

# An Empirical Study of Nomophobia Behavior of Saudi Learners

Abdulmohsin Suli man Alkhunaizan

Department of Information Systems, College of Computer and Information Sciences, Majmaah University, Majmaah  
11952, Saudi Arabia

## Summary

Smartphones are increasingly used in the daily lives of human beings because of their dynamic features, and prompt mode of communication around the clock. The excessive use of smartphone applications leads to its addiction. Particularly, this addiction develops the symptoms of psychological addiction, positive and negative emotions, stress, anxiety, depression and poor performance in academic activities. The most dominant behavior among all is the nomophobia behavior. The aim of present study is to determine the adults' mobile phone usage, nomophobia levels and to examine the associated elements to the nomophobia behavior. The study adopted a rational survey method. A total number of 285 students were engaged in the survey. The data was gathered by a questionnaire. Descriptive statistics was employed to analyze the data. The results of the data analysis showed that a considerable relation was appeared between the daily usage of social media addiction through smartphone and nomophobia.

## Key words:

*Smartphones; Smartphones addictions; Nomophobia; Social media usage.*

## 1. Introduction

21<sup>st</sup> century is marked as the age of smartphones. Mobile phones have become the integral part of the everyday life and even these are important aspect of daily life ( Gezgin, 2017; Bolle, 2014; Miraglia, 2014; Khan et al, 2018; Khan & Shahbaz, 2017. The use of android applications by the means of internet access enables users to use smartphones rapidly and simply (Hussain et al, 2018). Smartphones are being used intensively in social context for communication, educational institutions as a teaching aid, in medicine and addictive behaviors (Attri, Chatrath, & Kaur, 2016; Choliz, 2012). The excessive use of smartphones is now disturbing the lives of men, women and even children. In adults' insomnia, anxiety, physical and mental disorders and stress are the major causes of various educational, social and family problem (Demirci, Akgönül, & Akpınar, 2015).

Mobile phone addiction can be deemed identical to the other technology related addictions in the shape of using laptops, watching online videos, gaming, the use of internet and computer based chatting (Kuss, & Griffiths, 2017). Smartphone addiction is considered as more perilous as it is equipped with all sorts of technological related addictions (Kuss et al, 2018). Despite of this there

is no specific measure exists for controlling the prevailing smartphone addiction. Elhai, Dvorak, & Hall, (2017) asserted that the primary manifestation of smartphone addiction is basically result of fear of being away for the smartphone. In this perspective, the present attempt ponders to consider the level of homophobic activities that exhibit smartphone addiction among adults. Most of the adults are at the danger of smartphone addiction on the basis of fear being away from their smartphones and the worry of leaving their smartphones leads to stress.

Nomophobia is described as “the fear of being out of mobile phone contact” (Secur Envoy, 2012). The notion of nomophobia refers to unavailability of the access to the smartphone related communication and chatting (Okoye, Obi-Nwosu & Obikwelu2017). The term nomophobia is an abbreviation of “no-mobile-phone phobia”. Nomophobia is explained in a recent study by King, et al, (2014) as:

“Nomophobia is the modern fear of being unable to communicate through a mobile phone (MP) or the Internet. ... Nomophobia is a term that refers to a collection of behaviors or symptoms related to MP use. Nomophobia is a situational phobia related to agoraphobia and includes the fear of becoming ill and not receiving immediate assistance (p. 28)”.

People who are in the range of nomophobia behaviors encounter stress, anxiety, and psychological disorder that alter their lifestyle when they do not keep smartphone with them (Gezgin, et al, 2018). The negative impact of nomophobia behavior increases on the social and academic life with the development in the frequency of nomophobia behaviors, ( King et al, 2014). Nomophobia in 21<sup>st</sup> century marked as the disorder stemming from modern technologies particularly handheld technologies (Thompson, 2017). The predominance of this condition is the result of loneliness, social phobia and immigration (Pavithra and Madhukumar, 2015).

Gezer and Çakır (2016) asserted in their research study that demographic traits, the usage duration of cell phone, education of the family and the availability of the internet also the family's education level, and the duration of mobile phone and internet usage also influence the nomophobic behaviors. King et al., (2014) indicated that the research on the investigating the motives and causes of nomophobia is inadequate and it varies in different cultural settings. This assertion indicates the gap to be filled in the

literature. Therefore, the present study aims to investigate the nomophobic behaviors associated with the usage of smartphones. For this the focus of the present study is to determine the variables of the usage of social media, loneliness and locus of control those are associated with nomophobia. Moreover, the study will also focus that how to control the risks of the overuse of smartphones in Saudi context.

