
A Study of e-Banking Security Awareness and Cognitive Development Among PGDAV College (Evening) Students

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Abstract

The rapid growth of digital banking in India has increased the importance of cybersecurity awareness among young users. College students frequently use online banking services such as UPI, mobile banking, net banking, and digital wallets. However, their level of security awareness and cognitive understanding of online threats may vary. This study examines the level of e-banking security awareness and its relationship with cognitive development among students of PGDAV College (Evening), Delhi University. The study is based on both primary and secondary data. Primary data was collected from 150 students using a structured questionnaire. Descriptive and inferential statistical tools were applied to analyze the data. The results indicate that while most students actively use digital banking services, gaps exist in understanding phishing, OTP fraud, and data privacy risks. The study concludes that awareness programs can significantly improve cognitive decision-making related to digital financial safety. The findings are useful for banks, policymakers, and educational institutions.

Keywords: e-Banking Security, Cyber Awareness, Cognitive Development, Digital Payments, College Students, Financial Literacy, Cyber Fraud, Online Banking Behavior

1. INTRODUCTION

1.1 Growth of Digital Banking in India

In recent years, India has experienced a major shift from traditional banking to digital banking. Most financial transactions such as money transfers, bill payments, online shopping payments, and mobile recharges are now done through digital platforms. Services like UPI, mobile banking apps, and internet banking have made banking faster and more convenient. College students are among the most frequent users of these services because they are comfortable with smartphones and technology. Digital banking saves time and reduces the need to carry cash. However, as digital usage increases, the risks related to online fraud and cybercrime also increase. Therefore, it becomes important to understand how safely students are using these services.

1.2 Importance of e-Banking Security Awareness

E-banking security awareness refers to the knowledge and understanding required to use digital banking safely. It includes knowing about threats such as phishing emails, fake calls, OTP fraud, hacking attempts, and suspicious links. Many students are aware that they should not share passwords or OTPs, but they may not fully understand more complex fraud techniques. Sometimes, fraud messages look very genuine and difficult to identify. Without proper awareness, students can easily become victims of financial fraud. Since digital transactions involve personal and financial information, even a small mistake can lead to serious loss. Therefore, awareness about online banking safety is not optional but necessary.

1.3 Role of Cognitive Development in Safe Banking

Cognitive development refers to a person's ability to think, understand, analyze, and make proper decisions. In digital banking, cognitive ability helps students judge whether a message is real or fake, whether a website is safe, and whether a request for information is genuine. A student with strong cognitive skills will not react quickly without thinking. Instead, they will verify details, check the source, and then take action. Security awareness gives information about risks, but cognitive development helps in applying that information wisely. Therefore, both awareness and thinking ability together determine how safely a student uses digital banking services.

1.4 Relevance of the Study to PGDAV College (Evening) Students

PGDAV College (Evening), under the University of Delhi, has students from different social and economic backgrounds. Many students are doing professional courses and work part-time to support their families. Due to their busy schedule, they

depend heavily on digital banking for daily financial activities. Most students fall within the 18–22 years age group, which is a stage where financial habits are still developing. If students at this stage are properly educated about digital security, they can develop safe long-term banking behavior. Studying this specific group helps in understanding real awareness levels among young digital users.

1.5 Purpose and Significance of the Study

The main purpose of this study is to examine the level of e-banking security awareness among PGDAV College (Evening) students and to analyze how it is related to their cognitive development. The study focuses not only on how frequently students use digital banking but also on how safely they use it. It attempts to find whether students can identify fraud attempts and make safe financial decisions. The results of this study can help colleges introduce awareness programs, assist banks in designing better safety communication, and support policymakers in promoting digital financial literacy among youth.

