

Continual-use Intention for Platform-based Governance Services: A Study from an Emerging Economy

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Abstract

Several emerging economies have embarked on a path of digitization to provide lean governance through platform-based applications. Platforms and ecosystems can play vital roles in the proliferation of technologies, which can facilitate a digital transformation of society aimed at equitable and efficient service delivery to citizens. Despite being innovative, citizen-centric, and citizen-inclusive, such platforms has been observed to be rare in emerging economies. Our study assesses the factors that lead to the intention to continue to use these platforms, with the objective of establishing a revised approach to better governance through these platform-based services. A conceptual framework is proposed, based on an integration of

various models, and tested using primary data from citizens subscribing to platform-based government services. The results indicate that a continuous availability of such services has better predictive power for the continual-use intention. A unique contribution of the study worth highlighting is the significance of the factor, “sovereign structural assurance,” a prerequisite for strengthening the degree of control. Based on this study’s findings, it is recommended that platforms should invest in controls for structural assurance. These interventions can serve as contrivances that create a sustainable model for such services. A successful convergence of the factors would accelerate the government services by transforming the public service landscape.

Keywords: Sovereign Structural Assurance; Technology Platform Services; Continual-Use Intention; Perceived Security

Introduction

Emerging economies have experienced a diffusion of digital services in public-service delivery in the last few years (Alryalat et al., 2020; Tangi et al., 2021). There has been a proliferation of platform-based businesses and services, in both the private and public sectors, inspired by the reach and potential of cellular services. Emerging economies account for more than 80 % of the world’s population, while the cellular subscriber base in these countries has grown significantly in the last few years. A study conducted in 11 emerging economies reported that a vast majority of the adult population in those countries had access to mobile phones. In India, which is an emerging economy, it is estimated that 1.16 billion people, out of a population of 1.39 billion (according to the World Bank(2020), i.e., nearly 84 % of the population, use a device that can be used effectively by the government and government-controlled public sector undertakings (PSU) for providing value-added services. The Indian government has focused

on increased digitization of the economy, with the ambitious objective of providing government services through digital platforms.

Platform-based services are a part of the digital ecosystem that creates ease in executing transactions and ubiquity, and have proved to offer distinct advantages in offering platform-based products and services in an evolving digital ecosystem (Kapoor et al, 2021). Janssen and Estevez (2013) have stressed the benefits of platform-based lean governance, which not only reduces government costs, but also stimulates innovation through stakeholder engagement. Additionally, the government aims to reduce complexity by introducing m-governance initiatives for its citizens and subscribers (Jaradat et al., 2018; Lin et al., 2017). In India, many subscribers to platform-based services initially opted for these value-added services from both private and government agencies; however, after a brief period (6 months to 1 year), the customer base for these services declined. Such a trend is not only disappointing for service providers, but it can also derail governments in several emerging economies, including India, from the larger objective of implementing platform-based governance. Service providers (including the government) must explore ways to facilitate users' continuing subscription, otherwise the government's larger objective of deeper penetration and engagement with citizens will be hindered. For private-sector players offering new-age business models, customer retention has become imperative, as switching costs have substantially decreased. Studies have offered various explanations based on trust (Al-Ghazali et al., 2015; Bagozzi et al., 1998; Vatanasombut et al., 2008) and technology (Belanche-Gracia et al., 2015; Johnson et al., 2003). Some researchers have provided valuable insights based on demographics and individual lifestyles (Bhattacharya & Hartges, 2012). Upadhyay and Jahanyan (2016) used an integrative approach to study the adoption issues in mobile-based payment systems in the Indian context. Based on commitment-trust theory, some research was conducted on information systems (IS) continuance for online banking (Yuan et al., 2019) and for mobile-

based payment services (Cheng et al., 2009; Kapoor et al., 2015). Based on Chin's (1995) and Chain and Todd's (1995) information system success model, the current study attempts to explain IS continuance through the expectation-confirmation model's (ECM) consumer behavior approach.

A review of the published literature shows a prior focus on identifying factors in the adoption of platform-based services from an end-user perspective; however, continual-use intention has remained less explored, with inadequate reporting in the literature. Furthermore, it is important to incorporate measures of security in the design phase of the development of platform-based applications; otherwise, unsatisfactory experiences by subscribers will adversely impact continual use of platform-based applications (Kapoor et al., 2021). The government's larger objective of platform-based lean governance can only be achieved if the citizens continue to use platform-based applications on a long-term basis (Janssen and Estevez, 2013).

Access to cheap data (data rates in India are among the lowest in the world) and the availability of smartphones and handheld devices have led to a proliferation of new-age business models in the country, which continue to evolve. Nearly 84 % of the population currently own mobile phones; thus, the reach of any value-added and business application that is designed and developed using the mobile device as a platform is bound to be enormous. Not only does this represent a significant opportunity for government agencies to reach out to citizens, but the private sector has also been attracted by the size of the market in India. The government has developed several electronic governance (e-governance) portals and platform-based applications to introduce a greater degree of digitalization of society (Addo & Senyo, 2021).

This study aims to address the research gap discussed above, and presents an integrative approach to examine the continual-use intention amongst citizens availing themselves of platform-based services to co-create a sustainable digital architecture for the services in emerging economics. A unique contribution of the study worth highlighting is the significance

of the factor, “sovereign structural assurance,” a pre-requisite for strengthening the degree of control that needs to be incorporated in the design phase of the digital architecture while developing the platform-based applications.

The data from India’s emerging economy was analyzed to address the following research questions:

RQ1: What are the factors that influence subscribers’ intention regarding continual use of platform-based services provided by the government?

RQ2: Can co-creation of platform-based services enhance continual use?

The remainder of this paper is structured as follows. A theoretical foundation based on a literature review is laid in the first two sections of the study, followed by Section 3, which presents the proposed research model and discusses the various factors and hypotheses. Section 4 explains the research methodology and the development of the instrument used in the survey for data collection. A statistical analysis of the data is presented in Section 5, while Section 6 is dedicated to a discussion of the results and their managerial implications. Section 7 discusses the limitations of the study and offers suggestions for future research.

2. Literature Review

The dynamics of data-driven government and public services are volatile, due to changing societal behavior (Castelnovo & Sorrentino, 2021; McBride et al., 2018; Toots et al., 2017). Changes in behavior may arise from various disruptions (technological, environmental, etc.). Behavioral change, in turn, leads to changes in expectations of the government (Nasseef et al., 2021). Platform-based governance is a useful process in meeting society’s changing expectations (Bonina & Eaton, 2020; Cavallo et al., 2021; Jovanovic et al., 2021; Lewis, 2020; O’Mahony & Karp, 2020), while application of platform-based digital services varies between

urban and rural populations in many countries (Bibri & Krogstie, 2020; Doby et al., 2021; Engin et al., 2020; Matheus et al., 2020). The literature is analyzed using the overall context of platform-based services, focusing on the Indian adoption of such services, in the subsections below.

