The Impact of COVID-19 on Rural Citizens for Accessing E-Governance Services: A Conceptual Model Using the Dimensions of Trust and Technology Acceptance Model

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Abstract  World Bank Report highlights that nearly 65% of the entire population resides in rural villages. This displays the majority of the population has been covered by rural people in India. Hence any facilities offered by our government should productively reach the rural people, as they face multiple challenges in meeting their basic needs and requirements. E-governance is one of the successful platforms to provide convenience government services and communicate with the rural citizen with rural citizens at the most pandemic situation of COVID-19. Therefore this study has done a theoretical review on accessing the e-governance services by the rural people in this pandemic situation of COVID-19 through measuring the attitude of the people in the rural areas and their behavioral intention with the dimensions of trust. The study has discussed various dimensions of Trust for adopting e-governance services. The researchers have highlighted the percentage of people accessing government websites and obtaining e-governance health care services to safeguard their lives in a pandemic situation of COVID-19. The conceptual model developed by the authors can be extended by the researchers for making an empirical investigation through collecting the primary data from the government officials and people in rural and urban areas to view the obstacles in implementing it effectively. The findings of the research study help the government officials, policymakers, and people living at various places in society to understand basic needs and requirements for accepting the technology.

Keywords  E-governance · Rural people · Common service centres · Health care services · COVID-19

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1 Introduction

E-governance is described as the system of facilitating government services through Information and Communication Technology. ICT is said to be the most comfortable mode for transferring the information between the citizens and the government [1]. Researchers call e-governance services as “SMART” which means Simple, Moral, Accountable, Responsible, and Transparent methods to deliver the services to the people living in our country. Effective and Smooth administrative function of offering the favours for the poor people is the ultimate aim of e-governance services [2]. It is successfully developed and utilized effectively in developed countries like UK, USA, China, etc. But in our country using government services through ICT is still in a growing phase. In our country, out of the total population 69.8% of people reside in rural villages and the literacy is rate is comparatively lesser than 80% in rural villages across various states of India. It is considered to be a greater challenge and obstacles for the government officials to reach the rural people and facilities their services in a productive way [3]. The GOI has taken various actions for the development of rural villages and have taken various efforts to create awareness for the rural people to utilize the technology. It has developed Common Service Centres in remote villages to satisfy the needs and requirements of rural citizens. CSCs are considered as an umbrella to facilitate e-governance services like Agriculture, Financial Inclusion, Digital platform services, and Health care services [4]. This study has developed a review report on Common Service Centres of e-governance for health care services of rural development, highlighted the initiatives taken under e-governance services to safeguard the people from the pandemic virus COVID-19 and its impact on people to trust and believe the government services through ICT. This research study has examined the dimensions of Trust among the rural respondents towards accessing e-governance services and ascertained the impact of COVID-19 regarding the actual usage of e-governance services.

2 Dimensions of Trust Among the Rural Respondents Towards Accessing E-Governance Services

Trust is stated as a belief or an expectation towards the opposite party associated with the sensation of risk if the trust is reduced [5]. Trust is said to be build when the customers compute positive feelings on the networking sites and they are ready to adopt the vulnerabilities [6]. It is the belief or confidence that the customers have over another party and accept the facilities or services offered through the internet [7]. Trust plays an important role in making rural citizens access e-governance services [8]. Trust is stated as the challenging dimension for our government since citizens in our society get dominated by security and privacy issues. Hence trust is described as a perceived environmental security and competency issue for the citizen for using e-governance services [9].
2.1 Perceived Security (PS)

Perceived Security is defined as the degree in which a person believes that using smartphones are secure for sharing sensitive information like financial transactions and information about the consumers [10]. The Online environment is highly concerned regarding the importance of Security and privacy issues. Researchers have reported that security and privacy issues are the primary barriers found in Internet Shopping. These issues are further extended to accessing internet banking [11]. Security is considered as the major challenge for accepting banking services through Internet [12]. The range of accessing internet banking services has not further modified due to several security issues [13]. Studies examined that security issues are determined as significant dimensions to adopt online banking services in Australia [14]. Threats involved in internet banking can either be through the financial data that is transacted or with the networking sites, or with the unauthorized usage [15].

