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The Effect of Mobile Phone Use on the Students' Budget, Social Behavior and Academic Performance: A Case Study of Bacha Khan University, Charsadda, Pakistan

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Abstract
Among the common communication devices mobile phones are quite popular in the university students. However, Parents, guardians, and teachers are worried that students are spending too much money and time on using mobile phone and have not enough time to study and participate in social activities. This study attempts to analyze the effect of mobile phone use on the students' budget, social behavior and academic performance by taking Bacha Khan University, Charsadda, Pakistan as a case study. The study also evaluates the mobile phone addiction behavior of the students. Varimax rotation matrix is applied using data collected from 365 students through questionnaire. Results show that a female student, an engaged or divorced student, the student enrolled in Master program, and the student whose father is semi-government employee spent half of their part-time job income or pocket money on mobile phone. Besides, the students give less time to calling and sending less texts to family and friends while they give more time to calling and sending more texts to partner and other peoples. Results of the Varimax rotation matrix reveal that the students always use mobile phone for entertainment and they are often use mobile phone for making calls, sending text massages, getting news, and for connecting to social media. Furthermore, the use of mobile phone reduced the students' communication and travel costs as well as the use of mobile phone internet reduced their book purchasing costs. Finally, the use of mobile phone has both negative and positive impacts on the students' social behavior and on their academic performance. However, the negative impacts of using mobile phone on the students' academic performance and on their social behavior outweighs its positive impacts.
Key Words: Mobile phone usage, Mobile phone addiction, Students, Budget, Social behavior, Academic performance, Varimaxr rotation matrix

1. Introduction

The fast growing technological development has led to in invention of several devices and mobile phone is one of them. In today's modern era, mobile phones are essential device for easing daily life, it is an important device necessary for communicating and connecting to friends, families, and work or even used for emergencies (Nishad & Rana, 2016). Mobile phone has attained vast ground in the daily lives of students every part of globe. Mobile phone has become a common sight today in universities as they enter the premises with some of the most expensive and sophisticated mobile phones. Among the common communication devices mobile phones are quite popular in the university students. At the university level, almost every student owns one or more mobile phones that has all the software, facilities, and applications that connecting them to the internet and to various web sites and social media platforms (Khan et al., 2015). With advance mobile phones students can do chatting, stream, access, upload, download, play and exchange various types of contents. These contents are secured by the use of security PINs and passwords provided in these devices. The excessive usage of mobile phone and time spent on instant messaging, free night calls, chatting, , exam malpractices, social networking is greatly affecting their lives (Sabri & Argan, 2015). Resultantly, the increasing use of mobile phones affecting the students educational outcomes, budget, health, and social behavior (Khan et al., 2015).

The use of mobile phone has both positive and negative effects on the student lives. The use of smartphones makes it easier for students to connect directly to many educational, and social platforms. However, many university students perceive the mobile phone or cell phone mainly as a mean of entertainment, and very frequently use them for surfing the internet, social networking, playing games, and watching videos. The unproductive usage of mobile phone disrupts the students' social behavior and academic performance (Lepp et al., 2015). Mobile phones are a way that helps students feel they belong to a community. However, parents, guardians, and teachers are worried that students are spending too much money and time on using mobile phone and they have not enough time to study and participate in social activities. Therefore, intensive mobile phone use is affecting the students budget, social behavior, and academic performance.

For finding the impact of mobile phone use on the student academic performance Ifeanyi & Chukwuere (2018) carried out a study on the impact of using smartphones on the academic performance of undergraduate students at the North-West University, South Africa. The study found that majority of the undergraduate students are using

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their smartphones for smoothly engagement with classmates and teachers. The study also found that smartphones addiction sidetracks students on their studies. Hossain (2019) extended the same issue to Bangladesh and determined the effect of smart phone usage on the students' performance in Jahangirnagar University. Results of the study depicted that continuous application usage during study time, spending more time on mobile phone, and marital status has negatively affecting the academic performance of the students. Baert et al. (2020) extended the same issue to Belgium and measured the causal impact of smartphone use on educational performance of students' using data from the students in two Belgian universities. Results of the study indicated that an increase in daily smartphone use decrease exam scores of students. On the other hand, Lepp et al. (2015) has examined association between the grade point average (GPA) of college students and their mobile phone usage after including control variables. Their findings indicate mobile phone usage is negatively hampering the academic performance of students as indicated by their CGPA.

Besides, instead of analyzing the effect of mobile phone use on student academic performance Ogunmakin (2018) studied the influence of mobile learning on the academic performance of students and concluded that this type of learning has statistically significant and positive impact on their performance. Furthermore, some researchers bridge a proper link between mobile phone use and its effects on students' health and academic performance. For instant, Lepp et al. (2014) studied the interaction between mobile phone practice on Satisfaction with Life (SWL) using huge sample collected from college students. Results of the study indicated that cell phone use was negatively related to GPA and positively related to anxiety. This showed that GPA was positively related to SWL while anxiety was negatively related to SWL. Abed et al. (2018) focused only on mobile phone addiction and its adverse impacts on the students health. The study also assessed students' health awareness about these problems. The study found that mobile phone addiction causes vision problems in the students. Moreover, the students are fully aware of the adverse health impacts causing by mobile phone addiction. In a similar fashion, Servatyari et al. (2019) analyzed the impact of mobile phone addiction on the Divandareh city high school students depression level and on their hopelessness. Findings from the study revealed that mobile phone addiction causing mental disorders in high school students and consequently, decreasing their academic performance.

The results of the above studies showed that the extensive use of mobile phone negatively affecting the students' academic performance and health while mobile phone learning has positively effect the student academic performance. However, we hardly found a study which analyzed the effect of mobile phone use on the students' budget and on their social behavior.

Despites of the negative and positive effects of mobile phone usage, the trends in using mobile phones among the students increasing exponentially across the globe. The adoption of mobile phone among students in the developing world has also increased significantly, with many reporting ownership and penetration rates exceeding 100 percent (Ahmad, 2019). Pakistan is one of the emerging economies in the world. It is evident from the statistics provided by Business Recorder that by end February 2021, 179.9 million people in the country used mobile phones. In the world ranking of the young population countries, Pakistan stands at number fifth because about 63 percent of the country's population consists of young people whose age ranged from 15 to 33 years (Hafeez & Fasih, 2018). In Pakistan, the mobile phone has become a natural, fixed, stable part of daily life, life management and maintenance of social relationships for university students.

