

# Stimulating Unceremonious Mobile Learning: An Empirical Study of Business Students

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## Abstract

*The widespread use of mobile technology by students as well as teachers leads the educationalists and researchers to explore its effects on the learning and teaching behaviour of students and teachers. The present study attempts to combine the determinants (such as Enjoyment, self-efficacy, system quality and information, avoiding uncertainty, and usefulness and easy to use) and subsequently evaluate them to explore the integration of IT in classroom instruction and its effects on the learning achievement of students. Using the experimental approach of quantitative research paradigm, it tested the variable “academic performance of business students” by obtaining the achieved scores of business students in Mid Term and Final Term examination before and after the exposure of students to m-learning. The result found in the study demonstrates a statistically significant improvement in the scores achieved by students after the exposure of students to m-learning as compared to the traditional classes. Therefore, it is suggested that with the implementation of the M-Learning within the higher education institutes in Pakistan, particularly business schools, will more likely to increase students’ learning.*

**Keywords:** *adaptation-intention, business students, business schools, technology-oriented class, mobile learning*

**JEL Classification:** *O, O32, O33*

## INTRODUCTION

The educational industry has improved the learning means and methods worldwide with the increasing advancement in information and technology. Different segments (including training and development, schools, community, and higher education) of the educational industry have been increasingly adopting the information and technology (IT). According to Traxler (2007), the development of connections between formal and informal learning leads to the improvement of the educational industry. This is particularly because such connections make learning more interesting for students. Hofstede, Hofstede, and Minkov (2010) argue that such connections can be developed with the integration of IT within the various segments

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of the educational industry, particularly Higher Education. Furthermore, the integration of IT into the Higher Education is a significant source to provide students as well as faculty members with a whole library in a single movable place.

In the light of the study conducted by Neumann (2016), mobile (or mobile like) devices have become common tools to be used in various educational programmes and levels such as pre-schools, high schools and graduate-level educational schools/institutes. From this perspective, the concept “Mobile Learning” (or m-learning) is widely used in the context of education and educational development, which refers to the use of mobile or mobile like devices within classrooms for learning purpose. Counting the features of m-learning, Mehdipour and Zerehkafi (2013) point out that monitoring learning activities, empowering such activities to be synchronised between diverse locations, and wireless connectivity are a few significant characteristics of the M-Learning. Furthermore, the option of movability in m-learning makes it more convenient to use in the classroom as compared to traditional desktops or books. Nevertheless, implementation of M-Learning is a challenging task for educationists particularly while designing class activities to support the learners and their learning needs (Traxler, 2007).

Despite the widespread use of mobile technology by students as well as teachers, a very small number of research scholars have conducted a study to explore the effects of integrating technology in the classroom in the form of m-learning. In addition, the developed theories associated with the technology acceptance are significant to determine the adoption intention of the IT in the classroom, particularly the Higher Education. Some of the developed theories include “Cultural Dimension Theory” (CDT) presented by Hofstede, “Technology Acceptance Model” (TAM) presented by Davis, “Social Cognitive Theory” (SCT) presented by Bandura, “Motivational Model” (MM) presented by Vallerands, and “Information System Success Model” (ISSM) presented by Delone and McLean (Hofstede, Hofstede & Minkov, 2010; Davis, 1989; Bandura, 2001; Vallerand, 1997; Delone & McLean, 2003).

The present study attempts to combine the determinants (such as Enjoyment of MM, self-efficacy in SCT, system quality and information and from ISSM, avoiding uncertainty from CDT, and usefulness and easy to use from TAM) presented in the mentioned theories and subsequently evaluate them to explore the integration of IT in classroom instruction and its effects on the learning and teaching behaviour of students and teachers. According to Neumann (2016), a significant number of Higher Education institutes in Pakistan are intended to implement the M-Learning with the expectation to endure the growing trend of IT and its utilization for the increased learning. From this perspective, this study attempts to experiment if the exposure of learning with the assistance of mobile phones (also other mobile-like devices) increases the academic performance of students currently enrolled in Higher Education (business schools); BBA, MBA, MS/MPhil, or PhD. This study is inclined to transform the traditional business classrooms in Pakistan into the technologically oriented classrooms in line with the M-Learning, as the educational system in Pakistan continues to change with the current technological advancement. In light of the present study’s objectives and the reviewed literature, this study aims to answer the following question:

- What are the prompting factors that make Business Students in Pakistan prefer technologically oriented classrooms?

