Technology Adoption: Evidence from an E-Government Cloud Service

Kriti Priya Gupta
Professor, Symbiosis Centre for Management Studies, kriti.gupta@scmsnoida.ac.in

Symbiosis International University, Block A, Plot No. 47 and 48, Sector 62, NOIDA, U.P., India 201301

Abstract

This study investigates the effects of formal and informal external factors on citizens' intention to use DigiLocker, which is a government-backed cloud storage service (CSS). It also examines how trust in government moderates these effects. This research framework is grounded in institutional theory. The proposed model was validated by quantitative analysis of primary data collected through a survey in Delhi, the national capital region (NCR) of India.

The findings indicate that pressures can be divided into two categories — 1) formal (coercive pressure), and 2) informal (mimetic, and normative). Both significantly influence citizens' attitudes, which in turn influence their intention to use DigiLocker. Moreover, coercive pressure has been found to be the strongest influencer of citizens' attitudes. The moderating function of trust in the government has an ambiguous impact on different dimensions. That is, it is positive regarding the relationship between coercive pressures and citizens' attitudes. At the same time it negatively moderates the relationships between mimetic and normative pressures and citizens' attitudes. This study suggests that in order to effectively encourage the adoption of public CSSs, policymakers and service providers should consider the interplay of coercive, normative, and mimetic pressures along with trust.

Keywords: DigiLocker; cloud storage service; e-government; trust; institutional theory

Citation: Gupta K.P. (2025) Technology Adoption: Evidence from an E-Government Cloud Service. *Foresight and STI Governance*, 19(1), pp. 93–103. DOI: 10.17323/fstig.2025.24832

Introduction

Government-led technological advancements greatly enhance citizens' lives by making essential services more accessible, simplifying administrative processes, and increasing governmental transparency. The introduction of new technologies helps nations to stay internationally competitive. Among these tools are cloud storage services (CSSs) such as Google Drive, OneDrive, or Dropbox. One notable example here is "DigiLocker" - a digital document storage and sharing service provided by the Indian government. Unlike other CSSs, DigiLocker specializes in securely storing and providing access to the digital copies of the official government-issued documents and certificates (such as Aadhaar cards, driver's licenses, educational certificates, and property documents), thereby simplifying interactions between citizens and government agencies. DigiLocker enables citizens to conveniently access their official documents through a secure cloud platform, leading to enhanced transparency and accountability in governmental processes. By centralizing and digitizing official records, DigiLocker empowers citizens to monitor government activities and hold public officials accountable. It signifies a transformative shift in governance, promoting deeper citizen engagement, transparency, and inclusivity.

Currently, DigiLocker has around 387.16 million registered users, 1,640 issuers, and around 2,002 requesters.[1] However, it has not been widely adopted beyond tech-savvy individuals (including students and professionals). Recent research has extensively examined the challenges related to the adoption, continued use, and post-adoption use of various CSSs developed by private firms like Dropbox, OneDrive, Google Drive, and iCloud.[2] However, limited information is available regarding users' acceptance of DigiLocker, which is an e-government service (Sivathanu, 2018; Rathore, Panwar, 2020). Though previous studies have adequately discussed the design features of DigiLocker (Bakshi, Nandi, 2020; Babrekar et al., 2021), and utilities of DigiLocker (Meenakshi et al., 2023), there is a lack of comprehensive quantitative studies that aim to understand the factors influencing its adoption (Sivathanu, 2018).

The literature suggests that individuals' behaviors and attitudes toward accepting new technologies and services are often shaped by their social environment (Al-Saleh, Thakur, 2019). Nonetheless, few studies have analyzed the impact of social forces or institutional aspects on user acceptance of CSSs. While some have examined the role of informal memetic pressures like peer influence (Alsmadi, Prybutok, 2018), and normative pressures such as social influence (Yue, 2013; Yang, Lin, 2015), the role of formal institutional influences such as coercive pressures, has been overlooked. Prior studies have called for empirical examination of the roles of both formal and informal institutional factors on users' behavior toward CCSs (Ghaffari, Lagzian, 2018).

Considering the aforementioned gaps in the literature, the present study attempts to investigate the institutional factors that influence users' intention to use the DigiLocker service. Being an e-government service, DigiLocker is subject to specific regulatory frameworks, policies, and institutional structures, making its case unique compared to other CSSs that operate in the private sector. Therefore, trust in the government can plays a crucial role in shaping how citizens perceive and respond to institutional pressures. Hence, drawing upon the institutional theory, the study attempts to answer the following research questions:

RQ1: How do institutional pressures (i.e., coercive, memetic and normative pressures) influence citizens' behavior toward using DigiLocker?

RQ2: Does trust in the government moderate the effects of institutional pressures on citizens' attitudes toward DigiLocker? If yes, how?

This study provides an understanding of the institutional influences the driving adoption of DigiLocker. The findings of the study will enable policymakers and stakeholders to develop targeted strategies that foster the widespread acceptance and utilization of CSSs such as DigiLocker.

Literature Review

Global Comparison of e-Governance Systems

The main emphasis of India's digital interactions between citizens and the government is on scale and availability, which is mainly driven by initiatives such as DigiLocker and Aadhaar. Compared to other countries, India's approach is remarkable because of its ability to cater to a vast and diverse population. However, there are certain areas, where other countries have excelled. For example, the X-Road platform and e-Residency program in Estonia provide seamless and secure citizen services by using an integrated system of digital identity (Hardy, 2023). This enables the efficient exchange of information and a very user-friendly environment, thereby making Estonia a model in e-governance. Similarly, Singapore has one of the most advanced e-governance models globally. Through its

[1] https://www.digilocker.gov.in/statistics (accessed 08.11.2024). Registered users are individuals (citizens) who sign up for DigiLocker to store and access their digital documents securely. Issuers are organizations or institutions that generate and provide digital documents to users through DigiLocker (such as government departments, universities issuing digital certificates or transcripts). Requesters include entities that access or verify users' documents through DigiLocker (such as banks verifying identity or income documents for opening accounts or processing loans.