2.2 Perceived Privacy (PP)

Privacy is defined as the ability of a group or an individual to shelter their information about themselves and expressing themselves selectively [16]. Studies highlight that challenges related to the security and privacy of customer’s information make unfavorable consequences towards assessing online services [17]. Researchers have identified that due to a lack of confidence in Information and Communication Technology’s privacy and security, people hesitate to accept the vulnerabilities in accessing it or share their information [18]. Authors have discussed that a lack of control in the privacy of customer personal information leads to privacy risk in using an online transaction system [19]. According to the usage of e-commerce services in Spain, privacy and security are said to be the important dimensions to develop trust over the people for accessing it frequently [20].

2.3 Perceived Risk (PR)

Perceived risk is described as the customers’ perception towards uncertainty on accessing Information and Communication Technology. It is stated that perceived risk is the likelihood of unlike consequences regarding the purchase intention in consumer research [21]. It is the amount of uncertainty faced by consumers for utilizing specific products or services [22]. Authors have examined that, the perceived risk highly influences the willingness of a consumer to accept the innovation made in any services or products. In their study, the researchers found that there is a significant relationship between total perceived risk and consumer’s perceived risk for adopting online banking services [23]. It is specified in the research study that perceived risk
for accessing the technology by the consumers affects their decision for utilizing it frequently [24].

### 2.4 Information Quality (IQ)

According to Information System Model, the successful system’s output is called as the quality of Information provided by the system [25]. It is stated as the bulk of factors that are interrelated, functions, distribute, and store the information for supporting decision making and have control in an organization [26]. The research study has determined the various factors of Information and System Quality that impact the adoption of e-governance websites. The researchers have stated that the characteristics of information quality consists of timeliness, accuracy, relevance, completeness, and precision [27]. The study examined that out of various dimensions of Information System, relevancy, Completeness, and Accuracy plays a significant role when compared with other dimensions of Information System [28]. To access the frequent usage of e-governance website by the people, it is important to examine the quality of information facilitated by the website for the users [29]. Authors have measured that Information Quality is said to be the most significant factor with 0.84 as the coefficient value with the service quality of common service centres in rural areas [30].

### 2.5 Perceived Usefulness

Perceived Usefulness (PU) is described as the consumers’ perception in connection with the results of experience [31]. Researchers have examined the impact of institutional beliefs regarding internet banking adoption. The research objective of the study is to analyze the pattern of using technology by bank customers in South Africa. The researchers have collected information from 300 respondents for the study. The authors have explored that 61% of the customers are highly benefitted in using Banking Services through Internet. The customers perceived that Banking services through internet are extremely useful to them [32]. Studies found that perceived usefulness is the most influential dimension for accepting e-recruitment techniques for job seekers. The study has been conducted among 356 job seekers for utilizing e-recruitment techniques. It is found that perceived usefulness has a coefficient value of 0.53 towards the attitude of the respondents [33]. Researchers have applied the TAM model to evaluate the actual behavior of the user for accessing banking transactions and gathering the information and purchasing the products [34]. Perceived Usefulness of Banking services are supportive in checking the bank balances, payment of bills and money transactions [35].
2.6 **Perceived Ease of Use (PEOU)**

Perceived Ease of Use (PEOU) is stated as the belief of the person on accessing a specific application or the system will be exempted from effort [36]. Researchers have identified the antecedents which impact the adoption of banking technologies by customers. The authors have utilized the TAM in the study and the information is gathered from 208 customers and made a path analysis for analyzing the significance between the variables used in the study. Result of the study highlights the positive relationship linking the variables PEOU and the bank customers’ attitude with the beta value of 0.23 [37]. The Author has described the attitude of faculty members towards using ICT for teaching higher education. The researcher has gathered the primary data from 261 lecturers. The study has suggested that ICT will enhance competences and performance towards the faculty members for handling classes in universities [38]. The Study argued that banking services through technology have ease of use and minimum effort to process [39].

