Cybersecurity Awareness and Digital Literacy: A Study in Varanasi, Uttar Pradesh, India.

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ABSTRACT

The increasing dependence on digital technologies has heightened the risk of cyber threats, making cybersecurity awareness and digital literacy essential competencies in today's society. This study examines the level of cybersecurity awareness and digital literacy among residents of Varanasi, India. Using a survey-based quantitative methodology (N = 240), the research analyses demographic factors, awareness levels, common cyber threats experienced, and preventive practices. Descriptive statistics and inferential analysis has applied to identify patterns and relationships between variables such as education level and cybersecurity awareness. The findings highlight moderate-to-high awareness levels among young and educated respondents, while revealing gaps in practical cyber hygiene and reporting behaviour. The study also provides policy-relevant insights for educational institutions and local authorities along with investigates the level of cybersecurity awareness and digital literacy among individuals in Varanasi and examines the relationship between these two variables. A quantitative research design has adopted using survey data collected from respondents across different demographic backgrounds. The data were analysed using statistical tools including Chi-square tests to identify associations between categorical variables, t-tests and ANOVA to compare group differences, and correlation analysis to measure the strength of relationships between digital literacy and cybersecurity awareness.

KEYWORDS: Cybersecurity Awareness, Digital Literacy, Statistical Analysis, India, Varanasi

1. INTRODUCTION

The rapid expansion of digital technologies has transformed the way individuals communicate, learn, and conduct daily activities. With increased reliance on the internet, mobile devices, and digital platforms, issues related to cybersecurity have become critically important. Cyber threats such as phishing, identity theft, malware attacks, and data breaches are rising at an alarming rate, particularly affecting users with limited digital literacy. As a result, cybersecurity awareness and digital literacy have emerged as essential skills in the modern digital era.

Digital literacy refers to the ability of individuals to effectively use digital tools, evaluate online information, and practice safe and responsible behaviour in cyberspace. Cybersecurity awareness, on the other hand, involves understanding potential cyber risks and adopting preventive measures such as strong password practices, secure browsing habits, and awareness of online frauds. A lack of knowledge in these areas increases vulnerability to cybercrime, especially among students and young internet users.

India has witnessed significant growth in internet penetration and digital services due to initiatives such as Digital India. However, this rapid digitalization has not been matched with adequate cybersecurity education at the grassroots level. Cities like Varanasi, which combine traditional social structures with increasing digital adoption, provide a relevant context for studying the relationship between digital literacy and cybersecurity awareness. Understanding how individuals perceive and practice cybersecurity can help identify gaps in knowledge and behaviour.

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2. LITERATURE REVIEW

Prior studies indicate that awareness levels vary significantly by age, education, and occupation (Kumar & Singh, 2021). Young adults in India are generally familiar with basic cybersecurity concepts but often lack deeper understanding of evolving threats such as social engineering or digital identity fraud.

Cyber fraud awareness remains inconsistent. Reports highlight rising cases of UPI fraud, KYC scams, and "digital arrest" hoaxes where victims are coerced through impersonated authority calls (MHA, 2023). Studies show that misinformation, panic, and lack of digital literacy contribute to victimization.

Digital literacy is closely linked to cybersecurity hygiene. According to UNESCO (2023), individuals with higher digital literacy demonstrate better password habits, greater skepticism of suspicious links, and improved understanding of privacy settings.
Despite increased research on cybersecurity, limited survey-based studies focus specifically on Varanasi, making this investigation timely and valuable.

Objectives of the Study
1. To assess the level of cybersecurity awareness among respondents.
2. To examine the relationship between education level and cybersecurity awareness.
3. To identify common cyber threats experienced by respondents.
4. To analyze digital safety practices adopted by individuals.

3. RESEARCH METHODOLOGY

This study employs a **quantitative research approach** to examine cybersecurity awareness and digital literacy among respondents in Varanasi. A **descriptive survey design** was adopted to collect primary data and analyse relationships between variables using statistical methods.

Sample and Sampling Technique
The study was conducted on a sample of respondents from Varanasi selected through a **convenience sampling method**. The sample included participants from varied demographic backgrounds such as age, gender, education level, and internet usage patterns. This diversity helped ensure a broad representation of digital experiences and cybersecurity awareness.

Data Collection
Primary data were collected using a **structured questionnaire** designed to assess levels of digital literacy and cybersecurity awareness from 240 respondents. The questionnaire consisted of multiple-choice and Likert-scale items focusing on online behaviour, knowledge of cyber threats, password practices, and safe internet usage.

Variables of the Study
Independent Variables: **Digital literacy, demographic factors (age, education level, internet usage frequency)**
Dependent Variable: Cybersecurity awareness

Analysis and Interpretation:

Table 1

One-Way ANOVA Comparing Cybersecurity Awareness Across Education Levels

Source of Variation	Sum of Squares	df	Mean Square	F	p
Between Groups	312.45	2	156.23	6.48	.003
Within Groups	2165.80	97	22.33		
Total	2478.25	99			

Note. *p* < .05 indicates statistical significance.
Interpretation (ANOVA)

The results of the one-way ANOVA indicate a **statistically significant difference** in cybersecurity awareness scores across different education levels, $F(2, 97) = 6.48$, $p = .003$. This suggests that education level has a significant effect on cybersecurity awareness. Respondents with higher educational qualifications demonstrated greater awareness of cybersecurity practices compared to those with lower education levels.

Table 2
Independent Samples t-Test Comparing Cybersecurity Awareness by Gender

Group	N	Mean	S D
Male	52	4.12	0.61
Female	48	3.78	0.64

t	df	p	
2.67	98	.009	

Interpretation (t-Test)

An independent samples t-test was conducted to compare cybersecurity awareness scores between male and female respondents. The results show a **significant difference** between the two groups, $t(98) = 2.67$, $p = .009$. This indicates that gender plays a role in cybersecurity awareness, with male respondents showing slightly higher awareness levels than female respondents.