## 2. Literature Review

Currently, smartphones are persistently used as personal computers and mobile phones. This dual function of the smartphone provides the opportunity of interaction around the clock by answering and making calls, instant chat, SMS, web surfing, audio and video function, checking and sending emails above all the use of social media apps, and online shopping (Chan, 2015). These features of smartphones rapidly increased the usage of smartphones among adults. Alshehri & Meziane, (2017) asserted that around 95% of the Saudi population has the fast and rapid access to the internet. Computers, laptops and tabs are the important elements of every family and everyone in the family has smartphones. The most common activities of the smartphone usage is use of social media apps. The younger generation is more addicted towards the use of smartphones. The use of smartphone has some positive impacts particularly in learning language and other culture but most of the time smartphone usage resulted in the adverse effects (Khan et al, 2018). These include the poor academic performance, stress, loneliness, antisocial behavior, social interaction and family engagement (Lian, Huang & Yang, 2016).

There is great deal of attention of the usage of social media; however, the research on nomophobia is not widely explored. The earliest attempt was made by King et al, (2010) by examining the panic disorder and its relationship with nomophobia. The results of the study indicated that the person who depended on his smartphones was referred to seek the behavioral therapy, medication and psychiatric treatment. In spite the focus and attention on nomophobia the participants' dependence on the phone was also altered. They suggested that nomophobia should be considered as an important element of one's life and should be treated as other panic disorders. As the smartphones are linked with the self-governance and freedom of choice and action and people with agoraphobia may easily affected by the social media. So the attention should be drawn towards the social interaction. Similarly, King et al, (2014) investigated the nomophobia as an evident behavior that may be an indication of prospective anxiety disarray. The study was a case study in the nature where participant was in fear of social behavior and developed the inclination of an essential environment to contact with other members of

society. After the treatment period the participants showed independence of communication and engaged in daily life situations. The finding of the investigation exhibited that nomophobia is the result of problematic behaviors and possibly some other mental issues.

King et al, (2010) asserted that nomophobia is most commonly related to the dependency or mobile phone addiction. Contrarily to this Forgays et al, (2014) argued that the idea of mobile phone dependency is rather poor and they referred nomophobia as a term that would be utilized to the addiction of mobile phone addiction. Nevertheless, the conversational usage of the expression of addiction appears ambiguous on the connotation of nomophobia. Reasonably, the term infers from its name nomophobia or with-out mobile phone may be well suited for the vivid concept of the term or situational phobia (King et al, 2010; King et al, 2013).

Another important concern of the present study is locus of control which is also closely associated with nomophobia. The term locus of the control is primarily a forecaster of a person's entity, characteristics, expectations and ones' values of life. As a notion, it is an indication of one's individual perceptions on their responsibilities and experiences. People who feel themselves as the responsible for what they do and what they face are directed towards locus of the control (Durak, 2018). Excessive use of smartphones among adults and dynamic function of the modern cell phones are supposed to have a key part in the unpleasant and bad impact that come across. The locus of the control in the literature refers to as the addiction of the internet and internet is important factors that have the major part in the usage of mobile phone (Yildiz, 2018; Menon, Narayanan, & Kahwaji, 2018). Recently only one study was found in the literature that investigate the relationship of nomophobia and locus of control which is more commonly referred as the independence of the use of cell phones.

Smartphones have gained the popularity with the progression of its applications and useful features; it has been used widely in social and educational contexts (Khan et al, 2018b). Most of the adults are using smartphones for the communication and chat purposes. They remain online throughout the day for the purpose of social and other activities. This is because of the modern smartphones adults are spraying away from the direct social contact and physical meetings (Frederiks et al, 2018). This shows the strong association between adults and smartphones which results in losing of interaction with the society and anxiety. Form this clear association between loneliness and nomophobia starts to develop. Loneliness is the result of lack of social interaction and communication and smartphones are the key factor that cause these feelings, and hence the phase of nomophobia prevails (Bian & Leung, 2015). Therefore, the present study aims to determine the adults' levels of nomophobia and reveals

the associated variables which are related to nomophobia behavior.