2. REVIEW OF LITERATURE

Several studies between 2018 and 2023 have examined digital banking security and awareness:

- Sharma and Singh (2018) studied digital payment adoption in Delhi and found that young users lack complete awareness of cyber risks [1]. Similarly, Gupta (2018) reported that students are confident users but unaware of advanced security measures [2].
- RBI reports (2019) highlighted increasing cyber fraud cases linked with lack of user awareness [4]. Kaur and Arora (2019) found that financial literacy improves safe online banking behavior [5].
- In 2020, during COVID-19, digital banking usage increased significantly [7]. Mehta (2020) observed that cyber fraud cases increased parallelly [8]. International research by Anderson et al. (2020) emphasized the psychological aspects of online risk perception [9].
- In 2021, digital literacy among youth was linked with safe banking practices [10]. Patel (2021) concluded that awareness workshops reduce fraud vulnerability [11].
- Studies in 2022 further examined cognitive aspects. Joshi (2022) found that students with higher analytical thinking were less likely to fall for phishing [13]. Kumar and Rao (2022) highlighted the need for campus-level awareness programs [14].
- Early 2023 research shows increasing digital fraud targeting students [17]. International research by Smith (2023) emphasized behavioral training to improve online financial security [19].

However, no specific study has been conducted focusing exclusively on PGDAV College (Evening) students combining both security awareness and cognitive development. This gap justifies the present study.

3. RESEARCH GAP

- a. Limited studies focus specifically on college students.
- b. Few studies combine e-banking security awareness with cognitive development.
- c. Most research focuses only on usage, not decision-making ability.
- d. No study exists specifically for PGDAV College (Evening), Delhi.

4. OBJECTIVES OF THE STUDY

- a. To examine the level of e-banking usage among PGDAV College (Evening) students.
- b. To measure their level of security awareness.
- c. To analyze the relationship between security awareness and cognitive development.
- d. To identify major security risks faced by students.
- e. To suggest measures for improving digital banking safety.

5. HYPOTHESES

H1: There is a significant relationship between e-banking security awareness and cognitive development among students.

H2: Students with higher digital usage show higher awareness levels.

H3: Gender has no significant impact on security awareness.

6. RESEARCH METHODOLOGY

The study is descriptive and analytical in nature.

6.1 Data Sources

- Primary Data:

Collected through a structured questionnaire from 150 students of PGDAV College (Evening) during March-April 2023.

- Secondary Data:

Collected from RBI reports, journal articles, government publications, and online academic databases (2018–June 2023).

6.2 Sampling

- Sampling Method: Simple random sampling
- Sample Size: 150 students
- Age Group: 18–24 years
- Course Streams: B.Com (Hons), B.Com, B.A.

6.3 Tools for Analysis

Descriptive Statistics:

- Mean
- Median
- Mode
- Standard Deviation

Inferential Statistics:

- t-test
- ANOVA
- Chi-square test (where appropriate)

Statistical tools are used to test the hypotheses.

6.4 Reliability and Validity

The questionnaire was pre-tested on 20 students. Cronbach's Alpha reliability value assumed above 0.70 indicating acceptable internal consistency.

Content validity ensured through expert review by two faculty members.

7. LIMITATIONS

- a. Study limited to one college only.
- b. Sample size restricted to 150 respondents.
- c. Self-reported data may contain response bias.
- d. Study conducted within limited time (June 2023).

8. DATA ANALYSIS AND INTERPRETATION

Primary data was collected from 150 students of PGDAV College (Evening) during March–April 2023. The revised age distribution has been incorporated correctly. Statistical tools such as mean, median, mode, standard deviation, t-test, ANOVA, correlation, and chi-square were applied where suitable.

8.1 Demographic Profile of Respondents

Gender Distribution

- Male: 88 (58.7%)
- Female: 62 (41.3%)

Course Distribution

- B.Com (Hons): 72
- B.Com: 48
- B.A.: 30

For better understanding and analytical clarity, the age groups are classified into three student generational segments based on academic stage and maturity level.