[2] Most of the previous studies have examined the adoption of CSSs from technological perspectives such as users' expectations of usefulness and ease of use of CSSs (Cao et al., 2013; Oredo, 2020), service and system quality (Burda, Teuteberg, 2015; Burda, Teuteberg, 2016; Chen et al., 2024), concerns related to risk, security, privacy (Alsmadi, Prybutok, 2018), and synchronization and backup issues (Hui et al., 2023).

Smart Nation initiative and SingPass digital identity system, it provides over 400 government services, with a strong emphasis on improving the daily lives of its citizens (Hoe, 2018). South Korea has also developed a strong e-Government system and runs an efficient Hometax service that grants transparent access to public services (Sung, Lee, 2024). China has a different approach where it utilizes its Social Credit System in conjunction with digital services provided by platforms such as AliPay and WeChat (Li, 2021). However, this model raises significant privacy concerns due to its surveillance aspects, making it distinct from the more democratic and privacy-focused approaches seen in India, Estonia, and Singapore. While India has made substantial progress in making digital services accessible to a broad population, the levels of integration, security, and user-friendliness are much higher in countries such as Estonia and Singapore. Therefore, some lessons could be learned regarding how India's framework of digital governance needs to be strengthened further.

The DigiLocker Service

DigiLocker was officially launched by the Indian Department of Communications and Information Technology (DietY) in July 2015. Since its launch as part of the Digital India initiative, DigiLocker has changed a lot in what it does and in its coverage. It has come a long way since its inception, particularly in terms of security, accessibility, and service integration. In the first place, DigiLocker was thought up as a very secure cloud-based system to store and share documents. However, today it has become one of the fundamental tools used for India's digital governance. Over time, various government services and organizations have integrated DigiLocker into their systems. Some of the key organizations linked with DigiLocker include the Ministry of Road Transport and Highways for driving licenses and vehicle registration certificates, the Ministry of Human Resource Development for educational certificates, the Income Tax Department for income tax returns, and various state departments for land records and other documents. This integration ensures the authenticity and legality of the documents stored in DigiLocker, enhancing trust and reliability in the digital ecosystem. This also allows citizens to access their documents directly from issuing authorities.

In the course of its growth process, DigiLocker has undergone significant changes and improvements. In order to protect user information, enhanced security mechanisms such as two-factor authentication, have been implemented. Further, there has been a steady increase in the acceptance of DigiLocker-issued documents across different organizations such as schools, banks, and government departments. The mobile application of DigiLocker has also been updated by adding features like offline access to documents, thereby improving user accessibility and experience. Additionally, DigiLocker's seamless integration with Aadhaar identity cards has streamlined the process of accessing and auto-fetching documents, making it more convenient for citizens. Currently, it provides a dedicated 10MB free personal storage space, which is linked to the citizen's Aadhaar number (Rathore, Panwar, 2020). Citizens can utilize this space for storing, accessing, and sharing various official documents and certificates (such as Aadhaar cards, driving licenses, vehicle registration certificates, and educational certificates).

DigiLocker has a bright future, with numerous opportunities for technological advancements. The emerging technologies such as blockchain and artificial intelligence (AI) can be incorporated into DigiLocker to further enhance the security and authenticity of the documents stored on the platform (Chavan, Rajeswari, 2019). The integration of AI can improve document management, retrieval, and validation, thereby making the service even more efficient. The services offered by DigiLocker can also be expanded by integrating with private sector entities, such as banks, insurance companies, and healthcare providers. Moreover, there is also potential for international recognition of DigiLocker documents, which can benefit the Indian expatriates.

Despite the advancements and future prospects mentioned above, there are certain areas within DigiLocker, that need to be addressed. For example, increased user awareness regarding the full potential of this service is required since many citizens are still unaware of its capabilities and do not fully understand what it can do. Other than this, some users experience connectivity and interoperability issues while trying to access DigiLocker services through non-governmental entities. This calls for improvement in these areas for the successful diffusion of this service. Moreover, the digital divide among Indian citizens, particularly in rural areas where internet access is limited, poses a significant challenge to the widespread adoption of DigiLocker.

Prior Studies on the Adoption of DigiLocker

Very few studies have explored the users' attitudes toward accepting DigiLocker. For example, Sivathanu (2018) investigated the citizen's perspectives on adopting DigiLocker by integrating the Unified Theory of Acceptance and Use of Technology (UTAUT) with the e-Government adoption model (eGAM). The author found that the behavioral intention to use DigiLocker is determined by various factors such as performance expectancy, effort expectancy, social influence, facilitating conditions, computer self-efficacy, as well as perceptions of trust, awareness, and information quality. Rathore and Panwar (2020) found that users' intention to use DigiLocker is determined by users' personal innovativeness, as well as the ease of use and usefulness of the service. In an attempt to explore the barriers to the adoption of e-governance initiatives by the Indian youth, Narang et al. (2021) concluded that lack

of computer knowledge, fear of fraud, and resistance to change are the major factors that restrict the implementation of e-services such as DigiLocker.

Prior studies have examined the adoption of DigiLocker by considering technological factors and users' personal characteristics and concerns. However, the roles of formal and informal external factors in influencing citizens to use DigiLocker have not been adequately addressed in the literature.

Emerging Trends in Technology Adoption

Contemporary research on technology acceptance is shaped by various frameworks that address distinct aspects of the technology adoption process. Some of the notable frameworks that have been recently emerged are the Human-Organization-Technology Fit (HOT Fit) Model (Xu, Lu, 2022), which examines the alignment of human, organizational, and technological dimensions to understand adoption heterogeneity; the Ethical Governance Framework (Xue, Pang, 2022), which highlights the role of ethical considerations such as fairness, transparency, and trust in driving technology acceptance; the Cognitive Model for Technology Adoption (Sobhanmanesh et al., 2023), which emphasizes the importance of cognitive processes and user-centric design to reduce barriers to adoption; and the Socio-Technical Systems Approach (Lombardo et al., 2021), which integrates social and technical factors to ensure the joint optimization of social systems and technical systems.