2.1 Platform-based Services and Governance

Platform-based governance is a relatively new concept that offers value to citizens through lean governance processes (Janowski et al., 2018). Platforms that are based on e-governance services use networked technologies to enable economic transactions (Singh et al., 2019). Globally, many governments have taken strong initiatives to apply platform-based services to increase transparency and flexibility (Khanra & Joseph, 2019; Lee-Geiller & Lee, 2019). In some emerging economies, government has taken many initiatives to strengthen e-governance (Addo & Senyo, 2021). Platform-based services are expected to bring sustainability and transparency (Janowski et al., 2018). The concept of platform-based services is presented in Figure 1. As shown in the figure, the participation and expectation of the citizens are met by the platform-based applications designed to facilitate e-governance. The necessary digital infrastructural framework, along with the structural security, is embedded in the platform application design.

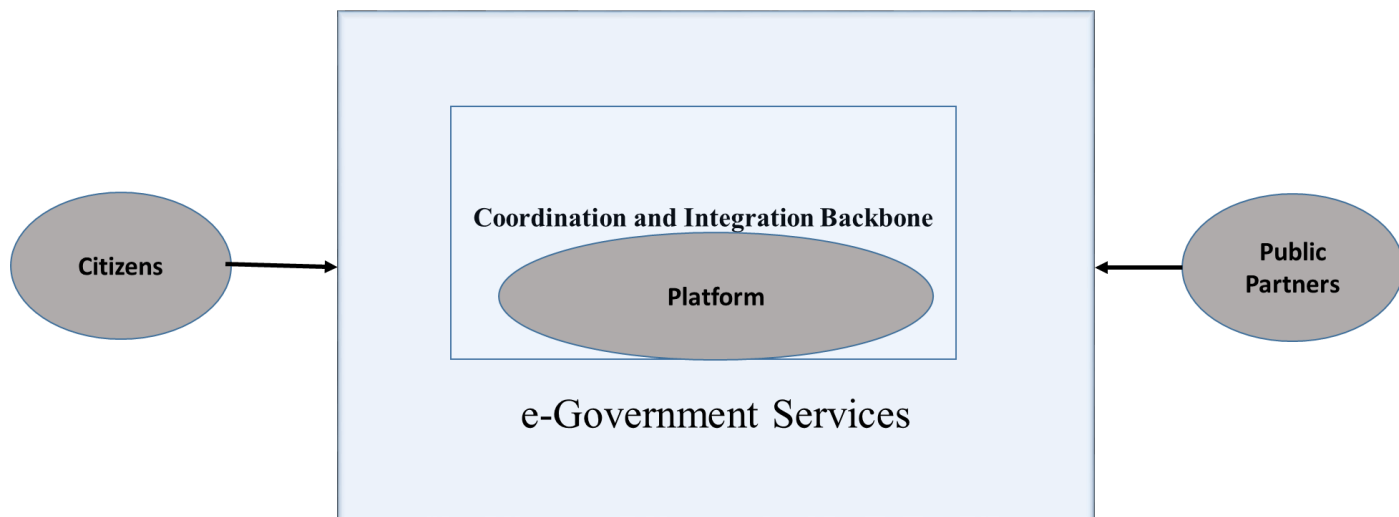


Figure 1: Platform-based government services

Generally, government agencies outsource the design and production of e-governance services; therefore, smooth coordination is required between government agencies and the e-governance solution providers (public partners); the coordination and integration backbone involves many design issues that affect the users, and may not be directly known to the service providers. The focus is on improving processes and public administration services, which is possible when the issues are identified and resolved.

2.2 Platform Governance and Services in India

The “Digital India” program was launched in 2014, with the objectives of creating digital infrastructure, imputing transparency in e-governance, and delivering quality services digitally. The program aimed to transform India into a digitally empowered society and knowledge economy. Over the last few years, India has concentrated its efforts on delivering public services through electronic platforms, and has initiated policies that are directed toward more inclusive e-governance (Gupta & Suri, 2017). The government relies on three foremost schemes: “Jan Dhan Yojna” (refers to the opening of basic bank accounts for a segment of the population to facilitate benefit transfer), “Aadhar” (a number provided to each citizen of the

country to uniquely identify them), and the Mobile and Goods and Services Tax (together called JAM). The schemes are the nucleus, and are essential for the accomplishment of the digitization initiatives in the country (Hooda & Singla, 2020). The digital technology platforms are more efficient than traditional linear forms of government as they offer greater power, access, and autonomy (Janowski et al., 2018). For example, 49 % of registered Aadhaar Card users in India used the platform to access platform based government services (i.e., the public distribution system, social pensions, obtaining mobile SIM cards, bank accounts, etc.). These platforms overcome traditional information asymmetries and streamline bureaucratic processes and functions (Sachan, 2018). The e-NAM platform (Pan-India Electronic Trading Portal), which networks different agricultural produce and marketing companies' (APMC) markets to create a unified national market for agricultural commodities, allows farmers to benefit from real-time market signals in marketing and selling their products. Platforms eliminate gatekeepers (e.g., middlemen involved in the transfer of government benefits, as direct benefit transfer is streamlined through Aadhaar) (Riley & Kulathunga, 2017). However, given various issues, such as literacy, availability of the internet, and proper awareness in the areas where internet connectivity and education is still poor, acceptance of such services will not only rely on the e-readiness of the citizens, but also on the support structure to use the e-governance services that are offered by the government agencies for effective e-governance (Kompella, 2020; Ruikar, 2020).

Digitization in e-governance has been a dominant thrust area for many progressive countries (Andreoni et al., 2021). Following the adoption of the Digital India program, which was launched in 2014, India has improved its digital ranking among the BRICS countries (Brazil, Russia, India, China, and South Africa) (Manda & Ben Dhaou, 2019). The use of advanced digital connectivity, storage, and replication mechanisms has created an enabling ecosystem with tremendous capabilities. 5G, Cloud, Internet of Things (IoT), Big Data, BlockChain, etc.

are being used for this purpose (Malhotra et al., 2020). However, a few challenges related to e-readiness and the adoption of such services in the rural areas of India remain to be addressed (Anusha, 2019; Jhavar & Kushwaha, 2018). Digitization has been a major thrust area for the government, while its benefits will result in a digitally empowered society (Hooda & Singla, 2020). Several services, such as direct benefit transfer, e-passport, checking land records and titles, as well as making tax payments and government service charges, have been provided using mobile applications (Busch et al., 2018). These mobile applications, in turn, have been integrated with government treasury for the seamless transfer of payments and updating (Janowski et al., 2018).