However, during the last few years, a general perception arises that intensive usage of mobile phone is affecting the students budget, social behavior, and academic performance. Thus, it is necessary to analyze the effect of mobile phone use on the students' budget, social behavior and academic performance. Therefore, this study attempts to analyze the effects of mobile phone use on the students' budget, social behavior and academic performance by taking Bacha Khan University, Charsadda, Pakistan as a case study. The study also evaluates the mobile phone addiction behavior of the students. Finding of this study will help the students' and their guardians to reduce unnecessary expanses on purchasing expensive mobile phones, to reduce unnecessary expenses on mobile phone recharge and internet services, and to reduce redundant expenses on purchasing mobile phone accessories. Finding of the study will help in increasing the positive impacts from mobile phone usage on the students' academic performance and social behavior and in reducing the negative impacts from mobile phone usage on the students' academic performance and social behavior. Finding of the study will also help the policymakers in devising appropriate policies on addictive mobile usage by university students which in turn will enhance the academic performance of the students.

2. Materials and methods

2.1 Data

In this study, we use the survey data which is collected from the male and female students enrolled in BS, Master, M.Phil, and PhD program in seventeen academic Departments via questionnaire at Bacha Khan University, Charsadda, Pakistan. The data collection is started in August, 2020 and completed in December, 2020. The aim of the survey is to assess the attitude of the students towards the impacts of mobile phone use on their budget, social behavior, and academic performance. We use the following sample size formula to draw the sample size from Bacha Khan University, Charsadda.

$$Sample\ size = \frac{Z^2 \times (P) \times (1-P)}{c^2} \quad (1)$$

where Z represents the Z statistics value (For example, 1.96 for 95 percent confidence level), P represents the percentage picking a choice expressed as decimal (commonly, 0.5 used for sample size needed), and c represents the confidence interval expressed as decimal (For example, 0.05 = ±5). Keeping the confidence interval as 5 percent, confidence level as 95 percent, and population size 3462 the estimated sample is 365.

2.2 Estimation method

To analyze the effect of mobile phone use on the students' budget we use bar charts. To analyze the effect of mobile phone use on the students' social behavior and academic performance we use Varimax rotated matrix. To evaluate the mobile phone addiction behavior of the students we use frequency distribution and Varimax rotated matrix. It is a statistical instrument the researchers frequently use in factor analysis. This method identifies the possible relationship between various factors a researcher uses in a study. This method usually, coordination the data that come out from the principal component analysis. Furthermore, the rotation process is used to maximize the shared value of variances amongst various items. The variance maximization is the process to rise the squared correlation of various items linked to a single factor whereas at the same time the process diminishing the correlation on other factors. More precisely, the factor analysis via the Varimax rotation method involves loadings various items by removing the middle ground and more accurately classifying the factor on which data load. *Varimax rotation is basically an orthogonal rotation which is working on the assumption of no intercorrelations among the* components. The Varimax rotation maximizes the differences between the loading factors while maintaining orthogonal axes. Varimax attempts to maximize the value of *V* where

$$V = \sum_{m=1}^{M} \left[\sum_{k=1}^{K} e_{k,m}^{*4} - \frac{1}{K} \left(\sum_{k=1}^{K} e_{k,m}^{*2} \right)^2 \right] \quad (2)$$

where

$$e_{k,m}^{*} = \frac{\widetilde{e_{k,m}}}{\sum_{m=1}^{M} \tilde{e}_{k,m}^2} \quad (3)$$

In other words, we are trying to maximize the sum of variances of the squared rotated eigenvector elements which tends to move them towards their maximum or minimum values (0 and ±1).

2.3 Budgets shares estimation

In this study we are consider three types of expenses the students made while using their mobile phones namely, service recharge expenses, internet recharge expenses, and accessories purchasing expenses. Besides, the pre-paid users made service and internet recharge expenses on daily, weekly, and on monthly basis while the post-paid users made these expenses on monthly basis. Therefore, the daily and weekly expenses is first converting into monthly expenses and then these groups are joined to make the students service and internet recharge expenses during the month. Once, we get the students monthly expenses on service recharge, internet recharge and mobile phone accessories we sum all of these expenses to make the students total mobile expenses during the month. For filling the expenses of the mobile phone the students' using their part-time job income or pocket money. In the collected survey data, we find three groups of students. The first group of students received monthly pocket money from their parents or guardians. The second group of students earn income from their part-time job and the third group of students received monthly pocket money from their parents or gardians.as well as earn income from their part-time job. Therefore, these groups are joined to make the students pocket money or part-time job income during the month. Once we get the above information, we compute the budget share as:

$$w_{service\ recharge} = \frac{Monthly\ expenses\ on\ service\ recharge}{Monthly\ pocket\ money\ or\ part-time\ job\ income} \quad (4)$$

$$w_{internet\ recharge} = \frac{Monthly\ expenses\ on\ internet\ recharge}{Monthly\ pocket\ money\ or\ part-time\ job\ income} \quad (5)$$

$$w_{mobile\ accessories} = \frac{Monthly\ expenses\ on\ mobile\ accessories}{Monthly\ pocket\ money\ or\ part-time\ job\ income} \quad (6)$$

$$w_{total\ mobile\ expenses} = \frac{Monthly\ total\ mobile\ expenses}{Monthly\ pocket\ money\ or\ part-time\ job\ income} \quad (7)$$

where $w_{service\ recharge}$ is the share of student pocket money or part-time job income spent on services recharge, $w_{internet\ recharge}$ is the share of student pocket money or part-time job income spent on internet recharge, $w_{mobile\ accessories}$ is the share of student pocket money or part-time job income spent on mobile accessories, and $w_{total\ expenses}$ is the share of student pocket money or part-time job income spent on mobile phone.

