Journal of Mathematical Problems, Equations and Statistics

Deepak Kumar Behera
Research Scholar, School of Statistics, Gangadhar Meher University, Amruta Vihar, Sambalpur, Odisha, India

Dr. Rajendra Gartia
Assistant Professor, School of Statistics, Gangadhar Meher University, Amruta Vihar, Sambalpur, Odisha, India

Dr. Ranjan Kumar Sahoo
Associate Professor, School of Statistics, Gangadhar Meher University, Amruta Vihar, Sambalpur, Odisha, India

Suru Munda
Research Scholar, School of Statistics, Gangadhar Meher University, Amruta Vihar, Sambalpur, Odisha, India

Pritipadma Sahu
Research Scholar, School of Statistics, Gangadhar Meher University, Amruta Vihar, Sambalpur, Odisha, India

A statistical analysis of the effect of social networking sites on students' academic performance in the western Odisha universities

Deepak Kumar Behera, Dr. Rajendra Gartia, Dr. Ranjan Kumar Sahoo, Suru Munda and Pritipadma Sahu

DOI: https://doi.org/10.22271/math.2023.v4.i1a.74

Abstract
The purpose of this research is to investigate the core notion of social networking sites, as well as their relevance, use, and effect on the academic performance of students. The university students from western Odisha are the major source of information for this study. Primary data on demographic information, educational qualifications & achievements are collected through Google forms in online and offline methods that were utilized for the study. From the sample of size 277, gender-wise distribution [Female- 141 (50.9%) and Male- 136 (49.1%)] have been responded to and selected for our study. A five-point Likert Type Rating Scale Questionnaire, titled: Social Media and Academic Performance of Students Questionnaire was used to collect data from the participants. The data so collected are analyzed through IBM SPSS Statistics 26 under MS Excel environment and the results are analyzed. Statistical tools like Graphs, Pie- Charts, Diagrams, Chi-Square tests, and t-tests were used for the statistical data analysis to assess the various effects of social networking sites on the academic performance of students. The results reveal that the students who spend more time on SNSs are likely to demonstrate poor Academic achievement. Students can be able to boost their Academic achievement by collecting data and gathering important information.

Keywords: Social networking sites, academic achievements, chi-square test, t-test, statistical analysis

1. Introduction
Social networking sites are the most widely used mode of communication nowadays. It is utilized by people from all walks of life. Social media was broadly embraced by the public about a decade ago. Facebook, Twitter, Instagram, Whats App, YouTube, LinkedIn, Google+, Flickr, Snapchat, and Telegram are just a few of the many online networking platforms available. The purpose of this research is to investigate the core notion of social networking sites, as well as their relevance and use. The research also looked at how students' usage of social networking sites affects their academic achievements. University students from western Odisha are the major source of information for this study. The core goal of social networking sites is to provide customers and users with access. On the internet, they may converse with folks and form social relationships. They may also publish their thoughts and personal information on social media, such as daily events, speculations, images, videos, weblinks, etc. Social networking sites have influenced a variety of industries, but it has had the greatest impact on classrooms and the educational system as a whole. School after school has mastered a wide spectrum of interpersonal contact through some type of social media, whether it's through private social gatherings, Facebook Pages, classroom Twitter profiles, or web diaries. There is no doubt that social networking sites, particularly social media, have brought people closer together than ever before, but experts and academics around the world have been looking for the flaws that its users may have encountered. The use of internet networking has increased dramatically with the introduction of cell phones. With the rise in the use of long-distance interpersonal communication platforms, the face of traditional individual cooperation has altered and will become more unique in the future. Long-distance interpersonal communication has ramifications both inside and beyond society, such as specialized tactics, self-expression, disengagement, relationships, and a feeling of humanity. Another issue is social media's impact on society's general health. People choose to play online games that do not need any physical exercise.

Corresponding Author:
Deepak Kumar Behera
Research Scholar, School of Statistics, Gangadhar Meher University, Amruta Vihar, Sambalpur, Odisha, India

Effects of SNSs on Academic Achievements
1. Positive effect
2. Negative effect

1. Positive effects of SNSs on Academic Achievements
Social networking has driven a significant cultural and lifestyle revolution. Some of the positive aspects of social networking sites and how students are benefited in academic achievement are listed below:
➢ Develop Communication Skills
➢ Get Information
➢ Friendship
➢ Develop reading and social skills
➢ Enhancing Skills
➢ Learning
➢ Share Information, Online Live Classes
➢ Fastest Information Sharing
➢ Build Networks on the same interest
➢ Develop Good Relationships
➢ News and Media