2.3. Adoption of Platform-based Services

Research on the adoption of platform-based services, in the context of India, has suggested that the adoption rate of technology-based services could be improved if there were a formal legal structure and security mechanism to deal with failed transactions (Kumar et al., 2018). A previous study on the acceptance issues of platform governance in urban India reported some challenges, such as ease of use, poor internet connections, and awareness, as the main factors in the acceptance of platform-based services among urban people (Samuel & Derrick, 2020). Self-efficacy and simplicity of use are the major determinants of customers' acceptance of e-governance platform-based services in Malaysia (Amin et al., 2013). A study conducted in the Indian context reported structural assurance as significant in offering platform-based services involving monetary transactions (Jebarajakirthy & Shankar, 2021; Rana et al., 2019). Several studies have been undertaken in several settings, including banking, retail, and payment services; therefore, issues that have been reported as deterrents in the adoption of services can be effectively addressed (Aghakhani et al., 2018; Hamzah, 2019). With increased digitalization, the offering of more platform-based services is bound to increase; however, the crucial question is how to ensure continual use of such platform-based services.

Studies on technology adoption theories that examine platform-service use behavior, which is useful in predicting technology adoption issues, could be leveraged to understand the issues that affected continual-use intentions pertaining to platform-based e-governance services (Jovanovic et al., 2021). These studies have attempted to integrate the theory of innovation diffusion and the unified theory of acceptance and use of technology (UTAUT2) based on a literature survey (Tamilmani et al., 2021). The studies have focused extensively on examining user behavior on platforms that facilitate monetary transactions, mainly banking. Studies on use intention in respect of e-banking have also essentially focused on platform-enabled e-banking and platform application-based mobile commerce (Jack & Suri, 2014). The current study uses an integrative approach, and draws on previous research that employs Expectation–Confirmation Theory (ECT) (Gillenson & Sherrell, 2002) and platform-based system success models (Krishnan & Gupta, 2001).

2.4. Technology-based Adoption Models

Highly cited published works have attempted to expound and predict users' behavior in relation to technology acceptance and subsequent use (Chaouali et al., 2020; Ratchford & Ratchford, 2021). Notable models include the theory of planned behavior (TPB) (Su & Huang, 2011), the technology acceptance model (TAM) (Little & Rubin, 1989), and the UTAUT (Lee et al., 2012). The highly cited TPB and TAM models have both adopted a generalized approach to explain user behavior related to technology adoption. Perceived ease of use, as used in the TAM model, has been referred to in several studies, and has been defined as "... the degree to which an individual believes that using a particular system would be free of physical and mental effort" (Davis, 1989). Ease of use is an important factor in the adoption, diffusion, and assimilation of technologies, particularly electronic business (E-Business) (Alam et al., 2011, Grandon & Pearson, 2004). It is generally believed that, as the complexity of a system increases, it is less likely to be used continuously or assimilated at higher levels (Lee & Runge,

2001). Technologies that are easier to use are more likely to be adopted and used continuously than those that are difficult to use (Lee, 2004). With perceived ease of use as one of the significant variables in technology adoption and diffusion studies, it is reasonable to presume that ease of use is a fundamental requirement for technologies to be successfully adopted and used. On the other hand, according to the TPB, technology acceptance by an end-user may be described by their intrinsic motivation, which involves grouping of attitudes, individual norms, and their perceived behavioral mechanism (Deci & Ryan, 2010). The theory was established to account for a user's actions in several shared scenarios, such as agriculture, health care, office automation, and retail (Lohse et al., 2000). Empirical evidence reveals its capability to predict the end-user intention (Mallat, 2007; Tangi et al., 2021) of using IS-assisted platform-based services.

Some models have been proposed that highlight the importance of system and information quality. Some studies relating to the adoption of platform-based services report the effect of service quality and repeat trust-building initiatives on use intention by end-users (McKnight & Chervany, 2000). The information system success model has been applied to predict users' intention to continue online shopping in a developing economy (Janssen & Estevez, 2013). A model that emphasizes trust and access to information has been proposed to examine e-governance success (Davis, 1989). The information system success model, including various success factors for mobile work in the healthcare industry, has been studied (Oghuma et al., 2015). Even in the context of platform-based banking interface design, both system and information quality have been reported to be significant (Oghuma et al., 2016). A study on the user adoption intention for mobile-based money transfer found the factors of technology task fit and structural assurance to be significant.

The published literature shows that most studies have either focused on the use intention for technology-based products or services, or frequent use based on either the ECT or the

information system success models. This study adopts an integrated approach that has not been used previously. Additionally, previous studies on the continual use of platform-based services based their analyses on responses from users who were comfortable and well versed with the use of technology devices, whereas this study examines the continual-use intention of all users, including those who may not be proficient in using technological devices. Many emerging nations, including India, exhibit a digital divide: although IT and mobile devices have proliferated, access to quality and steady networks remains a challenge. More inclusive development of society can be achieved through continual use of platform-based services. Thus, an attempt is made to identify and explore answers to the question of ensuring “optimum use of existing infrastructure is assured, re-use of applications, efficient service delivery to the citizens, and increasing the number of e-transactions in the country”ⁱ.

2.5. Expectation Confirmation Theory(ECT) Perspective

The ECT in the consumer behavior literature has been widely used in several settings to study customer satisfaction and their continual-use intention behavior (Cheng et al., 2020; Kim et al., 2020; Wolverton et al., 2020). The theory has been used to explain the repurchase and service continuation of automobiles (Gillenson & Sherrell, 2002; Jang et al., 2008). The model has also been applied in the institutional repurchase of photographic products to service marketing, generally (Jarvenpaa et al., 1998). Some studies have used this theory to explain information system-use continuation in the context of online banking and platform-based shopping apps (Al-Ghazali et al., 2015; Lee et al., 2003). Additionally, ECT expounds the significant determinants of expectation, as it offers a reference point for customers to form judgments about products or services. A high expectation tends to enhance users’ satisfaction, and vice-versa.