3 Results and discussions

3.1 Demographic, educational, and economic characteristics of the students

The information on demographic, educational, and economic characteristics of the surveyed students are given in Table 1. *These information* are collected on quantitative, nominal and ordinal scales. Therefore, for the analysis of these information we use descriptive statistics and frequency distribution. The survey is conducted from 365 students at Bacha Khan University, Charsadda. Out of these 365 students 74% are male and 26% are female. Besides, 84% of students are single, 8% of students are married and 8% of students are engaged or divorced. It is observed that the mean household size of the students is 8 members and mean age of the students is 22 years. Comparing the educational characteristics of the students, it is observed that 82.5% of the surveyed students are

enrolled in BS program, 11.2% students are enrolled in master program, 5.8% students are enrolled in M.Phil. program, and only 0.5% students are enrolled in PhD program. The mean CGPA of the students in the existing educational program is 3. Comparing the economic characteristics of the students, it is observed that father of 34% of students are government employee, father of 23% of students have other type of employment, father of 16% of students are self-employed, father of 10% of students are unemployed, father of 9% of students are semi-government employee, and father of 8% of students are private organization employee. The mean father income of the students is PKR55641 per month and the mean other family members' income is PKR30325 per month.

3.2 The effect of mobile phone use on students' budget

Figure 1 shows that the mean purchased price of the mobile set owned by the students is PKR27018 while the mean current price of the mobile set is PKR 19578. This indicates that the students owned expensive mobile sets. From Figure 2 it is observed that the mean pocket money of the student is PKR7158 per month and the mean income from part-time job is PKR1118 per month. Out of this pocket money and part-time job income the students on average spent 45% on mobile phone is shown in Figure 3. Out of this expenses the students on average spent 22% on service recharge, 9% on internet recharge and 14% on purchasing accessories for mobile phone. This indicates that the students spent almost half of their pocket money and part-time job income on mobile phone.

Table 1: Student characteristics

Variables	Category	Frequency	Percentage
Demographics:			
Gender	Male	269	74%
	Female	96	26%
Marital status	Single	308	84%
	Married	29	8%
	Other (engaged or divorced)	28	8%
Educational:			
Program	BS	301	82.5%
	Master	41	11.2%
	M.Phil.	21	5.8%
	PhD	2	0.5%
Economic:			
Father employment	Government employee	125	34%
Type	Semi-government employee	31	9%
	Private organization employee	29	8%
	Self-employed	57	16%
	Unemployed	37	10%
	Other employment	86	23%
Vehicle ownership	Vehicle	167	46%
	No vehicle	198	54%
Variables		Mean	Standard deviation
Demographic:			
Age	Age of the students (years)	22	1.7
Household size	Number of family members of the students	8	3.5
Educational:			
CGPA	CGPA of the students in	3.08	0.4
Economic:			
Father income	Monthly income of father (PKR)	55641	175180.3
Family income	Monthly income of other family members (PKR)	30325	55801.8

Source: Estimated by authors based on survey data.

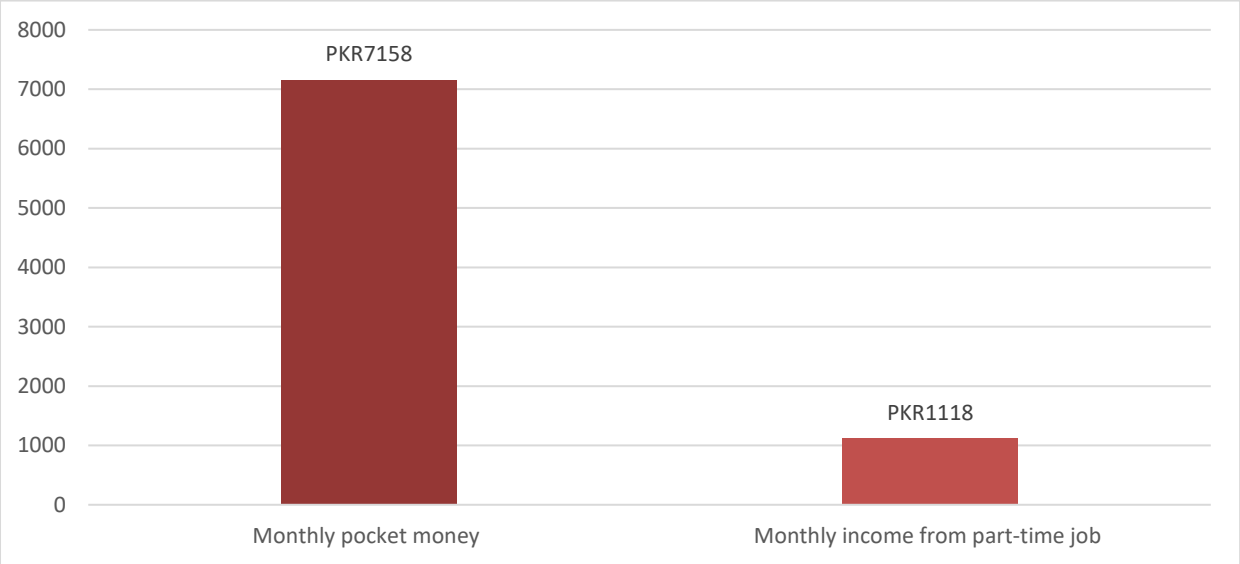
Comparing the expenses of male and female students on mobile phone we observed from Figure 4 that on average a female student spent half (50%) of her pocket money or part-time job income on mobile phone whereas on average a male student spent 44% of his pocket money or part-time job income on mobile phone. Out of this expenses the female students on average spent 24% on service recharge whereas a male student on average spent 22% on service recharge. Similarly, a female student on average spent 11% on internet recharge whereas a male student on average spent 9% on internet recharge. Moreover, a female student on average spent 15% on purchasing

mobile accessories whereas a male student on average spent 13% on purchasing mobile accessories. This indicates that a female student spent relatively more pocket money or part-time job income on mobile phone as compared to a male student.

Figure 1: Purchased and current price of mobile set owned by students

Source: Estimated by authors based on survey data.

