Dynamics of e-Governance in post COVID era: India

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Abstract
India as a country, has made numerous efforts related to launch and adoption of e-Governance initiatives, which has been introduced in various fields. However, except a few, most of such initiatives have not been able to deliver the desired results over the longer course of time, resulting in underutilization of public funds. Moreover, time and again it has been noted that e-Governance initiatives adoption and success varies across geography, mainly on account of prevalence of diversity in India. Furthermore, post COVID, the importance of e-Governance initiatives in the lives of citizens at large, has witnessed a paradigm shift both in applicability as well as acceptance. The enforcement of social distancing by Central as well as Local governments in the past few months has led to enhanced role of e-Governance initiatives in delivering critical to common services/facilities to the citizens at large. As a result, this study has been conducted with an aim to identify the factors responsible for higher adoption of the e-Governance services in India. The study also aims to analyze the impact of ongoing pandemic on the adoption of e-Governance by including a separate construct related to health.

KEYWORDS
COVID-19, e-Governance, India, structural equation modeling (SEM)

1 | INTRODUCTION

The world bank defines e-Government as “...the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management...”. On the other hand, e-Governance has been referred to as the use of Information and Communication Technologies (ICTs) by the public sector with an aim to making the government accountable, increase and promote transparency, enhance information and service delivery and encourage participation of citizen in the decision making process (Bannister & Connolly, 2011; Kazmi, 2010).

Due to the ongoing COVID-19 epidemic, which was declared a pandemic by the World Health Organization (WHO) on March 11, 2020, e-Governance initiatives have gained interest among the governments across the world at unprecedented levels, especially in case of a large country like India which has to cater to a population of almost 1.3 billion people (https://www.who.int/emergencies/diseases/novel-coronavirus-2019). As a response to the pandemic, like most of other countries in the world, India too had resorted to a nationwide lockdown. The Government of India initially announced a 21 days nationwide lockdown beginning from March 25, 2020, which was further extended upto May 03, 2020 with a view to prevent the Stage-III spread of virus in the country (India covid-19 tracker, 2020). At present, India has started to open up its economy in a phased manner and is currently going through Phase-V (as on October 2020) of the unlocking with travel restrictions being relaxed. Up till now India, has registered 74,94,714 total confirmed cases of COVID-19 (refer Figure 1) with 114,031 fatalities (as on October 23, 2020) (refer Figure 2).
In its fight against Covid 19, India has leveraged e-Governance for various kinds of information dissemination, tracing and monitoring activities. One such notable initiative is the ArogyaSetu app which is a contact tracing, syndromic mapping and self-assessment digital service (https://aarogyasetu.gov.in/). The app had seen 16,25,00,000 downloads, as on October 30, 2020, since its launch in May 2020. Another such e-Governance initiative was the e-Pass service delivered through the service plus framework and was used by 17 states of India to provide movement e-Pass services during COVID-19 pandemic (https://serviceonline.gov.in/epass/). In another such use of e-Governance, information on availability of hospital beds, related to Covid-19 treatment, was made available by Delhi Government. The said initiative was coupled with a helpline number to raise grievance, in case the patient in not admitted in a treatment facility (Hindustan Times, New Delhi, 2020).

e-Governance services have helped India in responding to the Covid-19 situation in an expeditious manner and has continued to act as a strategic asset in the fight against Covid-19.

The economy of India, like all other economies across the world, is expected to contract. The International Monetary Fund states that the same will be in tune of −10.3% for 2020-2021 (The Hindu, 2020). The Indian government has come out with slew of economic measures to aid the economic growth, including an economic stimulus aimed at boosting domestic demand by about $9.94 billion (CNBC, 2020). e-Governance has come to the aid here too, in the form of providing quick and effective solutions to enable the effective dissemination of intent, for example, Government of Delhi created a employment exchange/aggregation platform for prospective employees to register. The said platform could be used by the prospective employers to hire (jobs.delhi.gov.in). The initiative was so successful that all applicants by August 8, 2020 were either hired or shortlisted for 1 million jobs posted on the portal, since its launch on July 27, 2020 (Times of India, 2020).

While the benefit of e-Governance is an established fact, its ability to effectively and quickly succeed in matters like covid-19 has further enhanced its value proposition. From a policy point of view, e-Governance initiatives which are supported by ICTs not only lead to value creation but also facilitate formation of interactive channels for collaboration between various stakeholders. As a result, organizations, especially non-profit, are encouraged to join such e-Governance initiatives, thereby leading to delivery of public services through Public-Private Partnerships (PPP). Whereas, citizens in the e-Governance system contribute not only as the receivers but also as co-producers of various policies and services (Amirkhanyan & Lambright, 2017; Ju et al., 2018). Any such participation by the citizen in the initiative has the potential to enhance the efficiency
and effectiveness of public organizations, establish democratic governance thereby leading to creation of social value, increase the citizens satisfaction, etc. (Nabatchi et al., 2017). Researchers conducted from the point of view of government, have categorized such value additions under Public Value (Moore, 2000). Fruits of such value being created are available to all the citizens, irrespective of their contribution or participation in the process. On the other hand, any value being created in the process which is dependent upon the contribution or participation of the individual is known to be Private Value.

As per the Social Exchange Theory, it has been propounded that citizen participation is an exchange between government agencies and individuals (Alford, 2002). During the said exchange, citizen not only acts merely as a gainer leading to increase in private value but also acts a source of resource provider by offering personal opinions, physical actions, etc. thereby leading to the creation of public value (Ju et al., 2019a).