Studies have been conducted based on the information technology adoption theories, information system success models, ECT models, or their extensions, to study the initial adoption process. While most of these models have emphasized specific properties surrounding technology acceptance, only a few have focused on the continuation intention. Among studies on mobile financial services, some have focused on the use intention concerning m-banking using the extended TAM (Thakur & Srivastava, 2014); based on ECT, others have focused on the continuance intention regarding the use of electronic textbooks (Franque et al., 2020), the information system continuance intention regarding online banking (Shiau et al., 2020), and the continuance intention regarding the use of mobile instant messaging (Franque et al., 2020). For the research problem in this study, the ECT framework was employed, as it has been observed that end users tend to have a continual-use intention if their expectations are met by product and service offerings. Citizens are likely to continue using platform-based governance services if such services provide them with easy-to-operate interfaces and are backed by government assurance regarding security.

3. Research Model and Hypotheses

Trends in the use of platform-based services indicateⁱⁱ that, although, initially, there were encouraging levels of acceptance of these services, the use has dropped considerably over time (Anand et al., 2020). Limited published literature has explored the continual-use intention. The proposed research model (Figure 2) integrates the constructs of the ECT, TAM, and UTAUT models with one additional construct, sovereign structural assurance. This research is based on an integrated approach to study the continual-use intention regarding platform-based services offered by the government, wherein the subscribers are not sufficiently familiar with the technology. The research model is shown in Figure 2.

3.1 Perceived Ease of Use

The adoption of e-governance services has been an important question among stakeholders, including academics (Wallang, 2018). The role of intrinsic motivation (perceived ease of use and perceived usefulness) has been demonstrated in the case of adopting IT-enabled services (Bastari et al., 2020). User convenience is a major factor in service offerings (Shankar & Jain, 2021), while perceived ease of use replicates the intrinsic motivation related to the use and convenience of a product or service (Caffaro et al., 2020). A user of platform-based government services may have such an intrinsic motivation for a service.

Perceived ease of use plays a significant role in a subscriber's decision-making process regarding whether to use a product or service, and is considered as effort expectancy in the UTAUT model (Alalwan et al., 2017). It is defined as a base factor in the TAM model (Zafiroopoulos et al., 2012), and indicates "... the degree to which a potential user of a particular system believes it is free from effort" (Davis, 1989). The ease with which users can operate or execute a transaction through a platform-based application will also affect the continual-use intention. Frontline research has indicated that perceived ease of use has a significant effect on the adoption of technology-enabled services (Al-Marroof et al., 2020; Chen & Aklikokou, 2020).

Therefore, we examine the following hypothesis:

H1: Perceived ease of use positively impacts satisfaction in the continuance of platform-based services provided by the government.

3.2 Perceived Security

With the rapid proliferation of technology and platform-based applications and services, instances of cyber fraud have risen significantly. Thus, although the larger objective is that of introducing digital inclusion, if issues related to security are not addressed properly and on time, subscribers may discontinue using such services. Subscribers to platform-based services

should be assured that any transactions (monetary transactions, in particular) performed on a platform-based application are safe. While receiving a service through technology-based platforms, the level of perceived security and privacy are prime concerns for the users (Balapour et al., 2020; Yoon et al., 2020).

Perceived security is defined as users' opinion of the probable security threats to platform-based applications dealing with monetary transactions (Cheah et al., 2011; Little & Rubin, 1989). Privacy and security have been studied simultaneously in information systems research (Pavlou et al., 2007). Both are critical for users, as "... sensitive information is being transferred between parties" (Bansal & Zahedi, 2014). As perceived security indirectly measures both privacy and security (Tahar et al., 2020), we have adopted this construct for our study. Privacy and security concerns are shown as antecedents of trust building in e-government services (Belanche et al., 2012).

Based on the above discussion, we propose the following:

H2: Perceived security positively affects trust during use of government's platform-based services.

H3: Perceived security positively impacts satisfaction while using platform-based services.

3.3. Sovereign Structural Assurance

Structural assurance refers to the "... existence of technological and legal structures that safeguard security" (McKnight et al., 2002). It is a logical extension of the previous factor related to perceived security. Subscribers are wary of cyber fraud, which has increased exponentially in recent times. In such a scenario, subscribers seek clarity regarding grievance

redress, should fraud occur while they transact through platform-based applications. Government-backed assurance through appropriate legislation, and a time-bound resolution of any fraudulent transaction can significantly contribute to instilling confidence amongst subscribers to use platform-based services, even if they have been a victim of some form of online fraud.

A “... significant, positive relationship between structural assurance and trust in m-commerce” has been reported (Sarkar et al., 2020), while Geebren et al. (2021) reported that service quality and structural assurance positively impacted customer satisfaction. Zuiderwijk et al. (2015) explored the connotation for initial trust in structural assurance in mobile-based banking. A study on the continual-use intention regarding online shopping and its significance in business to the consumer has reported the significance of this factor (Mutahar et al., 2015). Thus, in the case of platform-based e-governance, we hypothesize the following:

H4: Structural assurance is positively related to trust in the use of platform-based government services.

H5: Structural assurance is positively related to satisfaction in using platform-based government services.

3.4. Trust

Trust building is a long-term process that refers to a critical factor that inspires inhabitants' behavior to use e-government services (Mensah & Adams, 2020; Pérez-Morote et al., 2020). The role of trust is critical in any kind of economic transaction (Warkentin et al., 2002). Trust becomes even more critical in the case of technology and mobile platform-based services because the limited technological interface does not allow consumers to assess whether a service provider or vendor is trustworthy, in contrast to face-to-face interaction (Akturan & Tezcan, 2012). This issue is presumed to be significant because vendors can instantly exploit

mobile and online consumers (Oghuma, 2013). There have been many cases wherein providers in the mobile and e-commerce space have misused the users' database for commercial gains. Platform-based business models built on mobile networks and terminals involve high uncertainty and risk. Such transfers are vulnerable to hacker attacks and viruses. Problems concerning users' security will, in turn, increase users' perceived risk. Thus, trust must be built to mitigate risk and facilitate frequent use. We have considered trust as a significant factor in use behavior. We therefore hypothesize the following

H6: Trust positively impacts the continual-use intention regarding platform-based government application services.

3.5 System Quality

System quality refers to the perceived expected performance demonstrated in a system's overall performance (DeLone & McLean, 2004; McKnight & Chervany, 2000; Oghuma et al., 2016). Platform-based applications are predominantly developed to operate in handsets that are "smart." Such applications work best when there is an interrupted telecom signal during a transaction. Over the last few years, the coverage and signal quality have significantly improved, with the government considering the rollout of 5G-based application across the country. However, cellular signals remain unstable in several parts of the country. Subscribers experience problems accessing platform-based applications because of an unsatisfactory level of system quality.

