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# An Empirical Investigation of the Relationship Between Students' Digital Consumption Time and Their Academic Outcome

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**ABSTRACT**

This investigation aims to conduct empirical research on the role that absolute time on social devices has on academic performance as well as evaluate the interaction of social-economic factors in this respect. An academic study was conducted to measure digital consumption time (the number of hours spent on the internet), academic performance (as reflected by cumulative grade point average), and the different socioeconomic aspects (such as age, number of family members, and monthly income). Analysis of data was done with the use of descriptive statistics, Chi-square tests, and Pearson's correlation analysis. The researcher showed a positive relationship between family income and academic performance. It was found that a statistically significant association between family income and CGPA occurred at a 5% level of significance. Furthermore, a considerable influence of the time spent consuming digital content on academic success was discovered at the 10% level of significance. It implies that moderate use of the internet may result in a higher-earned cumulative grade point average. However, other socioeconomic factors, including age, the size of a household, and the duration of time devoted to varied activities, did not demonstrate any significant correlation to academic performance. According to that study's findings, family income was identified as a major determinant of academic performance; extraneous youth's time spent on consuming digital media was found to be very crucial, though it plays a role of importance on a questionable scale. This supports the implementation of measures encouraging students to be involved only in positive digital activities while having the pupils of less privileged families given help. The academic scores in public sector universities can be ameliorated significantly by planning and implementing intentional programs that focus on leveling the socioeconomic imbalances and improving levels of digital literacy.



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## 1. Introduction

The digital technology era, including the internet and other digital media seems to spread more and more throughout because students who study in the universities use them so widely. The fears that the selective growth of such reliance on digital media for learning and entertainment among the students coming from schools may affect their school work have been expressed. In this study, the academic performance of students registering at a

public sector university in terms of the number of hours they spend online will be analyzed. Digital consumption will be determined as the number of hours students consume the internet on a weekly basis. Recognizing the liaison between these two aspects is crucial since it can render important information that can be later used in the creation of educational policies and practices meant to facilitate the use of digital resources by students to achieve academic success. Researchers use several different terms for time spent on digital applications. These include screen time and the time spent online using the internet for consuming digital information. The essence of "digital consumption time" is connected to the period of people's lives, which they devote to different kinds of activities, which also include digital information consumption and interaction with technologies. Students must track how long they spend their time using digital devices in order to understand what contribution these devices are having on their academic careers.

**Table 1: Digital Consumption Time**

| Activities | Digital Content and Technologies |
|---|---|
| Internet Browsing | Time spent on websites, including reading articles, shopping, or searching for information. |
| Social Media | Hours spent on platforms like Facebook, Twitter, Instagram, TikTok, etc., for social interaction, content consumption, and communication. |
| Streaming Media | Time spent on watching videos, movies, and TV shows on platforms like YouTube, Netflix, Hulu, and others. |
| Gaming | Hours spent playing video games on consoles, computers, or mobile devices. |
| Communication | Hours spent on using digital tools and platforms for communication, including email, messaging apps, and video calls. |
| Reading | Time spent on consuming digital books, articles, and other written content through e-readers, websites, and apps. |
| Work and Education | Number of hours spent on using digital tools for professional tasks, remote work, and online learning activities. |

### 1.1. Significance of the Study

This study has some significance because it addresses different issues at the same time. Students` digital usage effectiveness can be researched to enable the construction of interventions and assistance plans by universities and policymakers, showing the level of impact that digital consumption has on academic performance. Universities and policymakers can direct their efforts based on the data this way. Parents may have a clearer picture of how the students use the internet and how it can affect their academic performance. As a result, they can offer explanations to their children on this issue as well. Students can be prompted to take up more suitable and creative digital practices by exposing them to the fact that their internet practice patterns might affect their academic records. This particular location will use empirical evidence from the site and other areas to compare the findings, which can be used to make an addition to the growing body of knowledge on the relationship between digital consumption and education.