Considering the above, it is prudent to investigate the existing nexus among various drivers of e-Governance, including ICT Infrastructure, citizens, government, etc. in order to understand the success and failures of different e-Governance projects across India, which not only face demographic challenges but also have to deal with the uneven development of infrastructure across the nation. In this regard, it may be noted that most of the studies on e-Governance in India have been limited in scope, wherein only a certain geographical area of the country has been explored or success/failure of a certain scheme has been investigated. Hence, to the best of our knowledge, no study has been found which explores the nexus among the drivers of e-Governance in India as a whole and not in relation to a specific project or geography.

As a result, our study focuses on India as a whole and ponders upon the various factors/drivers critical for the overall adoption and success of e-Governance projects in India from a policy perspective. The same has been done by delving into the Civic Voluntarism Model (CVM) and Cognitive Integration Theory, which are based upon the fact that e-participation is an exchange between the individual and the public sector (Alford, 2002). As a result, the study aims to understand the existing nexus of identified factors/drivers by classifying them under Public and Private value creators from the point of view of Citizens, thereby helping in identifying factors critical in the overall success of the e-Governance projects in India.

Our results, indicate that the influence of private value creation holds a positive impact on the overall adoption of e-Governance projects in India at large, especially in case of Urban areas with highly literate population. Furthermore, non-monetary incentives like updating participation in e-Governance projects on social media platforms, etc. play a pivotal role in adoption of e-Governance projects in such geographies, which is in line with citizens being viewed as “customers” (Amirkhanyan & Lambright, 2017).

Furthermore, the results thus obtained in the said study also hold a special value from a policy perspective, since these results may be used by Government to adopt and/or implement focussed approach towards the usage of the limited resources while implementing the e-Governance initiatives in future.

2 e-GOVERNANCE IN INDIA

Recognizing the importance of Information and Communication Technology (ICT), the Government of India established National Informatics Centre (NIC) in 1977 making it a milestone towards adoption of e-Government in India. By late 1980s, a large number of government officers in the Indian Government had computers but they were mostly used for word processing (http://arc.gov.in/). Various ministries, departments, etc. started adopting ICT for both internal (payroll processing, etc.) and business requirement (monitoring of development work, report generation, etc.). In 2006, the e-governance initiative in India was named as the National E-Governance Plan (NeGP), which got its approval from the Government of India on May 18, 2006 (Mishra & Fatmi, 2015). The NeGP started with 27 Mission Mode Projects (MMPs), and four more MMPs were added in 2011. e-Government in India has developed from the introductory stage, in which the public is informed of the existence of government websites and their usefulness as an information source, to the stage of focusing on the transactional and political participation type services. In 2014, the government of India announced INR 1 Lakh Crore (approx.) investment for the digital India program. However, despite the extensive investment in the ICT component of the public sector projects, a high failure rate of these projects was widely reported (Bhattacharya et al., 2012; Twizeyimana & Andersson, 2019). Despite the huge investment in the e-government projects, the government agencies have not been able to ensure the adoption of public services by the Indian citizens (Bhattacharya et al., 2012; Mishra & Fatmi, 2015). However, with the onset of COVID-19 pandemic, as the economy starts to open up, the new reality is unraveling across dimensions, impacting the way business functions, including the delivery of Government services to the citizens. Challenges and uncertainties are expected to persist in the near future. Thus, it is important for the Government to proactively plan for the new reality and emerge stronger from the crisis, by further accelerating the digital transformation of Government service delivery and engagement through e-Governance. As technology adoption has increased to a new height not only by Government and municipal officials, technology savvy citizens etc. but also by many who were not active technology users earlier. If leveraged correctly, this situation can help India attain newer heights in terms of its e-Governance adoption and utilization.

As calibrated resumption of economic activities and delivery of Government services to citizens have restarted, the new normal would depend heavily on IT enabled solutions. But the million dollar question remains, is the e-Governance landscape in India ready for this?
3 | THEORETICAL FRAMEWORK

In order to build upon the theoretical base, an analysis of articles related to e-Governance was conducted by the authors, wherein published articles related to e-Governance and its adoption were identified by the authors. From an analysis of 180+ articles from over 50+ journals, 70 articles were found fit for the analysis.

It was identified that majority of the articles in the field of e-Governance were empirical in nature, accounting for almost 72% out of the total articles under consideration (50 of 70). One of the other highlight from the said analysis is that the proportion of empirical studies has increased over the past few years. Among the empirical studies itself, case study based works has been dominant throughout the period under consideration (71% of the empirical studies), which has been followed by field study and case & field study respectively. Whereas in case of theoretical methods, illustrative concept studies were found to be most prominent type of studies being undertaken (50% of the theoretical studies), followed by concept and applied concepts. Above all, it is also pertinent to mention that among the selected papers, only a handful of the papers have used quantitative models.

