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Analyzing the Impact of Digital Literacy and Security on DigiLocker Adoption in India

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Abstract
DigiLocker, which is one of the flagship initiatives under Digital India, is aimed at providing a platform for citizens to be able to store, access and authenticate official documents in a secure, paperless way. Despite all the transformation, adoption of DigiLocker has not been significant due to constraints like low digital literacy, security concerns, and usability issues. The study, therefore, seeks to investigate the level of awareness and use of DigiLocker among Indian citizens, barriers to its adoption, and provide recommendations to improve its use. A descriptive research design, which involved administering a structured questionnaire to 101 respondents drawn from a wide range of categories including students, employees, and professional groups, has been used in the study. While a good number of citizens know about DigiLocker, the study also shows that a sizable part of the populace does not use the technology on grounds like not trusting the platform, being unfamiliar with digital tools, as well as fear regarding data breach. T-tests and ANOVA statistical analysis established that user satisfaction differs significantly among registered users of DigiLocker and unregistered ones, with the former enjoying higher satisfaction levels. Satisfaction differed with the frequency of use at which the regular users expressed better experience while occasional users were not satisfied. Furthermore, a Chi-square test indicated that security concerns do not significantly determine use of DigiLocker for official verification, implying that other influencing factors could include digital competency and user experience. The study, therefore, recommends well-targeted digital literacy campaigns, strengthened cyber-security protocols, an even better user interface, and enhanced inter-linking with government and private sector services for better uptake. All these will allow DigiLocker to realize its potential as a key enabler of e-governance in making India more digitally empowered and inclusive.

Keywords:
DigiLocker, Digital Awareness, Technology Adoption, Citizen Empowerment, Cybersecurity, etc.

Introduction
The Government of India launched the Digital India program with an objective to enable e-governance, digital literacy, and technology-enabled services to make public administration more accessible and efficient. DigiLocker is one of the major programs under this initiative, which is a cloud platform that offers citizens a safe and paperless way to store, access, and authenticate important documents. DigiLocker is a digital locker for official documents like Aadhaar card, PAN card, driving license, educational certificates, vehicle registration certificates, and other government certificates. DigiLocker eliminates paperwork, bureaucratic delays, and the chances of loss or forgery of documents by facilitating easy document

verification and retrieval. It allows smooth digital transactions while at the same time ensuring environmental sustainability by eliminating the need for physical documents. Although it has its merits, the implementation of DigiLocker is patchy across various segments of the populace. While individuals from certain segments of society are actively utilizing the service for storing and accessing files, most others shy away or lack knowledge about it. The low rate of adoption can be traced to several factors such as low awareness, concerns for security, lack of digital literacy, and usability issues. Numerous people, especially those from rural or digitally illiterate communities, find it hard to use the platform or encounter challenges in associating their documents. Furthermore, privacy and security concerns deter some users from utilizing DigiLocker since they are afraid of data breaches or abuse of their information. Additionally, technical issues like document linking errors, authentication failures, and user interface complexities further discourage mass usage. The goal of this research is to analyze the level of awareness and use of DigiLocker among the citizens of India, the hurdles to adoption, and the dominant factors that govern its acceptance. Through the scrutiny of survey reports and qualitative judgments, the study attempts to conclude the most pivotal obstacles that restrict users from effectively utilizing DigiLocker. Some of these include lack of digital literacy campaigns, distrust in government digital services, and accessibility challenges. The study further identifies the most significant advantages of DigiLocker, including accelerated document retrieval, simplified authentication procedures, and lower paperwork. Recognizing these issues is important to policymakers, developers of technology, and government authorities seeking to enhance the reach and functionality of the platform. For increasing adoption, focused awareness programs, improved user interface, and better security measures need to be introduced. Digital literacy drives need to be focused especially on underrepresented segments, in a manner that citizens from various socio-economic levels can use the platform in confidence. In addition, introducing advanced security protocols, multi-factor authentication, and user education campaigns will lead to trust in DigiLocker's security infrastructure. This research adds to the larger discourse on e-governance and digital inclusion, underlining the importance of technology-enabled solutions being user-friendly, secure, and accessible. Through the identification and resolution of adoption impediments, this research offers insights into how DigiLocker can be maximized to fill the gap between technology and citizens. Strengthening the engagement of citizens with online governance portals is imperative for the long-term success of programs such as DigiLocker, eventually making India a more integrated, efficient, and digitally empowered nation.