2.7 **Attitude**

Attitude is defined as both positive and negative feelings of a person or an individual concerning a particular behavior. Researchers have described that people encounter positive or negative feelings when they are accomplishing a specific behavior [40]. The researchers have identified that the dimension “attitude” is the most influential dimension to understand the behavior of the people living in rural areas [41]. Several theories such as TPB (Theory of planned behavior), TRA (Theory of reasoned action), and Technology Acceptance Model (TAM) described various dimensions of an attitude of a people for accessing technology [42–44]. The authors have used the Technology Acceptance model to build the conceptual framework on examining the attitude of people living in rural areas towards accepting mobile banking services with the business correspondent model as mediating variable [45]. Studies determine that the dimension of behavioral beliefs increase the acceptance rate of the cashless payment system among rural citizens [46]. Perceived Trust, ICT Literacy, and Service Quality are the important factors to describe the attitude of rural citizens to utilize the e-governance service [47]. The researchers have identified that perceived usefulness is the most influencing factor for examining the factor “attitude of rural citizens” towards adopting technology-based banking [48]. Through Information and Communication Technology (ICT) acceptance factors like Perceived usefulness (PU), Perceived Ease of use (PEOU), subjective norms, and voluntariness, the attitude of the people from rural villages can be analyzed for adopting mobile banking [49]. An increase in awareness of ICT among rural people increases their attitude for accessing it frequently [50].
2.8 Behavioral Intention (BI)

Behavioral Intention is referred to as analyzing the likelihood of a person when they adopt the system or an application. It is the dimension that predicts the future behavior of a person to use technology [40]. The authors have built a conceptual framework for the adoption of technology using TAM. Information has been collected from the 720 employees in a steel manufacturing company. Results highlight that the factors “behavioral intention” and “actual usage” have a relationship for accepting the technology among the employees [51]. Authors have identified that the dimension “behavioral intention” is the dominant variable to examine the utilization of mobile banking [52]. Researchers have analyzed the Behavioral Intention of the people for using 3G Technology. Researchers have utilized the TAM (Technology Acceptance Model) and the UTAT (Unified Theory of Acceptance and Use of Technology) for constructing a theoretical framework. The result of the study reveals that a variety of 3G services, perceived usefulness, social influence, and service quality are the various dimensions of Behavioral intention of the people for accessing 3G Technology [53].

2.9 Actual Usage (AU)

Actual usage is defined as the behavioral response examined by the actions of the individual in real life. It is the amount of time utilized in the system and using it frequently [54]. Researchers have examined the customers’ intention of accessing Shopping through the Internet. Researchers have utilized TAM (Technology Acceptance Model) and TPB (Theory of Planned Behaviour) to construct a conceptual model for analyzing the actual usage of customers Internet shopping [55]. Studies have targeted senior analysts in business schools under the marketing section for gathering the primary data. The study pointed out variables used in the study has a significant relationship with the standardized range of 0.7 [56]. The study has proposed the conceptual model for measuring the acceptance of technology by the employees. The authors reported that the variables “intention of the employees” and “Actual Usage” has a significant and positive relationship [57]. The study implications described that the attitude of the rural people is dependent on a lack of awareness on using the services through mobile banking [58]. Analysis of the study on accessing mobile based services reveals that there is a positive relationship between the attitude of the rural people and the Intention towards usage of technology [59].
3 Impact of COVID-19 for the Actual Usage of E-Governance Services

E-governance acts as the key to facilitate government services through the electronic system for the people living in the unreached systems in society. It facilitates the citizens to get benefited from their services at a reasonable cost. But, our government has faced several challenges and obstacles to reach the citizen in remote villages and create awareness about the e-governance services facilitated in rural areas. Due to a lack of awareness and lower level of literacy rates at villages, our government officials have suffered in making the rural people access e-governance services. People living in rural areas resist to change themselves and adopt technology-based services offered by the government. There occurs a drastic change among the people for adopting technology-based services during the pandemic situation of COVID-19.