Figure 2: Monthly pocket money of the students and monthly income of the student from part-time job



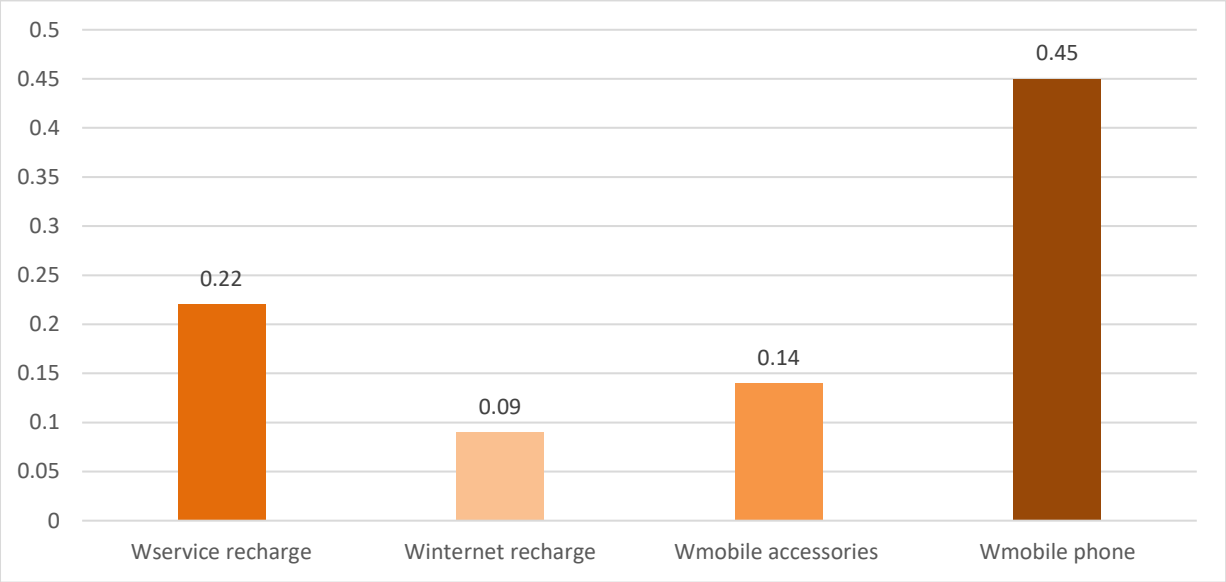
Source: Estimated by authors based on survey data.

From Figure 5 it is observed that an engaged or divorced student on average spent 47% of his/her pocket money or part-time job income on mobile phone, a single student on average spent 45% of his/her pocket money or part-time job income on mobile phone, and a married student on average spent 41% of his/her pocket money or part-time job income on mobile phone. Out of this expenses an engaged or divorce student on average spent 27% on service recharge whereas a single student on average spent 22% on service recharge. Similarly, an engaged or divorce student on average spent 12% on internet recharge whereas a married student on average spent 8% on internet recharge. Furthermore, a single student on average spent 14% on internet recharge whereas an engaged or divorced student on average spent 9% on internet recharge. This indicate that engaged or divorce student spent more pocket money or part-time job income on service and internet recharges as compared to other students whereas a single student spent more pocket money or part-time job income on purchasing mobile phone accessories as compared to other students.

From figure 6 it is observed that a students enrolled in Master program on average spent 56% his/her pocket money or part-time job income on mobile phone, a student enrolled in PhD program on average spent 50% of

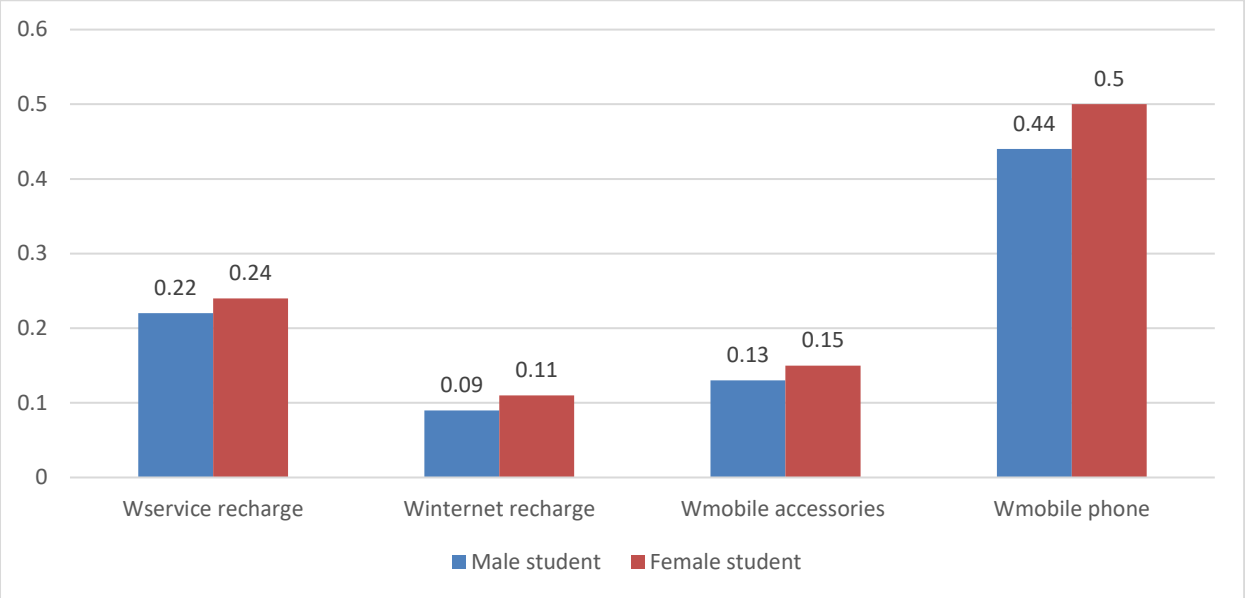
his/her pocket money or part-time job income on mobile phone, a student enrolled in M.Phil. program on average spent 49% of his/her pocket money or part-time job income
on mobile phone, and a student enrolled in BS program on average spent 44% of his/her pocket money or part-time job income on mobile phone. Out of this expenses a student enrolled in PhD program on average spent 35% on service recharge whereas a student enrolled in BS or Master programs on average spent 22% on service recharge. Moreover, a students enrolled in BS, Master and PhD programs on average spent 10% on internet recharge whereas a student enrolled in Master program on average spent 8% on internet recharge. Furthermore, a student enrolled in Master program on average spent 26% on purchasing mobile phone accessories whereas a student enrolled

Figure 3: Share of pocket money or part-time job income the students spent on mobile phone



Source: Estimated by authors based on survey data.

