



HARNESSING ARTIFICIAL INTELLIGENCE FOR E-GOVERNANCE: ADVANCING SOCIETAL COHESION IN THE DIGITAL AGE

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Abstract

Today, in all the regions across the globe from developed to developing countries, governments and businesses interact electronically with citizens and their customers. They share their critical information through online automatic processes. Based on the altering requirements and wants of the clients, the private sector institutions take their leads and make all transformations through online mode for satisfying their customers. Now, the public sector and the government organizations are under critical pressure for making a transition in bringing their facilities to the individuals. In the existing scenario of economic development, both governments and businesses are gently transferring from tangible assets to intangible assets. For the past few decades, technological advances in industries have changed the lifestyle and employed values of all the people in our nation. The WWW (World Wide Web) dynamized the innovation in ICT (Information and Communication Technologies) that are handled by the people, businesses, and the governments for their communication and interaction. The word “Governance” is traditionally significant with “Government”. The phrase “Governance” cultured common practice in 1990s when it was abundantly accessed in the 1989 World Development Report and developed greater identity primarily as a replacement of financial liability of government. Hence the current examined study has absorbed on defining the rural citizen engagement features that are inducing the actual usage of e-governance facilities with the mediating effect of ChatGPT.

Keywords: ChatGPT, E-Governance, ICT, Rural Citizen Engagement, Rural Citizen Satisfaction

1. OVERVIEW

The major objective of electronic participation is widely examined through the frequent access of Information & Communication Technology to deliver the consultations and deliberations to the people and the government to recover the citizen engagement in the process of self-governing decision making [32]. The basic and common aids of e-governance facilities are unquestionable in the fields of establishing the strong relationship between the citizens and the government [53]. Through the successful and effective implementation of e-participation initiatives is not easier by the government, it also found to be harder and challenging for the citizens especially for the rural citizens in India to engage themselves in the e-participation services facilitated by the government [30]. Various research studies have narrated that projects under e-governance services initiated by the government have faced several challenges with citizens residing at rural areas and to make them adopt to access towards e-governance services [36]. Even though the Indian government have increased the usage of technology especially the artificial intelligence, the citizen participation still persists in reality for both developing and developed countries. The intention of rural citizen participation is found to be very limited in the participation of e-governance initiatives Hence the intention of the citizens’ intention to engage themselves in e-participation is found to be duly seen in the e-participation research [37].

ChatGPT is said to be an AI Powered Chatbot constructed by the Artificial Intelligence Startup OpenAI. This technology functions by influencing a wide spread data to learn how to answer for the user queries in a prompt manner and facilitating information as similar to the existing



search engines. Chatbot is said to be a software that accelerate the conversations in the human like manners with the users through chats. The phrase “Artificial Intelligence” has made the significant impact on various organizations, individuals and societies. It has also facilitated a methodological ability of cognitive inputs and learning through the multiple varieties of estimated results as it analyses and adapts for the changes in the stimulus and ecosystem that has been attained through its external environment. The major focus of the AI based algorithms are fundamentally restricted with unsupervised and supervised learning, when it has shared their inspiration from the natural physical properties or from any biological organisms specially to solve any intensive data challenges [24]. For information processing and data structuring, still traditional based AI algorithms such as genetic algorithms, Neural Networks, random forests, decision trees, k-means, support vector machines, etc. are in demand. New AI based algorithms have been progressed in the present times and it can able to progress the data in the natural form, therefore it also helps to mine the unstructured data like images and raw text [26].

Today, in recent days, the widespread adoption of ChatGPT at global level has made a drastic change in the world of technology that includes software testing and development, essays, poetry, contracts as well as business letters [28]. Moreover, it also increased the number of alarms associated to the challenges and difficulties in distinguishing the human behaviour versus AI authorship with the educational and academic communities, as part of traditional human desires [36]. ChatGPT utilizes the combination of both supervised fine tuning and unsupervised pre-training to make the responses in a human like manner and give answers to the topics that has a human expert resemblance. GPT-3 Model is said to be the present extension that has been constructed on a language model with about 175 billion of parameters. These parameters are trained on a variety of dataset full of text that are used naturally and also obtained from various internet sources like research articles, books, social chatter and web pages [45].