While these models provide valuable insights into specific drivers of technology adoption, they are often limited in their applicability to broader systemic influences. For instance, the HOT Fit Model focuses on the interaction of individual, organizational, and technological factors but does not account for external institutional pressures (Xu, Lu, 2022). Similarly, the Ethical Governance Framework is instrumental in ensuring trust and ethical compliance but does not explore how societal norms or regulatory mandates influence adoption (Xue, Pang, 2022). The Cognitive Model and the Socio-Technical Systems Approach address usability and socio-technical integration but lack a systemic view of institutional dynamics (Sobhanmanesh et al., 2023; Lombardo et al., 2021). Hence, while these frameworks offer insights into specific adoption drivers, they are either limited to micro-level dynamics or require a localized focus, making them less effective in addressing systemic, institution-driven influences like those present in the adoption of DigiLocker.

Institutional Theory

Institutional theory is a prominent framework for analyzing the processes by which social behavior is regulated within institutional environments (DiMaggio, Powell, 1983). It provides insights into how institutions influence individuals' attitudes, beliefs, and behavior, such as information system adoption (Teo et al., 2003). According to Scott (2004), institutions are defined as "social structures that have attained a high degree of resilience". Institutional theory posits that the attitudes and behaviors of individuals are guided by institutions that comprise systems of established and prevalent rules, norms, and structures (DiMaggio, Powell, 1983). Institutions can be formal, such as laws and regulations, or informal, such as customs and traditions. The theory holds that individuals experience institutional pressures to adhere to commonly accepted forms and behaviors because they think that deviating from those behaviors might undermine their legitimacy, which in turn could impact their ability to obtain resources and social support (DiMaggio, Powell, 1983). The theory identifies three types of isomorphic pressures: formal/informal coercive pressures that arise from regulations and laws imposed by authoritative bodies; informal mimetic pressures that stem from the tendency to imitate successful people; and informal normative pressures that come from societal norms (DiMaggio, Powell,1983). Although institutional theory has been widely applied within the organizational contexts (Zheng et al., 2013), it is applicable at individual levels as well (Scott, 2004). Prior studies have employed institutional theory to examine individuals' technology adoption behavior in the contexts of internet banking (Shi et al., 2008), health (Bozan et al., 2015), and education (Gao, Yang, 2015).

Since the institutional theory accounts for both formal and informal pressures that influence individual behavior, we find it suitable for our study. It can help explain how government mandates (coercive pressures), adoption by influential peers and organizations (mimetic pressures), and societal expectations (normative pressures) collectively shape citizens' attitudes and intentions toward using new technologies, in our case, DigiLocker.

Development of Hypotheses

Attitude and Intention to Use

Attitude represents an individual's feelings toward using a specific technology or service (Aizen, 2011). Intention to use refers to an individual's plan to engage in a particular behavior (Davis, 1989). In the present study, attitude indicates citizens' overall assessment of using DigiLocker as a digital platform for storing and accessing their documents; and intention to use represents their willingness to engage with DigiLocker in the near future. Attitude has been observed as a significant determinant of intention in various theoretical models, such as the Theory of Planned Behaviour (TPB; Aizen, 2011), the Theory of Reasoned Action (TRA; Fishbein, Ajzen, 1975), and the Technology Acceptance Model (TAM) (Davis, 1989). It is a common observation in the literature that individuals' behaviors are motivated by their attitudes (Shi et al., 2008). Prior studies suggests that the relationship between these two variables is crucial for understanding and predicting citizens' adoption of e-government services

(Azamela et al., 2022). Prior studies also demonstrate that attitude significantly influences individuals' intention to use cloud-based services for storing personal documents (Garrison et al., 2018; Arpaci, 2019).

In the context of the present study, a positive attitude toward DigiLocker is likely to lead to a higher intention to use it for document storage and retrieval. Hence, we propose that:

H1: Citizens' attitudes have a significant positive influence on their intention to use DigiLocker

Coercive Pressures

Coercive pressures refer to the influence exerted on individuals to adopt certain practices or behaviors due to formal or informal regulations imposed by powerful external entities (Shi et al., 2008). The literature suggests that coercive pressures may stem from various sources such as governments, regulatory bodies, or other authoritative institutions (Anderson, Jakobsen 2018). This pressure arises from the need to comply with the standards set by governing bodies, rather than from the voluntary choice of individuals (Vos, Voets, 2022). Ramirez-Madrid et al. (2022) demonstrated that coercive pressure from the government is an important predictor of citizens' adoption of e-government services. Governments use coercive pressure in the form of appropriate legal frameworks, laws, and regulations to encourage citizens to embrace e-government services (Al-Mamari et al., 2013).

The Indian government is enforcing the use of DigiLocker for accessing certain public services such as passport services[3] and road transport services[4], as well as issuing educational certificates[5]. Such mandates create a coercive pressure on citizens to use DigiLocker. Hence, we hypothesize that:

H2: Coercive pressures have a significant positive influence on citizens' attitudes toward DigiLocker

Normative Pressures

Normative pressures arise from the norms and expectations of one's professional associations, social groups, and society at large (Maity et al., 2019). These pressures occur when individuals voluntarily, but unconsciously, follow the behaviors and practices of other people. Institutional theory suggests that individuals are more likely to adopt a certain behavior if it has been adopted by a large number of others (DiMaggio, Powell, 1983). Normative pressures compel individuals to conform to accepted standards and practices to gain legitimacy within their social and professional circles (Shi et al., 2008). Prior research has demonstrated that individuals' attitudes toward adopting e-government services are determined by various normative pressures such as subjective norms (Hujran et al., 2020; Azamela et al., 2022) and the social influence of family members and peers (Camilleri, 2019).

India's push toward digital literacy and modernization through initiatives like Digital India creates a societal expectation for citizens to adopt digital technologies and services. Such normative pressures can foster positive attitudes in citizens toward DigiLocker. Hence, we posit that:

H3: Normative pressures have a significant positive influence on citizens' attitude toward DigiLocker

Mimetic Pressures

Mimetic pressures refer to the influence exerted on individuals keen to imitate the behaviors and practices of other successful and high-status individuals (DiMaggio, Powell, 1983). These pressures force individuals to voluntarily and consciously copy successful people because of the belief that the practices followed by those successful people are more likely to be correct and less risky (Teo et al., 2003). Individuals tend to mimic the practices of those who are perceived as successful, popular or respected, in order to achieve similar success and improve their self-image (Zheng et al., 2013). Prior studies have demonstrated the significant influence of mimetic pressures on individuals' adoption of technologies in the context of mobile banking (Abayomi et al. 2020), mobile technologies (Chen, Wong, 2003), and educational technologies (Gupta, Maurya, 2022).