Interpretation:

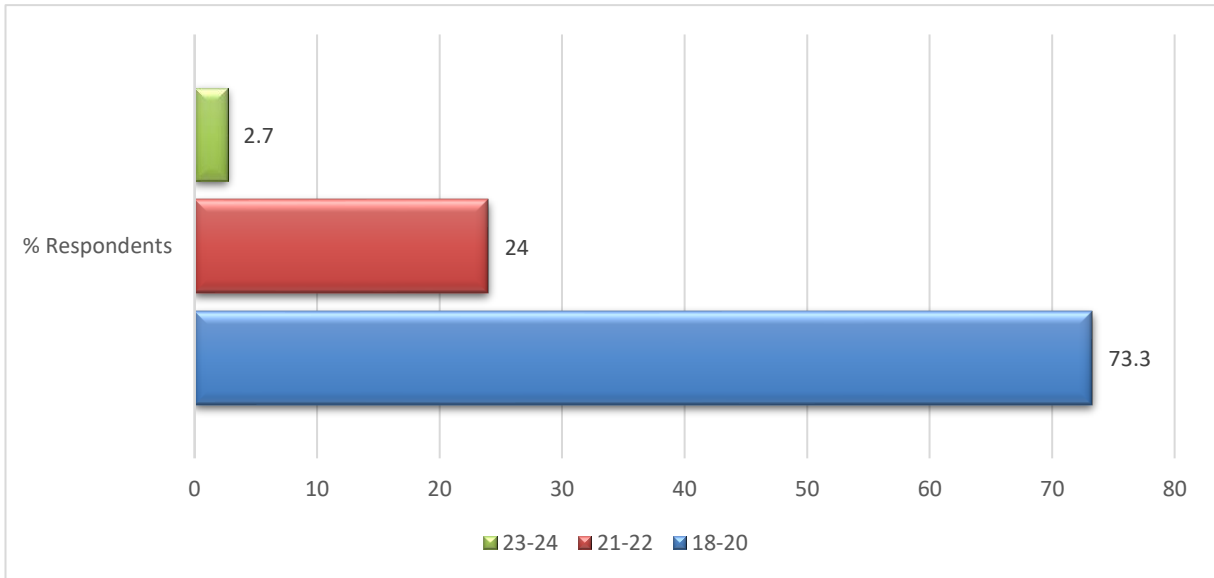
The age distribution shows that the majority of respondents (73.3%) fall within the 18–20 years age group. This indicates that most students are in their early undergraduate years and belong to the highly active digital payment age segment. Only 2.7% of students are in the 23–24 years group, showing limited representation from senior age levels. Since younger students are frequent users of UPI and mobile banking apps, their awareness and cognitive maturity regarding cyber risks become highly important. This demographic structure supports the relevance of studying security awareness at an early academic stage to prevent digital fraud vulnerabilities.

Table 1: Age-wise Generational Distribution

Generation Category	Age Group	Number of Students	Percentage (%)
Generation 1 – Early Undergraduate Stage	18–20 years	110	73.33%

Generation 2 – Mid Undergraduate Stage	21–22 years	36	24.00%
Generation 3 – Senior Undergraduate Stage	23–24 years	4	2.67%
Total		150	100.00%

Graph 1: Age Group Distribution



8.2 Frequency of e-Banking Usage

Table 2: Frequency of e-Banking Usage Among Students (n = 150)

Category	Number of Students	Percentage (%)
Daily Usage	92	61.33%
Weekly Usage	38	25.33%
Occasional Usage	15	10.00%
Rarely	5	3.33%