The Indian Government is currently working on the ChatGPT based WhatsApp chatbot that could help the rural citizens to understand and get awareness about the government schemes. The Ministry of Electronics and Information Technology (MeitY) is allegedly working towards ChatGPT empowered WhatsApp Chatbot to support the farmers in India to get awareness about several Indian Schemes. A small team from the Ministry of Electronics and Information Technology (MeitY) named as Bhashini is working on ChatGPT driven through OpenAI’s ChatGPT. The RBI (Reserve Bank of India) has made a discussion paper on the applying the artificial intelligence in the financial sectors. Moreover, the Ministry of Health and Family Welfare, GOI (Government of India) has formed a regulatory framework called National Digital Blueprint as a guideline for Artificial Intelligence in Healthcare Industries. Moreover, the Supreme Court has set an Artificial Intelligence Committee using chatbots that focuses on the legal document’s translation, filing & predicting, cases scheduling, and early case resolution. The GOI (Government of India) has set forth a tentative strategy for AI (Artificial Intelligence) and the Telangana state of India has stated that 2020 as the AI Year.

The present research study extends the rural citizen engagement in E-governance services through ChatGPT by providing various insights and several factors that are influencing the rural citizens in engaging themselves in accessing e-governance services through ChatGPT. Furthermore, this research study, focuses on rural citizens e-participation in attaining the various e-governance services through ChatGPT [4]. Moreover, it is found that several research studies have made a technological or social perspectives of initiatives taken by the government while investigating their research study [19]. The present study satisfies these requirements, and it has given importance on socio-technical features of e-governance services in highlighting the dimensions of rural citizens engagement towards access to e-governance services through



ChatGPT. The current study also benefits the practitioners, policy makers, and frontline workers as it facilitates new ideas that helps to implement and develop several e-governance initiatives.

The present research paper has been structured as 4 different sections as follows: Section 2 Explains the conceptual background of the study. Section 3 investigates the determinants that are influencing the rural citizens' engagement to access e-governance services through ChatGPT. Section 4 represents the conceptual model of the present research study that includes the brief explanation of DeLone and McLean (2003) [50]. Information System Success Model developed in the year 2003 with related hypothesis. Section 5 explains the research methodology adopted for the research study. Section 6 describes the study findings, discussions and implications. Finally, the section 8 concludes with the limitations, and suggestions for the future research studies.

2. DETERMINANTS OF RURAL CITIZEN'S ENGAGEMENT THROUGH CHATGPT FOR ENABLING E-GOVERNANCE SERVICES

Rural Citizens' engagement in e-governance initiatives is found to be lacking and it has been frequently identified and highlighted in various literature surveys [30]. Furthermore, very few studies have been made on this title [17]. The reason behind is because the study conducted on the participation of citizens in e-governance initiatives particularly through Information and Communication technologies was found to be neglected by the citizens [4]. Various research studies have identified the gaps that have identified the gap and have highlighted that further more focus needs to be sited on thoughtful learning about the perspectives of the citizens in terms of examining the dimensions that are influencing the acceptance of the citizens towards e-governance initiatives [3]. In order to study the variables that influences the intention of the rural citizens towards accessing e-governance services, it is best to start with analysing the engagement factors in the context of e-governance.

2.1 Information sharing

The term information sharing is defined as the process of distributing the meaningful information among the systems, organizational unit or the general public in the open environment [41]. Authors have highlighted that Information sharing should focus on the key areas like "What to Share?", "When to Share?", "Whom to Share", and "How to Share". Information Sharing contributed for minimizing the sharing cost, deficiency found in the information, Overloaded information and improving the responsiveness [43]. Even in Supply Chain industries Information Sharing is highly supportive to pursue product availability and competitive advantage [33]. Information Quality and Information Sharing at higher level is influenced by maintaining a proper successful partner relationship. In the cross organizational collaboration, "Information Sharing" plays a vital role in cross cultural collaboration. It is highly recommended to achieve maximum public benefits if it is implemented in a qualitative manner [52]. In the public and private sectors companies "Information Sharing is considered as the most predominant resources. It is declared that to improve organizational effectiveness and efficiencies, information needs have to be well regulated periodically. It is named as the crucial factor for attaining the public requirements and benefits like improving the policy making, enhancing the productivity, and integrating the public services [9].