Further, it was also identified that the following theories related to e-Governance have been used in the papers analysed:

1. Exogenous Growth Theory - Grew out of the neoclassical growth model and the works contributed by Robert Solow (1956), as cited in (Puaschunder, 2020). It assumes that economic prosperity is primarily determined by external rather than internal factors, such as the flow of goods, ideas, capital and technology innovations.
2. Endogenous Growth Theory - holds that economic growth is primarily the result of endogenous and not external forces. Endogenous growth theory by Romer (1994) holds that investment in human capital, innovation, and knowledge are significant contributors to economic growth, as cited in (Puaschunder, 2020).
3. Human Capital Theory - It has long been recognized that humans are an important component of the wealth of a nation. Schultz (1961) (Tjahjadi et al., 2020) in his human capital theory (HCT) had emphasized the critical role of “human capital” (such as education, health, and fertility) in growth and development of both the individual and society.
4. Technology–Organization–Environment (TOE) Framework - Tornatzky and Fleischer (1990), as cited in (Singeh, Abrizah, & Kiran, 2020), developed a framework that explains the decision to adopt a technological innovation by a firm is not only based on the technological consideration, but also dependent on the organizational and environmental contexts.
5. Resource Based View - Posits that the basis for a competitive advantage of a firm lies in the application of the bundle of valuable resources at the firm’s disposal as given by Wernerfelt (1984) and Barney (1991) (Campbell & Kubickova, 2020). Factors such as human resource development and other facilitating conditions such as the availability of IT resource within an economy makes it more competitive than counterparts lacking such resource.

Our study is an effort to delve deeper into the concept of adoption of e-Governance initiatives, which is in line with the existing online environment whereby consumer transactions have been made easier by facilitating superior interactions like websites, kiosks, etc. As a result, consumers are not only encouraged to revisit but also to repeat the use of said resource (Chang & Wang, 2011).

Basis above, developing an in depth understanding of the underlying dynamics of the influences on Private Value can steer policy development in the field of e-Governance. In this respect, Xu et al. (2013) have used belief–attitude–intention–behavior model to investigate how the perceived service quality of e-government services is associated with positive value appraisals, which in turn leads to a behavioral intention. However, the said model explores only two dimensions namely e-government service quality and user value. Whereas in the said study, the theoretical framework has been based upon the elements of CVM and Cognitive Integration Theory. This is based upon the fact that e-participation primarily is an exchange between the individual and the public sector (Alford, 2002), whereby both public value is created and private value acquired (Ju et al., 2019a). CVM model has emerged as an explanatory tool for participation antecedents (Kumar et al., 2020; Seyd et al., 2001; Stewart, 1997). Further, it has been argued that participation antecedents tends to retain their influence throughout the life cycle of e-participation, since they continue to evolve with IT Governance Innovation post implementation (Phang et al., 2014, 2015). It is important to mention that the incentives being offerd by the public sector has not only grown in terms of value but also have expanded in terms of dimensions. Hence, the overall motivations for citizens behind adoption of the e-Governance model and its related success, may be extended using the General Incentives Model to include following incentives (Phang et al., 2014, 2015):

1. Collective: a socially oriented benefit enjoyed by all members of the community regardless of whether they participate or not.
2. Selective: privatized outcomes of participation that fulfill the individual’s self-interest (and can help eliminate the “free ride” problem).
3. Expressive: related to the individual’s confidence in and affection towards a group. Citizen e-participation is a pro-social behavior.

Ariely et al. (2009) have stated the citizen e-participation is a pro-social behavior and is determined primarily by three different motives:
1. **Intrinsic** - motivation is pure altruism characterized by personal preferences for servicing society and increasing the well-being of others.

2. **Extrinsic** - motivations are ego-driven; the individual seeks to earn material rewards or benefits associated with giving.

3. **Image-related** - motivations are driven by the individual's perceptions of the judgment of others and the desire to be liked and respected by others.

As a result, it has been argued that sub dimensions of motivation can be broadly categorized into (Ju et al., 2019b):

1. **Public motivation**: Citizen's tendency to create public value for the government or society as they participate in governance, such as through collective incentive and intrinsic motivation.

2. **Private motivation**: Citizen's tendency to create personal benefits via selective incentive, expressive incentive, extrinsic motivation, and image motivation.

### 3.1 Civic voluntarism model

Over the years a number of other theories and models of citizen participation have been developed, which have elucidated various factors like standard political participation on the said process/model (Finch et al., 1974), the social capital theory of participation (LaPalombara, 1993), etc.

However, CVM continues to be viewed as the most comprehensive model among such models mainly on account of factoring of resources, mobilization, and motivations in the said process. The same has been derived from the general incentives model (Seyd et al., 2002), resource-mobilization theory (Snow et al., 1986) and the social capital theory of participation (LaPalombara, 1993).

It is to be noted that as per the CVM:

1. Resources - include time, money, and civic skills that facilitates the participation
2. Mobilization - refers to recommendations by friends and associates to participate in the process.
3. Motivations - benefits which are perceived on account of individuals' participation in the process.

Over the years CVM has not only been widely accepted but also extended using other theories to adapt to the context.

Lately, IT related factors, including but not limited to, connectivity, skill, etc. have been integrated in the model of CVM and positive results have been obtained against the said factors on motivation of citizen to participate (Oni et al., 2017; Phang et al., 2014, 2015). Also, IT enabled governance factors have started to play a pivotal role in satisfying the expectations of the citizens.

### 3.2 Cognitive integration theory

The second part of the model, that is, Cognitive Integration Theory is widely adopted model and is being used by not only Governmental agencies but also by a wide variety of other organizations like citizens/private organizations, non-profit organizations, etc., who tend to be related to government bodies in co-creating governance (Dawes, 2008; Nabatchi et al., 2017).

As the outset, e-Governance is a concept wherein citizens are engaged, enabled and empowered using technology and citizens participation in governance is determined by the efforts and processes by which citizens:

1. Receive information in relation to the public policies/programs,
2. Engage in formulation/implementation of such policies/programs.
3. Share feedback/opinions/values.