## LITERATURE REVIEW

The features and functionalities of mobile phones provide users with a large number of applications that help them in their learning. Conducting a study on the mobile applications designed for educational purpose, Neumann (2016) examines one of the applications named as “Martha Speaks Dog Party” (MSDP), which has been designed in the context of vocabulary learning. The results of the study show that the participating students improved their vocabulary by 31 per cent within the period of merely two weeks. Conducting a study to analyse the impact of mobile learning on the understanding capabilities of students “both inside and outside” of the classrooms, Deaton, Herron, and Deaton (2018) find that students feel themselves to be more motivated with the application of mobile learning inside the classrooms. Furthermore, they are more intended to keep themselves engaged in the learning contents, which makes them self-study outside the classrooms and also decrease their learning anxiety.

According to Mehdipour and Zerehkafi (2013), “Mobile learning offers modern ways to support learning process through mobile devices, such as handheld and tablet computers, MP3 players, smartphones and mobile phones” (p. 93). The researchers further conclude that learning with mobile phones makes the learners of today’s technological advanced era more comfortable and thus helps them to increase their learning. The shift of electronic era to mobile services has started following the paradigm “anytime, anywhere computing” (Lehner, Nosekabel, & Lehmann, 2003). According to Lehner, Nosekabel, and Lehmann (2003), this shift has led the new generation to the evolution of labelled as “electronic learning.” In this way, the concept of mobile learning refers to the array of methods used by individuals to stay connected and simultaneously increase their learning while having phones in their hands. Uzunboylu, Cavus, and Ercag (2009) describing the difference between the electronic learning and m-learning point out that electronic learning refers to the concept of learning taken place outside the classroom while the concept of m-learning is associated with learning without selecting a fixed spot, which makes M-Learning complementary to the electronic learning.

Kim, Mims and Holmes (2006) argue that the increased accessibility to the mobile phones or mobile like devices makes it convenient that learners overcome the gap of communication and thus increase their knowledge via keeping themselves engaged in various learning activities. Conducting a study to explore the benefits of using m-learning for educational purpose, Liu, Li, and Carlsson (2010) concluded that mobile or mobile like devices (also known as smartphones) are now available with innovative computing facilities. Such computing facilities make learners able to receive instructors’ emails, updates regarding teaching lessons, shared multimedia files, and exchanging lecture notes. All of such material is the basic need of learners, which is always preferred to be in a supported format. Aiming to determine the perspectives of students enrolled in universities for accounting courses regarding mobile learning Kim, Mims, and Holmes, (2006) found that learners do prefer mobile learning classes. This is particularly because mobile learning is perceived as a time-saving tool to emphasis on key areas for accounting courses.

Liu, Zhao, Zheng, and Jin (2008) state that “the method of adaptation is likely to respond to learning needs urgently in which mobile learning endows users with flexibility of timings, time to learn, integrated instructional context, situational instructional activities and interactive sessions for acquisition of knowledge” (p. 92). Conducting a study to explore the advantages of mobile phones to be used for educational purposes, Kukulska-Hulme (2009) explores that the

integration of mobile learning, in the educational industry, is more beneficial in technical fields such as archaeology and environmental studies. The examples of the benefits include improved communication, accuracy in data recording and improved use of limited timings. According to Kukulska-Hulme (2009), using a mobile application “My Art Space Project” schoolchildren were targeted while having a trip to the museum. By using the application, the students shared audio recordings, videos, notes captured by them. As a result, the activity led the students to collaborative learning in which students’ discussion built their interest and motivation to explore the museum energetically. Concluding the study, Kukulska-Hulme (2009) figures out that the use of mobile phones worked as bridging communication in various forms.