Review of literature

Advanced Locker is a key aspect of the Digital India Program, leveraging cloud computing and mobile applications for rapid digital empowerment. It integrates into daily life, from retail to government, enhancing connectivity and data sharing. The paper also explores Digital India's nine pillars, its complexity, and transformation. (Kaur, H., & Kaur, U. 2019). Launched on 1st July 2015, the Digital India campaign aims to transform India into a digitally empowered society. A key initiative, Digital Locker, enables secure storage and sharing of electronic documents. A study assessing citizen awareness found concerns around security, confidentiality, and ease of use, highlighting challenges in adoption and implementation. (Rathore, S., & Panwar, A. 2020). DigiLocker, India's Digital Locker, enables users to store and share government-issued documents online. This study examines whether its usage depends on gender, school background, college location, course type, and study year. It also

analyses the types of documents students store, acceptance in undergraduate institutes, security perceptions, and ease of use. (Kaur, H., & Kaur, U. 2019). Digital Locker, linked to UID Aadhaar, allows citizens to store documents online. This study examines factors influencing its usefulness, including ease of use, social influence, service variety, and perceived risk. Data from 165 respondents revealed that ease of use and service variety strongly impact usefulness, while risk and social influence have less effect. (Bharati, J. S., & Garg, A. 2016). Advanced Locker, a key part of the Digital India Program, leverages cloud computing and mobile applications for rapid digital advancement. It integrates into daily life, enhancing data sharing across sectors. The paper also explores Digital India's nine pillars, its complexity, and transformation. (Pal, S. S. 2021). The government plans to link UIDAI with DigiLocker to promote a paperless economy, raising security concerns over data sharing and misuse. Managing and securing vast amounts of data is a challenge. This paper proposes a framework with authentication controls, ensuring document access is owner-verified, time-limited, and requires revalidation if expired. (Kumar, V., Chaturvedi, A., & Dave, M. 2018). The rise of digital systems has led to the development of digital lockers for secure document storage. Ensuring non-repudiation of services is a key security requirement. This paper presents a digital locker system that enhances confidentiality, integrity, and non-repudiation, along with other security features. (Deb, A., Dalal, S., & Das, M. L. 2018). DigiLocker, a key Digital India initiative, provides secure online storage for documents like passports, licenses, and certificates. This study examines the willingness and trust of young citizens in Chennai to use DigiLocker. Findings show strong trust in government services and high willingness to adopt DigiLocker, though awareness needs improvement. (Pravallika, M. I., & Nagalatha, A. S. 2023). Traditional lockers face issues like forgotten passwords, lost keys, and unused spaces. To solve this, we designed a Smart DigiLocker accessed via RFID-enabled ID cards. LED indicators show availability, while usage data is stored on the backend. Intruder alerts are sent via SMS and email, and a master card ensures access if an ID is lost. This cost-efficient system enhances security and convenience for all users. (Priya, S. S., Umamaheswari, R., Uma, S., & Ganesan, R. 2023). Digital technologies play a vital role in economic development. The Digital India program aims to enhance online infrastructure and empower the nation technologically, benefiting both users and service providers. DigiLocker, a secure digital document wallet, allows storage of documents like licenses, PAN cards, and voter IDs. This paper explores Digital India's nine pillars, key initiatives, and challenges, with a focus on DigiLocker's features, benefits, and limitations. (Kamath, S. 2021).