Figure 4: Share of pocket money or part-time job income the male and female students spent on mobile phone

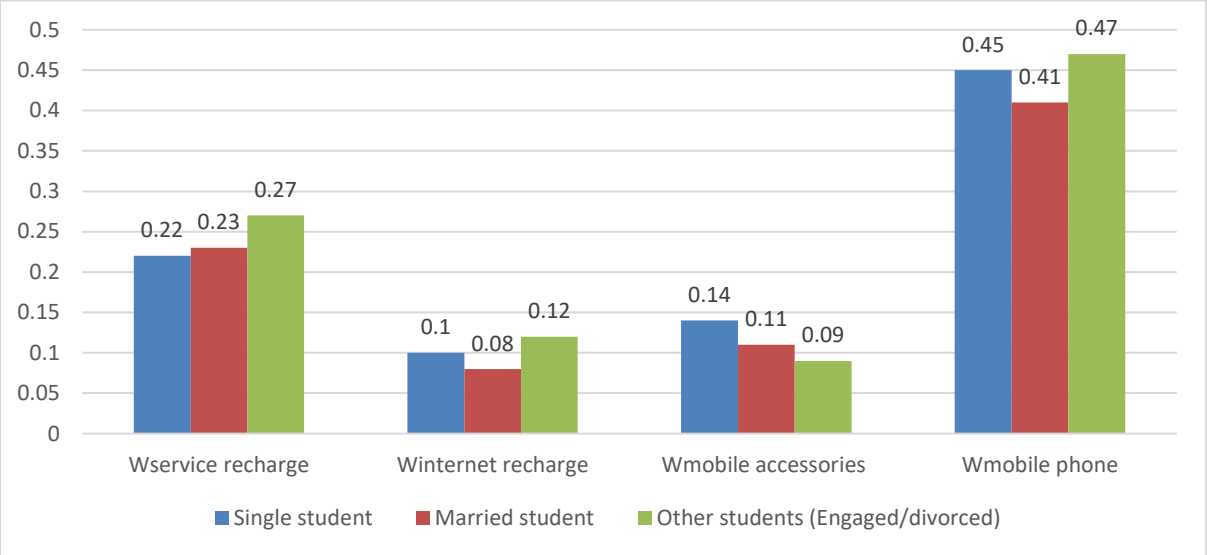


Source: Estimated by authors based on survey data.

in PhD program spent 6% on purchasing mobile phone accessories. This indicate that a student enrolled in Master program spent more pocket money or part-time job income on mobile phone as compared to the students enrolled in other programs. A student enrolled in PhD program spent more pocket money or part-time job income on service recharge as compared to the students enrolled in other programs. Finally, a student enrolled in Master

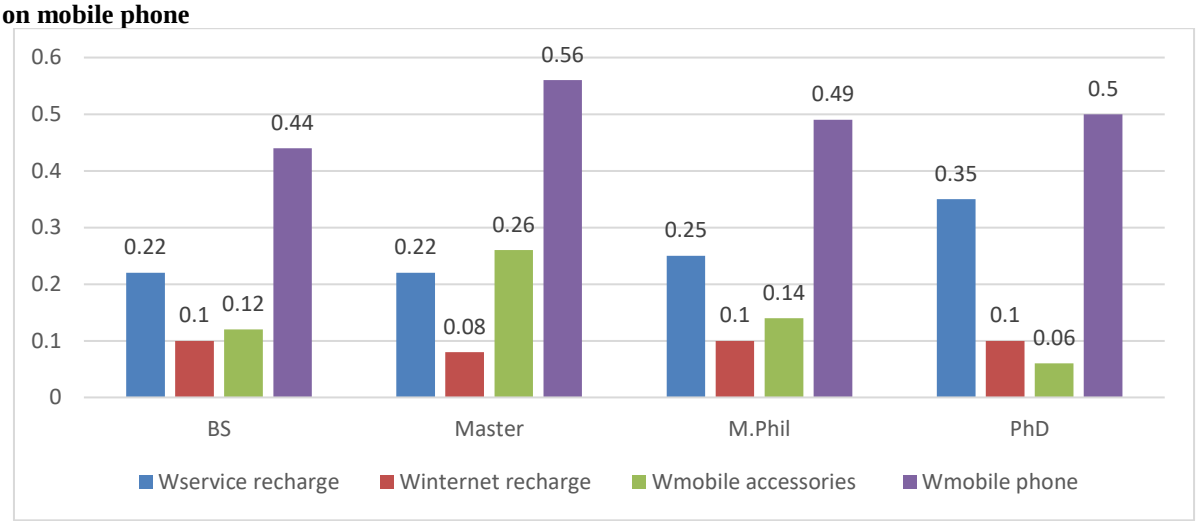
program spent more pocket money or part-time job income on purchasing mobile phone accessories as compared to the students enrolled in other programs.

Figure 5: Share of pocket money or part-time job income the single, married and engaged/divorced students spent on mobile phone



Source: Estimated by authors based on survey data.

Figure 6: Share of pocket money or part-time job income the BS, Master, M.Phil and PhD students spent on mobile phone

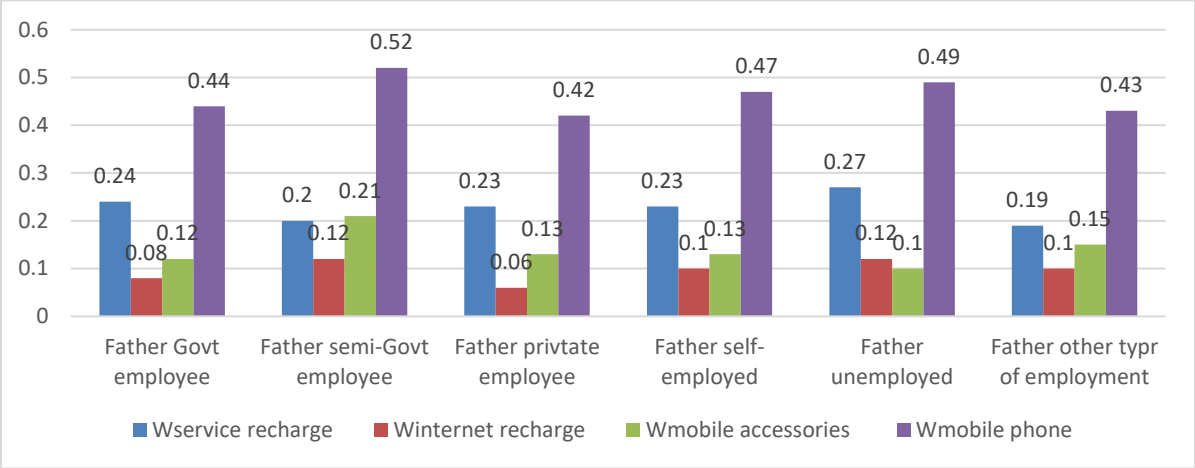


Source: Estimated by authors based on survey data.