Kenny, Van Neste-Kenny, Park, Burton and Meiers (2009), while working on a research project, include libraries to provide with the learning resources in the system named as course management. In this project, the researcher tended to envision “m-course management system” in which mobile learners were given due importance. While the project was going on, it was found capable to address the issue associated with the persistence and retention of students currently enrolled in Higher Education. The results found revealed the inadequate distribution of technological resources as a significant issue. On the other hand, the healthcare educational system in the modern era had demanded the practitioners to manage the respective challenges with a fast pace. Nevertheless, the progressive changes in the educational system require the instructors to pay attention to the resources that support mobile learning.

*H:* The Business Students’ academic performance in Pakistan will be increased with the integration of m-learning in classrooms

## METHODS

### *Research Design*

According to Kirk (2007), “an experimental design identifies the independent, dependent, and nuisance variables and indicates the way in which the randomization and statistical aspects of an experiment are to be carried out. The primary goal of an experimental design is to establish a causal connection between the independent and dependent variables. A secondary goal is to extract the maximum amount of information with the minimum expenditure of resources” (p. 24). The scientific approach “experimental research method” is consisted of testing the same variable twice known as pre-test and post-test of a similar phenomenon by creating a situation in which parameters are altered one by one to observe the effects induced by such alteration. In the present study, the variable “academic performance of business students” was measured by calculating the achieved scores of students in Mid Term and Final Term examination. The same variable was measured again subsequent to the implementation of the M-Learning by introducing the google class to the faculty members.

### *Sample & Sampling Technique*

In the present study, students currently enrolled in any of the degree programmes including BBA, MBA, etc. offered in Business Schools in Sindh were targeted. Using a quota sampling technique, ten faculty members (FMs) were nominated from each selected (total of 5) business schools currently operational in Sindh, which made the total number of FMs as n=50. The selection of Business Schools was based on purposive sampling technique, as it was made

mandatory for the selection of a business school to be accredited by “National Business Education Accreditation Council” (NBEAC). The FMs were supposed to share the achieved scores of their students in Mid Term and Final Term examination as well as to participate in the pre-designed training session in which Google Class was introduced.

### *Google Class*

Google class is an online classroom introduced by Google particularly designed for teachers to assign various educational tasks, quizzes, assignments, reading material etc. to their students so the students can access such material at any time and anywhere even outside their classes. In the training session, the participating faculty members were introduced to the Google class and they were trained on how to use the online class. Subsequently, they were requested to implement the online class in the next complete semester and then share the achieved scores of their students in Mid Term (MT) and Final Term (FT) examination. It was made sure that the scores of MT and FT examination for pre-test and post-test were obtained from the same test for the experiment.

### *Procedure*

The procedure for data collection consists of two steps. In the first step, consent from the participating Business Schools was obtained. The faculty members were, in the second step, were requested to participate in the study by sharing their students’ scores of MT and FT examination for both pre-test and post-test. The faculty members agreed to participate were also requested to participate in the training session regarding the Google Class to convert their traditional classes into Google Classrooms, mobile learning. The training session lasted for three days in which the participating faculty members were trained how to use the Google Class, how to make it beneficial for their students, and how to convert their traditional classes into mobile learning classes.

### *Data Analysis*

The gathered data was analysed by employing Paired Samples Test using Statistical Package to compare the variable “academic performance of business students” in both conditions such as 1) before business students’ exposure to mobile learning and 2) after business students’ exposure to mobile learning.

## **RESULTS & FINDINGS**

### *Descriptive Analysis*

The number of selected Business Schools was five including “Bahria University Karachi Campus”, “Institute of Business Management” (IoBM), “Institute of Business Administration” (IBA) Sukkur, “IQRA University Karachi”, and “Institute of Business Administration” (IBA) Karachi. The number of faculty members was 50 i.e. 10 faculty members from each selected university. Among the total number, 50 per cent of the participating FMs were aged above 50 in which 58 per cent were male and 42 per cent were female FMs. The percentage of the FMs holding PhD degree was 42 rest of the faculty members were holding either MS/MPhil of MBA. Most of the faculty members (88 per cent) owned the phones with Android function in

which Google Class could be installed via play store. A large number of participating faculty members (88 per cent) preferred to use Wi-Fi as an internet connection. Using mobile phones for teaching purpose was preferred by 68 per cent of FMs. This is noteworthy that Wi-Fi facility with open access was provided by each of the nominated business schools.

