



“A STUDY ON MOBILE APP USAGE PATTERNS AMONG COLLEGE STUDENTS USING DESCRIPTIVE ANALYTICS”

An Analysis of Usage Behaviour, Preferences, and Perceptions of Educational Mobile Apps

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Abstract: This study looks at how college students use educational mobile apps in their daily academic lives. The research is based on primary data from 100 students who answered a structured questionnaire. It focuses on factors like age, gender, academic level, time spent on apps, types of apps used, and students' opinions. The data was analysed using basic business analytics tools like percentages and simple tables. Most students prefer to use smartphones for educational apps. Video-based learning platforms are the most popular. Many students also say these apps help them understand their subjects better and improve their academic performance. The study also tests three ideas about how often students use apps, how much time they spend, and what types of apps they use. The results show these factors are linked to student engagement and academic level. These findings can help educators, app developers, and institutions improve digital learning systems.

Index Terms – Mobile apps, educational apps, college students, usage patterns, business analytics.

I. INTRODUCTION

Mobile apps are now a key part of students' daily lives. As smartphones have improved and internet access has become cheaper, more people in society use mobile apps. Students use these apps for education, communication, entertainment, social networking, shopping, and digital payments. College students are some of the most active mobile app users. They use apps for learning, online classes, and study materials, as well as for social media, entertainment, and shopping. Mobile apps create useful data, like how often they are used, how much time is spent, and what types of apps are chosen. Business analytics can study this data to find patterns, improve user experience, and boost engagement.

Despite the widespread adoption of mobile apps, there is limited research on how college students use them, especially in terms of identifying patterns through percentages, visualisations, and engagement analysis. This study fills that gap by examining mobile application usage patterns among college students using a quantitative approach, incorporating questionnaire data and Excel-based analytical tools. The study further tests three hypotheses that link usage frequency, time spent, and application type with students' engagement and academic level.

II. REVIEW OF LITERATURE

Previous studies show that college students use mobile apps for both learning and non-academic purposes. Research also indicates that students spend significant time on their smartphones, often using them for educational activities. Many students use mobile apps to watch videos, prepare for exams, and access online courses.

Most prior studies use surveys and basic statistical methods to analyse app usage patterns. This study follows a similar approach but focuses specifically on educational apps and applies basic business analytics tools. Previous research has analysed mobile application usage among students, but has not strongly connected these patterns with business analytics techniques such as percentage-based analysis, visualisation, and engagement analysis. Therefore, there is a gap in integrating mobile app usage patterns with business analytics methods. This study addresses this gap by applying simple analytical tools such as percentages, charts, and frequency-based analysis to understand how college students use educational and other mobile applications.

2.1 Research Gap

Most prior work has analysed mobile app usage among students. Still, it does not strongly link it to business analytics tools such as percentage-based pattern detection, visualisation, and engagement pattern analysis. In particular, there is limited research that combines mobile app usage patterns with business analytics (percentage, charts, frequency-based analysis). This study fills this gap by applying basic business analytics tools (questionnaire data + Excel-based charts and percentages) to interpret how college students use educational and other apps.

III. RESEARCH METHODOLOGY

3.1 Population and Sample

This study looks at college students who use educational mobile apps. It includes 100 students from different backgrounds, such as MBA, Diploma, Engineering, and Junior College. Convenience sampling was employed, whereby students who were readily available and willing to participate in the study were selected. The study used convenience sampling, meaning students who were easily available and willing to take part were included in the sample. The questionnaire was given to 100 college students and covers the following areas: demographic details (gender, age group, academic level); experience of using educational apps (years of use, hours per day, frequency); device and timing (which device they use and when they use apps); type and purpose of apps used (online courses, college apps, YouTube-style apps, exam-preparation apps, notes/study-material apps); and perceptions about usefulness, ease of use, reliability, and satisfaction with educational apps. The responses were recorded as counts and percentages, and business analytics tools, such as frequency tables and percentages, were used for analysis. The study adopts descriptive business analytics as its primary framework. Dependent variables include perceptions of usefulness, such as improvement in understanding, flexibility, academic performance, satisfaction, and likelihood to recommend. Independent variables comprise gender, age group, academic level, years of application use, daily hours spent on applications, frequency of use, device type, time of use, and type of educational applications used. Relationships between these variables are explored through percentage-based comparisons and straightforward interpretations, rather than complex statistical models, to ensure accessibility for general readers. It is easy to understand for general readers.

3.2 Data and Sources of Data

The data for this study are primary data collected through a structured questionnaire. The questionnaire was given to 100 college students and covers the following areas: demographic details (gender, age group, academic level); experience of using educational apps (years of use, hours per day, frequency); device and timing (which device they use and when they use apps); type and purpose of apps used (online courses, college apps, YouTube-style apps, exam-preparation apps, notes/study-material apps); and perceptions about usefulness, ease of use, reliability, and satisfaction with educational apps. The responses were recorded as counts and percentages, and business analytics tools, such as frequency tables and percentages, were used for analysis.