From figure 7 we observe that the student whose father is semi-government employee on average spent 52% of his/her pocket money or part-time job income on mobile phone, the student whose father is unemployed on average spent 49% of his/her pocket money or part-time job income on mobile phone, the student whose father is self-employed on average spent 47% of his/her pocket money or part-time job income on mobile phone, the student whose father is government employee on average spent 44% of his/her pocket money or part-time job income on mobile phone, the student whose father is other type of employment on average spent 43% of his/her pocket money or part-time job income on mobile phone, and the student whose father is private organization employee on average spent 42% of his/her pocket money or part-time job income on mobile phone. Out of this expenses the student whose father is unemployed spent 27% on service recharge whereas the students whose father is other type of employment spent 19% on service recharge. The student whose father is semi-government employee or unemployed spent 12% on internet recharge whereas the students whose father is private organization employee spent 6% on internet recharge. The student whose father is semi-government employee spent 21% on purchasing mobile accessories whereas the students whose father is unemployed spent 10% on purchasing mobile accessories. This indicates that the student whose father is unemployed spend more pocket money or part-time job income on service recharge as compared to other students. The student whose father is semi-government employee or unemployed spent more pocket money or part-time job income on internet recharge as compared to

other students The student whose father is semi-government employee spent more pocket money or part-time job income on purchasing mobile phone accessories as compared to other students

Figure 7: Share of pocket money or part-time job income the students spent on mobile phone according to their father occupation



Source: Estimated by authors based on survey data.

3.2.1 Economic benefits the students received from using mobile phone

In this section, we present the results of Varimax rotation matrix to analyze the direct economic benefits the students received from using the mobile phone. The results of the diagnostic tests of the Varimax rotation matrix are reported in the last panel of Table 2. For questionnaire validity Cronbach's Alpha reliability test is used. For the 5 items the value of the test is 0.507 which confirm that these items can be used for empirical estimation because these items are consistent and reliable. The Bartlett's Test of Sphericity is significant at 1 percent level and the value of the Kaiser-Meyer-Olkin test is 0.614 which shows that *the data is suitable for the factors analysis.* The factor loading of item one for component 1 is 0.831, the factor loading of item two for component 1 is 0.662, and the factor loading of item three for component 1 is 0.448. This shows that the use of mobile phone reduced the students' communication and travel costs as well as the use of mobile phone internet reduced their book purchasing costs. The factor loading of item four for component 2 is 0.834 and the factor loading of item five for component 2 is 0.699. This show that the use of mobile phone did not reduce the students' emergency communication costs and their internet (i.e DSL, Internet devices etc) costs.

3.3 Effect of mobile phone use on the students' social behavior

In this section, we present the results of Varimax rotation matrix to analyze the positive and negative effects of mobile phone use on the students' social behavior. The results of the diagnostic tests of the Varimax rotation matrix are reported in the last panel of Table 3. For questionnaire validity Cronbach's Alpha reliability test is used. For 12 items the value of the test is 0.70 which confirm that these items can be used for empirical estimation because these items are consistent and reliable. The Bartlett's Test of Sphericity is significant at 1 percent level and the value of the Kaiser-Meyer-Olkin test is 0.779 which shows that *the data is suitable for the factors analysis. In the Varimax rotation matrix we use two factors. The first factor deals with the* positive effects of mobile phone use on the students' social behavior while *the second factor deals with the* negative effects of mobile phone use on the students' social behavior.

For the first factor the outcomes from the Varimax rotation matrix show that the factor loading of item one for component 2 is 0.634, the factor loading of item two for component 2 is 0.633, the factor loading of item three for component 2 is 0.614, the factor loading of item four for component 2 is 0.603, and the factor loading of item five for component 2 is 0.549. This shows that the students are agree with the statements that the use of mobile phone internet makes it easier for them to joined online learning societies, mobile phone is the main source of connecting with friends'/class fellows, most of the students use mobile phone for making friends within or outside the country, mobile phone is necessary for students because it is the main source of social contacts, and mobile phone builds a bridge between the students and their family, relatives, neighbors etc.

For the second factor the outcomes from the Varimax rotation matrix show that for component 1 the factor loading of item six is 0.824, for component 1 the factor loading of item seven is 0.795, for component 1 the factor loading of item eight is 0.791, for component 1 the factor loading of item nine is 0.755, and for component 1 the factor loading of item ten is 0.665. This shows that the students are strongly agree with the statements that the mobile phone is responsible in increasing the psychological diseases in students, most of the students use mobile phones for non-productive purposes, mobile phone is the main source of blackmailing class/University fellows, the student feels proud of having costly mobile phone, and the use of mobile phone during driving increase the accident ratio especially in students. The factor loading of item elven for component 3 is 0.795 and the factor

loading of item twelve for component 3 is 0.738. This shows that the students are neutral with the statements that mobile phone destroyed the future of students and the extensive use of mobile phone restrict them to spend more time with their family members.

Table 2: Results of Varimax Rotation Matrix for economic benefits the students received from using the mobile phone

	Components	
Constructs	1 = Yes	2 = No
Factor: Economic benefits:		
The use of mobile phone reduced my communication costs	0.831	0.004
The use of mobile phone reduced my travel costs	0.662	0.095
The use of mobile phone internet reduced my book purchasing costs	0.448	0.356
The use of mobile phone reduced my emergency communication costs	-0.027	0.834
It reduced the costs of internet (i.e DSL, Internet devices etc)	0.198	0.699
Number of responses	365	365
Reliability statistics:		
Cronbach's Alpha	0.507	
Number of items	5	
KMO and Bartlett's Test:		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.614	
Bartlett's Test of Sphericity (Approx. Chi-Square)	104.848	
Df	10	
Significance	0.000	

Source: Estimated by authors based on survey data.

These results show that the use of mobile phone have both positive and negative effect on the students' social behavior. However, the students are strongly agreeing with the negative effects of mobile phone use on their social behavior while they are agreeing with the positive effect of mobile phone use on their social behavior.