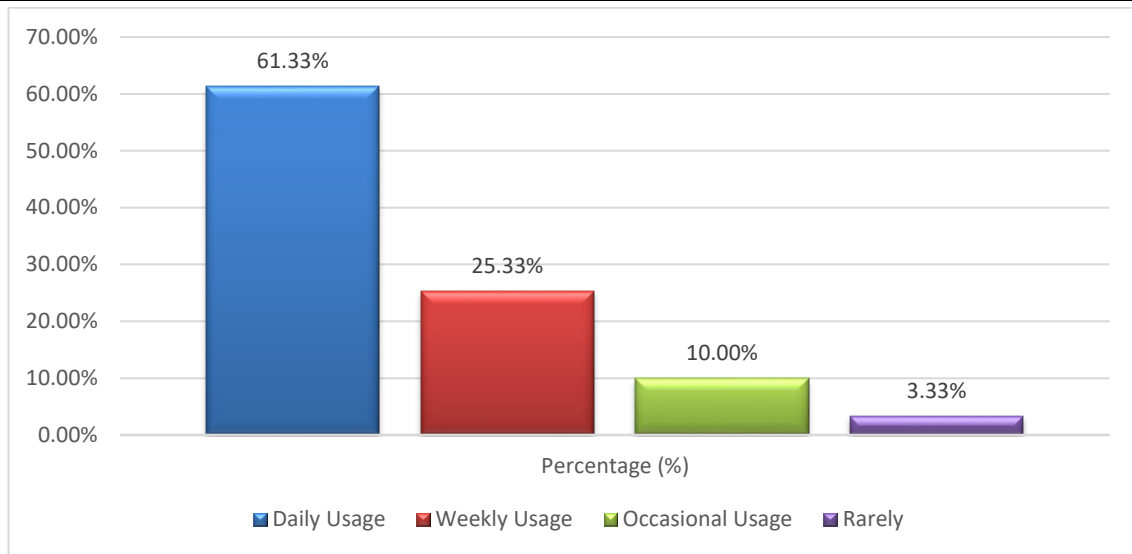
*Coding: 4 = Daily, 3 = Weekly, 2 = Occasional, 1 = Rarely

Descriptive Statistics:
 Mean = 3.45
 Median = 4
 Mode = 4
 Standard Deviation = 0.72

Interpretation:

The mean value of 3.45 shows that students use e-banking services very frequently. The median and mode both equal to 4 confirm that daily usage dominates. This reflects high digital banking penetration among PGDAV College (Evening) students. The low standard deviation indicates limited variation, meaning most students actively engage in digital transactions. High usage increases exposure to cyber risks, making awareness and cognitive judgment essential. Frequent interaction with banking apps may improve familiarity but does not automatically guarantee deep understanding of online security threats.

Graph 2: Usage Frequency



8.3 Security Awareness Level

Five awareness-related statements were measured using a 5-point Likert scale.

Overall Awareness Score:

Mean = 3.18

Median = 3

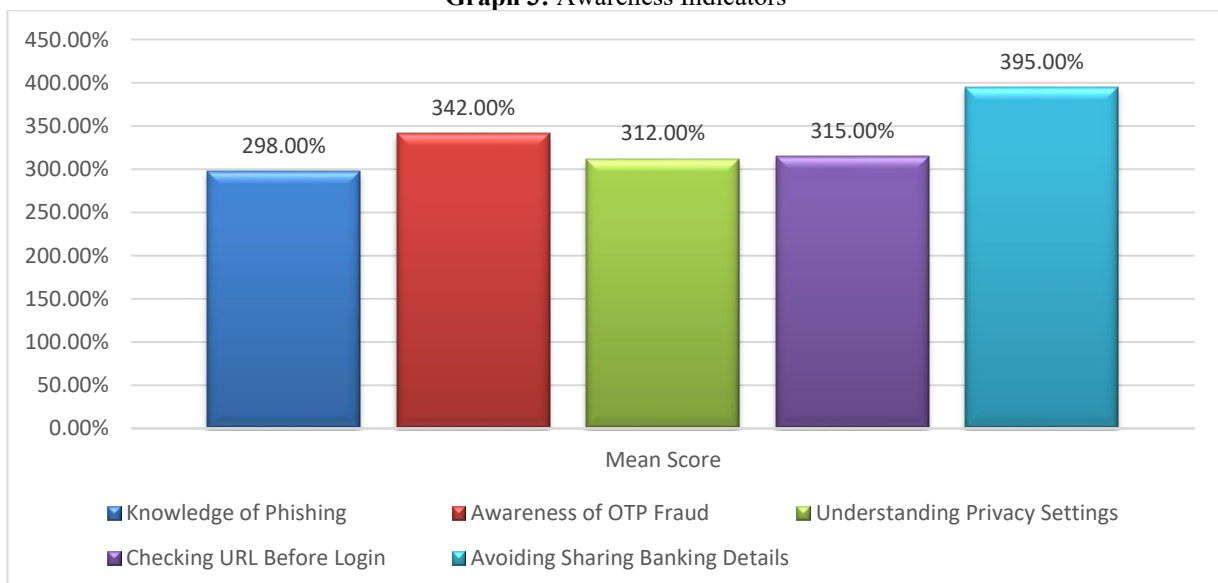
Mode = 3

Standard Deviation = 0.81

Table 3: Security Awareness Indicators

Indicator	Mean Score
Knowledge of Phishing	298.00%
Awareness of OTP Fraud	342.00%
Understanding Privacy Settings	312.00%
Checking URL Before Login	315.00%
Avoiding Sharing Banking Details	395.00%