Methodology

This research employs a descriptive research design to evaluate the awareness and adoption of DigiLocker among Indian citizens. Data was collected using a structured questionnaire distributed via Google Forms to a diverse group of participants, including students, employees, and professionals. The survey covered key areas such as user awareness, registration status, frequency of use, perceived advantages and disadvantages, security concerns, and suggestions for improvement. To select the participants, convenience sampling was used, resulting in a sample size of 101 respondents. The data analysis was carried out using Jamovi, which helped conduct descriptive statistics, frequency distributions, and correlation analyses to identify trends in user behaviors. Visual representations of the data, such as bar and pie charts, were created to present the findings. Additionally, thematic analysis was applied to the qualitative responses, highlighting common challenges and recommendations for enhancing the platform's usability and effectiveness. This

comprehensive approach provides valuable, data-driven insights into DigiLocker's adoption trends and offers actionable suggestions for improving user engagement and addressing barriers to greater adoption.

Results

The results, also sometimes called the findings section, objectively report the data and findings of the study, presenting the outcomes of the research. The primary goal of the results section is to present the data collected during the research, answering the research question or testing hypotheses.

Hypothesis-I

H0: There is no mean difference in satisfaction scores between users who have registered for a DigiLocker account and those who have not.

H1: There is a mean difference in satisfaction scores between users who have registered for a DigiLocker account and those who have not.

Table 1. Independent Samples T-Test -Satisfaction Score

Test Type	Statistic	df	p-value	Mean Difference	SE Difference
Student's t	-4.52[a]	99.0	< .001	-0.947	0.210
Welch's t	-3.56	30.0	0.001	-0.947	0.266

[a] Levene's test is significant ($p < .05$), indicating unequal variances.

From the above table, since p (0.001) value is less than alpha (0.05), we reject the null Hypothesis. The analysis revealed a significant difference in satisfaction levels between users who registered for DigiLocker and those who did not ($p < 0.05$). Registered users reported higher satisfaction, suggesting that active engagement with the platform improves user experience. This indicates that increasing awareness and onboarding support could enhance user satisfaction.

Hypothesis-II

H0: There is no mean difference in satisfaction scores among users with different DigiLocker usage frequencies.

H1: There is a mean difference in satisfaction scores among users with different DigiLocker usage frequencies.

Table (2.A). One-Way ANOVA – Satisfaction Score Among Users' Usage Frequency

Test Type	F-value	df1	df2	p-value
Welch's ANOVA	4.68	3	13.0	0.020
Fisher's ANOVA	2.70	3	95	0.050

Table (2.B). Group Descriptives – Satisfaction Score by DigiLocker Usage Frequency

Usage Frequency	N	Mean	Standard Deviation (SD)	Standard Error (SE)
Daily	4	3.75	0.957	0.479
Monthly	23	3.91	0.596	0.124
Rarely	60	3.48	1.127	0.146
Weekly	12	4.25	0.452	0.131

From the above table and figure 1, since p (0.02) value is less than alpha (0.05), we reject the null Hypothesis. The results showed a significant difference in satisfaction scores among users with different DigiLocker usage frequencies ($p < 0.05$). Weekly users had the highest satisfaction, while those using it rarely reported the lowest scores. This suggests that frequent usage leads to better familiarity and a more positive experience, emphasizing the need for engagement strategies.

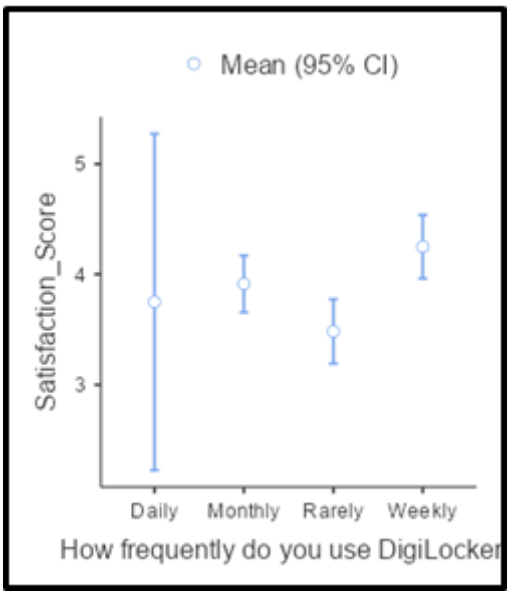

Figure 1. One-Way ANOVA: Satisfaction score among users' Usage frequency

Hypothesis-III

H0: There is no significant relationship between users' perception of DigiLocker security and whether they have used it for official verification.