3.4 The effect of mobile phone use on the students' academic performance

In Table 4, we present the results of Varimax rotation matrix to analyze the positive and negative effects of mobile phone use on the students' academic performance. The results of the diagnostic tests of the Varimax rotation matrix are reported in the last panel of Table 4. For questionnaire validity Cronbach's Alpha reliability test is used. For 14 items the value of the test is 0.70 which confirm that these items can be used for empirical estimation because these items are consistent and reliable. The Bartlett's Test of Sphericity is significant at 1 percent level and the value of the Kaiser-Meyer-Olkin test is 0.648 which shows that *the data is suitable for the factors analysis. In the Varimax rotation matrix we use two factors. The first factor deals with the* positive effects of mobile phone use on the students' academic performance while *the second factor deals with the* negative impacts of the mobile phone usage on the academic performance of students.

For the first factor the outcomes from the Varimax rotation matrix show that the factor loading of item one for component 2 is 0.674, the factor loading of item two for component 2 is 0.589, the factor loading of item three for component 2 is 0.539, the factor loading of item four for component 2 is 0.446, the factor loading of item five for component 2 is 0.559, and the factor loading of item six for component 2 is 0.495. This shows that the students are agree with the statements that the mobile technology improve my academic performance, in the class room the teacher uses mobile phone for learning purposes, the mobile phone make it easier from me to contact with class fellows when I need help in my studies, the mobile phone technology improve the education quality, the mobile phone make it easier from me to contact with teachers when I need help in my studies, and students use dictionary/vocabulary/calculator of mobile phone in classes.

For the second factor the outcomes from the Varimax rotation matrix show that for component 1 the factor loading of item seven is 0.694, for component 1 the factor loading of item eight is 0.695, for component 1 the factor loading of item nine is 0.626, for component 1 the factor loading of item ten is 0.626, for component 1 the factor loading of item elven is 0.564, for component 1 the factor loading of item twelve is 0.564, and for component 1 the factor loading of item thirteen is 0.547. This shows that the students are strongly agree with the statements that for my low academic performance mobile phone is responsible, during study time/class work I wasting my time writing/sending SMS, I often disturb the classes by sending missed calls to classmates, by sending missed calls through unknown numbers the students tease their classmates, the mobile phone is a waste of time for students, I keep my mobile phone on general mode and the ring tone disturbs the class, and the mobile phone usage negatively affecting the students moral values. The factor loading of item fourteen for component 3 is 0.682. This shows that the students are neutral with the statement that most of the students use mobile phones as a source of unfair means in examination hall.

Table 3: Results of Varimax Rotation Matrix for the effect of mobile phone use on the students' social behavior

	Component		
Constructs	1 = Strongly agree	2 = Agree	3 = Neutral
Factor 1: Positive effects of mobile phone use on the students social behavior:			
The use of mobile phone internet makes it easier for a student to joined online learning societies	0.023	0.634	-0.040
Mobile phone is the main source of connecting with friends/class fellows	0.174	0.633	-0.081
Most of the students use mobile phone for making friends within or outside the country	-0.032	0.614	0.000
Mobile Phone is necessary for students because it is the main source of social contacts	-0.156	0.603	0.212
Mobile phone builds a bridge between the students and their family, relatives, neighbors etc.	0.086	0.549	0.099
Factor 2: Negative effects of mobile phone use on the students social behavior:			
The mobile phone is responsible in increasing the psychological diseases in students	0.824	-0.029	0.029
Most of the students use mobile phones for non-productive purposes	0.795	0.011	-0.001
Mobile phone is the main source of blackmailing class fellows/collage fellows	0.791	-0.098	0.097
The student feels proud of having costly mobile phone	0.755	0.084	-0.041
The use of mobile phone during driving increase the accident ratio especially in students	0.665	0.233	-0.233
Mobile phone destroyed the future of students	0.097	0.062	0.795
The extensive use of mobile phone restrict you to spend more time with your family members	-0.119	0.051	0.738
Number of responses	365	365	365
Reliability statistics:			
Cronbach's Alpha		0.70	
Number of items		12	
KMO and Bartlett's Test:			
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.779	
Bartlett's Test of Sphericity, Approx. Chi-Square		878.238	
Df		66	
Significance		0.000	

Source: Estimated by authors based on survey data.

These results show that the use of mobile phone have both positive and negative effect on the students' academic performance. However, the students are strongly agreeing with the negative effects of mobile phone use on their academic performance while they are agreeing with the positive effect of mobile phone use on their academic performance

3.5 Mobile phone addiction behavior of the students

3.5.1 Calling and text massaging intensity of the students

The details on the calling intensity of the students to various persons are given in Table 5. It is observed that 51% of the students calling less than 20 minutes per week to their family. 41% of the students calling 20 to 40 minutes per week to their friends. 33% of the students calling 40 to 60 minutes per week to their partner, and 34% of the students calling more than 60 minutes per week to other people. The details on the test massaging intensity of the students to various persons are given in Table 6. It is observed that 47% of the students send less than 20 texts per week to their family. 38% of the students send 20 to 40 texts per week to their friends. 30% of the students send 40 to 60 texts per week to their partner, and 34% of the students send more than 60 texts per week to other people. This shows that within a given week the students give less time to calling and sending less texts to family and friends while they give more to calling and sending more texts to partner and other peoples.

2.1.1 Mobile phone addiction of students using various functions of the mobile phone

In Table 7 we present the results of Varimax rotation matrix to analyze the mobile phone addiction of students using various functions of the mobile phone. The results of the diagnostic tests of the Varimax rotation matrix are reported in the last panel of Table 7. For questionnaire validity Cronbach's Alpha reliability test is used. For 12 items the value of the test is 0.702 which confirm that these items can be used for empirical estimation because

these items are consistent and reliable. The Bartlett's Test of Sphericity is significant at 1 percent level and the value of the Kaiser-Meyer-Olkin test is 0.712 which shows that *the data is suitable for the factors analysis.*

Table 4: Results of Varimax Rotation Matrix for the effect of mobile phone addiction on the academic performance of students