### 3. Research Questions

1. What are the adults' levels of smartphone usage (duration and frequency of use) by using their smartphones?
2. What are the adults' nomophobia levels by the use of their smartphones?
3. What are adults' locus of control, and social media levels and their relationships with nomophobia?

### 4. Methodology

The study adopted a rational survey method to answer the research questions developed for the present study. The study is quantitative in nature. Rational Survey approach is the good choice for the researcher to administer and analyze the survey based questionnaire (Moser& Kalton, 2017). It allows research to administer the questionnaire to large sample of the population (Moser& Kalton, 2017). It involves two steps for data collection; the first one is the planning of the survey and then distribution of the survey.

#### 4.1 Population

The present investigation was carried with the adults who were the students at public university under the ministry of education of Saudi Arabia during second semester, 2018. A total number of 285 students were engaged in the survey. All of them were informed about the process of survey and they received the survey by the help of faculty members. Initially 305 questionnaires were distributed among the participants and 285 participants answered the whole questionnaire and hence the total participants were 285. All of them participated in the survey voluntarily. 46.2% were female and 53.8% were male in the present investigation.

#### 4.2 Instruments

The data was gathered by using a questionnaire which was further divided into four different sections. All the sections of the questionnaire were analyzed separately. The first part of the questionnaire was developed by the researcher and on the personal information and participants' daily smartphone usage. It was sent to three research experts to evaluate its face validity. The feedback was kept in mind for the administration of the questionnaire. This section of the questionnaire was comprised of 19 items. The second section of the questionnaire was adopted form (Yildirim and Correia, 2015) to check the nomophobia level of the

participants. The nomophobia scale questionnaire was comprised of 20 items and participants were asked to response the questionnaire on 5 points Likert scale. The Cornbach alpha of the questionnaire was measured .97 and reliability of questionnaire in the present study was measured .91. This asserts that nomophobia scale measure questionnaire is highly reliable.

The third section of the questionnaire was social media disorder scale which was developed by Van Dan et al, (2016). The part of the questionnaire was consisted of 9 item and participants were asked to mark their answer on five point likert scale from Never to always. The reliability of the scale was measure .72 and in the present investigation, its reliability was .79. The last part of the questionnaire was adopted form ongen (2003) to measure locus of the control of the control. This scale is comprised of 29 items and respondents were asked to mark it on 4-point likert scale. The reliability of the original scale was measured .73 and it present study was .72.

### 5. Data Analysis

For the present study parametric tests and descriptive statistics were utilized to analyze the quantitative data gathered from the participants. Data obtained from the participants of the study was first inserted in the excel sheet and it was transferred to SPSS 22 to calculate the mean, mode, correlation and standard deviation. Data was check for the normality analysis to choose the suitable test for the analysis. For this purpose the Kolmogorov-Smirnov Test was applied, this test showed the normal distribution of the data. Multivariate analysis was also applied. For this Variance Inflation Factor (VIF) was calculated. Table 1 illustrates the Collinearity statistics.

Variables	Tolerance	VIF
Daily Social media Usage	.827	1.091
Smartphone addiction	.357	2.787
Locus of control	.961	1.017

### 6. Findings

The percentages of the participants daily mobile phone usage was calculated to measure participants' daily smartphone utilization. The data is presented in the table 2. Table 2 displays that 34.7% of the participants use their smartphone 2 hours daily and 16. % of the participants use their smartphones 3 hours daily. 79 participants indicated that use their smartphone one hour and only 21.1 % of the participants indicated that they use their smartphone less than an hour.

Table 2: Participants daily mobile phone Usage

	Daily Mobile usage	Percentage
Less than an Hour	60	21.1
1 Hour	79	27.7
2 Hours	99	34.7
3 Hours	47	16.5
	285	100

**Locus of control and the use of social media levels**

**Table 3:** displays the locus of control and the use of social media levels. The descriptive values of the adults’ usage of social media and locus of control were calculated.