### 1.2. Scope of the Study

Students from a public sector university are the subjects of this study. One hundred students have been chosen to participate as responders in this study. Digital consumption time, which is measured in terms of hours spent on the internet each week, and academic accomplishment, which is measured by cumulative grade point average, are the major variables of interest. Factors such as age, family size, monthly income, the number of hours spent studying at home, the amount of time spent on social activities, activities connected to the household, and economic activities are all considered to be explanatory variables. The study is placed within the framework of a public sector university in the southern region of Punjab in Pakistan, which may represent distinctive socioeconomic and cultural traits.

### 1.3. Research Gap

There is a dearth of empirical studies that particularly investigate the connection between internet usage and academic performance in the setting of public sector institutions. However, there is a substantial body of research on the impact that digital consumption has on a variety of elements of life. Studies that have been conducted in the

past frequently concentrate on either secondary school settings or private institutions, which may not truly reflect the dynamics that occur inside public universities. Furthermore, little research has been done on how several characteristics, such as the size of the family, wealth, and how well one manages their time, interact with one another in this particular setting. This study intends to fill this vacuum by giving specific insights into how the amount of time spent consuming digital content affects academic achievements among students attending universities in the public sector.

### 1.4. Purpose of the Research

Through the use of empirical research methods, the major purpose of this study is to evaluate the relationship between the amount of time spent on digital consumption and the academic outcomes of students attending a public sector institution. Particularly, the purpose of the study is to:

1. Determine the typical amount of time that students spend using digital forms of media.
2. Investigate the relationship between the amount of time spent on digital media and the cumulative grade point average.
3. Investigate how other aspects, such as age, the number of members in a family, the amount of money earned each month, and the amount of time spent on different activities (study, social, home, and economic) interact with digital use to influence academic achievement.

As a result of the findings, recommendations should be provided to assist students, teachers, and policymakers in optimizing their use of digital technology to achieve better academic results. This study will provide valuable findings for the field of education research and the adoption of helpful strategies for improving academic performance in the era of digitalization. These goals will be attained based on the completion of the study questions.

## 2. Literature Review

In the modern educational context, the Internet is available to everyone, and a huge number of studies have been carried out to see the link between the time digital content is consumed and student's academic achievements. Based on the results that were reported by different researchers, (Alahmar, 2016; Chang, 2012), there is a negative link between the use of devices with large screens and academic output. On the other hand, students who spend too much time, say, distracted by social media or media entertainment might face a decrease in their ability to focus, a decrease in the quality of their sleep, and trouble with academic prioritizing a problem, as noted in 2015 by Fleck (2015). However, the relationship that may exist between the exact quantity of time spent using digital media and, at the same time, how well students perform in school is not always that clear. Based on the consideration of the various forms of internet utilization and the sociocultural functions of the internet, their effects on learning differ. The diverse values of including technology in the educational context are documented by the studies mentioned below. As indicated in the study conducted by Samir Abou El-Seoud (2014) and Shurygin (2016), it turned out that pedagogical technology tools and online resources are instrumental in the improvement of engagement levels in making communication easier and pushing collaboration. In addition to the aforementioned tactical usability, researchers and Umek et al. (2017) have found that the Internet can be beneficial to information retrieval, research abilities, and general knowledge building. We can summarize this information as follows: a moderate amount of digital usage, especially when a purpose can be attributed to accomplishing tasks assigned for academic endeavors, also tends to result in favorable outcomes of academic activities.

In addition to those areas that have been extensively researched, an area that is beginning to see the light of day is the study of how socioeconomic characteristics and internet navigation interplay to impact scholarly accomplishments. It has been proved that learners from families with low socioeconomic backgrounds are not always capable of purchasing technology and establishing reliable communication; thus, their ability to harness the power of the World Wide Web for education is restricted (Sriwilai, 2016). On

another side of the same issue, studies show that teenagers coming from low-income families at home prefer mainly online connections for socializing and having fun. This is because digital content consumes more of people's time, so academic performance might be expected to be affected (Chukwuere, 2017). It can be deduced that the existing body of literature depicts a complex unfolding of the relationship that prevails between the number of hours of digital media use and the cognitive outcomes in school-related activities. While the influence of too much screen time on performance at school can be negative, the extent depends on the type of use and goal of being online. Moreover, socioeconomic factors lay a fingerprint on how students engage the technology and at what rate they use it which eventually have an impact on digital consumption. In order to add to this discussion that is currently with respect to this subject of study, this research is based on the empirical examination of the association between the amount of time spent on digital consumption, academic achievement, and socioeconomic determinants among students who go to a public sector university.