2.2 Consultation Services

There are various development schemes and initiatives has been familiarized via Government of India (GOI) for the benefit of rural development. NABCONS known as NABARD Consultancy Services has been structured in the year 2003 for the rural development to get a



subsidy in all the scopes of agriculture. Common Service Centres is said to be an access points for delivering the e-governance services to the citizens' doorstep by providing an ICT infrastructure to the rural people [21]. National E-Governance Plan has been introduced for the common person to make them easily access the government services at their locality at a very low reasonable cost through common service centers. There are about 27 mission mode projects that are developed under the National e-governance plan on 18th May 2006. These projects are made for the development of rural villages for getting access to the government services facilitated through Common Service Centres (CSCs) and State Wide Area Networks (SWAN) [34]. The Common Service Centres (CSCs) are described as the strategic foundation of the National e-governance Plan (NeGP) that has been approved by the Government of India in May 2006. The objective of these centers is to provide cost-effective, high-quality voice, video, and data content in various fields of e-governance namely health, telemedicine, health, entertainment, and education. The core objective of this system is to ease web-based e-governance services at rural villages that include certificates, application forms, and utility payments like telephone and electricity, and water bills.

2.3 Joint Assessment

Monitoring, participatory assessment of the citizens towards accessing e-governance services, identifying the service seekers are found to be the techniques for enhancing the rural citizens' engagement [11]. It also includes techniques like conducting meeting with the selected representatives and joint citizen monitoring. Various assessment studies have been made to understand the impact of e-governance services towards business and citizens by focusing on the processing and collection of new companies' registration, income tax and issuing of passport, etc [23]. The existing e-governance projects has to be assessed by focusing the quantum and nature of impact among the rural citizens. One way of assessment can be done by understanding the actual requirement of people in accessing the e-governance services [29]. It is very important that the appointed nodal agencies should understand the performance levels of rural citizens in accessing e-governance services should be compared with the various states after computerization [25]. To implement this plan, it is necessary to send the appropriate agents to closely monitor various projects established under e-governance services and identify the view points of the users and discuss among the nodal agents to discuss among themselves, identify the problems found in the e-governance projects and look how they could be mitigated [39]. The quality of e-governance services has been assessed through the two different terms such as "Perceived Usefulness" and "Perceived Ease of Use". A framework consisting of security and privacy are highly helpful in assessing the quality of e-governance services.

2.4 Shared Decision Making

Human beings make multiple decisions every day. Shared decision-making aims to understand to understand the reasons behind the agents' choices and helps them to enhance their decision-making capabilities [46]. Decision making theories are highly concerned about how people take their decisions, whereas the shared decision-making supports to provide assistance for the people at rural villages to improve their decision making. The fundamental objective of shared decision-making analysis is to contribute for balanced decision making, and which in turn enhances the likelihood of satisfying the objectives of decision makers and working towards their values and desires [44]. In certain situations, with huge uncertainties, it is very difficult for the decision maker to understand to choose the correct path especially to satisfy their financial requirements [14]. Shared decision making is said to be a collaborative process that includes the person with the healthcare working professionals, to reach out their healthcare requirements. The interaction between the government and the citizens through e-consultation,



e-decision making, and information sharing provides a transparency in facilitating e-governance services [13]. The primary objective of shared decision making is to benefit the citizens in terms of Diversity, Engagement, Competencies, Connectivity, Complexity, Decisions and Accountability in facilitating a transparent and effective e-governance services [1].