A poor system quality will negatively impact users' opinions regarding the acceptance of the platform-based government services, while "... there is a significant, positive relationship between system quality and trust in m-commerce" (Sarkar et al., 2020). Customers' ability to painlessly integrate the services affects not only their adoption, but also their continuance. System quality affects trust in platform-based services, while any complications experienced

by customers in executing transactions will affect their satisfaction (Reichheld & Schefer, 2000). The following hypotheses may therefore be formulated:

H7: System quality of platform-based services affects the continuance intention.

H8: System quality of platform-based services positivity affects satisfaction.

3.6. Satisfaction

Satisfaction has been defined as “a psychological state when the emotion surrounding disconfirmed expectations along with consumer’s erstwhile experience about the services” (Reeves & Sabharwal, 2013). Satisfaction is an outcome that replicates collective feelings that have developed after multiple interactions and transactions with a service provider (Alkrajji, 2020a; Iskandarli, 2020). Customers who are dissatisfied with a service may discontinue using it. Satisfaction, in the context to this study, also considers subscribers’ overall experience while using platform-based services. Ease of use, supported by sovereign assurances and a mechanism for resolving grievances about a service previously provided will play a significant role in subscribers’ continual-use intentions.

Previous studies have suggested that satisfaction about an e-government service is a strong basis for use behavior (Alkrajji, 2020b). It has been shown that the success of an IS model is extremely dependent on consumers’ satisfaction with the IS service. Many researchers have posited perceived usefulness and ease of use of e-governance services as the common and major construct, with the strongest influence on citizens’ satisfaction (Alkrajji, 2020b; Dehghanpouri et al., 2020; Lytras & Şerban, 2020; Slack & Singh, 2020).

Thus, the following hypothesis is formulated:

H9: Satisfaction positively affects the intention to continue to use platform-based applications.

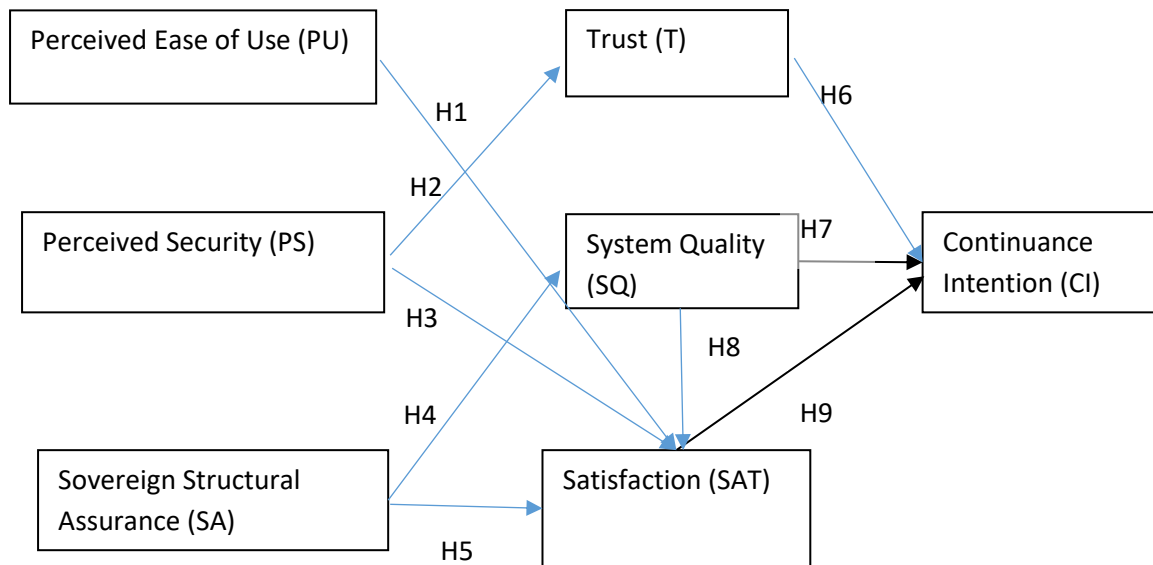


Figure 2: Proposed Research Model

Table 1: Details of items

| No. | Construct | Adapted from | Questionnaire items |
|-----|-------------------------------------|---|---------------------|
| 1 | System Quality (SQ) | Wang and Liao (2008) | SQ1, SQ2, SQ3, SQ4 |
| 2 | Perceived Ease of Use (PU) | Chen and Aklikokou (2020) | P1, P2, P3, P4 |
| 3 | Sovereign Structural Assurance (SA) | Significantly modified by an existing scale | SA1, SA2, SA3, SA4 |
| 4 | Perceived Security (PS) | Upadhyay and Jahanyan (2016) | S1, S2, S3 |
| 5 | Trust (T) | Lemieux et al. (2005) | T1, T2, T3 |

| | | | |
|---|----------------------------|---|---------------|
| 6 | Satisfaction (SAT) | (Alawneh et al., 2013; Reddick & Roy, 2013) | ST1, ST2, ST3 |
| 7 | Continuance Intension (CI) | Kumar et al. (2018) | C1, C2, C3 |

4. Research Methodology

A literature review revealed a gap and helped develop the research model. Primary data were collected through a survey method to empirically test the model. The survey items were mostly conceived from published articles in peer-reviewed reputable journals, with significant modifications to some of them (Table 1). A list of the elements of the research instrument is presented in Appendix 1.

4.1 Design of the Questionnaire

Appropriate constructs were adopted from high-quality literature to accomplish the objective of the study. The ECM items were used based on [Kitapci and Dortyol's](#) recommendation (2009). A new latent construct (perceived security) was introduced for platform-based applications (particularly those that involve monetary transactions) that affect users' continual-use intentions. An experimental study was undertaken to test the consistency and reliability of the scales during the initial stage. Thirty questionnaires were circulated among individuals who were regular users of platform-based services. The questionnaire was further improved based on suggestions received. The experiment led to some changes in the items, while the reliability and consistency of the scales improved (Table 3).

4.2 Data Collection

The data was collected from common citizens who regularly use platform-based government services and perform online transactions using their computers or mobile phones. As the Indian demography is wide and diverse, the data collected represent subcontinental data, and are considered sufficiently representative for generalization of the study. The primary data were collected from pan India users (across age groups 18-60 years) using self-administered questionnaires during the period February 2018 to December 2020. Non-random sampling (Buchanan et al., 2021) was employed. A questionnaire was formulated and administered online to more than 500 users. Finally, 265 responses were received, constituting a 70% response rate (known groups). The published literature reports that group-managed questionnaires tend to record high rates of responses (Thakur & Srivastava, 2014). The inconsistent and missing responses were filtered out and, finally, 250 valid responses were used for analysis. Sample size was determined based on standards suggested by Upadhyay and Jahanyan (2016). To ensure adequate rigor for the data analysis, 170 observations were required, based on the 35 items in the questionnaire. Therefore, a final sample size of 250 responses is considered sufficient. To avoid the common method bias, the survey was conducted following Podsakoff et al. (2003, 2011, and 2012). The respondents' demographic information is shown in Table 2.