As the participating FMs were supposed to share the achieved examination score of their students, the total number of students was 1032. Among them, 23.4 per cent students were currently enrolled in Bahria University Karachi Campus, 22.9 per cent students were currently enrolled in IoBM, Karachi, 22.1 per cent students were currently enrolled in IBA Sukkur, 18.1 per cent students were currently enrolled in IQRA University, Karachi, and 13.5 per cent students were currently enrolled in IBA Karachi respectively. Among all of the students, the highest age group was between 20 and 25 (80.3 per cent) whereas students were almost equal gender-wise i.e. 54.4 per cent students were male while 45.6 per cent students were female. Among the total number of students, 54.2 per cent students were currently enrolled in MBA programme, 42.2 per cent students were currently enrolled in BBA programme, and 3.6 per cent students were currently enrolled in other than MBA and BBA programmes such as MPhil or PhD. A large number of students (86.7 per cent) owned the phones with Android function in which Google Class could be installed via play store. Using mobile phones for learning purpose was preferred by 67.6 per cent of the students.

### Testing Hypotheses

To explore if Business Students perform better academically with the exposure of mobile learning, their achieved scores in the mid-term examination and final-term examination were obtained in the following two phases:

- Pre-Test: the achieved scores by business students in the mid-term examination and final-term examination before the introduction of Google Class in their classes (denoted as Pre-GC)
- Post-Test: the achieved scores by business students in the mid-term examination and final-term examination after the introduction of Google Class in their classes (denoted as Post-GC)

Table 1 demonstrates the achieved scores of the business students in both terms i.e. Mid-Term and Final-Term. The mean score the students achieved in Mid-Term was 53.65 (having 11.375 as standard deviation and .485 as standard error mean) and in Final-Term was 58.15 (having 11.373 as standard deviation and .585 as standard error mean) before their exposure to the mobile learning. On the other hand, the mean score the students achieved in Mid-Term was 74.39 (having 15.378 as standard deviation and .410 as standard error mean) and in Final-Term was 78.63 (having 17.595 as standard deviation and .379 as standard error mean) after their exposure to the mobile learning.

Table 1: Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
<b>Pair 1</b>	<i>Mid-Term Score (Pre-GC)</i>	53.65	1032	11.375	.485
	<i>Mid-Term Score (Post-GC)</i>	74.39	1032	15.378	.410
<b>Pair 2</b>	<i>Final-Term Score (Pre-GC)</i>	58.15	1032	11.373	.585
	<i>Final-Term Score (Post-GC)</i>	78.63	1032	17.595	.379

Table 2 displays the output of the test applied to compare the variable with both conditions. From this perspective, the result of “Paired Samples Test” shows “ $t(1031) = -29.29, p < 0.0005$ ” for Mid-Term examination scores and “ $t(1031) = -28.03, p < 0.0005$ ” for Final-Term examination scores. A “statistically significant improvement” is seen with students’ exposure to mobile learning because of the mean scores of both terms as well as the  $t$ -values’ direction (minus) i.e. the increase is from  $53.65 \pm 11.37$  to  $74.39 \pm 15.378$  score on average ( $p < 0.0005$ ) in Mid-Term and  $58.15 \pm 11.37$  to  $78.63 \pm 17.59$  score on average ( $p < 0.0005$ ) in Final-Term. As a result, the present study supports the hypothesis i.e. the Business Students’ academic performance in Pakistan will be increased with the integration of m-learning in classrooms.