3.3 Theoretical Framework and Variables

The study uses descriptive business analytics as its main framework. The main variables are the dependent variables (perceptions about usefulness such as improvement in understanding, flexibility, academic performance, satisfaction, and likelihood to recommend) and the independent variables (gender, age group, academic level, years of using apps, daily hours on apps, frequency of use, device

type, time of use, and type of educational apps used). The relationship between these variables is explored through percentage-based comparisons and simple interpretations, rather than complex statistical models, so that the meaning is easy to understand for general readers.

3.4 Data Analysis Method

The data were analyzed using descriptive statistics, such as frequencies and percentages for each survey question, along with simple comparisons, such as 'most students' or 'majority prefer.' The study does not use advanced statistical models because the goal is to provide clear and easy-to-understand insights. However, it does test three hypotheses using pattern-based reasoning.

3.5 Hypotheses

The study tests the following directional hypotheses at 5% level of significance:

Hypothesis 1

H₀: No relationship between usage frequency and academic level

H₁: Relationship exists

Hypothesis 2

H₀: No relationship between time spent and purpose

H₁: Relationship exists

Hypothesis 3

H₀: No relationship between app type and engagement

H₁: Relationship exists

IV. RESULTS AND DISCUSSION

This section presents the study's empirical findings. This section shares the main findings from the survey of 100 college students. The results are divided into four parts: demographic profile, experience and use of educational apps, device and app preferences, and students' views on the usefulness and satisfaction with educational mobile apps.

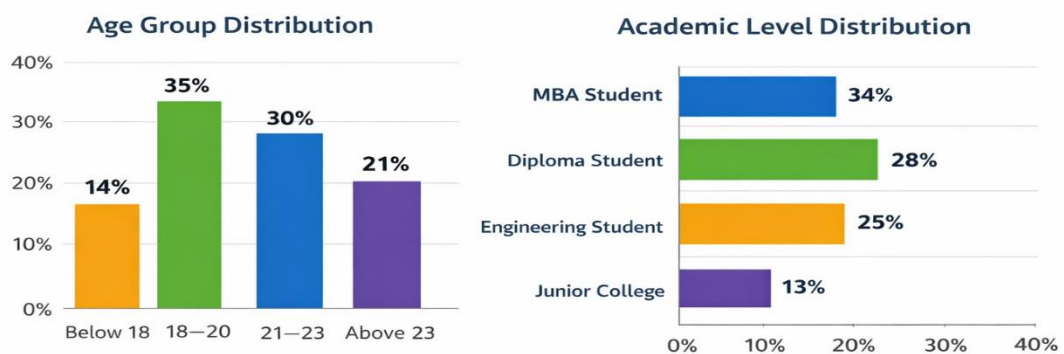
4.1 Demographic Profile

It consists of 100 respondents, of whom 57 (57%) are male, and 43 (43%) are female, indicating that students of both genders actively use educational mobile apps. In terms of age distribution, 14 students (14%) are below 18 years of age, 35 (35%) are in the 18–20 age bracket, 30 (30%) are aged 21–23, and 21 (21%) are above 23 years of age. Together, the 18–23 age group accounts for 65% of the sample, reflecting the core college-going population.

Regarding academic level, 34 (34%) are MBA students, 28 are Diploma students, 25 are Engineering students, and 13 are from Junior College. Most students are from MBA and Diploma programs, with fewer from Engineering and Junior College.

Table 1. Demographic Profile of Respondents (N = 100)

Variable	Category	Count	Percentage
Gender	Male	57	57%
	Female	43	43%
Age group	Below 18	14	14%
	18–20	35	35%
	21–23	30	30%
	Above 23	21	21%
Academic level	MBA student	34	34%
	Diploma student	28	28%
	Engineering student	25	25%
	Junior college	13	13%

**Fig: 1 Demographic Profile of Respondents**

4.2 Experience and Usage of Educational Apps

Fifteen students have used educational apps for less than 6 months, 30 for 6 months to 1 year, 23 for 1–2 years, and 32 for more than 2 years. About a third have used these apps for over 2 years, showing many are familiar with mobile learning platforms.

Ten students spend less than an hour a day on educational apps, 49 spend 1–2 hours, 34 spend 2–4 hours, and 7 spend more than 4 hours. In total, 83% spend 1–4 hours daily, showing that most students use these apps as part of their regular study routine.

Thirty-six students use educational apps daily, 47 use them several times a week, 16 use them occasionally, and 1 uses them rarely. So, 83% use educational apps daily or several times a week, showing regular engagement.