When citizens observe the successful adoption of DigiLocker by influential people in society, they will perceive it as a safe and effective service. Therefore, citizens driven by mimetic pressures will develop positive attitude towards DigiLocker. Hence, we propose that:

H4: Mimetic pressures have a significant positive influence on citizens' attitude toward DigiLocker

Moderating Effects of Trust in the Government

CSSs are subject to various risks such as data breaches, unauthorized access, and data loss (Cheng et al., 2019). Users of CSSs are often concerned with the privacy and security of their data (Yue, 2013). Therefore, trust is a vital key for generating a positive attitude in users toward CSSs (Burda, Teuteberg, 2016). In the context of DigiLocker, the role of trust is even more important, as DigiLocker is integrated with various government departments, and citizens do not have other alternatives serving the same purpose. Therefore, building citizen trust is a key factor for the successful implementation of DigiLocker (Narang et al., 2021).

Prior studies suggest that trust moderates the effects of social pressures on individuals' behavioural outcomes (Ng et al., 2020). Higher trust levels reduce ambigu-

[3] https://www.thehindu.com/news/cities/Madurai/passport-applicants-must-upload-documents-on-digilocker/article67147197.ece, accessed 19.10.2024.

[4] https://parivahan.gov.in/parivahan/sites/default/files/NOTIFICATION%26ADVISORY/08-08-2018.pdf, accessed 19.10.2024.

[5] https://www.cbse.gov.in/cbsenew/documents/Circular_for_access_code_Digilocker_Final_04052024.pdf, accessed 19.10.2024.

ity about others' actions and hence result in positive attitudes. Previous studies have identified trust to be one of the crucial enablers of citizens' positive behavior toward e-government services (Alzahrani et al., 2017), and have called for examining the moderating effect of trust in government in assessing e-government initiatives (Teo et al., 2008). Citizens' trust in the government can significantly influence how they perceive and respond to institutional pressures regarding the adoption of DigiLocker. It can act as a buffer against institutional pressures. Citizens with a high trust in the government are more likely to view institutional influences as beneficial endorsements rather than forced pressures. Such perception can lead to a more positive attitude toward using DigiLocker. Hence, we propose the following hypotheses:

Trust in the government significantly moderates the effect of coercive (H5), normative (H6), and mimetic (H7) pressures on citizens' attitudes toward DigiLocker.

Methodology

Measures

There are six latent constructs in our proposed model, namely, coercive pressure (CP), normative pressure (NP), mimetic pressure (MP), trust in government (TG), attitude (AT), and intention to use (IN). All the constructs were measured using validated scales available in previous studies. Specifically, the items for CP were adapted from Klöcker et al. (2014); the items for NP, MP, and AT were adapted from Shi et al. (2008); items for TG were adapted from Belanger and Carter (2008); and the items for IN were adapted from Alharbi et al. (2017). Small modifications were implemented for some of the items to fit the present research context. All items were measured using five-point Likert scale, which ranged from 1 = "strongly disagree" to 5 = "strongly agree".

Table 1. **Sample Profile**

Categories	Response (%)
Gender	
Female	38.5
Male	61.5
Age	
18-29 years	25.7
30-39 years	26.0
40-49 years	27.0
50-59 years	14.9
60 years and above	6.4
Education	
Primary or secondary level	29.7
Under-graduate	36.1
Post-graduate or above	26.7
Other	7.4

Source: author.

Sample and Data Collection

We conducted a survey in to collect the primary data using a structured questionnaire. Individuals who have used DigiLocker during the previous year were considered the target respondents for the survey. The convenience sampling technique was used to select the respondents. Both online as well as offline methods were used to collect the data. For online method, the questionnaires were sent to 300 respondents via email or social media, out of which 214 questionnaires were returned. For offline method, paper questionnaires were distributed to 150 respondents, out of which 102 questionnaires were returned. After removing the incomplete or unviable responses, 296 questionnaires were considered to be valid. Table 1 displays the demographic information of the respondents.

Results

The primary data were analyzed using the Partial Least Squares-Structural Equation Modeling (PLS-SEM) technique. First, the measurement model was evaluated to assess the reliability and validity of model constructs. Thereafter, the structural model was assessed to test the proposed hypotheses.

Measurement Model

Table 2 indicates the results of the reliability and convergent validity of the constructs. As can be noted from the table, all the items loaded significantly ($p<0.001$) to their respective constructs, and the item loadings were greater than 0.5, which indicated adequate convergent validity (Hair et al., 2012). Moreover, the values of average variance extracted (AVE) for all the constructs were greater than 0.5 which further ensured the convergent validity (Fornell, Larcker, 1981).

The constructs exhibited sufficient reliability as the values of Cronbach's alpha as well as composite reliability (see Table 2) were greater than the recommended threshold of 0.7 (Hair et al., 2012).

To assess the discriminant validity, we used two approaches: 1) the Fornell and Larcker (1981) criterion which states that the square root of the AVE of each construct should be greater than other inter-construct correlations; and 2) heterotrait–monotrait (HTMT) criterion (Henseler et al., 2015), which states that the HTMT ratios should be less than 0.85. Table 3a shows the inter-construct correlations with square roots of AVE at the diagonal, and Table 3b shows the HTMT ratios. As can be observed from Tables 3a and 3b, discriminant validity was satisfied according to both criteria.