Table 3: Locus of control and the use of social media levels

Scales	Minimum score	Maximum score	X	SD
Daily Social Media use	0	15	2.89	3.67
Smartphone addiction	8	44	22.11	1.31
Locus of control (LOC)	61.1	126.5	83.1	.38
LoC for family relations	12	31	22	.54
LoC for success	14	31	20.89	.43
LoC for classmates	12	33	19.37	.63
LoC for superstition	3	9	6.85	1.01
LoC for fate	7	19	11.9	.77

The closer look of the table 3 asserts that the adults LOC appears higher than the other scales presented in the table. The smartphone average time spent is 1.31 hours whereas the use of social media is 2.89 in average.

**Smartphone usage relationships with Nomophobia**

To investigate the association between participants’ levels nomophobia behavior and social media usage of the Pearson Moments Multiplication Correlation coefficients were estimated. Table 4 displays the descriptive statistics of the correlation and coefficients of the smartphone usage and its relationships with nomophobia.

Table 4: Smartphone usage relationships with Nomophobia

Variables	Nomophobia	Social Media Usage duration	Smartphone addiction	Locus of control
Nomophobia	-			
Social Media Usage duration	.389**	-		
Smartphone addiction	.781**	.402**	-	
Locus of control	.073*	.065*	.139**	1.56**

\* $p < .05$ ;  $p < .01$ .

It is vital from table 4 that the correlation between different variables appeared between .073 to .139. The smartphone addiction is ( $r=.781$ ,  $p < .01$ ) which is at the highest level among other variables. A considerable correlation was found between smartphone addiction and

nomophobia. This asserts that if the usage of social media increases it directly affects the levels of nomophobia.

**Duration of Locus of control and Social Media Usage for the Prediction of Nomophobia**

The regression analyses of the variables were calculated at the identical time. Table 5 displays the results of regression analysis of the social media usage i.e. smartphone addiction and prediction of the nomophobia levels.

Table 5: Regression analysis of Locus of control and Social Media Usage for the Prediction of Nomophobia

Variable	B	SE of B	$\beta$	T	p	Binary r	Partial r
Constant	.819	.239		3.223	.001		
Social Media usage	.039	.008	.113	4.398	.000	.103	.157
Smartphone Addiction	.647	.038	.645	16.324	.000	.369	.502
Locus of Control	-.153	.083	-.043	-1.901	.056	-.043	-.078

$r = .783$ ;  $R^2 = .584$ ;  $F(4, 871) = 277.990$ ;  $p = .000$

Table 5 indicates that the model has the significant pvalue ( $p < .000$ ). The overall nomophobia level ( $R^2 = .584$  and  $p < .001$ ) and determines variable duration is 59%. As of uniform regression coefficients ( $\beta$ ), while investigating the prediction of variables the levels of social media usage and nomophobia levels appears to be more important factor in the analysis. This asserts that if social media usage increases the levels of nomophobia also alters their levels.

**7. Discussion**

The aim of the present study was to explore the levels of nomophobia among adult learners and determine the factor that affects the levels of nomophobic behavior. Rational model was followed from the related available literature. The results of the data analysis show that a considerable relation was appeared between the daily usage of social media addiction through smartphone and nomophobia. For this perspective, the desirability and inclination of the usage of social media setting is supposed to be critical among adults excessive utilization of smartphones. Durak, (2018) explored the levels of nomophobia levels and its relations with smartphone addiction. The study revealed positive correlation among the social media usage, locus of the control and levels of the nomophobia.

The finding of the present study are also in the line with the earliest attempt made by King et al, (2010) by examining the panic disorder and its relationship with nomophobia. The results of the study indicated that the person who depended on his smartphones was referred to seek the behavioral therapy, medication and psychiatric treatment. In spite the focus and attention on nomophobia the participants’ dependence on the phone was also altered. Likewise the results of the present investigation endorsed the findings of King et al, (2014) who investigated the

nomophobia as an evident behavior that may be an indication of prospective anxiety disarray. The study was a case study in the nature where participant was in fear of social behavior and developed the inclination of an essential environment to contact with other members of society. The finding of the investigation exhibited as in the present study assert that nomophobia is the result of problematic behaviors and possibly some other mental issues.

The result of present investigation asserts that level of nomophobia greatly relies on the usage of social media and social media depends on smartphones addiction. This also highlight by King et al, (2010) that nomophobia is most commonly related to the dependency or mobile phone addiction. However the result of the present study are not consistent with Forgays et al, (2014) who argued that the idea of mobile phone dependency is rather poor and they referred nomophobia as a term that would be utilized to the addiction of mobile phone addiction.