## 3. Data and Methodology

The investigation was done using a sample consisting of a group of hundred students who were studying at a public university. In order to make sure that the answers become a reflection of the population, random sampling techniques were applied. To ensure that diverse experiences were considered, the inclusion criteria incorporated students who had done their studies in various academic areas and at least had some years of schooling. For this study, the population of interest consists of all undergraduate students who are currently enrolled at a public sector university during the current academic year. Given the restrictions of practicality, a sample size of one hundred students was selected to be representative of this group. The following table provides explanations of the names, types, and operational definitions of all of the variables that were incorporated into this study. The variables used in this study are listed in Table 2, along with their names, types, and operational definitions.

**Table 2: The Name, Type, and Operational Definition of each Variable**

| Variable Type | Variable Name | Operational Definition |
|---|---|---|
| Main Explanatory Variable | Digital Consumption Time | Refers to the number of hours per week spent using the internet for academic, leisure, or other purposes. This variable was self-reported by respondents. |
| Outcome Variable | Academic Performance (CGPA) | Measured by the Cumulative Grade Point Average (CGPA), which is a numerical representation of a student's overall academic achievement based on their grades across multiple courses. CGPA is typically calculated on a scale of 0 to 4.0. |
| Socio-economic Variables | Age | The age of the students (respondents) in years. |
| | Family Size | The number of individuals living in the respondents' households. |
| | Monthly Income | The total monthly income of the respondents' families is measured in the local currency. |
| Time Spending Schedules | No. of Hours Allocated for Study at Home | This represents the amount of time, in hours per week, that respondents dedicate to studying at home outside of regular class hours. |
| | No. of Hours Spent on Social Circle | Refers to the time, in hours per week, spent by respondents on social activities, including interactions with friends and peers and participation in social events. |
| | No. of Hours Spent on Household-Related Activities | Indicates the time, in hours per week, allocated by respondents for household chores, responsibilities, and familial |

| | |
|---|---|
| | obligations. |
| No. of Hours Spent on Economic Activities | Represents the time, in hours per week, dedicated by respondents to economic endeavors, such as part-time employment, internships, or other income-generating activities. |

### 3.1. Data Estimation Techniques

A summary and presentation of the characteristics of the sample and the variables that were being investigated were accomplished through the utilization of descriptive statistics. When dealing with continuous data, it was necessary to compute measures such as the mean, the standard deviation, the minimum, and the maximum. Chi-square tests were utilized to investigate the correlation between categorical variables, such as the cumulative grade point average (CGPA), and socioeconomic parameters, such as the number of members in a family and the amount of money earned each month. To assess whether or not there is a significant association between two categorical variables, this test is utilized. Pearson's correlation coefficient was utilized to investigate the magnitude and direction of the linear relationship that exists between continuous variables. These variables include the amount of time spent on digital consumption, the cumulative grade point average (CGPA), and socioeconomic indicators such as age. It is possible to uncover probable correlations and relationships between variables with the assistance of this study. The purpose of this study was to investigate the relationships between the amount of time spent on digital consumption, academic performance, and socioeconomic factors among students attending a public sector university. The findings of this study were intended to provide valuable insights into the factors that influence academic outcomes in the digital age.

## 4. Results and Discussion

The study was conducted on the relationship between the amount of time spent using digital media and academic outcomes. The descriptive data for each attribute are presented in Table 3. Approximately 22.28 years is the average age of the respondents, and the majority of the students' ages are concentrated around this average. However, there is some variety in the ages of the students, as evidenced by the standard deviation. Students ranging in age from 19 to 40 years old are included in the sample, which indicates that the sample includes both traditional and some non-traditional students. Students typically come from relatively large families, with the typical household having approximately seven people when they are all together. The student's family structures exhibit a great amount of variation, as evidenced by the range of family sizes, which range from three to thirteen individuals. Demographics, time allocation schedule, and academic outcome are all described in Table 3, which contains descriptive statistics.