Structural Model

The hypotheses were tested by analyzing the structural model. In line with the prior studies (Shi et al., 2008),

Table 2. **Reliability and Convergent Validity**

a) Item loadings

Construct	Item	Loadings
Coercive pressure	CP1	0.911***
	CP2	0.911***
	CP3	0.907***
Normative pressure	NP1	0.928***
	NP2	0.920***
	NP3	0.936***
Memetic pressure	MP1	0.944***
	MP2	0.908***
	MP3	0.871***
Trust in government	TG1	0.849***
	TG2	0.931***
	TG3	0.896***
	TG4	0.859***
Attitude	AT1	0.945***
	AT2	0.908***
	AT3	0.885***
	AT4	0.930***
Intention	IN1	0.897***
	IN2	0.909***
	IN3	0.877***

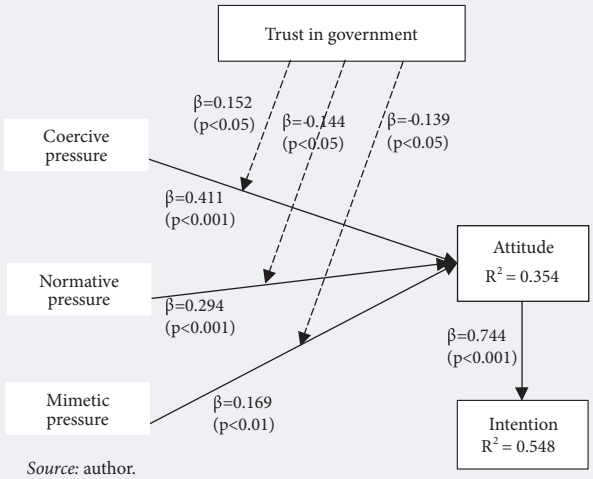
Note: *** p<0.001.

b) Cronbach's alpha, Composite reliability and Average variance extracted values

Construct	Cronbach's alpha	Composite reliability	Average variance extracted
Coercive pressure	0.896	0.901	0.827
Normative pressure	0.919	0.925	0.861
Memetic pressure	0.893	0.901	0.825
Trust in government	0.909	0.979	0.782
Attitude	0.937	0.938	0.841
Intention	0.875	0.877	0.8

Source: author.

Figure 1. **Structural Model**



Source: author.

we included gender and age as the control variables in our model. Figure 1 shows the results of hypothesis testing. The results indicate that AT has a significant positive influence on IN (b=0.744, p<0.001); and CP (b=0.411, p<0.001), NP (b=0.294, p<0.001) and MP (b=0.169, p<0.01) have significant positive influences on AT. Thus, the hypotheses H1, H2, H3, and H4 were supported. With regard to the hypotheses concerning the moderating effects of TG, the results indicate that TG has a significant positive moderating effect in the relationship between CP and AT (b=0.152, p<0.05); but negative moderating effects in the relationships between NP and AT (b=-0.144, p<0.05), and MP and AT (b=-0.139, p<0.05). Hence the hypotheses H5, H6, and H7 were supported. Regarding the control variables, the effects of both gender and age were found to be insignificant (b=0.036 and 0.031 respectively). Overall, the model explained 35.4% variation in AT and 54.8% variation in IN.

Discussion and Conclusion

This study examined the role of institutional pressures in shaping citizens' attitude and intention toward using DigiLocker. The findings suggest that all three institutional pressures, coercive, normative, and mimetic, significantly influence citizens' attitudes, which, in turn, has a significant influence on their intention to use DigiLocker. Our finding regarding the positive influence of attitude on intention to use, is in line with the prior studies on CSSs (Garrison et al., 2018; Arpaci, 2019). It indicates that when citizens perceive DigiLocker positively, considering it beneficial for them, they are more likely to use it.

The positive influence of all three types of institutional pressures on attitudes toward DigiLocker highlight the importance of both formal as well as informal social forces in shaping citizens' attitudes. While coercive pressures build a positive attitude through formal regulations, normative and mimetic pressures foster positive attitudes through social norms and the imitation of successful practices. Our findings regarding the significant influence of informal normative and mimetic pressures are in line with prior studies, which indicate that social influence is an important determinant in e-government contexts (Azamela et al., 2022), as well as in the context of cloud computing (Alsmadi, Prybutok, 2018) and other CSSs such as Dropbox (Yamin, Ishak, 2015). Further, our findings suggest that coercive pressure has the strongest influence (b=0.411) on citizens' attitudes toward using DigiLocker as compared to normative and mimetic pressures. This finding highlights the importance of coercive pressure, which stems from formal mandates and regulations imposed by the government. Such regulations leave little room for non-compliance (Ali, Osmanaj, 2020). When the government mandates the use of DigiLocker for accessing and managing educational certificates and official documents, citizens are compelled to use it. Coercive pressure ties the use of DigiLocker to essential

Table 3. **Discriminant Validity**

a) Fornell and Larcker criterion

	AT	IN	CP	MP	NP	TG
AT	**0.917**					
IN	0.739	**0.894**				
CP	0.437	0.442	**0.91**			
MP	0.279	0.271	0.194	**0.908**		
NP	0.288	0.239	0.102	-0.084	**0.928**	
TG	0.167	0.167	0.126	0.246	0.048	**0.884**

b) HTMT criterion

	AT	IN	CP	MP	NP	TG
AT						
IN	0.816					
CP	0.474	0.496				
MP	0.303	0.308	0.218			
NP	0.310	0.264	0.114	0.095		
TG	0.170	0.181	0.129	0.285	0.072	

Source: author.

services that citizens need to access regularly, such as healthcare records, educational certificates, and identity verification (Rathore, Panwar, 2020). Such practical necessities ensure that citizens develop a positive attitude toward DigiLocker by considering it a valuable tool for digitally managing their documents and certificates. Our finding is line with prior studies, which underscore the importance of regulatory measures in driving the adoption of digital services (Shi et al., 2008; Alhajjaj, Ahmad, 2022).

Our findings further indicate that trust in the government strengthens the effect of coercive pressure on attitude. This implies that trust acts as a catalyst that enhances the effectiveness of coercive measures. When citizens trust the government, they believe that the government's mandates are legitimate and in their best interest, which fosters a favorable attitude toward government-backed services (Carter, Bélanger, 2005), such as DigiLocker. Trust in the government also reduces citizens' resistance toward government-imposed mandates. Citizens who trust the government are less likely to question the necessity of these mandates, leading to positive attitudes and higher acceptance of government initiatives (Teo et al., 2008). On the other hand, our results indicate that trust in the government negatively moderates the relationships between normative pressure and attitudes as well as mimetic pressures and attitudes. This implies that citizens' trust in the government can override the influence of informal social pressures on their attitude. High trust in the government reduces citizens' reliance on societal norms and others' behaviors to form their attitudes. When citizens trust the government, they do not need to look to others for using government's digital initiatives, such as DigiLocker. They form their attitudes on the basis of the government's guidance rather than social imitation or norms.