2.5 ChatGPT for Assessing E-Governance Services

AI (Artificial Intelligence) is recently innovated the outcome of state of arts in multiple domains across the world. Moreover, it still seems to be had various challenges for the deployment of applications developed for facilitating e-governance services [10]. A framework has been proposed to utilize AI technologies to facilitate and automate e-governance services. AI is said to be the field that intersects with various fields like Deep Learning, Machine Learning, Context Awareness, Data privacy, Security and Natural Language Processing. Researchers has designed a framework for the utilization of e-government information resources. The authors have developed a deep learning models for the automation of e-governance services [42]. The proposed e-government platform supports the various applications of e-governance services. ChatGPT is an Artificial Intelligence language model that has been developed by OpenAI. It has a greater potential to transform the citizens interaction with the government to streamline it processes and enhances the overall performance [2]. E-governance is determined as the usage of digital technologies by the government to facilitate the services, share information, and provide effective communications with the citizens [51]. The digitalized public services comprise of wider range of services that includes social security benefits, tax filing through online, and electronic voting. The incorporation of ChatGPT with these services can suggestively improves the efficiency of the E-governance applications. The major benefit of utilizing ChatGPT in e-governance services is its capability to process and realizes its natural language[52, 53]. It also fulfils the development of interface that are user-friendly for providing public services through online. However, ChatGPT can be accomplished to realize several languages, structuring digital public services that are more accessible for varied population. Through offering multilingual support, the governments can make sure that all the citizens of a country can have equal access for public services [42].

2.6 Intention to Use E-Governance Services

“Intension to Use” can be measured through predicting the usage behavior of an individual [48]. “Intention to use” as an examination of an Individual for adopting an application [6]. “Intention” as the prediction of future behavior of an individual for using a specific system [20]. “Intension to Use” as the potential of a person’s intention to perform a specific behaviour [16]. “Intension to Use” as the mixture of “Perceived Usefulness” & “Perceived Ease of Use” for an individual to access the specific system [49]. Research study on identifying the factors that determine the intention of the people to use e-governance services [40]. The researchers have adopted six different theories (Diffusion of Innovation, Theory of Planned Behaviour, Technology Acceptance Model, Motivational Model, Social Cognitive Theory, and Unified Theory of Acceptance and Use of Technology) to construct the theoretical model for the research study. Researchers measured the dimensions towards intention of people to adopt e-governance services. The questionnaire framed by the researchers has been circulated to the people accessing e-governance services in Greece. Through Structural Equation Modelling the research study has stated that the dimension “Perceived Usefulness” is highly significant towards Intention to use e-governance services among the people with the highest coefficient score of 0.51 [48].



2.7 Rural Citizens' Satisfaction

The Researcher has examined the satisfaction of citizens to access e-governance services among the citizens of Punjab [32]. Technology Acceptance Model has been used by the authors for constructing the conceptual model. The researchers have highlighted the issues and obstacles faced by the citizens of Punjab for using the e-governance system. Low literacy level, Low ICT literacy, Lack of Native Language, Absence of User-Friendly Websites, Security & Privacy issues, Lack of Awareness, and Inequalities are outlined as the issues faced by the citizens of Punjab for accessing the e-governance system. The study has highlighted that there exists a strong association between the study variables towards the intention of citizens in Punjab for using the e-governance system. The researchers have done a research study on citizen satisfaction towards SETU System, an initiative taken under the e-governance initiative in Maharashtra. The researchers have considered Timeliness, Accuracy, Cooperation, Ease of Use, Promptness, Privacy, and service cost as the dimensions considered by the researchers to adopt the SETU System among the citizens of Maharashtra. The multistage sampling method has been adopted by the researchers for collecting the data from 977 respondents from three districts of Maharashtra. Two different sets of questionnaires have been framed and distributed Questionnaire-I to the citizens of Maharashtra and Questionnaire-II to the services providers [38]. The author have analysed the determinants for adopting an e-governance system among the citizens of China [27].

The researchers have taken Technology Adoption Model for constructing the theoretical framework. Social Influence, Degree of Openness, Truth worthiness, Technical Risk, Facilitating Conditions are the dimensions used to measure the factors of Perceived Usefulness and Perceived Ease of use towards behavioural intention to use e-governance systems. The researcher has gathered 1000 data from the respondents of China. Through Structural Equation Modelling the Researchers have measured the relationship that exists between the study variables. The findings of the research study have highlighted that the antecedents of citizen satisfaction have to be analysed to measure their intention towards accessing the e-governance system [13]. The researchers have measured the citizen satisfaction on e-governance services through Trust and internet usage among the citizens. The researchers have gathered data from about 806 users of e-governance services in the United States of America. The researchers have designed three equations for identifying the satisfaction of citizens towards accessing e-governance services. Trust in Government, Government Website Usage, Satisfaction towards transactions, and interactivity transactions are the dimensions considered under Citizen Satisfaction [35]. The researchers have gathered the data from 806 adults residing in the United States of America. The study has concluded that citizens of America are satisfied with the services provided through the e-governance system. The findings of the research study have highlighted that the dimension of website usage is found to be highly significant towards the overall satisfaction of the citizens towards the e-governance system [12].