On the other hand, Meijer (2015) has stated that both citizens as well as government are motivated by the framework of the e-governance, which connects technological opportunities with public value formation. Also, citizens in the said framework tends to act as co-implementer/designer or initiator thereby leading to reduction in the cost borne by the Government in creation of the public value (Voorberg et al., 2015); however the associated cost is not simply eliminated from the system but shifted from governmental personnel to citizens.

Hence, e-participation by citizens tends to be a citizen-government social exchange, which is characterized by mutual rewards and contingency (Alford, 2002; Emerson, 1976). In this regard, public sector seeks cooperation and compliance from citizens in lieu of creation of crucial public value. However, eliciting the same from citizens necessitates provisioning of private incentives to avoid the problem of free riders in the system (Alford, 2002). Accordingly, incentives in this respect like material or monetary rewards, tax breaks, social reputation promotion, etc. are put in place to meet the needs of Citizens (Ariely et al., 2009; Ashraf et al., 2014).
As far as creation of Public value is concerned, it is dependent upon citizen's perception of contribution to public organizations in terms of improvement in efficiency and effectiveness, etc. and/or society in terms of democratic governance, etc. (Ju et al., 2019a; Nabatchi et al., 2017). Whereas, private value acquisition is related to generation of personal benefits owing to participation in the process like Private Value, etc. (Ju et al., 2019a).

Over the years, citizens have been started to being viewed as “customers” with e-Governance initiatives moving towards privatization (Amirkhanyan & Lambright, 2017), hence the overall importance of the perceived benefits in terms of private value has grown into a critical factor for adoption of the mechanism by the Citizens.

It is pertinent to mention that public value creation and private value acquisition are both not only interrelated but also inseparable, hence for benefits of citizen participation to accrue both the processes must take place. However, on account to the inherent property of both the processes, they tend to move in separate directions and hence require consideration separately.

As a result, we have adopted the Cognitive Integration Theory, which provides a structure to gauge user's attitude by evaluating a set of relevant attribute, which are then evaluated against their perceptions of importance of said attributes (Ju et al., 2019b; Sethi & King, 1999). The mechanism is primarily based on:

1. **Valuation**: the process of determining the evaluative scale values and weights assigned to each item of information that contribute to an attitudinal judgment.
2. **Integration**: the process of combining the information items into an overall attitudinal judgment in terms of the sum of all weights.

Accordingly, citizen e-participation has been used as the final output of the decision made by participants towards the creation of public as well as private value.

### 4 | RESEARCH MODEL AND HYPOTHESES

In order to ascertain the role of Public and Private Value in citizen participation in the e-Governance projects, we have selected a research setting wherein data has been collected to empirically examine the role of major factors like Motivation, health Incentives, etc. As a result, following constructs have been used in the said study with aim to study the role of these constructs on overall adoption of the e-Governance projects in India:

1. Collective Incentives
2. Health & Ease
3. Monetary Motivations
4. Non-Monetary Motivations

The study has explores various factor related to motivation of citizen for participating in the e-Governance project and influence of public and private value, separately, in the said participation process.

#### 4.1 | Collective incentives (Public value creation)

The concept of “Public Value” was first coined by Mark Moore. It was argued that private value serves the strategic purpose, mostly in terms of creation of private economic value. Similarly public sector also tends to create strategic value in terms of efficiency and fairness (Moore, 2000). Over the years, public management has witnessed colossal change from being a bureaucratic management to modern collaborative governance (Bryson et al., 2014; Stoker, 2006). Consequently, role of citizen participation in the success of e-Governance initiatives also has increased multi-fold by co-creation of public value alongside the public sector. It has been argued that during the process of co-creation, private value is also being accrued to citizens (Alford, 2002; Ju et al., 2019a).

In view of the above, public value creation has been defined as the efforts made to enhance efficiency or effectiveness or societal fairness and democracy (Ju et al., 2019a; Nabatchi et al., 2017). Furthermore, public value is argued to be shared among all the citizen, irrespective of the individual contributions. Whereas, private value has been defined to be the benefits earned during the said process with an intention to satisfy personal needs or/augmenting individuals trust in public sector (Ju et al., 2019a; Nabatchi et al., 2017).

In the study, collective incentives construct represents the public value created during the process of participation in the e-Governance initiatives of Government, thereby positively influencing the society at large. On the other hand, other constructs gauge the impact of private values being offered to citizens during the process.
Although literature related to broad organization management as well as customer engagement literature supports the argument of role of perceived value in driving individuals’ engagement in the project, there has been a dearth of research on the relative roles these values play in overall citizen participation in the e-Governance. In general, studies conducted in the field have established a positive co-relation between perceived value for individual with engagement intention (Rich et al., 2010).

Based on the above, we propose that both public and private value tends to have a positive impact on citizens participation intentions in e-Governance programmes.

Hypothesis (a). Public value creation is positively related to continuous e-participation intentions in e-Governance programmes.

It has been argued that collective intentions tend to exert significant influence on the intentions of the citizens to participate in the programme (Phang et al., 2015), thereby enhancing the overall participation of citizens in the e-Governance program. Collective benefits are enjoyed by all the community members, which is in line with the General Incentive Model (Seyd et al., 2002). However, in certain cases the collective intentions also play a negative role, like in case of political activities (Peddibhotla & Subramani, 2007; Phang et al., 2014), wherein individuals tend to post negligible to limited views or suggestions online. However, collective intentions in case of e-Governance programmes are generally positively associated with the creation of public value.