4.3 Data Analysis

Of the respondents, 75 % were male, while 25 % were female, consistent with the gender distribution among the working-class population of India. Most respondents were young professionals (fair combination of graduates (65 %) and postgraduates (35 %)); additionally, the respondents were approximately proportionally distributed among the income groups shown in Table 2, signifying the appropriateness of the sample.

The data analysis was performed in two stages. The first stage considered the factor structure of the dimension items of qualifiers of continual-use intention in respect of platform-based services. For this, we applied both reliability and factor analyses on the adopted and newly derived constructs. The second stage entailed an examination of the effect of each latent construct on principal and target constructs, based on the hypotheses (Figure 2). SEM was performed using the R statistical open software package (lavaan).

Table 2: Demographic Characteristics of Respondents

| Category | Value | Valid % |
|------------------------------|--------------|---------|
| Gender | Male | 75 |
| | Female | 25 |
| Age | 18-30 | 91 |
| | 31-60 | 9 |
| Education Level | Graduate | 65 |
| | Postgraduate | 35 |
| Annual Income (INR millions) | < 3 | 15.7 |
| | 3-6 | 19 |
| | 6-9 | 22 |
| | 9-12 | 17.7 |
| | > 12 | 25.6 |

5. Results

The results are analyzed for measurement and path model in Subsections 5.1 and 5.2. The sample of mixed users that includes proficient and non-proficient, young and middle-aged, and male and female users shows the same results, as seen in the hypothesis tests (Table 6).

5.1. Measurement model

The test result related to sampling adequacy (KMO) was 0.91, while Bartlett's test result for sphericity was 0.02. Exploratory Factor Analysis (EFA) was performed on the items to identify the hidden constructs. The EFA results for adequate fit indices and sufficient factor loadings, with seven hidden constructs, are presented in Table 3. The EFA results allow for the development of a theoretical research framework (Figure 1). The sample adequacy for factor analysis was tested based on standards suggested by [Upadhyay and Kumar \(2020\)](#). The scale reliability test results were sufficient, as the value lay between 0.90 to 0.93 (Table 3). In addition to EFA, Confirmatory Factor Analysis (CFA) was performed for assurance regarding the adequacy and fitness of the identified hidden constructs. The latent constructs have sufficient loadings, as each factor loading is 0.6 or higher. Furthermore, we tested for the convergent and discriminant validity of the dataset. Convergent validity was measured using Average Variance Extracted (AVE) ([Upadhyay & Kumar, 2020](#)) (Table 3). The item loadings were adequate, based on the standard cut-off value 0.6 (the values ranged from 0.63 to 0.84) ([Peterson, 2000](#)).

Table 3: Reliability and Validity of the Measurement Model.

| Constructs | Items | Items Loading | CR | AVE | Cronbach's Alpha |
|----------------|-------|---------------|------|------|------------------|
| System Quality | SQ1 | 0.68 | 0.92 | 0.68 | 0.91 |
| | SQ2 | 0.66 | | | |

| | | | | | |
|-----------------------|------|------|------|------|------|
| | SQ3 | 0.81 | | | |
| | SQ4 | 0.75 | | | |
| Perceived Ease of Use | P1 | 0.78 | 0.93 | 0.66 | 0.92 |
| | P2 | 0.85 | | | |
| | P3 | 0.86 | | | |
| | P4 | 0.77 | | | |
| Perceived Security | S1 | 0.74 | 0.91 | 0.70 | 0.90 |
| | S2 | 0.65 | | | |
| | S3 | 0.73 | | | |
| Structural Assurance | SA1 | 0.67 | 0.92 | 0.72 | 0.91 |
| | SA2 | 0.65 | | | |
| | SA3 | 0.77 | | | |
| Trust | T1 | 0.79 | 0.91 | 0.63 | 0.90 |
| | T2 | 0.75 | | | |
| | T3 | 0.84 | | | |
| Satisfaction | ST1 | 0.74 | 0.90 | 0.69 | 0.93 |
| | ST2 | 0.75 | | | |
| | SAT3 | 0.83 | | | |
| Continuance Intention | C1 | 0.83 | 0.93 | 0.68 | 0.92 |
| | C2 | 0.72 | | | |
| | C3 | 0.74 | | | |

5.2. Structural Model

Structured Equation Modelling (SEM) reveals the fitness of the proposed theoretical model, while the adequacy of the fit indices of the measurement model provides the basis for the path analysis (covariance-based SEM) (Khan et al., 2021). The model satisfied the standards required for the fit measures. Table 4 shows the correlations between the constructs. Additionally, the fit measures for the model were tested using path analysis, the results of which satisfied the standards, and are shown in Table 5. The model exhibits good fit indices (chi sq = 3.123; DF = 3.01; chi sq. /DF = 1.03; P-value = 0.001; GFI = 0.955; TLI = 0.951; RMSEA = 0.012). The results reveal that system quality, structural assurance, and perceived security (Table 6) are positively related to continuance intention (adjusted $R^2 = .377$). Finally, for all the hypotheses, the estimated Beta and P-values are presented, based on which we can either confirm or reject each hypothesis (Table 6).