On 31st December, 2019, strange a new pneumonia virus was reported in WHO (World Health Organization) country office, China. A cluster of cases with this virus was infected in Wuhan city, China. This deadly infected virus has given a name called “2019 Novel Corona Virus” (COVID-19) [60]. It causes respiratory infection to humans and it widely spread from person to person similarly like flu. This virus has spread all over the world countries like United States, Brazil, Russia, Spain, United Kingdom, Italy, India, Germany, etc. Thousands and Lakhs of cases have been reported daily in various countries [61]. World Health Organization (WHO) insisted people use masks during traveling at roads, doing home care and health care services, and use hand sanitizers for the prevention of the virus. India is in 7th place among the most affected countries like Italy [62]. The entire country was under complete lockdown for more than 75 days. Our government has regulated various moments to take care of public health. Under this condition, health care services under common service centres (CSCs) health care services play an important role in safeguarding the lives of people living in remote villages [63].

3.1 CSC (Common Service Centre) Health Care Services

The primary objective of CSC health care services is to protect the health and cure the illness of people in remote villages through Information and Communication Technology [64]. The objectives of CSC Health care services through ICT are:

1. Facilitate clinical support under non-emergency health conditions.
2. Associating the users by overcoming geographical barriers even for the people who are not in the same location.
3. Using several types of ICT based delivery channels to facilitate health care services even in the unreached corners of the society.
4. To provide quality and cost-effective health care services to the unserved and underserved people.
5. To improve rural entrepreneurship, enhance community participation, and promote activities for social improvements.

### 3.2 Health Care Services Offered Under CSC

There are about 8 different services offered under CSC [65]. They are listed below:

1. **Telemedicine:** It is the form of primary care for the people visiting CSC for seeking advice from the doctors during nonemergency medical conditions and when the direct contact with the doctor is not necessary. CSC-SPV (Special Purpose Vehicle) provides a platform to Village Level Entrepreneurs (VLEs) to get integrated with Digital Seva for getting consultations from specialists in Allopathy, Homeopathy, Ayurveda, and Veterinary Doctors.

2. **Diagnostic Services:** To identify the specific weakness and health conditions of village people, a diagnostic test has been done. There are two sets of diagnostic services are provided in CSCs such as Invasive diagnostic tests and Non-invasive diagnostic tests.

3. **Medicines:** Under PRADHAN MANTRI BHARTIYA JAN AUSHADHI PARISHAD (PMBJP) scheme quality medicines are offered at affordable prices through JAN AUSHADHI KENDRA. These Kendra offers specific drugs that are available at lower prices to complete the vision of providing quality medicines to the poor at a reasonable cost.

4. **Products:** There are three different products facilitated under CSC. They are Patanjali Products for VLEs. They provide membership cards for the buyers to get benefited on their products, JIVAA Ayurveda Products to get ayurvedic treatments at doorsteps and Essilor to prescribe lenses, spectacles, and sunglasses.

5. **Customized Health Packages:** It is the cost-effective treatment provided for the rural villages. The package includes the Health Homeo plan for 1 month that provides two teleconsultations and one medicine sent to the patient through courier. In Health Homeo 499 plan, the patients get facilitated for 5 video consultations with the doctors, first aid family kits, and 2 medicines will be sent through couriers. Health Homeo plan for Rs. 999 is the one year plan to get 9 video consultations, free medical consultation for the registered family members, first aid family kits, and 6 medicines sent through couriers.

6. **Training:** CSC SPV offers a training programme for blood sample collection to Village Level Entrepreneur (VLE). It is the 11 days training programme containing 2 days theory and 9 days of practical sessions.

7. **CSC Wellness Centres:** It is organized to facilitate tele-medicines, generic medicines services, and diagnostic services under one common roof through the networks of Common service centres (CSCs) [66].

8. **Digigaon:** It is the “Digi Gaon Initiatives” taken by the Ministry of Electronics and Information Technology for remote and rural villages. Through this platform, the citizens can get online services from the state, central and
private players. They create agents for promoting rural entrepreneurship, building capacity development programmes, and activities for social improvements.

3.3 Aarogya Setu App

On 2nd April 2020, the Ministry of Electronics and Information Technology, India has launched the Mobile Application called Aarogya Setu for limiting the spread of Coronavirus in the country. It enables contact tracing via Bluetooth, receiving recent information about COVID-19 and mapping with hotspots. The application can be accessed with 12 different languages on Android, KaiOS, and IOS platforms. The Application has successfully reached 114 million users till 26th May 2020. Transparency, Privacy, and Security are the three main pillars of this application to safeguard the citizens from this deadly Virus. The Government of India (GOI), have demonstrated the Aarogya Setu Application clearly and transparently to benefit the people by facilitating technology-based services and fight against the pandemic disease [67].