**Table 3: Demographics, Time Allocation Schedule, and Academic Outcome: Descriptive Statistics**

| Attributes | Mean | Std. Dev. | Minimum | Maximum |
|---|---|---|---|---|
| Age | 22.28 | 3.143 | 19 | 40 |
| Family Size | 7.38 | 2.137 | 3 | 13 |
| No. of hours allocated for study at home (in a week) | 16.260 | 11.5362 | 4.0 | 80.0 |
| No. of hours internet use | 8.420 | 10.5774 | 0.0 | 70.0 |
| No. of hours spent on social circle | 11.140 | 8.7329 | 0.0 | 49.0 |
| No. of hours spent on household-related activities | 8.120 | 9.6046 | 0.0 | 35.0 |
| No. of hours spent on economic activities | 2.420 | 6.7647 | 0.0 | 49.0 |
| CGPA | 3.16770 | .432301 | 2.170 | 3.990 |
| Total number of observations (N) = 100 | | | | |

It is estimated that students spend approximately 16.26 hours per week studying at home; however, this number can range anywhere from four to eighty hours, indicating that

students vary in their study habits and their ability to manage their time effectively. The average amount of time that students spend on the internet each week is 8.42 hours, although the number of hours can range anywhere from 0 to 70 hours. These findings suggest that individuals have varying degrees of engagement with the Internet, which may affect their academic achievement. On average, students devote 11.14 hours per week to participating in social activities; however, the amount of time spent varies greatly, ranging from 0 to 49 hours, which indicates that students have varying social responsibilities. There is a significant amount of variation among students, ranging from 0 to 35 hours, which is a reflection of the various tasks that are associated with the household. The average amount of time spent on household activities is 8.12 hours each week. Students devote an average of 2.42 hours per week to economic activities, which is a considerably smaller amount of time than other students. On the other hand, the range of 0 to 49 hours lends credence to the possibility that some students are currently engaged in serious labor. The pupils have a cumulative grade point average of 3.17, and their standard deviation is 0.43, which indicates that there is a substantial amount of variation around the mean. The range of the cumulative grade point average (CGPA) from 2.17 to 3.99 indicates that there is a significant amount of variety in academic achievement.

### 4.1. Digital Consumption Time and Academic Achievement: Pearson's Chi-square Associations

The findings of Chi-Square tests that were designed to establish whether or not there is a significant association between the cumulative grade point average (CGPA) of students and a variety of explanatory variables are presented in Table 4.

**Table 4: Digital Consumption Time and Academic Achievement: Pearson's Chi-square Associations**

| Cross-Tabs | Pearson Chi-Square Values | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| CGPA and Age | 591.713 | 558 | .156 |
| CGPA and Family Size | 663.429 | 610 | .066 |
| CGPA and Family Income | 1842.914 | 1736 | .037 |
| CGPA and No of Hours Spent on Study | 1446.811 | 1364 | .059 |
| CGPA and No of Hours Spent on Internet | 1209.750 | 1240 | .725 |
| CGPA and No of Hours Spent on Social Circle | 1102.745 | 1116 | .605 |
| CGPA and No of Hours Spent on Household-Related Activities | 1041.651 | 992 | .133 |
| CGPA and No of Hours Spent on Economic Activities | 807.652 | 806 | .477 |

a. 882 cells (100.0%) have an expected count of less than 5. The minimum expected count is .01.

Since the p-value (0.156) is higher than the standard significance level of 0.05, it may be inferred that there is no statistically significant association between the cumulative grade point average and age. The p-value, which is 0.066, is slightly higher than 0.05, which indicates that there is no clear evidence of a significant association between the cumulative grade point average and the size of the family. On the other hand, it is quite close to the threshold, which indicates that there may be a trend that warrants more research. If the p-value (0.037) is lower than 0.05, then there is a statistically significant association between the cumulative grade point average and the family income. It appears from this that the income of a student's family may affect the academic achievement of the student. There is not a strong indication of a significant link between cumulative grade point average and the number of hours spent studying, as indicated by the fact that the p-value (0.059) is slightly increased from 0.05.