2.8 Actual Usage of E-Governance Services

The researchers have stated that "Actual Use" is defined as the combination of Perceived Usefulness and Perceived Ease of Use of a User towards utilizing a particular system [47]. The researcher has stated that "Actual use" as a specific system is accessed by the user periodically [7]. The author has described "Actual Use" as the extent to which an individual estimates the usage of a specific system to enhance their performance [8]. The researchers, have examined the usage patterns of E-Governance applications among the various developing countries. The researchers have examined several e-governance initiatives designed and developed by several countries [18]. The study has highlighted the advantages and limitations of various e-



governance applications in the aspects of Business, Organizations, Government, and Internal Organizations. The study has concluded that Infrastructure, Enforcement of Laws, Trust, Privacy, Integrity, and Corruptions are the major challenges faced by the people towards accessing the system of e-governance. The findings of the research study revealed that among four continents like Europe, America, Asia, Oceania, and Africa, maximum usage of e-governance services is utilized in American countries [15].

The researchers, have measured the usage of e-governance systems among higher education students. The researchers have identified the factors that determine the e-governance system applications. Transparency, Accountability, Information service delivery, Interaction, and communication are the various factors identified by the researchers to measure the usage of the e-governance system. The study has also highlighted the various initiatives taken by the government under the system of e-governance. The study has also highlighted various interactive platforms and applications developed under e-governance initiatives. 328 data have been gathered from the higher education students towards e-governance system usage. Higher education students from six universities have been considered for collecting the data. The findings of the research study have identified that the determinants of e-governance applications usage are highly associated with Internet Usage of Higher education students [20]. The authors have explored the values of using an e-governance system among the citizens. The researchers have designed a conceptual model by indicating that Policies, Connectivity, and Access are the main important components of the citizens towards usage of the e-governance system [5]. Various definitions of e-governance described in several countries have been outlined by the researchers in the study [31]. The study has used the VFT approach for explaining the usage pattern of e-governance services among the citizens. Identifying the concepts from previous studies, reviewing the recent literature related to e-governance, converting the gained knowledge into objectives, differentiating the objectives, and combining the fields are the various steps explored by the researchers to highlight the importance and usage of e-governance system among the citizens [22].

3. RESEARCH GAP

Many studies have concentrated only on the challenges faced by the citizens residing in rural villages for using e-governance services. The researchers focused on reviewing only the contents related to e-governance services. No research study has made an empirical examination for measuring the adoption of e-governance services for rural development through ChatGPT. Based on the previous literature review the researchers comes to know that several research studies have been done on general discussions about overall e-governance initiatives taken for rural development. Very limited studies have been done on e-governance services through common service centres in villages. Researchers have not been concerned about the satisfaction and net benefits attained by accessing the e-governance services, particularly in rural areas through ChatGPT.

4. THEORETICAL BACKGROUND

The present research study concentrates on identifying the rural citizens' engagement factors towards citizens intention in rural areas towards the actual usage of e-Governance Facilities through ChatGPT. The researchers have considered NeGP (National E-Governance Plan) Citizen Engagement framework and DeLone and McLean (2003) Information system Success Model to develop the conceptual framework shown in Figure 4.1 [50]. The researchers have considered Information Sharing, Consultation, Joint Assessment, and Shared Decision Making

as Rural Citizens’ Engagement Factors to measure the Intention and satisfaction level of rural citizens towards the actual usage of E-Governance Services through the mediating variable “ChatGPT”.