Excessive use of smartphones among adults and dynamic function of the modern cell phones are supposed to have a key part in the unpleasant and bad impact that has been come across. The locus of the control in the literature refers toward the addiction of the internet and its important factors that have the major part in the usage of mobile phone (Yildiz, 2018; Menon, Narayanan, & Kahwaji, 2018).

## 8. Implication, Conclusion and Implications

The present study investigated the levels of nomophobia among adults was governed by the smartphone addiction. Nomophobia levels were appeared considerably high and these levels were directly associated with the smartphone addiction and social media usage. The social media variable appeared to in a more positive correlation. Whereas, the locus of the control was remained at the lower level of nomophobia among other variable. It was obvious from the result that no considerable relation was established between locus of control and nomophobia levels. Research that focused on the key element and factors that governs the levels of nomophobic behaviors were found identical. However, the focus of the research should be on the investigating the factors that affect the smartphones addiction may add more insight in the literature. Another important limitation of the present study was that the study employed the rational survey design using only quantitative method; a qualitative study could present better insight of the levels of nomophobia.

The findings of the study are a road map for education planesr, teachers, and parents to have some positive steps to reduce the impact of smartphone addiction. The use of smartphones is very vital in every mode of life; therefore a study is required to determine the academic performance

of smartphone addiction. For this, an experimental study is essential that may allow learner to use smartphones for learning purposes. Moreover, adults learners should be trained to use the social media positively that can aid them in their study, for this intervention programs are essential to use the addiction of social media and smartphones positively.

The accuracy of the data relies on the honesty of the expression of the participants. To this end different data collection techniques should be employed in the future investigation to validate the findings of the study. Moreover, policy maker on the social media should be propagated to avoid the nomophobia behavior. This will help individuals to create a specific environment for reducing the duration spent on smartphones. Finally, training is required for the adults and teachers to develop the awareness on the use of technology particularly smartphones.

## References

- [1] Attri, J. P., Khetarpal, R., Chatrath, V., & Kaur, J. (2016). Concerns about usage of smartphones in operating room and critical care scenario. *Saudi journal of anaesthesia*, 10(1), 87.
- [2] Bian, M., & Leung, L. (2015). Linking loneliness, shyness, smartphone addiction symptoms, and patterns of smartphone use to social capital. *Social Science Computer Review*, 33(1), 61-79.
- [3] Bolle, C. L. (2014). Who is a smartphone addict? The impact of personal factors and type of usage on smartphone addiction in a Dutch population (Master's thesis, University of Twente).
- [4] Chan, M. (2015). Mobile phones and the good life: Examining the relationships among mobile use, social capital and subjective well-being. *New Media & Society*, 17(1), 96-113.
- [5] Cholz, M. (2012). Mobile-phone addiction in adolescence: The test of mobile phone dependence.
- [6] Demirci, K., Akgönül, M., & Akpınar, A. (2015). Relationship of smartphone use severity with sleep quality, depression, and anxiety in university students. *Journal of behavioral addictions*, 4(2), 85-92.
- [7] Durak, H. Y. (2018). Investigation of nomophobia and smartphone addiction predictors among adolescents in Turkey: Demographic variables and academic performance. *The Social Science Journal*.
- [8] Elhai, J. D., Dvorak, R. D., Levine, J. C., & Hall, B. J. (2017). Problematic smartphone use: A conceptual overview and systematic review of relations with anxiety and depression psychopathology. *Journal of affective disorders*, 207, 251-259.
- [9] Forgays, D. K., Hyman, I., & Schreiber, J. (2014). Texting everywhere for everything: Gender and age differences in cell phone etiquette and use. *Computers in Human Behavior*, 31, 314-321.
- [10] Frederiks, K., Sterkenburg, P., Lavner, Y., Cohen, R., Ruinskiy, D., Verbeke, W., & IJzerman, H. (2018). Mobile Social Physiology as the Future of Relationship Research