Table 4: Descriptive Statistics and Correlation between the Constructs

| | Mean | SD | SQ | P | SA | T | S | ST | C |
|-----|------|------|-------|-------|-------|-------|-------|-------|---|
| SQ | 3.1 | 0.8 | - | | | | | | |
| P | 3.3 | 0.9 | 0.588 | - | | | | | |
| SA | 4.1 | 0.8 | 0.632 | 0.617 | - | | | | |
| T | 3.5 | 0.78 | 0.581 | 0.637 | 0.583 | - | | | |
| S | 3.9 | 0.8 | 0.460 | 0.495 | 0.541 | 0.543 | - | | |
| SAT | 4.01 | 0.85 | 0.484 | 0.347 | 0.407 | 0.501 | 0.506 | - | |
| C | 3.6 | 0.88 | 0.478 | 0.488 | 0.518 | 0.575 | 0.652 | 0.624 | - |

Table 5: Model Fit

| Fit Indices | Chi ² /df | GFI | AGFI | CFI | NFI | NNFI | RMSEA |
|-------------|----------------------|--------|--------|--------|--------|--------|-------|
| Standards | < 3 | > 0.90 | > 0.90 | > 0.90 | > 0.90 | > 0.90 | < .08 |
| Model | 2.4 | 0.955 | 0.944 | 0.995 | 0.991 | 0.968 | 0.012 |

Table 6: Hypothesis Testing

| Hypothesis | Estimated Beta | P-value | Result of Hypothesis Testing |
|------------|----------------|---------|------------------------------|
| H1 | 0.267 | 0.000 | Supported |
| H2 | 0.374 | 0.000 | Supported |
| H3 | -0.127 | 0.039 | Supported |
| H4 | 0.207 | 0.000 | Supported |
| H5 | 0.356 | 0.000 | Supported |
| H6 | 0.304 | 0.000 | Supported |
| H7 | 0.372 | 0.000 | Supported |
| H8 | 0.207 | 0.000 | Supported |
| H9 | 0.332 | 0.000 | Supported |

6. Discussion

From Table 6, it is evident that all the hypotheses are supported. The results presented in Section 5 highlight the factors that impact the continual-use intention regarding the governments' platform-based services. Globally, governments are innovating to reduce costs, and engage the stakeholders to solve societal problems utilizing platform-based services (Janssen and Estevez, 2013). Governments in emerging economies, such as India, aim to reduce complexity by introducing platform-based governance (either e-governance or m-governance) initiatives for their citizens (Jaradat et al., 2018; Lin et al., 2017). Government departments, public sector undertakings, and government-controlled agencies have developed and rolled out platform services for filing tax returns, obtaining property-related documents, making payments for property and vehicles, checking service-related benefits, or even filing complaints about non-compliance or non-receipt of proper benefits. The government attempts to seamlessly provide such services to the citizens through mobile-based applications. In this context, the success and penetration of digitization initiatives are crucial, in the long run, in achieving the desired objectives by the government and its agencies. While governments, worldwide, innovate to implement such services, the intention to use the services is critical, from the citizens' perspective. The results in Section 5 highlight the important issues about the system and task fit that affect the apparent effectiveness of such platform-based service offerings. Factors such as user characteristics, and problems such as quality and structure all impact the expected simplicity of using platform-based services. In an emerging economy, a digital ecosystem evolves rapidly; hence, the absence of structural establishments in the form of externalities influences subscribers' continual-use intentions. Some of the factors emphasized in this study, such as the quality of the system and apparent presence or absence of structural assurance have also been found significant by previous researchers in the ITeS sector (Janssen & Estevez, 2013).

Platform-based digital services operate within a composite space, wherein users' needs and the competency of the organization must be balanced, and must fit within a digital environment that is still evolving in an emerging economy such as India (Immonen, 2018). The delivery of platform-based services has simply shifted from physical locations to the digital space (Juncker, 2015; OECD, 2016). A digital ecosystem is an open and evolving community, and can result in multiple architectural models (Marinos & Briscoe, 2009). Development of a digital ecosystem by organizations providing public services, and subsequently ensuring continual use is vital for the success of their digital services (Boley & Chang, 2007). The evolving digital ecosystem in emerging economies, and its penetration through mobile devices has made reliance on digital services critical for service provision (Boley & Chang, 2007). However, it has been recommended that, to ensure adoption and subsequent continual use, a phase-wise approach be followed (Bourne, 1959; Gateru et al., 2017). First, a government and its agencies should make the users aware of the platform-based services and their benefits. In the second phase, digital infrastructure must be ensured to provide adequate information about the services. In the next phase, the possible gap between subscribers' expectations from the digital services and their actual experiences must be reduced, as consumers tend to determine if a product is worth consuming based on their experience. In the subsequent phase, the product is trialled on a restricted basis (Heidenreich & Kraemer, 2016). In the last phase, adoption takes place, when the subscribers decide to avail themselves of the platform-based services. It is worth pointing out that subscribers' initial experience of working with the product or service offering will have a significant impact on their continual-use intentions. Thus, government agencies should ensure continuous availability of the platform by improving the system quality and providing structural assurance at pertinent stages. However, rejection can occur at any stage of the process (Reinders, 2010). The adoption process of digital services links to the digital ecosystem, while these factors will

subsequently impact the continual-use intentions regarding digital services and products, following initial adoption (Barrett et al., 2015). A significant proportion of India's population still lives in the villages. Hence, the development of the rural areas has been an intricate policy priority for the country. Over the last few years, government departments have taken several digital initiatives to directly deliver these services to these large segments of the population for more inclusive growth. However, the delivery of government services to this vast majority of the population has its challenges, such as the scarce distribution of resources and lack of access to low-cost collaboration tools (Venkatesh et al., 2014). Emerging economies nurture a digitally connected society that enables continuous access to information resources, while several policies have been formulated to realize this. The National Digital Communications Policy (NDCP-2018) of the Government of India attempts to integrate several platform-based services to facilitate synchronized activities among the different government agencies.

6.1 Theoretical Implications

The authors have observed that continual use of platform-based services and regular and unrestrained feedback provided to the service providers play a vital role in bringing about greater inclusivity and effectiveness (Janssen and Estevez, 2013). As the ease of use, security, and, more importantly, structural assurance (Table 6) are significant satisfaction creators, it is important to introduce greater transparency and control for a tighter oversight of the system, and to reduce risks. This necessitates regular improvements on the existing processes, having considered the risk areas in the structural assurance and security that are related to platform-based government services. As Hypotheses H4 and H5 are supported by the data, the sovereign structural assurance should be platform-specific; thus, the government and sovereign agencies should invest in control measures over the platform service to instill trust amongst its subscribers. In addition to the security and structural assurance aspects, it is important to

monitor users' experience while using such services; therefore, ease of use and system quality also play a major role in the success of the platform-based services.

Hypotheses H1, H3, and H5 are related to ease of use, security, and structural assurance, which are more pertinent in respect of satisfaction, while Hypotheses H2 and H4 entail trust and system quality. Therefore, to realize greater benefits and attain sustainability, digital platforms and their associated applications must be created following a careful analysis of the personalized and contextualized needs of the citizens. Citizen-inclusive techniques and participatory approaches should be employed to elicit citizens' inputs. Technological challenges that arise because of inadequate technical infrastructure, erratic power supply, lack of customized software, and absence of meaningful content must be mitigated. However, government regulations and legislation, budgetary constraints, inadequate infrastructure, and growing populations hinder acceptance in the public sector enterprises and government agencies (Costabile & Iden, 2020).