Implications

This study extends institutional theory by incorporating the moderating role of trust in the government, to explore the adoption of a government-initiated cloud storage service, i.e., DigiLocker. It contributes to the literature on the adoption of cloud storage services by identifying how institutional pressures shape users' attitudes. This study also demonstrates the relevance of institutional theory in the context of e-government adoption by highlighting how formal and informal external influences shape citizen attitudes and behaviors. By demonstrating the dominant role of coercive pressure, the study contributes to the understanding of how formal and authoritative directives can significantly influence citizens' behavior toward using e-government services. Finally, the study contributes to the literature by considering trust in the government as a moderator. The study demonstrates that trust is a critical factor that can either enhance or weaken the influence of institutional pressures, thereby providing deeper insights into the dynamics of trust and its role in the adoption of technologies, in this case, cloud storage systems as well as e-government services.

The findings of this study offer practical insights for the government and policymakers to design targeted interventions for accelerating the use of DigiLocker. Considering the important role of coercive pressure, government should clearly communicate the regulations regarding the use of DigiLocker. Regular updates and reminders about the benefits of using DigiLocker can be disseminated through official channels and public campaigns. For citizens with high trust in the government, these coercive pressures will more effectively translate into positive attitudes and higher adoption rates. The government should focus on increasing transparency in the implementation of DigiLocker by providing clear information about data security, privacy measures, and government intentions. For example, the government can engage citizens in dialogues to address their concerns and build trust. Considering the significant role of normative pressure, the government can partner with educational institutions, professional organizations, community leaders, and social influencers to endorse DigiLocker amongst citizens. For citizens with lower trust in the government, emphasizing the use of DigiLocker through normative influences, can mitigate the negative moderating effect of trust. Finally, considering the significant influence of mimetic pressure, government can run marketing campaigns that feature testimonials of successful people using DigiLocker. The government can also organize workshops, seminars, and community events to demonstrate DigiLocker's benefits and usage.

Though the present study has been conducted within the context of an Indian cloud storage service, i.e., Di-

giLocker, our findings present practical implications for global service providers of cloud storage services. The service providers should ensure that their services comply with the relevant regulations and standards, such as data protection laws and security protocols (coercive influence). They should regularly update their users about compliance with legal standards and any regulatory changes. They should position cloud storage as a socially responsible and modern solution for data management (normative influence). They can design marketing campaigns that highlight the environmental benefits of cloud storage such as saving paper and reducing physical storage needs. Finally, they can feature the testimonials of prominent individuals and organizations (who have successfully used their cloud storage services) in their promotional materials and advertisements (mimetic influence). They can create a supportive environment for their users through user forums and online communities, where users can share experiences, tips, and best practices for utilizing their cloud storage services.

Limitations and the Future Scope of the Study

The present study has a few limitations. First, the sample used in this study has been selected from only one region in India i.e., Delhi. It may not fully represent the diverse population of India, restricting the generalizability of the findings. Second, the study has employed a cross-sectional design, which limits the ability to infer causality between institutional pressures, attitudes, and use intentions. Longitudinal studies should be conducted in future to establish causal relationships and observe changes over time. Third, the present study has examined the citizens' use intentions from an institutional theory perspective. Future studies could include technological (such as perceived usefulness, ease of use, complexity, compatibility) and personal factors (such as innovativeness, self-efficacy, resistance to change) to provide a holistic understanding of the citizens' behavior toward using DigiLocker. Lastly, this study has examined the adoption of DigiLocker, which is a specific e-government service. This service may have unique characteristics that are not applicable to other types of cloud storage systems or e-government services. Therefore, future studies should test the proposed model in the contexts of other cloud storage services in order to validate the findings. The presented cases could be useful for other nations, which can potentially adopt such services to enhance their own governance systems.

References

Abayomi O.J., Zhang X., Peng X., Zhao S. (2020) How do institutional pressures and behavioral intentions affect mobile services adoption? The moderating role of perceived risk. *ACM SIGMIS Database: The DATABASE for Advances in Information Systems*, 51(2), 82–100. http://dx.doi.org/10.1145/3400043.3400049

Ajzen I. (2011) The theory of planned behaviour: Reactions and reflections. *Psychology & Health*, 26(9), 1113–1127. https://doi.org/10.1080/08870446.2011.613995

Alhajjaj H., Ahmad A. (2022) Drivers of the Consumers Adoption of FinTech Services. *Interdisciplinary Journal of Information, Knowledge & Management*, 17, 259–285. https://doi.org/10.28945/4971

Alharbi N., Papadaki M., Dowland P. (2017) The impact of security and its antecedents in behaviour intention of using e-government services. *Behaviour & Information Technology*, 36(6), 620–636. https://doi.org/10.1080/0144929X.2016.1269198

Ali O., Osmanaj V. (2020) The role of government regulations in the adoption of cloud computing: A case study of local government. *Computer Law & Security Review*, 36, 105396. https://doi.org/10.1016/j.clsr.2020.105396

Al-Mamari Q., Corbitt B., Oyaro Gekara V. (2013) E-government adoption in Oman: motivating factors from a government perspective. *Transforming Government: People, Process and Policy*, 7(2), 199–224. https://doi.org/10.1108/17506161311325369

AlSaleh D., Thakur R. (2019) Impact of cognition, affect, and social factors on technology adoption. *International Journal of Technology Marketing*, 13(2), 178–200. https://doi.org/10.1504/IJTMKT.2019.102266

Alsmadi D., Prybutok V. (2018) Sharing and storage behavior via cloud computing: Security and privacy in research and practice. *Computers in Human Behavior*, 85, 218–226. https://doi.org/10.1016/j.chb.2018.04.003

Alzahrani L., Al-Karaghouli W., Weerakkody V. (2017) Analysing the critical factors influencing trust in e-government adoption from citizens' perspective: A systematic review and a conceptual framework. *International Business Review*, 26(1), 164–175. https://doi.org/10.1016/j.ibusrev.2016.06.004