H1: There is a significant relationship between users' perception of DigiLocker security and whether they have used it for official verification.

Table (3.A). Contingency Table – Security Concerns vs. Use of DigiLocker for Official Verification

Security Concern Response	Used DigiLocker for Official Services – No	Yes	Total
Maybe	17 (Obs) / 13.47 (Exp)	23 (Obs) / 26.53 (Exp)	40
No	3 (Obs) / 1.68 (Exp)	2 (Obs) / 3.32 (Exp)	5
Yes	14 (Obs) / 18.85 (Exp)	42 (Obs) / 37.15 (Exp)	56
Total	34 (Obs) / 34 (Exp)	67 (Obs) / 67 (Exp)	101

Table (3.B): χ^2 Test – Association Between Security Concerns and DigiLocker Usage

Test	Value	df	p-value	N
χ^2	4.83	2	0.089	101

In the above table, since the p value (0.089) is greater than alpha (0.05), we fail to reject the null hypothesis. There was no significant relationship between users' perception of DigiLocker security and their use of it for official verification ($p > 0.05$). This suggests that security concerns alone do not strongly influence whether users adopt DigiLocker for official purposes. To improve adoption, efforts should focus on increasing trust through education and transparent security measures.

Conclusion

DigiLocker, being one of the flagship programs under Digital India, can transform document management and e-governance by offering citizens a safe, paperless, and effective means of storing and authenticating official documents. Yet, with all its advantages, large-scale adoption is hampered by issues such as low digital literacy, security risks, ease of use, and unawareness. This research finds that although numerous citizens are familiar with DigiLocker, a large percentage do not use it because of trust problems, technology-related issues, and lack of exposure to digital platforms. Secondly, users who have successfully utilized it for official authentication express greater satisfaction, which proves that smooth user experience can foster wider usage. To fill the gap between people and digital government, specific digital literacy campaigns, better cybersecurity solutions, and accessibility are key. Streamlining the user interface, increasing support for multiple languages, and interlinking DigiLocker with critical government and private sector services can further stimulate participation. Finally, stakeholders such as the government, policymakers, and developers of technology must come together to develop increased trust, user-friendliness, and recognition. Once these issues are met, DigiLocker can act as an extremely useful instrument of digital change by enabling higher involvement of citizens in e-governance and making India a more inclusive, efficient, and digitally empowered country.

The sample size of 101 respondents, although diverse in terms of occupation and background, may not fully represent the entire Indian population, particularly those in rural or digitally marginalized communities. The research also depended mostly on self-reports, which are prone to biases. Subsequent research might investigate deeper qualitative approaches, like interviews or focus groups, for an empirically richer understanding of the motivations for the low DigiLocker adoption rate. Future research might also incorporate a larger and more representative sample to gauge the effect of individual demographic variables on DigiLocker usage. Investigating the effectiveness of government-run digital literacy campaigns and security enhancements might yield useful information on enhancing the platform's usability, trust, and accessibility. As DigiLocker develops, there is a need to track the evolution of users' attitudes and behavior over time, allowing the platform to become more responsive to the needs of a digitally empowered India.

Managerial implications

The findings have critical implications for public administrators, digital service providers, and policy formulators. Policymakers can design targeted awareness and literacy programs for rural and digitally challenged communities. Technology developers can improve user interfaces and multi-language support, enhancing accessibility and usability. Cybersecurity professionals should strengthen authentication and data protection mechanisms, thereby increasing user trust. Government departments can ensure deeper integration of DigiLocker with other digital services, making it a central tool for e-governance and public utilities.

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