2. Negative effects of SNSs on Academic Achievements
Social networking has driven a significant cultural and lifestyle revolution. Some of the negative impacts of social networking sites and how they affect a student's academic performance are listed below:
➢ Over the years, intensive research has been carried out all over the world regarding the effect that SNSs have on youngsters, especially in terms of their academic achievements.
➢ SNSs are distracting and time-consuming. Students spend hours on social networking sites, ignoring their studies altogether. The rapid growth in the usage of SNSs among students has been associated with their declining academic performance.
➢ Past studies have found that students who spend more time on SNSs are likely to demonstrate poor academic performance. This is because they spend time chatting online and making friends on social media sites instead of reading books.
➢ Social media, thus, is extremely distracting and has a direct impact on the academic performance of students. It is like a two-edged sword and prudence is required in its operation.
➢ By using social media for communication, students lack interaction with people by meeting in person and as a result, they lack the maturity and communication desired from their age group, which in the long run proves to be highly detrimental.
➢ While social media platforms offer easy access to new friends, they can also lead students to predators who like to victimize such young people. A naive student can give out all personal information on such sites to a total stranger pretending to be a teacher or someone in the same school and get into a lot of trouble.
➢ Social isolation: social media has greatly reduced interactive sessions among students from different walks of life. Earlier, students would go out to parks, hobby centers, etc, and interact with fellow students. However, with the advent of social media, this has seen a setback. Social isolation has led to increasing dependence on social media, which in turn hurts a student's academic performance.

Objectives
The objectives of this research are as follows:
➢ To ascertain the social networking sites preferred by students at western Odisha universities.
➢ To examine the level of student addictiveness to social networking sites and their impact on academic achievement.
➢ To ascertain the difference in students' usage of social networking sites by gender.

2. Data & Methodology
Research methodology refers to the general plan or approach that aids in achieving the research's targeted aims and objectives. It is essentially a statement that the problem under investigation has been adequately examined and handled. The study is more effective and complete as a result of this. Study techniques include research design, data collecting, reliability and validity, data analysis, and ethical considerations that arise throughout the research process. The purposive or convenient sampling technique was used to encompass all the students of Gangadhar Meher University (GMU) and Sambalpur University Institute of Information Technology (SUIIT), out of which 277 respondents have been responded to the query. From the sample of size 277, gender-wise distribution [Female- 141 (50.9%) and Male- 136 (49.1%)] have been responded to and selected for our study. A five-point Likert Type Rating Scale Questionnaire type, titled: Social Media and Academic Performance of Students Questionnaire (SMAAPOS) was used to collect data from the participants. The descriptive statistics of frequency counts and percentages were used to analyze the demographic data while inferential statistics of Chi-square $(x2)$ were used in testing the research hypotheses (Ogunleye, 2015) collected data of students of Western Odisha.

Hypotheses: The following Null hypothesis and Alternative hypothesis are tested to arrive at the desired objectives:
❖ H_{50} = Academic achievements are independent of total hours spend on SNS.
H_{51} = Academic achievements depend on total hours spent on SNS.
❖ H_{60} = Academic achievements are independent of Gender.
H_{61} = Academic achievement depends on Gender.
❖ H_{70} = Academic achievements are independent of total hours of sleep at night.
H_{71} = academic achievements depend on total hours of sleep at night.

3. Findings and Discussion
The data are analyzed through SPSS 26.00 and the results obtained are presented through the following figures and tables:
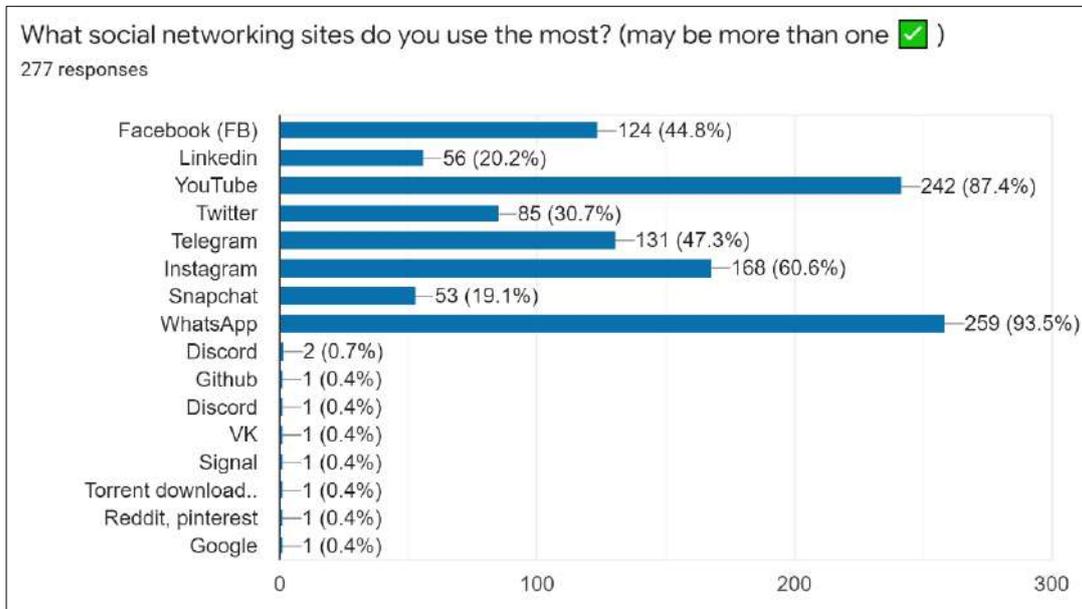
Graph 1: Mostly used SNSs