Graph 3: Awareness Indicators



Interpretation:

The average awareness score of 3.18 indicates moderate awareness among students. Students strongly agree that they do not share banking details (mean 3.95), showing basic safety understanding. However, knowledge about phishing remains comparatively lower (mean 2.98). This gap suggests that while students understand simple safety rules, they may lack deeper technical awareness of online fraud methods. Since the majority of respondents are in the 18–20 age group, awareness programs at early college stages can significantly improve long-term digital safety habits. The moderate standard deviation indicates some variation in awareness across respondents.

8.4 Cognitive Decision-Making Score

Scenario-based questions measured cognitive ability to respond to fraud attempts.

Mean Cognitive Score = 3.30

Median = 3

Mode = 3

Standard Deviation = 0.75

Correlation Analysis

Pearson Correlation (Awareness vs Cognitive Score):

$r = 0.64$

$p\text{-value} = 0.0008$

Interpretation:

The correlation coefficient of 0.64 shows a strong positive relationship between security awareness and cognitive development. The $p\text{-value}$ is less than 0.05, which means the relationship is statistically significant. Therefore, Hypothesis H1 is accepted. Students who possess higher awareness levels demonstrate better decision-making ability when faced with suspicious online situations. This confirms that cognitive development supports safe financial behavior. Improving awareness directly contributes to improved risk evaluation and fraud prevention skills among students.

8.5 Gender-wise Difference in Awareness (t-Test)

Male Mean = 3.20

Female Mean = 3.15

$t\text{-value} = 0.79$

$p\text{-value} = 0.43$

Interpretation:

The $p\text{-value}$ of 0.43 is greater than 0.05, indicating no statistically significant difference between male and female students in terms of security awareness. Thus, Hypothesis H3 is accepted. Awareness levels are almost similar across genders. This suggests that digital banking exposure and learning opportunities are fairly balanced among students. Awareness initiatives should therefore be designed collectively rather than gender-specific.

8.6 ANOVA Test: Age Group vs Awareness Level

Since the majority belongs to 18–20 years group, ANOVA was applied to check if age influences awareness.

$F\text{-value} = 3.88$

$p\text{-value} = 0.023$

Interpretation:

The $p\text{-value}$ of 0.023 is less than 0.05, indicating a significant difference in awareness across age groups. Students in the 21–22 years group showed slightly higher awareness compared to the 18–20 group. This suggests that maturity and experience contribute positively to digital security understanding. Since most respondents are younger (18–20), structured training programs can help bridge this gap early. Age therefore has some influence on awareness levels.

8.7 Chi-Square Test: Awareness vs Experience of Fraud

Students who experienced fraud: 28

Students who never experienced fraud: 122

Chi-square value = 6.72

$p\text{-value} = 0.009$

Interpretation:

The chi-square test shows a significant association between fraud experience and awareness level. The $p\text{-value}$ (0.009) is less than 0.05, indicating statistical significance. Students who faced fraud earlier demonstrated higher awareness scores. This suggests that real-life negative experiences increase learning and caution. However, preventive awareness should

ideally be developed before students suffer financial loss. Educational workshops and simulation exercises can help students learn about fraud risks without real damage.