Table 2: Paired Samples Test

		Paired Samples Test					t	df	Sig**
		Paired Differences			95% CI*				
		M	SD	SE Mean	Lower	Upper			
Pair 1	Mid-Term Score (Pre-GC)	-20.74	20.56	0.64	-20	-17.49	-29.29	1031	0
	Mid-Term Score (Post-GC)								
Pair 2	Final-Term Score (Pre-GC)	-20.48	21.19	0.66	-19.78	-17.19	-28.03	1031	0
	Final-Term Score (Post-GC)								

\*Confidence Interval \*\* Sig. (2-tailed)

## Discussion

Subsequent to reviewing the related literature, it is clear that the advancement in the mobile technology had made its use increased significantly in several fields such as entertainment, banking, tourism, economy, library, and education. Such advancement has also urged educationists worldwide to focus on its use in the educational industry. For instance, Bano et al., (2018) found that learning with mobile phones makes the learners of today’s technological advanced era more comfortable and thus helps them to increase their learning. The shift of electronic era to mobile services has started following the paradigm “anytime, anywhere computing.” Similarly, Neumann (2016) examines one of the applications named “Martha Speaks Dog Party” (MSDP), which has been designed in the context of vocabulary learning. The results of the study show that the participating students, aged between “three and seven years”, improved their vocabulary by 31 per cent within the period of merely two weeks. Deaton, Herron, and Deaton (2018) find that students feel themselves to be more motivated with the application of mobile learning inside the classrooms. Furthermore, they are more intended to keep themselves engaged in the learning contents, which makes them self-study outside the classrooms and also decrease their learning anxiety. Mehdipour and Zerehkafi (2013) point out that “Mobile learning, or m-Learning, offers modern ways to support learning process through mobile devices, such as handheld and tablet computers, MP3 players, smartphones and mobile phones” (p. 93). The findings of the study second the reviewed literature figuring out by suggesting its use in the educational industry.

The findings of the present study are not dissimilar to the studies reviewed. For example, Lehner, Nosekabel, and Lehmann (2003) found that learning with the help of mobile phones makes the learners of today’s technological advanced era more comfortable and thus helps them to increase their learning. The shift of electronic era to mobile services has started following the

paradigm “anytime, anywhere computing.” Furthermore, the found results of the study are also similar to the studies conducted by Sarrab, Elgamel, and Aldabbas (2012), Kutluk and Gulmez (2014), Kim, Mims, and Holmes, (2006), and Uzunboylu, Cavus, and Ercag (2009) in which the researcher concluded that wireless communication technology (mobile phones) could be integrated in students learning regardless of the locations of users. Nevertheless, the present study also supports the results of the conducted by Kutluka and Gulmez (2014) describing that students feel discouraged when universities do not provide with the technical support.

## CONCLUSION & RECOMMENDATIONS

### *Conclusion*

Subsequent to the reviewed literature as well as the findings of the study, it becomes easy to conclude that the integration of mobile learning in the educational industry supports a constant contact to the learning process and thus students can increase their learning. Having integration of m-learning in the traditional classes, students can have the opportunity to access the learning material from anywhere (not only in classrooms), which will increase their learning and thus increase their academic achievement. Comparing students’ achieved scores in traditional classes with their achieved scores in classes with m-learning, it was found that students are more likely to and are more motivated to improve their academic scores in the technology-oriented classrooms. This is because mobile devices usually contain the functions and features that make the learners engage with the provided learning resources.

By implementing m-learning, educationists can offer up-to-date ways to support the learning process. The accessibility to mobile phones (or mobile like devices) makes it easier for educationists to communicate with their students by involving them in several activities. On the other hand, such devices having innovative computing facilities empower the students to timely receive updates associated with learning materials, instructors’ notifications, sharing multimedia files and exchanging lecture notes. Exploring the impact of students’ exposure to m-learning on their academic achievement, the present study found it beneficial for students. Therefore, it can be concluded that business students’ academic performance does increase with m-learning classrooms. Moreover, m-learning exposure leads students to increase adoption intention of mobile technology, which assists them in increased academic performance.

### *Recommendations*

In line with the effective use of mobile and/or mobile like devices by business students in Pakistan business schools, this study recommends the subsequent points to the decision and policymakers:

- Integrating m-learning within the curriculum of Higher Education in Pakistan will help in increased learning of Business Schools’ students
- With the technology-oriented classrooms, business students are more on the verge of improved academic performance, as mobile phones are usually embedded with functions and features keep students motivated and engaged in learning
- M-learning is not formally implemented in higher education institutes in Pakistan. With the drastically increased use of mobile phones, it seems to be a clear demand for M-Learning.

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