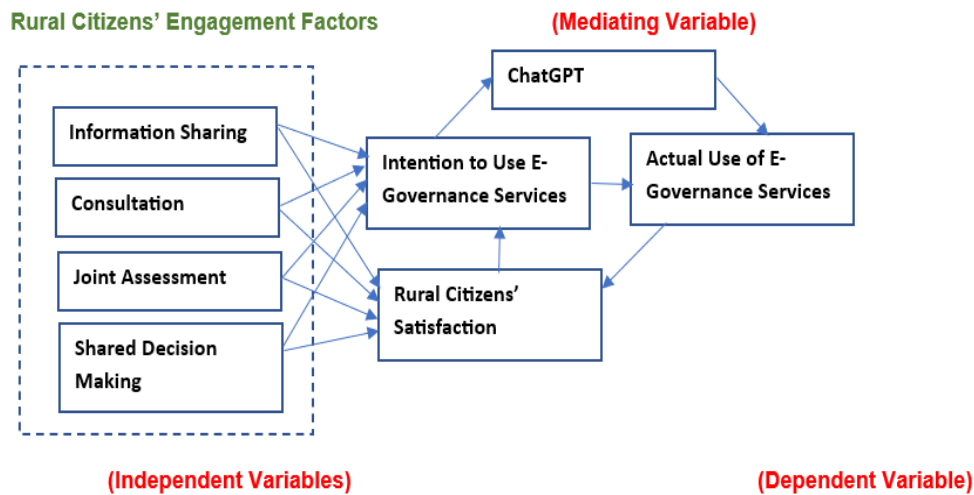


Figure 4.1: Rural Citizen’s Engagement through ChatGPT for Enabling E-Governance Services

4.1 Implications and Discussion

The authors of the current study have completed furnished the utmost information remarkably based on the study objectives. The constructed conceptual model can be utilized by the researchers to conduct the empirical study for developing the application for E-governance services with ChatGPT. The developed theoretical framework has identified the exact rural citizens engagement factors that can be utilized by various funding agencies, policy makers, and government authorities to satisfy the demand and requirements of the rural population towards accessing e-governance services with the help of ChatGPT.

4.2 Theoretical Implications

The researchers have done a theoretical study based on identifying the gaps that exist in the previous studies carried out on the topic of rural development through e-governance services with ChatGPT. The past research studies made by the researchers have completely focused on the theoretical perspectives on a general overview of the initiatives made under the system of e-governance. Several researchers have highlighted the factors that affect rural development and have narrated the suggestions and conclusion with the supporting variables. The present study shared the maximum knowledge gained by the researcher related to the development of rural areas through e-governance services through using ChatGPT.

4.3 Managerial Implications

The present study has expressed detailed information related to the attainment of benefits among rural citizens through the initiatives of the e-governance system through ChatGPT. The actual usage of e-governance services through ChatGPT can be measured by the identified rural citizens’ engagement factors. The constructed theoretical framework of the present study supports all the service providers of the people residing in remote villages towards rural development. Several innovative e-governance applications could be designed and developed by the application developers for rural communities having very low literacy levels.



4.4 Policy Implications

The theoretical framework of the research study has explained the actual usage of e-governance initiatives through ChatGPT. It is considered as the finest opportunity for the policymakers and the regulators of rural development to revamp the guidelines and strategies of e-governance application for the sake of benefiting the rural citizens to overcome their demands most specifically for accessing the e-governance services in a productive manner. Several policies have been designed to address the requirements of rural citizens in the aspects of employment, agriculture, financial services, and education services, etc.

5. CONCLUSION

Rural development is the process of improving the financial status and enhancing the lifestyle of the individuals situated in remote villages. Traditionally remote areas are centralized by natural resources like agriculture and forestry. Nevertheless, the present condition of today's world, escalation of urbanization, and development of various industries have altered the settings of rural areas. Despite all these developments in our country, rural development lack behind when compared with overall development in our country. Moreover, rural people cover 60 percent of the Indian population, and 2/3rd of the entire population is highly dependent on the field of agriculture. But still, 1/3rd of the rural population in India is found to be under the poverty line. Hence, to intensify the living standards of the rural citizens, the government needs to act productively for fulfilling their requirements. AI (Artificial Intelligence) and big data analytics has been presently utilized at various fields for offering low cost and productive solutions in solving various rural environmental and socio-economic problems at global level. E-governance Services through ChatGPT is the only solution to achieve rural citizens' trust to access any technology-based government services. Village level entrepreneurs and all the members of the common service centers could only reach the rural citizens and educate them about e-governance services in the simplest way to create a radical change for rural development.

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