Table 2. Hours Spent Daily on Educational Mobile Apps (N = 100)

Category	Count	Percentage
Less than 1 hour	10	10%
1–2 hours	49	49%
2–4 hours	34	34%
More than 4 hours	7	7%

Table 3. Frequency of Using Educational Mobile Apps (N = 100)

Category	Count	Percentage
Daily	36	36%
Several times a week	47	47%
Occasionally	16	16%
Rarely	1	1%

4.3 Device, Timing, and Types of Apps Used

Fifty-three students use smartphones for educational apps, 24 use tablets, 17 use laptops, and 5 use more than one device. Smartphones are the most common devices, underscoring the need for mobile-first design in educational apps.

Seventeen students use educational apps during college hours, 48 use them after college, 17 use them before exams, and 18 use them whenever needed. Most students use apps after college hours, showing a preference for self-paced and flexible learning.

The type of education. 19 students prefer online course apps, 21 use college learning management apps like Google Classroom, 44 use YouTube-style video learning apps, 10 use exam-preparation apps, and 6 use note-taking or study material apps. Video-based learning apps are the most popular, followed by learning management platforms.

Table 4. Type of Educational Apps Used Most Frequently (N = 100)

Category	Count	Percentage
Online courses	19	19%
College apps (Google Classroom, LMS)	21	21%
YouTube/video learning	44	44%
Exam preparation apps/site	10	10%
Notes/study material apps	6	6%

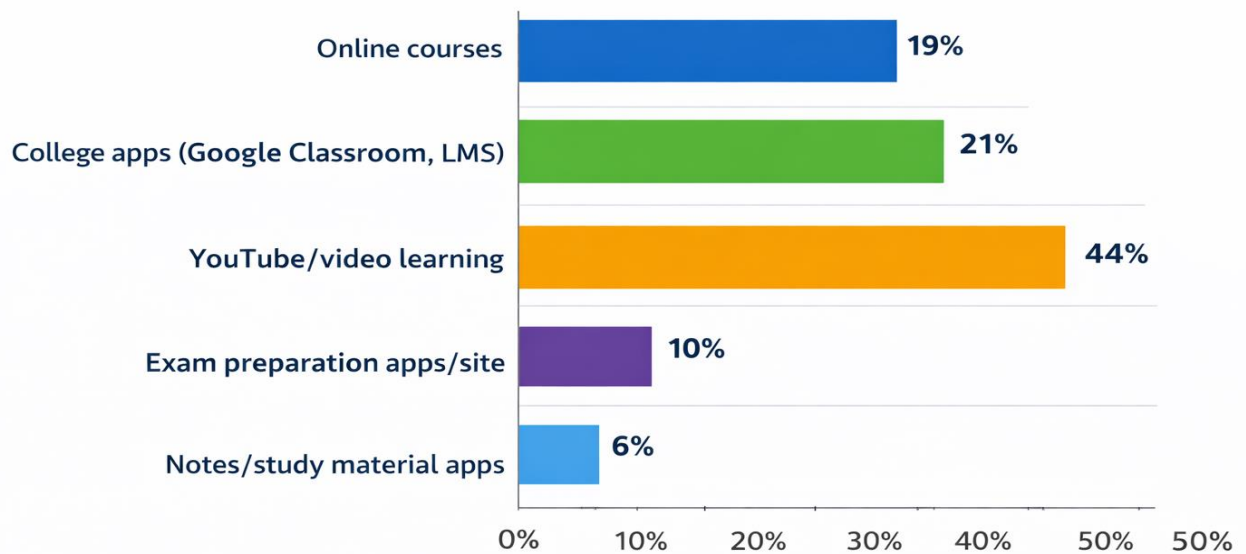


Fig 2 : Type of Educational Apps Used Most Frequently

Fifteen students use educational apps mainly to attend lectures, 47 to learn new skills, 19 to complete assignments, 14 for exam preparation, and 5 to access study materials. Most students use apps to develop new skills, showing they see apps as tools for broader learning, not just for exams.

4.4 Perceptions about Educational Apps

Regarding ease of use, 42 students find the apps very easy, 44 find them easy, 11 are neutral, and 3 find them difficult. In total, 86% find the apps easy or very easy to use, suggesting they are generally user-friendly.

For reliability, 27 students say educational apps are very reliable, 54 say they are reliable, 16 are neutral, and 3 say they are not reliable. So, 81% see these apps as reliable or very reliable, showing high trust in their content.