Hypothesis (b). Collective incentives are positively related to public value creation in e-Governance.

4.2 | Health & Ease (Private value creation)

Resource has been identified as one of three broad classes of participation factors in the CVM, we have considered Time as driver of creation Private value. The same is based on the argument that resources form the basic means or capability to meet the participation requirement of citizens in the e-Governance programme (Finch et al., 1974; Seyd et al., 2001), however the type of resource is dependent upon the type/context of the programme in question like in case of political activities, a citizen might be required to have a certain level of organization and communication skills (Phang et al., 2014).

As far as e-Governance programmes are concerned, they tend to cater to the needs of the citizens by creation of value in terms of traveling cost and time. Furthermore, not all locations of the offices implementing the programme, which are located at geographically distant locations from the actual beneficiaries, tend to cater to all the needs of citizens, thereby increasing the cost for citizens by multi-fold. Hence, among all the factors related to resources, Time has been identified as the most important factor determining the overall participation of the citizens in the programme.

One of the selective, but robust, incentive is self-interest of the citizen (Seyd et al., 2002). Such incentives are generally contextualized as per the requirement of the study like in case of political activities the same may be contextualized as political career benefit, political interest, etc., which in turn are likely to affect citizen participation in the political activities (Phang et al., 2014). In line with the same, benefits associated with the health, especially taking into account the unprecedented COVID-19 Pandemic throughout the world, have been taken into consideration and have been perceived as a private value acquisition.

Hypothesis (c). Time limitation is positively related to private value acquisition in e-Governance.

Hypothesis (d). Health incentives are positively related to private value acquisition in e-Governance.

4.3 | Monetary incentives and non-monetary incentives (Private value creation)

Over the years, online incentives have been gamified, including usage of points, leader boards, etc., to encourage adoption/enhancing user adoption of the programmes. It has been argued that gamification tends to positively influence the user outcomes both in terms of behavioral as well as psychological aspects (Huotari & Hamari, 2012). Also, gamification is usually combined with the element of monetary reward points to increase the likelihood of participation (Ueyama et al., 2014).

In this regard, other elements, like leader boards, badges, etc., are related to citizen’s personal reputation within a group of individuals which directly affect the online image, which in turn are known to promote/encourage a pro-social participation by the citizen (Ariely et al., 2009; Seyd et al., 2002). In one of such initiatives by Government e Marketplace (GeM), a dedicated e market for different goods and services procured by Government Organizations/Departments/PSUs promoted by Government of India, offers recognition.

Since, monetary and image incentives tend to encourage participation by the citizen (Ariely et al., 2009; Bucciol et al., 2011, 2015), we have assumed that monetary and online image incentives promote participation by the citizens.

Hypothesis (e). Online monetary incentives are positively related to private value acquisition in e-Governance.

Hypothesis (f). Online image incentives are positively related to private value acquisition in e-Governance.

Under the CVM Model, mobilization is one of the three major aspects responsible for influencing the participation of citizens in the e-Governance programmes. In this regard, it has been identified that Mobilization tends to take place, with respect to citizen participation, in the
form of requests to participate in the programme from various members of society, mainly relatives, friends, acquaintances, etc. Verbaet et al., 1995, as cited in Lidström, 2010. Furthermore, social-psychological perspective of the individual also plays a major determinant in participation process, whereby various subjective norms like pressure to conform to a group plays pivotal role (Whiteley, 1995). It further has been argued that mobilization tends to play a greater role in case the citizen has not been part of e-Governance programme vis-a-vis citizens who have been already involved in the governance earlier (Phang et al., 2015). The same holds significant relevance in case of e-Governance programmes since most of the participants in such programmes are not only first time participant but also lack certain desired skills like education, technology, etc. Also, it is to be noted that e-Governance projects require participation by citizens on a regular basis, as against other types of programmes like political participation.

As a result, request from other members of the society considerably enhances the chances of participation by the citizen in the e-Governance program.

**Hypothesis (g):** Mobilization is positively related to private value acquisition in e-Governance.

The primary research design and methodology adopted in the said paper is based on survey measures adopted in earlier studies. The same has been suitably modified, at places, to suit the contextual requirement of the study undertaken. A summary of the constructs used in the study have been given below in Table 1. It may be noted that the same are only indicative in nature:

Based on the above, following constructs were developed (refer Figure 3):

**TABLE 1** Summary of constructs

| Construct                      | Items (Only indicative in nature)                                                                 | Source                                                                 |
|-------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| E-participation intentions     | I want to continue using the e-Governance platform rather than discontinue its use.             | (Bhattacherjee, 2001; Phang et al., 2015)                               |
| Creation of Public value       | I would like to participate in e-Governance activity to bring benefits for society.             | (Karunasena & Deng, 2012)                                             |
| Acquiring Private value        | I feel I am getting good personal benefits for my contribution to activity.                     | (Kuo et al., 2009) and (Yang et al., 2016)                             |
| Time                          | I have enough time to participate in e-Governance programmes.                                     | (Oni et al., 2017)                                                    |
| Mobilization                  | The engagement of people around me promotes my participation in e-Governance                    | (Oni et al., 2017)                                                    |
| Collective incentives          | Participation in e-Governance can make positive social effects.                                  | (Phang et al., 2015)                                                 |
| Health incentives             | Participating in e-Governance programmes is beneficial for my health.                            | (Phang et al., 2015)                                                 |
| Online monetary incentives     | The monetary rewards (i.e., money, prizes) obtained through use of e-Governance channels are attractive to me. | (Phang et al., 2015)                                                 |
| Online image incentives        | Updating my social media to show my participation in e-Governance.                              | (Phang et al., 2015)                                                 |

**FIGURE 3** Base model of the structural equational model
1. Non-Monetary Benefits
2. Monetary Benefits
3. Health & Ease
4. Common Incentives

In the said model, all the constructs, namely Non-Monetary Benefits, Monetary Benefits, Health & Ease and Common Incentives, are expected to have a positive relation with e-Governance.