From above Graph- 1 it is observed that WhatsApp is the most popular platform. 93.5% of the students prefer to use WhatsApp followed by YouTube (87.4%), Instagram (60.6%), Telegram (47.3%), Facebook (44.8%), and so on as depicted in Graph-1 above.
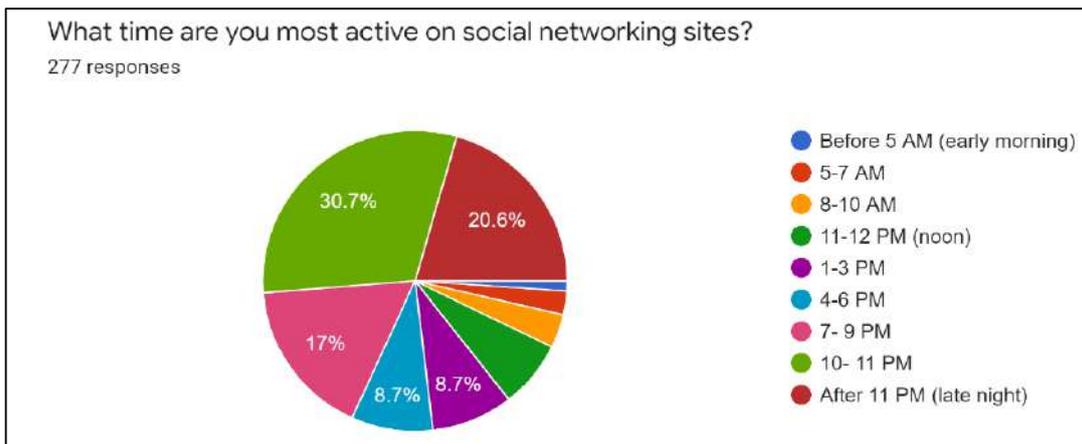
Pie Chart 1: Mostly active time on SNSs