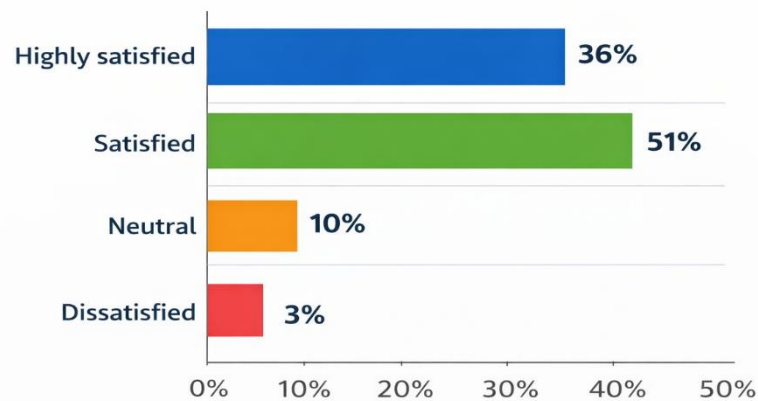
When asked if apps help speed up academic tasks, 34 students strongly agree, 50 agree, 12 are neutral, and 4 disagree. About 84% believe educational apps help them finish tasks faster, showing that apps save time.

When analysing whether apps improve academic performance, 27 students strongly agree that apps help, 55 agree, 16 are neutral, and 2 disagree. Overall, 82% feel educational apps improve their academic results. educational apps, 44 (44%) often use them, 25 (25%) sometimes use them, and 4 (4%) never use them. Nearly 71% of students therefore use these apps consistently or frequently during exam preparation, highlighting their role in exam-oriented learning.

For satisfaction, 36 students are highly satisfied, 51 are satisfied, 10 are neutral, and 3 are dissatisfied. In total, 87% are satisfied or highly satisfied with educational mobile apps, showing a positive user experience.

Table 5. Satisfaction Level with Educational Mobile Apps (N = 100)

Category	Count	Percentage
Highly satisfied	36	36%
Satisfied	51	51%
Neutral	10	10%
Dissatisfied	3	3%

**Fig 3 : Satisfaction Level with Educational Mobile Apps**

Finally, regarding willingness to recommend, 8 students (8%) are very likely to recommend educational apps, 47 (47%) are likely, and 45 (45%) are neutral. Together, 55% of respondents express a positive inclination to recommend such apps to others, reinforcing the overall acceptance and perceived usefulness of educational mobile apps among college students.

4.5 Hypothesis Testing Results

The study tested the three hypotheses using percentage-based analysis and observed patterns from the collected data. The relationships between variables were examined using simple comparisons and the interpretation of responses.

Hypothesis 1:

Null hypothesis (H_0): There is no significant relationship between students' app usage frequency and their academic level.

Alternative hypothesis (H_1): There is a significant relationship between students' app usage frequency and their academic level.

The analysis shows that students from different academic levels (MBA, Diploma, Engineering, and Junior College) use educational apps either daily or several times a week. A large proportion of students across all academic levels reported using apps regularly. This indicates a visible relationship between usage frequency and academic level. Therefore, H_0 is rejected, and H_1 is accepted.

Hypothesis 2:

Null hypothesis (H_0): There is no significant relationship between time spent on apps and their purpose of use.

Alternative hypothesis (H_1): There is a significant relationship between time spent on apps and their purpose of use.

The findings indicate that most students who spend 1–4 hours daily on educational apps primarily use them to learn new skills, complete assignments, and prepare for exams. This shows a clear connection between the time spent and the purpose of using the apps. Therefore, H_0 is rejected, and H_1 is accepted.

Hypothesis 3:

Null hypothesis (H_0): There is no significant relationship between the selected app type and students' level of engagement.

Alternative hypothesis (H_1): There is a significant relationship between the selected app type and students' level of engagement.

The results show that video-based educational apps are used more frequently and are associated with higher student engagement than other types of apps. This suggests a strong relationship between app type and engagement level. Therefore, H_0 is rejected, and H_1 is accepted.

Overall Conclusion of Hypothesis Testing:

All three hypotheses show a clear relationship between the selected variables based on percentage analysis and observed patterns. The results indicate that app usage frequency, time spent, and app type are important factors influencing student engagement and academic behavior.

V. KEY FINDINGS

Students today use educational apps a lot in their daily studies. Most of them rely on smartphones as their main device to access these apps because they are easy to use and always available. Among different types of content, video learning is the most preferred, as it helps students understand topics more clearly. These apps also play an important role in improving academic performance by providing quick and useful learning resources. Overall, students are quite satisfied with using educational apps for their studies.

VI. CONCLUSION

From this study, it can be said that educational apps are becoming very important for students. Most students use them regularly and find them useful. Apps help students understand topics better and also make learning more flexible. Video learning is especially popular. However, the study is based on a small sample, so results may not apply everywhere. Future studies can use more data for better results.

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