5 | RESEARCH DESIGN AND METHODOLOGY

It may be noted that from the above constructs, three constructs namely Non-Monetary Benefits, Monetary Benefits and Health & Ease represent and gauge the accrual of private benefits to the respondent, whereas Common Incentives has been designed to captures the public value.

In order to test the model, data was collected by conducting a field survey with the following major groups of citizens:

1. Policy Makers (Ministry of IT, Govt. of India, State IT Department, NIC, etc.)
2. Consultants (Big Four Consultants, National Institute for Smart Government, etc.)
3. End user citizens (based on the strata suggested by prior research/studies and pilot survey)

The said questionnaire was administered using Google Survey. Once the data against the said questionnaire was collected, a base model, in line with the association expressed in Section 5, without any modifications was analysed using SEM package in Lavaan Library of R Studio.

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\text{eGov} \sim \text{Non-Monetary Benefits} + \text{Monetary Benefits} + \text{Health & Ease} + \text{Common Incentives}
\]

Later, various modifications in the model were introduced basis Modification Indices, which is also a part of the Lavaan Package, with a view to improve upon the model in terms of Model Fit Indices. After deciding upon the final model, SEM package was applied on the model and the results thus obtained were further checked using Model Fit Indices.

6 | DATA ANALYSES AND RESULTS

6.1 | Participant profiles

At the onset, we explore the data using descriptive analytics; the same will be used to understand the profiles and primary traits of the participants of the survey. It may be noted that the said study is based on 114 responses against the questionnaire. The questionnaire administered is placed at Table 2 and the same was circulated among the participants through electronic medium. This method was preferred over the other more traditional methods owing to the ongoing pandemic situation and geographical spread of the participants. The geographical and physical spread of respondents is also useful to break the regional bias towards the e-Governance.

The gender profile of the participants has not been evenly distributed, and most of the responses received against the said survey were from Male participants, which was around 76%. Furthermore, it is also notable that most the respondents were from the Age Groups of 36–45 (around 33%), which was closely followed by Age Group of 26–35 (around 30%) and Age Group of 18–25 (around 28%). A brief summary of the respondents profile has been provided below in Table 3:

The other most dominant demographics related to the respondents was that most of the respondents belonged to Urban areas (around 85%) and were Graduate or above (almost 99%).

6.2 | Measurement model analysis

Lavaan package of R has been used to validate the Measurement as well as Structural Model. At the initial level, the model specified by the theory was tested using the Confirmatory Factor Analysis. Taking into consideration the Unidimensionality of the model, which has been achieved by ensuring that all the measuring items had the acceptable factor loadings for the respective latent constructs. As a result, items with factor loadings of less than 0.60 have been dropped from the model (Kashif et al., 2016).