The above Pie Chart- 1 shows that 10-11 PM is the most active time online by the students. Around 30.7% of students are active online at 10-11 PM followed by 20.6% after 11 PM (late night), 17% between 7-9 PM, and so on as depicted in the above Pie chart-1.
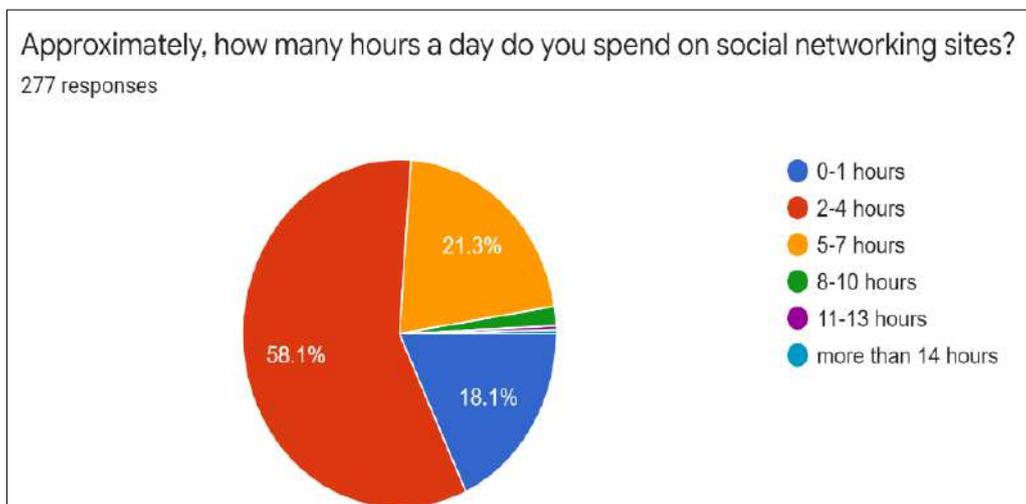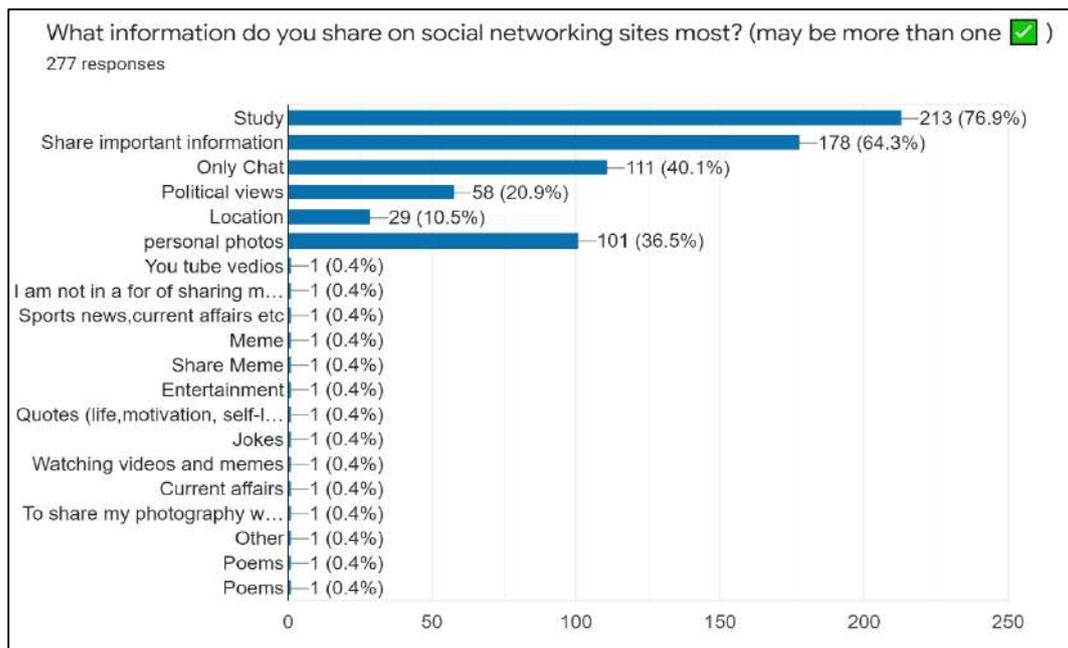

Pie Chart 2: Total no. of hours spent on SNSs in a Day

The above Pie chart-2 shows that mostly 2-4 hours spend on SNSs i.e., 58.1% of students followed by 5-7 hours (21.3%)

and so on as depicted in the above Pie chart- 2 above.

Graph 2: Purpose of using SNSs

From above graph- 2 it is observed that most of the students (76.9%) use SNSs mainly for study purposes. Sharing important information is done by (64.3%) of students,

chatting (40.1%) and Photos by (36.5%) of the total number of students, and so on as depicted in graph-2 above.

Table 1: Testing of Hypotheses

Attributes	Hypotheses	x^2-value	Sig. ($\alpha = 0.05$)	Decision
Academic Achievements & Total Hours SNSs	H_{50} = Academic achievements are independent of total hours spend on SNS. H_{51} = Academic achievements depend on total hours spent on SNS.	35.038	0.241	H_{50}: Accepted
Academic Achievements & Gender	H_{60} = Academic achievements are independent of Gender. H_{61} = Academic achievement depends on Gender.	12.139	0.059	H_{60}: Accepted
Academic Achievements & Total Hours of Sleep at Night	H_{70} = Academic achievements are independent of total hours of sleep at night. H_{71} = academic achievements depend on total hours of sleep at night.	30.034	0.184	H_{70}: Accepted

('*' implies chi-square is significant at $\alpha = 0.05$)

4. Conclusion

Students who spend more time on SNSs are likely to demonstrate poor Academic achievement. They spend more time on SNSs instead of reading books. More use SNSs adversely impacts their Academic achievement, social interaction, and Sleep duration and leads to a sedentary lifestyle and physical inactivity. Which, in turn, can render them vulnerable to non-communicable Psychosomatic health problems. It was the only alternative to the Physical mode of classroom teaching. Students can be able to boost their Academic achievement by collecting data and gathering important information. They are enabled to access all the open sources information related and useful for their Academic achievement and Self-development. Because of SNSs, they are unable to know all the important information, news, ideas, skills, etc. happening around the world.

5. Acknowledgment

6. Financial Support

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