaiyyan (2017), Hossain and Ahmed (2016), Rahman (2014) etc., it can be said mobile learning is a very useful mechanism to ensure normal studying of the students of all level particularly university level in all weather, be it normal condition or unpredicted situation like COVID-19 pandemic, if the necessary arrangements such as logistics, availability of internet, etc. be already in place.

CONCLUSION

The education sector of Bangladesh has been taken various initiatives to utilize Information and Communications Technologies (ICT) at every stage of education from primary to tertiary levels. The main focus of this study is to measures the student's perception of using mobile for learning during COVID-19 in Bangladesh especially at the university student's perspective. The study shows that students are very familiar with mobile learning, have a positive perception of mobile learning, and students used various social media for their study during COVID-19 pandemic time. The findings also demonstrate that mobile learning is a useful tool for this pandemic time where students can learn from outside of the classroom or participate in class from anywhere; improve the relationship with their teacher and also fulfill the long term study gap. The policymaker as well as the educational institutions should consider the opportunity to incorporate mobile learning technology for the whole education system where social media may enhance the process of teaching and learning. In addition, university-level students have positive opinions about mobile learning and willingness to be part of which is very crucial for the institutionalization of mobile learning in the universities in Bangladesh.

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