As a next step forward, models fitness and viability has been assessed by taking into consideration the Construct validity measures, wherein Absolute and Incremental indicators were found to be at acceptable levels (Bentler, 1990; MacCallum & Hong, 1997). Summary of the Model-of-fit Indices obtained provided in Table 4.
| Construct               | Question number | Question                                                                                                                                 |
|-------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| eGov                    | Q31             | Using e-government portal and/or Ministry’s website(s) to access government services increase the government transparency.                   |
|                         | Q32             | Using e-government portal and/or Ministry’s website(s) to access government services decrease corruption inside the government.               |
|                         | Q33             | Using e-government portal and/or Ministry’s website(s) to access government services increase the government accountability.                  |
|                         | Q34             | Overall, I believe that using e-government portal and/or Ministry’s website(s) to access government services provide good public value.          |
|                         | Q36             | Participating in availing the government services through e-governance initiatives is expected to help me in maintaining social distancing, thereby facilitating in remaining safe. |
| Collective incentives   | Q22             | I feel availing the government services through e-governance channels by me influences my family, colleagues, friends, community, etc. at large |
|                         | Q23             | I feel advertisement of to avail e-government services has a positive influence on the commodity at large.                                 |
|                         | Q24             | I feel my recommendations towards using e-government channels influences my family, colleagues, friends, community, etc. at large           |
|                         | Q28             | Participation in availing the government services through e-governance initiatives can make positive social effects.                       |
|                         | Q29             | Participation in availing the government services through e-governance initiatives is a way to respond to government calls to action       |
|                         | Q30             | Participation in availing the government services through e-governance initiatives can facilitate an increase in social collective benefits.|
|                         | Q35             | Group success is more important than individual success.                                                                                  |
| Health & Ease           | Q4              | E-government portal and/or Ministry’s website(s) is flexible to interact with.                                                             |
|                         | Q5              | Overall, I find using e-government portal and/or Ministry’s website(s) to access government services easy to use.                           |
|                         | Q6              | I feel I am getting personal benefits by availing the government services through e-government channels like timeliness, quality, etc.    |
|                         | Q7              | Availing the government services through e-government channels is worth my time and efforts.                                               |
|                         | Q8              | Availing the government services through e-government channels brings me more advantages than disadvantages.                              |
|                         | Q10             | Using e-government portal and/or Ministry’s website(s) enhances my effectiveness in accessing government services (e.g., find the most relevant information about a service). |
|                         | Q11             | Using e-government portal and/or Ministry’s website(s) allows me to access more government services than would otherwise possible.         |
|                         | Q12             | Using e-government portal and/or Ministry’s website(s) to access government services increases my productivity (e.g., find information about services within shortest time) |
|                         | Q13             | Overall, I find e-government portal and/or Ministry’s website(s) useful for me to access government services.                               |
|                         | Q14             | I intend to use the e-government portal and/or Ministry’s website(s) to access government services frequently.                             |
|                         | Q15             | I predict that I should use the e-government portal and/or Ministry’s website(s) to access government services in the future.            |
|                         | Q16             | I feel everybody should avail government services through e-government channels in order to save time                                      |
|                         | Q17             | I feel availing the government services through e-government channels requires lesser time than traditional channels.                     |
|                         | Q18             | Using e-government portal and/or Ministry’s website(s) to access government services is an efficient way to manage my time.                |
|                         | Q19             | Using E-Government portal and/or Ministry’s website enable me to access government services more quickly                                  |
|                         | Q20             | Learning how to use e-government portal and/or Ministry’s website(s) to access government services is easy for me.                         |
|                         | Q21             | I find it easy to use e-government portal and/or Ministry’s website(s) to find what I want.                                               |
| Monetary motivations    | Q37             | The monetary rewards (i.e., money, prizes) associated with assisting government to maintain law and order, etc. through the use of e-governance channels are attractive to me. |
|                         | Q38             | The monetary benefits (i.e., concessions in application fees, etc.) on obtaining government services through e-governance channels encourages me. |
Further, Convergent validity and Reliability have been checked by calculating Average Variance Extracted (AVE) (Campbell & Fiske, 1959) and Composite Reliability (CR) (Fornell & Larcker, 1981), respectively. The same were found to be in acceptable ranges, that is, CR > 0.7, and AVE > 0.5. Summary of the same provided in Table 5 below.

### TABLE 2 (Continued)

| Construct                     | Question number | Question                                                                                                                                 |
|-------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Non-monetary motivations      | Q39             | I would like to acquire more monetary rewards (i.e., money, prizes) by assisting to maintain law and order.                                 |
|                               | Q40             | Using e-government portal and/or Ministry’s website(s) to access government services provide better value for money.                       |

### TABLE 3  Respondents profile

| Sl. No. | Particulars   | Classification        | Figures in percentage (%) |
|---------|---------------|-----------------------|---------------------------|
| 1       | Sex           | Male                  | 76.3%                     |
|         |               | Female                | 23.7%                     |
| 2       | Age Group     | 18-25                 | 28.1%                     |
|         |               | 26-35                 | 30.7%                     |
|         |               | 36-45                 | 33.3%                     |
|         |               | 46-55                 | 7.9%                      |
|         |               | 56 and above          | 0.0%                      |
| 3       | Location      | Urban                 | 85.1%                     |
|         |               | Semi-urban            | 10.5%                     |
|         |               | Rural                 | 6.1%                      |
| 4       | Education     | Below 10th standard   | 0.0%                      |
|         |               | 10th standard         | 0.0%                      |
|         |               | 12th standard         | 0.9%                      |
|         |               | Graduate              | 47.4%                     |
|         |               | Post-graduate and above | 56.2%                    |

### TABLE 4  Model-of-fit indices

| Category                | Name of indices                                      | Value  |
|-------------------------|------------------------------------------------------|--------|
| Absolute fit indices    | Root Mean Square Error Of Approximation (RMSEA)       | 0.083  |
| Incremental fit indices | Comparative Fit Index (CFI)                          | 0.894  |

### 6.3 Structural model analysis

Measurement model analysis was duly followed by Structural model analysis, which primarily evaluates the relationships between the constructs proposed in the said model. With a view to improve upon the model, various relationships found to be non-significant between the constructs were dropped from the model. Figure 4 shows the revised structural path diagram of the final model. Fit indices of Root Mean Square Error of
Approximation (RMSEA) and Comparative Fit Index (CFI) have been listed in Table 4 and are were found to be within the specified threshold limits, indicating towards a good model fit.

6.4 Construct wise results

The construct wise results obtained along with the p-values has provided in Table 6 below: Final Model:

Based on the analysis, the final result obtained using Lavaan Package of R -Studio is placed at Figure 4, however for the ease of understanding a simpler construct of the model has been created and is placed below at Figure 5. It may be noted that initial understanding basis the literature review that all the constructs being considered in the said analysis are expected to have a positive relation with the dependent construct, that is, e-Governance, only Health & Ease along with Non-Monetary Measures were found to be positively related with dependent variable. The said relationship has been discussed in detail in subsequent sections.

7 DISCUSSION AND IMPLICATIONS

Due to the on-going Covid-19 Pandemic, e-Governance has been one of the key facilitators in enabling delivery of some of the most elementary but necessary services by the government, apart from aiding the fight against Covid, be it at the strategic planning level like covid19india.org and

| Construct          | Convergent validity (Average variance extracted) | Reliability (Composite reliability) |
|--------------------|-------------------------------------------------|------------------------------------|
| eGov               | 0.738967                                        | 1.070752059                        |
| Collective incentives | 0.687799857                                    | 1.065166442                        |
| Health & Ease      | 0.623926941                                     | 1.035754311                        |
| Monetary motivations | 0.68474325                                     | 1.115307086                        |
| Non-monetary motivations | 0.630642667                               | 1.098139787                        |
Aarogyasetu app or at an operational level like e-pass. Pre-Covid environment, e-Government was mostly associated with the delivery of the services by Government in a cost effective manner, which was further substantiated by the fact that such initiatives play a major role in reducing corrupt practices, bribery, etc.