Andersen S.C., Jakobsen M.L. (2018) Political pressure, conformity pressure, and performance information as drivers of public sector innovation adoption. *International Public Management Journal*, 21(2), 213–242. https://doi.org/10.1080/10967494.2018.1425227

Arpaci I. (2019) A hybrid modeling approach for predicting the educational use of mobile cloud computing services in higher education. *Computers in Human Behavior*, 90, 181–187. https://doi.org/10.1016/j.chb.2018.09.005

Azamela J.C., Tang Z., Ackah O., Awozum S. (2022) Assessing the antecedents of e-government adoption: A case of the Ghanaian public sector. *Sage Open*, 12(2), 21582440221101040. https://doi.org/10.1177/21582440221101040

Babrekar D., Patel D., Patkar S., Lobo V.B. (2021) Blockchain-based digital locker using BigchainDB and InterPlanetary file system. In: *Proceedings of the 2021 6th International Conference on Communication and Electronics Systems (ICCES)*, Piscataway, NJ: IEEE, pp. 950–956.

Bakshi P., Nandi S. (2022) Anonymous and Privacy Preserving Attribute-Based Decentralized DigiLocker Using Blockchain Technology. In: *Proceedings of the 2022 International Conference on Modeling, Simulation and Optimization, December 23–25, Pathum Thani, Thailand,* Singapore: Springer Nature Singapore, pp. 361–372.

Bélanger F., Carter L. (2008) Trust and risk in e-government adoption. *The Journal of Strategic Information Systems*, 17(2), 165–176. https://doi.org/10.1016/j.jsis.2007.12.002

Bozan K., Davey B., Parker K. (2015) Social influence on health IT adoption patterns of the elderly: An institutional theory based use behavior approach. *Procedia Computer Science*, 63, 517–523. https://doi.org/10.1016/j.procs.2015.08.378

Burda D., Teuteberg F. (2015) Understanding service quality and system quality success factors in cloud archiving from an end-user perspective. *Information Systems Management*, 32(4), 266–284. https://doi.org/10.1080/10580530.2015.1079998

Burda D., Teuteberg F. (2016) Exploring consumer preferences in cloud archiving — a student's perspective. *Behaviour & Information Technology*, 35(2), 89–105. https://doi.org/10.1080/0144929X.2015.1012650

Camilleri M.A. (2020) The online users' perceptions toward electronic government services. *Journal of Information, Communication and Ethics in Society*, 18(2), 221–235. https://doi.org/10.1108/JICES-09-2019-0102

Cao Y., Bi X., Wang L. (2013) A study on user adoption of cloud storage service in China: A revised unified theory of acceptance and use of technology model. In: *Proceedings of the 2013 International Conference on Information Science and Cloud Computing Companion,* Piscataway, NJ: IEEE, pp. 287–293.

Carter L., Bélanger F. (2005) The utilization of e-government services: Citizen trust, innovation and acceptance factors. *Information Systems Journal*, 15(1), 5–25. https://doi.org/10.1111/j.1365-2575.2005.00183.x

Chavan A.B., Rajeswari K. (2019) The design and developement of decentralized DigiLocker using blockchain. *International Journal of Computer Science Engineering and Information Technology Research (IJCSEITR)*, 9(2), 29–36. http://dx.doi.org/10.24247/ijcseitrdec20195

Chen J.V., Chung H.Y., Widjaja A.E., Ha Q.A. (2024) An empirical investigation of users' continuance intention to use cloud storage service for organisational uses. *International Journal of Business Information Systems*, 45(2), 254–277. http://dx.doi.org/10.1504/IJBIS.2021.10038640

Chen W.S., Wong S.F. (2003) *An Empirical Examination of the Use of Mobile Technology — A Social Pressure Perspective* (ICEB Proceedings Paper), Atlanta, GE: Association for Information Systems.

Cheng S., Lee S.J., Choi B. (2019) An empirical investigation of users' voluntary switching intention for mobile personal cloud storage services based on the push-pull-mooring framework. *Computers in Human Behavior*, 92, 198–215. https://doi.org/10.1016/j.chb.2018.10.035

Davis F.D. (1989) Technology acceptance model: TAM. *MIS Quarterly,* 13(3), 319–340. https://doi.org/10.2307/249008

DiMaggio P.J., Powell W.W. (1983) The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147–160. http://dx.doi.org/10.17323/1726-3247-2010-1-34-56

Fishbein M., Ajzen I. (1975) *Belief, attitude, intention and behavior: An introduction to theory and research*, Reading, MA: Addison-Wesley.

Fornell C., Larcker D.F. (1981) Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. https://doi.org/10.2307/3151312

Gao S., Yang Y. (2015) Exploring users' adoption of MOOCs from the perspective of the institutional theory. Paper presented at the 14th Wuhan International Conference on E-Business (WHICEB2015), Wuhan, China.

Garrison G., Rebman C.M., Kim S.H. (2018) An identification of factors motivating individuals' use of cloud-based services. *Journal of Computer Information Systems*, 58(1), 19–29. https://doi.org/10.1080/08874417.2016.1180653

Ghaffari K., Lagzian M. (2018) Exploring users' experiences of using personal cloud storage services: A phenomenological study. *Behaviour & Information Technology*, 37(3), 295–309. http://dx.doi.org/10.1080/0144929X.2018.1435722

Gupta K.P., Maurya H. (2022) Adoption, completion and continuance of MOOCs: A longitudinal study of students' behavioural intentions. *Behaviour & Information Technology*, 41(3), 611–628. https://doi.org/10.1080/0144929X.2020.1829054

Hair J.F., Sarstedt M., Ringle C.M., Mena J.A. (2012) An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science*, 40, 414–433. https://doi.org/10.1007/s11747-011-0261-6

Hardy A. (2023) Digital innovation and shelter theory: Exploring Estonia's e-Residency, Data Embassy, and cross-border e-governance initiatives. *Journal of Baltic Studies*, 55(4), 793–810. https://doi.org/10.1080/01629778.2023.2288118

Henseler J., Ringle C.M., Sarstedt M. (2015) A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43, 115–135. https://doi.org/10.1007/s11747-014-0403-8

Hoe S.L. (2018) Building a smart nation: Singapore's digital journey. *Asian Research Policy*, 9(1), 86.