	Component			
Constructs	Strongly agree =1	Agree = 2	Neutral = 3	Disagree = 4
Factor 1: Mobile phone use and its positive effects on the students' academic performance:				
The mobile technology improve my academic performance	0.034	0.674	0.181	0.027
In the class room the teacher uses mobile phone for learning purposes	0.054	0.589	-0.227	0.066
The mobile phone make it easier from me to contact with class fellows when I need help in my studies	-0.183	0.539	0.181	0.293
The mobile phone technology improve the education quality	0.232	0.446	0.033	-0.525
The mobile phone make it easier from me to contact with teachers when I need help in my studies	0.108	0.559	0.081	0.172
Students use dictionary/vocabulary/calculator of mobile phone in classes	0.100	0.495	-0.034	-0.225
Factor 2: Negative effects of mobile phone use on the students' academic performance:				
For my low academic performance mobile phone is responsible	0.694	-0.100	-0.032	0.054
During study time/class work, I wasting my time writing/sending SMS	0.659	0.097	-0.446	-0.123
I often disturb the classes by sending missed calls to classmates	0.626	0.077	-0.424	0.203
By sending missed calls through unknown numbers the students tease their classmates	0.626	-0.074	0.369	0.446
The mobile phone is a waste of time for students	0.564	-0.120	0.263	-0.408
I keep my mobile phone on general mode and the ring tone disturbs the class	0.564	-0.069	-0.279	0.350
The mobile phone usage negatively affecting the students moral values	0.547	-0.113	0.160	-0.385
Most of the students use mobile phones as a source of unfair means in examination hall	0.437	0.002	0.682	0.128
Number of responses	365	365	365	365
Reliability statistics:				
Cronbach's Alpha		0.70		
Number of items		14		
KMO and Bartlett's Test:				
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.648		
Bartlett's Test of Sphericity, Approx. Chi-Square		909.586		
Df		91		
Significance		0.000		

Source: Estimated by authors based on survey data.

Table 5: Calling intensity of the students to various persons

Time per week	Family	Friends	Partner	Other peoples
Less than 20 minutes	51%	23%	9%	17%
20-40 minutes	20%	41%	20%	19%
40-60 minutes	20%	22%	33%	25%
More than 60 minutes	26%	20%	20%	34%

Source: Estimated by authors based on survey data.

Table 6: Text massaging intensity of the students to various persons

Text per week	**Family**	**Friends**	**Partner**	**Other peoples**
Less than 20 texts	47%	21%	14%	18%
20-40 texts	19%	38%	15%	28%
40-60 texts	18%	30%	21%	31%
More than 60 texts	20%	20%	26%	34%

Source: Estimated by authors based on survey data.

Table 7: Results of Varimax Rotation Matrix for mobile phone addiction of students using various functions of the mobile phone

	Component			
Constructs	1 = Always	2 = Often	3 = Sometimes	4 = Seldom
Factor: Function of mobile phone:				
Downloading games	0.833	0.073	-0.007	0.058
Downloading Drama and movies	0.774	0.024	-0.112	-0.111
Playing games	0.679	0.254	0.100	0.085
Downloading ring tones and songs	0.560	0.075	0.514	-0.065
Local calls	-0.055	0.777	0.095	-0.075
International calls	0.246	0.670	-0.187	-.0148
Video calls	0.195	0.601	-0.239	0.302
Getting news	0.094	0.584	0.245	0.016
Sending picture messages	0.042	0.108	0.795	0.062
Use for social media (facebook, twitter etc)	0.177	0.498	-0.610	-0.006
Any other	0.101	0.169	0.242	0.765
Sending text messages	0.155	0.324	0.217	-0.644
Number of responses	365	365	365	365
Reliability statistics:				
Cronbach's Alpha		0.702		
Number of items		12		
KMO and Bartlett's Test:				
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.712		
Bartlett's Test of Sphericity (Approx. Chi-Square)		832.741		
Df		66		
Significance		0.000		

Source: Estimated by authors based on survey data.

For component 1 the factor loading of item one is 0.833, for component 1 the factor loading of item two is 0.774, for component 1 the factor loading of item three is 0.679, and for component 1 the factor loading of item four is 0.560. This shows that the students always use mobile phone for downloading games, dramas, movies, ring tons and songs, and for playing games. The factor loading of item five for component 2 is 0.777, the factor loading of item six for component 2 is 0.670, the factor loading of item seven for component 2 is 0.601, the factor loading of item eight for component 2 is 0.584, the factor loading of item ten for component 2 is 0.498, and the factor loading of item twelve for component 2 is 0.324. This shows that the students often use mobile phone for local, international, and video calls, for getting news, for using social media, and for sending text messages. The factor loading of item nine for component 3 is 0.795. This shows that the students sometimes use mobile phone for sending picture messages. The factor loading of item nine for component 4 is 0.765. This shows that the students seldom use mobile phone for any other purpose.

These results show that the students always use mobile phone for entertainment and they are often use mobile phone for making calls, sending text massages, for getting news and for connecting to social media.

4. Conclusion and recommendations

In this study, we analyze the effect of mobile phone use on the students' budget, social behavior and academic performance by taking Bacha Khan University, Charsadda, Pakistan as a case study. The study also examines the mobile phone addiction behavior of the students. Varimax rotation matrix is conducted using data from 356

students. Results show that a female student, an engaged or divorced student, the student enrolled in Master program, and the student whose father is semi-government employee spent half of their part-time job income or pocket money on mobile phone. Besides, within a given week the students give less time to calling and sending less texts to family and friends while they give more time to calling and sending text massages to partner and other peoples. Moreover, results of the Varimax rotation matrix reveal that the students always use mobile phone for entertainment and they are often use mobile phone for making calls, sending text massages, for getting news and for connecting to social media. Furthermore, the use of mobile phone reduced the students' communication and travel costs as well as the use of mobile phone internet reduced their book purchasing costs. Finally, the use of mobile phone both positively and negatively effects the students' social behavior and their academic performance. However, the negative impacts of mobile phone usage on the students' academic performance and on their social behavior outweighs the positive impacts of mobile phone usage on the students' academic performance and on their social behavior.

The results that the students spent half of their part-time job income or pocket money on service and internet recharges and purchasing mobile accessories is important for the students' guardians. This laid responsibility on the guardians to take serious measures to reduce the students' unnecessary expanses on service and internet recharge and to reduce redundant expenses on purchasing mobile phone accessories. The results that the negative impacts of using mobile phone over the students' academic performance and on their social behavior outweighs its positive effects is important for guardian, teachers and University administration. This laid responsibility on the above mentioned people to devise a proper structure and plan for students on mobile phone usage which in turn increase the positive effects of mobile phone usage on the students' social behavior and academic performance and reduced the negative effects of mobile phone usage. The result that students always use mobile phone for entertainment and they are often use mobile phone for productive purposes is showing alarming situation. This laid responsibility on the parents, guardian and teachers to convince the students to use the mobile phone for educational and social purposes rather than just for entertainment.

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