However, a new dimension has been added to the said area, namely concerns related to health since most of the traditional infrastructure has not been designed to allow for the social distancing norm. This is further fueled by the disruption in the transportation sector, wherein movement of vehicles are being regulated by government in many of the states.

In view of the above, the said study was undertaken to study the impact of the health related concerns on overall adoption of the e-Government initiatives along with traditional constructs. Based on the analysis, contribution of non-monetary incentives was found to be

### TABLE 6 Construct wise results

| Construct              | Associated hypothesis                                                                 | Estimate | p value |
|------------------------|---------------------------------------------------------------------------------------|----------|---------|
| Collective incentives  | Hypothesis (a). Public value creation is positively related to continuous e-participation intentions in E-governance programmes. | −0.619   | 0.84*   |
|                        | Hypothesis (b). Collective incentives are positively related to public value creation in green commuting E-governance. |          |         |
| Health & Ease          | Hypothesis (c). Time limitation is positively related to private value acquisition in E-governance. | 0.376    | 0.57*   |
|                        | Hypothesis (d). Health incentives are positively related to private value acquisition in E-governance. |          |         |
| Monetary motivations   | Hypothesis (e). Online monetary incentives are positively related to private value acquisition in E-governance. | −1.204   | 0.46*   |
| Non-monetary motivations| Hypothesis (f). Online image incentives are positively related to private value acquisition in E-governance. | 3.691    | 0.09**  |
|                        | Hypothesis (g). Mobilization is positively related to private value acquisition in E-governance. |          |         |

* Not significant.
** Significant at 10% significance level.

### FIGURE 5 Final model showing direct effect (Constructed by authors based on original output of the SEM model)
dominating attribute, in the overall adoption of e-Governance projects among the participants. Monetary incentives as well as Collective incentives, on the contrary, were found to be playing a negative role on the overall adoption. The said results when viewed in line with CVM and Cognitive Integration Theory, whereby private value is being created especially in case of Non-Monetary Motivations, are likely to continue to exert their influence in the future also.

Thus from a policy perspective, Government may consider to focus the usage of its limited resources towards enhancing Non-Monetary Motivations like social media engagements, etc., especially among the educated class residing in urban areas, since participation antecedents tends to retain their influence throughout the life cycle of e-participation (Phang et al., 2014, 2015). Furthermore, the findings are also aligned with findings of Guo et al. (2020), wherein antecedents with respect to participation of citizens in Government social media accounts (GSMAs) have been explored under CVM. In the said study, it has been established that GSMAs can be effectively used by Governments to tackle crisis by developing holistic understanding regarding the role of media in crisis management. In one such study by Ju et al. (2019b), which is based on the analysis of citizen e-participation in the context of green commuting governance, it has been concluded that online image incentives significantly contribute towards the adoption of e-Governance initiatives among the participants by enhancing overall private value acquisition for the participants.

However, one of the major assumptions of the analysis that Health & Ease factor plays a positive and dominant role in overall adoption of the e-Governance initiatives, in light of the ongoing Pandemic, although was found to be positive, but was not found to be influential in the said analysis. It may be noted here that profile of the participants being skewed in nature may require further exploring by including participants from other strata’s, especially Rural, and limit the generalization of the results thus obtained.

With a view to summarize the findings of the study, it may be concluded that Collective Incentives (Hypothesis (a) and (b)) along with Monetary Motivations (Hypothesis (e)) were found to negatively influence the overall adoption of e-Governance, which was in line with findings of Ju et al. (2019b), whereas Health & Ease (Hypothesis (c) and (d)) and Non-Monetary Motivations (Hypothesis (f) and (g)) were found to exert positive influence on the overall adoption of e-Governance.

It is to be noted that both Health & Ease along with Non-Monetary benefits are directly instrumental in generating positive private values for the participants. Hence, policy makers may consider allocation of resources and efforts, towards variables directly influencing the generation of private values for citizens, thereby facilitating the overall adoption of e-Governance projects in India.

It is understood that the p-value obtained in case of Monetary Benefits, Health & Ease and Common Incentives were not found to be acceptable range. Moreover, p-value for Non-Monetary Benefits, although found to be acceptable range of 10%, is unlikely to produce robust analysis for any Policy Decision in future. As a result, the said research needs to be further explored for an in depth analysis and generalization across the geographies, including Rural.

8 | LIMITATIONS AND SCOPE

We understand that the scope of the work was limited on account of sample size and owing to the rather small sample size used in the study, findings of the study may be restricted in nature leading to limited generalization. Further, it may be mentioned that SEM performs best when the sample size is greater than 100, although Loehlin (1992) recommends a sample size of at least 100 cases, preferably 200, whereas Hoyle (1995) also recommends a sample size of at least 100–200 (Niall Crowley, 2011).

It is further understood that majority of the respondents were highly educated and residing in urban areas, hence the study has limited power in explaining the adoption factors relevant to less educated population or population residing in Semi-Urban and Rural areas of the country.

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