- and Therapy: Presentation of the Bio-App for Bonding (BAB).
- [11] Gezgin, D. M. (2017). EXPLORING THE INFLUENCE OF THE PATTERNS OF MOBILE INTERNET USE ON UNIVERSITY STUDENTS' NOMOPHOBIA LEVELS. *European Journal of Education Studies*.
- [12] Gezgin, D. M., Hamutoglu, N. B., Sezen-Gultekin, G., & Ayas, T. (2018). The relationship between nomophobia and loneliness among Turkish adolescents. *International Journal of Research in Education and Science*, 4(2), 358-374.
- [13] Hussain, M., Zaidan, A. A., Zidan, B. B., Iqbal, S., Ahmed, M. M., Albahri, O. S., & Albahri, A. S. (2018). Conceptual framework for the security of mobile health applications on android platform. *Telematics and Informatics*, 35(5), 1335-1354.
- [14] Khan, R. M. I., Radzuan, N. R. M., Shahbaz, M., & Ibrahim, A. H. (2018). EFL Instructors' Perceptions on the Integration and Implementation of MALL in EFL Classes. *International Journal of Language Education and Applied Linguistics*, 39-50.
- [15] Khan, R. M.I., Radzuan, N. R. M., Shahbaz, M., Ibrahim, A.H., & Ghulam Mustafa (2018). The Role of Vocabulary Knowledge in Speaking Development of Saudi EFL Learners. *Arab World English Journal*, 9 (1). DOI: <https://dx.doi.org/10.24093/awej/vol9no1.28>
- [16] King, A. L. S., Valença, A. M., Silva, A. C. O., Baczynski, T., Carvalho, M. R., & Nardi, A. E. (2013). Nomophobia: Dependency on virtual environments or social phobia?. *Computers in Human Behavior*, 29(1), 140-144.
- [17] King, A. L. S., Valença, A. M., Silva, A. C., Sancassiani, F., Machado, S., & Nardi, A. E. (2014). "Nomophobia": Impact of Cell Phone Use Interfering with Symptoms and Emotions of Individuals with Panic Disorder Compared with a Control Group. *Clinical practice and epidemiology in mental health: CP & EMH*, 10, 28-35. Chicago
- [18] Kuss, D. J., Kanjo, E., Crook-Rumsey, M., Kibowski, F., Wang, G. Y., & Sumich, A. (2018). Problematic mobile phone use and addiction across generations: The roles of psychopathological symptoms and smartphone use. *Journal of technology in behavioral science*, 3(3), 141-149.
- [19] Kuss, D., & Griffiths, M. (2017). Social networking sites and addiction: Ten lessons learned. *International journal of environmental research and public health*, 14(3), 311.
- [20] Lian, L., You, X., Huang, J., & Yang, R. (2016). Who overuses Smartphones? Roles of virtues and parenting style in Smartphone addiction among Chinese college students. *Computers in Human Behavior*, 65, 92-99.
- a. *Medicine*, 6(3), 340-344.
- [21] Menon, S., Narayanan, L., & Kahwaji, A. T. (2018). Internet addiction: A research study of college students in India. *Journal of Economics and Business*, 1(1), 100-106.
- [22] Miraglia, D. A. (2014). The experiences of adult women ages 30-44 who log on to Facebook daily using their smartphone: A generic qualitative study (Doctoral dissertation, Capella University).
- [23] Moser, C. A., & Kalton, G. (2017). *Survey methods in social investigation*. Routledge.
- [24] Okoye, C. A., Obi-Nwosu, H., & Obikwelu, V. C. (2017). Nomophobia among undergraduate. *Practicum Psychologia*, 7(2).
- [25] Pavithra, M. B., Madhukumar, S., & Mahadeva, M. (2015). A study on nomophobia-mobile phone  
a. *Progress in Health Science*, 2(1), 33-44.
- [26] SecurEnvoy. (2012). 66% of the population suffer from Nomophobia the fear of being without their phone.
- [27] Shahbaz, M., & Khan, R. M. I. (2017). Use of mobile immersion in foreign language teaching to enhance target language vocabulary learning. *MIER Journal of Educational Studies, Trends and Practices*, 7(1).
- [28] Thompson, M. L. (2017). Smartphones: Addiction, or way of life?. *Journal of Ideology*, 38(1), 3.
- [29] Yıldız Durak, H. (2018). What would you do without your smartphone? Adolescents' social media usage, locus of control, and loneliness as a predictor of nomophobia.

**Abdul Mohsin AlKhunaizan** is currently serving as an Assistant Professor at Department of computer science, Majma'ah University. He holds a PhD degree from UK and more than 5 years of research experience. His research interests include E-Learning; E-Commerce and Information Technology.