Hui S.C., Kwok M.Y., Kong E.W.S., Chiu D.K.W. (2024) Information security and technical issues of cloud storage services: a qualitative study on university students in Hong Kong. *Library Hi Tech,* 42(5), 1406–1425. https://doi.org/10.1108/LHT-11-2022-0533

Hujran O., Abu-Shanab E., Aljaafreh A. (2020) Predictors for the adoption of e-democracy: an empirical evaluation based on a citizen-centric approach. *Transforming Government: People, Process and Policy*, 14(3), 523–544. https://doi.org/10.1108/TG-03-2019-0016

Klöcker P., Bernnat R., Veit D. (2014) *Implementation through force or measure? How institutional pressures shape national eHealth programs*. Paper presented at the 22nd European Conference on Information Systems, Tel Aviv, Israel.

Li G. (2021) State control by stealth in the big data era-from WeChat to the Social Credit System in China. *Journal of Telecommunications and the Digital Economy*, 9(4), 88–109. https://doi.org/10.18080/jtde.v9n4.443

Lombardo G., Mordonini M., Tomaiuolo M. (2021) Adoption of social media in socio-technical systems: A survey. *Information,*

12(3), 132. https://doi.org/10.3390/info12030132

Maity M., Bagchi K., Shah A., Misra A. (2019) Explaining normative behavior in information technology use. *Information Technology & People*, 32(1), 94–117. https://doi.org/10.1108/ITP-11-2017-0384

Meenakshi K., Ravi P., Shriprakash T., Kumar D.S. (2023) *Digital locker for storing sensitive information*. Paper presented at the 2nd International Conference on Advanced Information Scientific Development (ICAISD) 2021: Innovating Scientific Learning for Deep Communication.

Narang S., Singhania M., Kaur S., Mahajan S. (2021) Perception of youth on Digital India. *International Journal of Business Innovation and Research*, 25(3), 365–388.

Ng K.Y.N. (2020) The moderating role of trust and the theory of reasoned action. *Journal of Knowledge Management*, 24(6), 1221–1240. https://doi.org/10.1108/JKM-01-2020-0071

Oredo J. (2020) *Personal Cloud Computing Adoption: Integrating IT Mindfulness with TAM*. Paper presented at the 2020 IST-Africa Conference, 18–22 May 2020, Kampala, Uganda.

Ramirez-Madrid J.P., Escobar-Sierra M., Lans-Vargas I., Montes Hincapie J.M. (2022) Government influence on e-government adoption by citizens in Colombia: Empirical evidence in a Latin American context. *PloS One*, 17(2), e0264495. https://doi.org/10.1371/journal.pone.0264495

Rathore S., Panwar A. (2020) Digital-locker services in India: An assessment of user adoption and challenges. In: *Leveraging Digital Innovation for Governance, Public Administration, and Citizen Services: Emerging Research and Opportunities* (ed. N.V. Mali), Hershey, PA: IGI Global, pp. 101–131.

Scott W.R. (2004) Institutional theory: Contributing to a theoretical research program. In: *Great Minds in Management: The Process of Theory Development* (eds. K.G. Smith, M.A. Hitt), Oxford: Oxford University Press, pp. 460–484.

Shi W., Shambare N., Wang J. (2008) The adoption of internet banking: An institutional theory perspective. *Journal of Financial Services Marketing*, 12(4), 272–286. https://doi.org/10.1057/palgrave.fsm.4760081

Sivathanu B. (2018) An empirical study of cloud-based e-governance services adoption in India. *International Journal of Electronic Government Research (IJEGR)*, 14(1), 86–107. https://doi.org/10.4018/IJEGR.2018010105

Sobhanmanesh F., Beheshti A., Nouri N., Chapparo N.M., Raj S., George R.A. (2023) A cognitive model for technology adoption. *Algorithms,* 16(3), 155. https://doi.org/10.3390/a16030155

Sung W., Lee J. (2024) A longitudinal study on the diffusion and the divide in the use of e-government services among vulnerable citizens in Korea. *Government Information Quarterly*, 41(2), 101938. https://doi.org/10.1016/j.giq.2024.101938

Teo H.H., Wei K.K., Benbasat I. (2003) Predicting intention to adopt interorganizational linkages: An institutional perspective. *MIS Quarterly*, 27(1), 19–49. https://doi.org/10.2307/30036518

Teo T.S., Srivastava S.C., Jiang L.I. (2008) Trust and electronic government success: An empirical study. *Journal of Management Information Systems*, 25(3), 99–132. https://doi.org/10.2753/MIS0742-1222250303

Vos D., Voets J. (2022) Explaining municipalities' (alternative) service delivery modes over time. The importance of coercive pressures. *Local Government Studies*, 48(4), 728–748. https://doi.org/10.1080/03003930.2020.1869546

Xu J., Lu W. (2022) Developing a human-organization-technology fit model for information technology adoption in organizations. *Technology in Society,* 70, 102010. https://doi.org/10.1016/j.techsoc.2022.102010

Xue L., Pang Z. (2022) Ethical governance of artificial intelligence: An integrated analytical framework. *Journal of Digital Economy,* 1(1), 44–52. https://doi.org/10.1016/j.jdec.2022.08.003

Yamin F.M., Ishak W.H.W. (2015) Continuous use of online storage system for document sharing. *Jurnal Teknologi*, 77(5), 23–27. http://dx.doi.org/10.11113/jt.v77.6109

Yang H.L., Lin S.L. (2015) User continuance intention to use cloud storage service. *Computers in Human Behavior*, 52, 219–232. https://doi.org/10.1016/j.chb.2015.05.057

Yue C. (2013) *Toward Secure and Convenient Browsing Data Management in the Cloud*. Paper presented at the 5th USENIX Workshop on Hot Topics in Cloud Computing, HotCloud'13, San Jose, CA, USA, June 25–26, 2013.

Zheng D., Chen J., Huang L., Zhang C. (2013) E-government adoption in public administration organizations: Integrating institutional theory perspective and resource-based view. *European Journal of Information Systems*, 22(2), 221–234. https://doi.org/10.1057/ejis.2012.28