In a manner analogous to that of Family Size, this finding is relatively near to the threshold and may point to a trend. Since the p-value (0.725) is significantly higher than 0.05, it can be inferred that there is no statistically significant correlation between the cumulative grade point average and the amount of time spent on the internet. It would appear from this that the amount of time spent consuming digital content may not have a direct influence on academic success. Because the p-value (0.605) is higher than 0.05, it can be concluded that there is no statistically significant connection between the cumulative grade point average and the amount of time spent participating in social activities. There is

no statistically significant association between cumulative grade point average (CGPA) and the number of hours spent on activities connected to domestic chores, as indicated by the fact that the p-value (0.133) is greater than 0.05. Based on the fact that the p-value (0.477) is higher than 0.05, it can be concluded that there is no statistically significant correlation between the cumulative grade point average and the amount of time spent engaging in economic activities.

It is just the Family Income variable that demonstrates a statistically significant association with the cumulative grade point average (p= 0.037). There is a possibility that the income of a family could affect the academic performance of students, possibly as a result of the availability of resources, study materials, or an environment that is conducive to learning. The fact that age, family size, hours spent studying, internet use, social circle, household-related activities, and economic activities do not exhibit significant relationships with cumulative grade point average (CGPA) suggests that these characteristics may not have a direct or strong influence on academic outcomes within this sample. It is important to take note that a hundred percent of the 882 cells have predicted counts that are lower than five, which can have an impact on the reliability of the Chi-Square test results. There is a possibility that this indicates the requirement for larger sample sizes or alternative statistical tests that are more appropriate for the data format. The absence of significant connections in many instances does not necessarily suggest that there is no effect; rather, it may indicate that the effect is not detectable with the sample size that was provided or that other factors that act as mediators play a role. The interpretations presented here serve as a basis for further investigation and analysis in subsequent research, which may lead to the formulation of research questions that are more narrowly focused or refined.

### 4.2. Correlation between the Amount of Time Spent Using Digital Media and Academic Performance

Pearson's Correlation table, which can be found in Table 5, contains the correlation coefficients (Pearson's R), as well as their standard errors, t-values, and significance levels, for the links that exist between the cumulative grade point average and the many variables that explain it. There is a weakly negative association between cumulative grade point average and age, as indicated by the correlation coefficient of -0.160. The fact that the p-value (0.112) is higher than 0.05, on the other hand, indicates that this link does not meet the criteria for statistical significance. A very weak negative association between cumulative grade point average and family size is indicated by the correlation coefficient, which is -0.116.

**Table 5: Digital Consumption Time and Academic Achievement: Pearson's Correlation**

| Pearson's Correlation between | Pearson's R-Value | Asymptotic Standardized Error | Approximate T[b] | Approximate Significance |
|---|---|---|---|---|
| CGPA and Age | -.160 | .078 | -1.602 | .112 |
| CGPA and Family Size | -.116 | .110 | -1.149 | .253 |
| CGPA and Family Income | .203 | .111 | 2.051 | .043 |
| CGPA and No of Hours Spent on Study | .064 | .111 | .639 | .524 |
| CGPA and No of Hours Spent on Internet | .177 | .105 | 1.777 | .079 |
| CGPA and No of Hours Spent on Social Circle | .018 | .098 | .176 | .861 |
| CGPA and No of Hours Spent on Household-Related Activities | .155 | .089 | 1.552 | .124 |
| CGPA and No of Hours Spent on Economic Activities | .058 | .071 | .571 | .569 |

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

This link does not meet the criteria for statistical significance because the p-value (0.253) is higher than the threshold of 0.05. There is a weak positive association between cumulative grade point average and family income, as indicated by the correlation value of 0.203. The p-value, which is 0.043, is lower than 0.05, which indicates that there is a statistically significant relationship. Consequently, a higher family income is linked to a better cumulative grade point average. There is a very weak positive association between the cumulative grade point average and the number of hours spent studying, as indicated by the correlation coefficient of 0.064. This link does not meet the criteria for statistical significance because the p-value (0.524) is higher than the threshold of 0.05. There is a weak positive association between the cumulative grade point average and the number of hours spent on the internet, as indicated by the correlation value of 0.177. Because the p-value (0.079) is somewhat higher than 0.05, it can be deduced that this link is not statistically significant; nonetheless, it is relatively close to the threshold, which suggests that there may be a trend.