4 Research Gap

Several research studies have focused on the challenges and obstacles faced by the rural citizens for accessing the e-governance services. This research study has analyzed various dimensions of Trust such as perceived Security, Perceived Privacy, Perceived Risk, and Information Quality for adopting e-governance services. Very few research studies have described the services offered to the rural people through common service centres of e-governance especially the health care services. This research study has given a detailed description of all the health care services offered for the rural citizen for the societal and rural developments. During this pandemic situation of COVID-19, Information and Communication Technology is the only mode for the people to obtain any kind of facilities availed by the government. The most talkable and successful application called “Aaroaya Setu” has been discussed briefly in this study.

5 Conceptual Model

Figure 1 displays the conceptual model of the research study. The study has taken the Technology acceptance model developed by Davis et al. [54]. Research Study has extended the Technological Acceptance Model for examining the adoption of social media usage among the students. The authors have explored that ‘Subjective Norms’, ‘Perceived enjoyment’, ‘Self-efficacy’, ‘Perceived Connectedness’,
‘Perceived Critical Mass’, ‘Perceived Trust’, and ‘Perceived Security’ are the most constant factor for the extension of TAM [68]. Qualitative approach using meta analysis has been made by extending the UTAUT (Unified Theory of Acceptance and Use of Technology) Model for examining the adoption of mobile payment by the users. The finding of the research study reveals that Perceived Cost, Perceived Trust and Self-efficacy are the dimensions that have attained the significant results [69]. Perceived Trust and Perceived Risk are the most influential factors for Mobile payment usage among the students [70]. Performance Expectancy and Perceived Benefit has the positive relationship among the higher education students for adopting the system of e-payment [71]. To identify the technology impact on usage behavior, TAM is considered as the most inspiring models and it has been utilized widely in several contexts [72].

In this present study, the researchers have developed the conceptual model to examine the actual usage of the system by measuring the variable “Behavioral Intention (BI)” and “Attitude” to accept the services offered through technology. The researchers have considered the variables “Perceived Ease of Use (PEOU)” and “Perceived Usefulness (PU)” as the two independent variables for measuring the dimensions “Attitude of the people” and “Behavioral Intention” to adopt the technology. This study has considered attitude and actual usage as the study variables from the TAM. Additionally, the study has focused on analyzing the dimensions of perceived trust such as perceived security, perceived privacy, perceived risk, and information quality to measure the variables “Attitude” and “Behavioral Intention” of the people in rural villages for accessing e-governance Health care services with the mediating variable of COVID-19.
6 Limitations and Further Work

This study has discussed the positive view of COVID-19 and the drastic change in the mindset of the rural people to adopt the technology-based services offered by the government during the pandemic situation. The current study has described the present situation of rural development with the source of secondary data. Accessing the government websites has increased to 80% and accessing Aarokya Setu app has increased to 114 million people to safeguard their lives. This shows that people believe and trust the favours facilitated by our government through technologies. Even though this pandemic situation threatens the life of the people, it focuses on people to learn new knowledge and accept changes or innovations that are taking place in the countries. The study has limited with the theoretical discussion on people accepting the government services through ICT and constructed a model using TAM with the mediating effect of COVID-19. The study has proposed the “e-Health Care Acceptance Model” and it can further be extended by the researchers for making an empirical investigation through collecting the primary data from the government officials and people in rural and urban areas to understand the challenges in implementing it effectively.

7 Conclusion

The research study has identified the most influential gap from the existing literature survey by considering the positive view of COVID-19. It has created a huge revolution all over the world to create resistance in the mindset of the people in rural areas to accept e-governance services. It has created the strong hope that people in crisis receive and follow the guidelines of e-governance services specifically the health care facilities. Hence this research study helps the government officials, policymakers, and people living at various places in society to understand basic needs and requirements for accepting the technology. The researchers conclude with the statement that the study has highlighted the innovation of ICT created by the government and its successful acceptance rate of the people.

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