The empirical findings related to Hypotheses H6, H7, and H8 suggest that a digital culture incorporates a broad set of components that impacts an individual or group's willingness to adopt digital services, including societal norms, perceptions, and stories (either highlighting successful or unsuccessful ventures) (Stoica, 2019). Societal norms interact with a person's human capital, as they impact the risk tolerance, mistakes, and failure, along with their level of creativity and willingness to experiment (Hu et al., 2015; Onu & Oats, 2015). Perceptions of the digital services and the organization (whether positive or negative) will impact the continual use of digital services (Onu & Oats, 2015). Finally, the importance of success stories, highlighting visible successes by adopting platform-based services, are vital for obtaining a positive reputation, and will encourage continual use (Hu et al., 2015; Onu & Oats, 2015).

Finally, while digital adoption is a complex phenomenon, the mandatory nature of public sector services adds to its complexity. A conceptual model has been proposed, in this study, that successfully combines various factors to accelerate the delivery of platform-based government services through digital platforms. These factors are expected to serve as meaningful contrivances that strategically link the 17 SDGs at the local and global levels to create an enabling environment of responsiveness and accountability.

6.2 Policy Implications

The model presented in this study reveals that perceived security and sovereign structural assurance are the dominant antecedents of trust and satisfaction for the continual use of platform-based services (Barnes & Mattsson, 2017). The emergence of information technology, coupled with mobile technology use and internet access in rural areas, offers an opportunity to enhance government service deliveries (Bertot et al., 2010; Aker & Mbiti, 2010; Changsu Kim et al., 2019). The ongoing themes of digitization and digitalization¹ that are gaining increased importance in public policymaking serve as an added facilitator.

This information may lead to a proper regulatory framework that considers governance, technology, and citizens as the cornerstones, while firming up a platform-based governance framework for any government. This study presented the perspective and experience of users of platform-based services provided by government or public sector units for effective delivery to introduce greater levels of digitalization, as mandated by the government. An initiative for creating a digital ecosystem by governments worldwide and their agencies is to introduce platform-based governance, which has its merits and demerits. Subscribers' pain points must be addressed, as the findings of this study advocate for greater stakeholder inclusiveness while

¹ It refers to the element of business and economic processes driven by the changes associated with digital technology applications in all aspects of human society.

developing platform-based governance solutions to achieve greater levels of continual use by subscribers. A multi-stakeholder analysis may facilitate a better understanding, by government and public sector organizations, of the interactions, roles, hindrances, and other elements within the stakeholders' broader environment.

The integration of a multidimensional perspective will assist in understanding the digital ecosystem, particularly focusing on governments' initiatives for increased digitization of society. A developing country's citizens and subscribers will benefit by continually using such services and providing feedback to the service providers (be it government agencies or private players) for issues that hinder use to be identified and timely resolved. Governments in developed and developing economies have been emphasizing an inclusive digital ecosystem for governance; thus, a proliferation of platform-based services is imminent. The government agencies and public sector undertakings should remain cognizant of users' adaptability issues to ensure their continual use.

Platform-based governance initiatives are an integral part of any government's objective of creating a digital ecosystem. Such an ecosystem will comprise numerous digital platforms that create a digital environment and boost collaboration between service providers and subscribers. The government and the subscribers will be able to realize the real benefits when such platform-based products and services are continually used by the subscribers. Digital adoption is a complex phenomenon, based on numerous factors, made more difficult to understand due to the mandatory nature of government and public sector services. To understand this complexity, this research proposes a conceptual model that incorporates numerous theories, including inclusiveness, digital inclusiveness, and the development of digital ecosystems.

6.3 Limitations and Future Research Directions

Emerging economies have realized the value and significance of digital platforms, and the need to develop ecosystems across various industries and domains. Some intriguing questions require further exploration, such as how digital ecosystems can evolve in an emerging economy, particularly in the domain of government and public sector services. One of the major drawbacks of this study concerns the data collection. The data were collected from subscribers to the government's platform-based services in India. The authors assume that Indian data are representative of other emerging economies. Future researchers can extend or replicate this study to validate the findings in the context of other emerging economies. There are other possible limitations: Although a group invariance test (male and female) was conducted, the test results showed an insignificant invariance between the male and female groups. Penetration of the internet has been possible in rural India, resulting in reach-potential subscribers in far-flung towns and rural areas. This is quite relevant, particularly for India over the last two years. However, the survey did not specifically consider the adoption and subscription of platform-based online services. Thus, future researchers could analyze the continual-use intentions of subscribers from rural India, which would help the government achieve the larger objective of more inclusive digitization of its services, and a gradual move to platform-based governance in the long run. Ensuring continual use of platform-based services is key for any government, from a long-term perspective.

Future research could also explore how platforms-based governance models could adapt to changes in the socio-economic or political environment. Additionally, it would be interesting to compare the dynamics of platform-based governance models in the context of developed vis-à-vis emerging economies, and even how unintended consequences were managed. The creation of a digital ecosystem is like a double-edged sword: if it creates an array of opportunities at one end, it also creates newer challenges that hamper the next level of growth

and need to be addressed. It becomes imperative to undertake policy measures only following a careful assessment of subscribers' pain points to bring in greater inclusiveness and continual use intension.

7. Conclusion

Government service delivery to the vast majority of the population in developing economies faces many challenges, including resource constraints, inadequate participation of the various agencies involved in providing the services, or lack of end users' continual-use intention. Globally, emerging economies have attempted, in their own way, to mitigate the shortcomings through different delivery mechanisms. Platform-based delivery services have emerged as a preferred mechanism for their inherent advantages of being lean and low-cost; however, ensuring continual use continues to be a challenge. This study explored the factors in the continual-use intentions of subscribers to platform-based application services provided by governments in emerging economies. Based on success stories across various industries, it has become evident that organizations in any sector must consider platform-based perspectives and ensure the development of a digital ecosystem. The results of this study indicate that continuous availability of platform-based governance services, backed by sovereign structural assurance, can instill trust among service subscribers. Sovereign structural assurance and government assistance have better predictive power for continual-use intention. These factors can serve as meaningful contrivances that help in creating a sustainable model for the delivery of platform-based services. Thus, it is recommended that governments and their agencies should invest in creating controls within platform-based services to ensure better subscribers' continual use. A successful convergence of the factors would accelerate the delivery of governments' platform-based governance services in all the spheres, as well as ensure continual use.

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ⁱⁱ <https://www.statista.com/statistics/558610/number-of-mobile-internet-user-in-india/>