The coefficient of correlation is 0.018, which indicates that there is no significant association between cumulative grade point average and the number of hours spent participating in social activities. The p-value for this link is 0.861, which is much higher than 0.05, which indicates that it is not statistically significant. A weakly positive association between cumulative grade point average and the number of hours spent on tasks connected to household chores is suggested by the correlation value of 0.155. It is not statistically significant that this association exists because the p-value (0.124) is higher than the threshold of 0.05. There is a very weak positive association between the cumulative grade point average and the number of hours spent on economic activities, as indicated by the correlation coefficient of 0.058. It is not statistically significant that this association exists because the p-value (0.569) is higher than the threshold of 0.05. Family Income is the sole variable that demonstrates a statistically significant link with cumulative grade point average (CGPA) ($p = 0.043$), alongside a weak positive correlation ($r = 0.203$). It would appear from this that pupils who come from homes with higher incomes tend to have slightly better academic performance outcomes. The cumulative grade point average does not reveal any significant associations with factors such as age, family size, hours spent studying, internet use, social circle, activities linked to domestic chores, or economic activities. Although certain factors, such as the utilization of the internet ($p = 0.079$) and activities connected to the household ($p = 0.124$), are on the verge of being significant, they do not satisfy the usual criterion of significance ($p < 0.05$).

## 5. Conclusions and Policy Suggestions

The purpose of this study was to evaluate the association between the amount of time spent on digital consumption and academic outcomes among students attending a public university. The study took into consideration a variety of socioeconomic parameters, including age, family size, and monthly income. This suggests that students who come from families with higher incomes tend to have better academic performance. There is a statistically significant positive correlation between family income and academic achievement (CGPA), which suggests that this correlation exists. A significant influence on academic outcomes was found to be exerted by the amount of time spent consuming digital content at the 10% level of significance. Based on this, it appears that moderate internet use may have a positive impact on cumulative grade point average (CGPA), although the effect is not as strong as the effect of family income. According to the conventional levels of significance, there was no significant correlation between the cumulative grade point average (CGPA) and factors such as age, family size, and the number of hours spent on study, social activities, household-related activities, and economic activities. Based on these findings, it appears that although socioeconomic background, and more specifically family income, plays a significant role in academic performance, the amount of time spent engaging in digital consumption also plays a role, albeit to a lesser extent. Many policy recommendations can be made in light of the findings to improve academic outcomes in the context of digital consumption and socioeconomic disparities. These recommendations include the following:

- ·For the elimination of academic performance adverse effects of economic inequality, schools should maximize the number of scenarios in which economically

disadvantaged students would get a chance to get access to financial aid and scholarships.

- There is an equity of opportunities that students of low income will be given by providing them with the opportunities of cheap textbooks, learning materials, and digital resources.
- Students can be instructed in the way they can precisely use the internet for academic purposes and to teach digital literacy education through running programs focused on digital literacy. These programs should instill the equivalence of e-commerce with business and entertainment.
- Students can be assisted by universities that will develop guidelines and workshops to learn how they could maximize the time they spend consuming digital forms of entertainment, while emphasizing their productivity that can significantly benefit their learning outcomes.
- Though, particularly for students who may be failing in school due to societal upheaval or maladaptive learning, the creation of tutoring and mentoring programs can lend a helping hand by taking in these students and offering them added academic support.
- To help students be more productive in various things like studying, interacting socially, and consuming through the internet, giving a dosage of time management lectures is an added advantage.
- The educational activities of students are further enabled by making investments in campus facilities that have study lounges, libraries with enough resources, and digital access to the internet and other facilities.
- Making sure that all students are able to get the essential technology and have access to computers and internet connections would help promote even academic success.
- For the effective implementation of solutions, it is therefore necessary to conduct periodic testing and surveys to collect information on the patterns of digital consumption and academic performance of the students.
- The creation of a feedback loop that allows students to contribute their experiences and hardships to the constant evolution of the support services and policies in place is highly imperative in this regard.

By implementing these guidelines, colleges may have created an environment that is friendly to all students, makes the best use of digital tools for academic benefit, and fixes socioeconomic inequalities, ultimately contributing to the achievements of students.

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