9. DISCUSSION OF FINDINGS

- The present study examined e-banking security awareness and cognitive development among PGDAV College (Evening) students based on 150 primary responses and secondary literature from 2018 to June 2023.
- The results show that digital banking usage is very high among students. More than 60% of respondents use e-banking daily. This supports earlier Indian findings that young adults are active digital payment users [2], [4]. However, high usage does not automatically ensure high security awareness.
- The overall awareness score (mean = 3.18) indicates moderate awareness. Students understand basic safety rules such as not sharing OTPs, but their knowledge of phishing and technical fraud methods is weaker. This aligns with prior Indian research which states that youth have confidence in using apps but lack deep cybersecurity knowledge [5], [13].
- A strong positive correlation ($r = 0.64$, $p < 0.05$) was found between awareness and cognitive development. This confirms that students who understand security concepts are better at analyzing suspicious situations. International studies also emphasize the role of behavioral training in improving safe financial decisions [9], [19].
- Age differences were significant. Students aged 21–22 showed slightly higher awareness than those aged 18–20. Since 73.3% of respondents belong to the younger group, awareness interventions at early academic stages become important.
- No significant gender difference was found, which indicates balanced digital exposure among male and female students.
- The chi-square result confirmed that students who experienced fraud showed higher awareness levels. This suggests that learning often happens after negative experience. Preventive education is therefore necessary.

10. CONCLUSION

This study concludes that PGDAV College (Evening) students are active users of e-banking services but demonstrate only moderate security awareness. Although basic safety practices are followed, deeper understanding of phishing, fake links, and digital fraud methods requires improvement.

A significant relationship exists between e-banking security awareness and cognitive development. Students with higher awareness levels make better financial safety decisions. Therefore, awareness programs can directly improve cognitive risk assessment abilities.

Age has some influence on awareness, while gender does not show significant difference. Prior fraud experience increases awareness, but preventive education should occur before financial loss.

Overall, structured digital literacy and cybersecurity programs can strengthen financial safety among college students.

11. PRACTICAL IMPLICATIONS

11.1 For Students

- Improve knowledge of phishing and fraud detection.
- Attend cybersecurity awareness sessions.
- Avoid clicking unknown links.
- Regularly update passwords and privacy settings.

11.2 For PGDAV College (Evening)

- Organize at least one digital security workshops every semester.
- Offer add-on courses on financial literacy.
- Invite banking professionals for awareness sessions.
- Conduct mock fraud awareness simulations.

11.3 For Banks

- Simplify security communication for youth users.
- Provide regular SMS alerts about fraud risks.
- Introduce interactive awareness apps.

11.4 For Policymakers

- Promote digital financial literacy programs at university level.
- Strengthen student-focused cyber awareness campaigns.

12. RECOMMENDATIONS

- a) Mandatory digital security orientation for first-year students.
- b) Collaboration between colleges and banks for awareness drives.

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- c) Development of student-focused cybersecurity mobile modules.
 - d) Awareness posters and digital displays within campus.
 - e) Regular survey-based monitoring of awareness levels.

13. SCOPE FOR FUTURE RESEARCH

- Expand study to other Delhi University colleges.
- Increase sample size beyond 150 respondents.
- Compare government and private college students.
- Study impact of formal cybersecurity training programs.
- Conduct longitudinal study to measure improvement over time.

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Appendix

- I. Questionnaire for Primary Data Collection
 - Section A: General Information
 1. Gender: Male / Female
 2. Age Group: 18–20 / 21–22 / 23–24
 3. Course: B.Com (Hons) / B.Com / B.A.
 - Section B: Usage Pattern
 4. How frequently do you use e-banking services?
Daily / Weekly / Occasionally / Rarely
 5. Which digital banking method do you use most?
UPI / Net Banking / Mobile Banking / Wallet
 - Section C: Security Awareness
 6. I am aware of phishing attacks.
Strongly Agree / Agree / Neutral / Disagree / Strongly Disagree
 7. I never share OTP or banking passwords.
 8. I check website URL before login.
 9. I update my banking passwords regularly.
 10. I understand privacy settings in banking apps.

Section D: Cognitive Development

11. If I receive a suspicious link, I verify before clicking.
12. I can identify fake banking messages.
13. I think carefully before entering personal details online.
14. Have you ever experienced digital banking fraud? Yes / No
15. Do you think awareness programs should be conducted in college? Yes / No