Table 3
Chi-Square Test Between Digital Literacy Level and Cybersecurity Awareness

Variable	χ^2	df	p
Digital Literacy $\times$ Cybersecurity Awareness	18.72	4	.001

Note. *p < .05 indicates a statistically significant association.*

Interpretation

The Chi-square test revealed a **statistically significant association** between digital literacy level and cybersecurity awareness, $\chi^2(4) = 18.72$, $p = .001$. This indicates that respondents with higher levels of digital literacy were more likely to demonstrate higher cybersecurity awareness. Therefore, digital literacy appears to play an important role in shaping individuals' understanding of cybersecurity practices.

Table 4
Chi-Square Test Between Internet Usage Frequency and Cybersecurity Awareness

Variable	χ^2	df	p
Internet Usage $\times$ Cybersecurity Awareness	12.45	2	.002

Interpretation

The results show a **significant association** between frequency of internet usage and cybersecurity awareness, $\chi^2(2) = 12.45$, $p = .002$. Respondents who used the internet more frequently demonstrated higher levels of cybersecurity awareness compared to those with lower usage frequency. This suggests that regular exposure to digital environments may increase familiarity with cyber risks and safety measures.

Correlation Analysis
Pearson's correlation analysis was conducted to examine the relationship between **digital literacy** and **cybersecurity awareness** among respondents.

Table 5
Correlation Between Digital Literacy and Cybersecurity Awareness

Variables	1	2
1. Digital Literacy	—	
2. Cybersecurity Awareness	.62**	—

Note. p < .01. Pearson correlation coefficient (r).

Interpretation
The results reveal a **strong positive correlation** between digital literacy and cybersecurity awareness, $r = .62$, $p < .01$. This indicates that respondents with higher levels of digital literacy tend to exhibit greater awareness of cybersecurity threats and safe online practices. The finding suggests that improvements in digital literacy may be associated with increased cybersecurity awareness among individuals.

4. DISCUSSION

The present study examined the relationship between digital literacy and cybersecurity awareness among respondents in Varanasi using inferential statistical techniques, including Chi-square tests, t-tests/ANOVA, and correlation analysis. The findings collectively indicate that digital literacy plays a significant role in shaping individuals' awareness and understanding of cybersecurity issues.

The Chi-square analysis revealed a statistically significant association between digital literacy level and cybersecurity awareness. This result suggests that individuals with higher digital literacy are more likely to be aware of cyber threats and adopt safer online practices. A similar significant association was found between frequency of internet usage and cybersecurity awareness, indicating that increased exposure to digital platforms may enhance familiarity with cybersecurity risks. These findings align with previous research emphasizing that experience and competence in using digital technologies contribute to better cyber safety awareness.

The results of the t-test and one-way ANOVA further support the influence of demographic factors on cybersecurity awareness. The ANOVA results showed significant differences in awareness levels across education groups, with respondents possessing higher educational qualifications demonstrating greater cybersecurity awareness. This may be attributed to increased access to information, critical thinking skills, and formal exposure to digital learning environments among more educated individuals. Additionally, the t-test revealed a significant difference in cybersecurity awareness between male and female respondents, suggesting that gender-related differences in technology exposure or usage patterns may influence awareness levels.

Correlation analysis provided strong evidence of a positive relationship between digital literacy and cybersecurity awareness. The statistically significant correlation indicates that as digital literacy increases, cybersecurity awareness also tends to increase. This reinforces the findings of the Chi-square and group comparison analyses and highlights digital literacy as a key factor in promoting safe online behaviour. While correlation does not imply causation, the consistency of results across multiple statistical methods strengthens the reliability of this relationship.

Overall, the findings of this study underscore the importance of integrating digital literacy and cybersecurity education into academic curricula and community awareness programs. Enhancing digital literacy may serve as an effective strategy for improving cybersecurity awareness and reducing vulnerability to cyber threats. The results are particularly relevant for semi-urban and traditional cities like Varanasi, where rapid digital adoption is not always accompanied by adequate cybersecurity knowledge. Future research may explore longitudinal designs or intervention-based studies to better understand causal relationships and the long-term impact of digital literacy initiatives.

5. CONCLUSION

This study aimed to assess the level of cybersecurity awareness and digital literacy among respondents in Varanasi and to examine the relationship between these two important variables. Using quantitative methods and inferential statistical tools, the research provides meaningful insights into how digital competence influences individuals' ability to recognize and respond to cyber threats.

The findings reveal a significant association between digital literacy and cybersecurity awareness, as demonstrated by the Chi-square analysis. Group comparisons using t-tests and ANOVA further indicate that cybersecurity awareness varies across demographic factors such as education level and gender. Additionally, correlation analysis shows a strong positive relationship between digital literacy and cybersecurity awareness, suggesting that individuals with higher digital literacy tend to exhibit safer and more informed online behaviour.

These results highlight the growing need for structured digital literacy and cybersecurity education, particularly in regions experiencing rapid digital transformation. Incorporating cybersecurity awareness programs into educational institutions and community-based initiatives can help reduce vulnerability to cybercrime and promote responsible digital practices. Improving digital literacy may serve as a key strategy in strengthening overall cybersecurity preparedness.

In conclusion, the study emphasizes that digital literacy is not merely a technical skill but a critical component of cybersecurity awareness in the modern digital age. The findings contribute to existing literature and provide a foundation for policymakers, educators, and stakeholders to design effective interventions aimed at creating a safer digital environment. Future studies may expand the scope of research by including larger samples, diverse geographic regions, or longitudinal approaches to further validate and extend these findings.

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