

## IMPACT OF DIGITIZATION ON E-GOVERNANCE FRAMEWORK – A STUDY

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### ABSTRACT

*E-Governance can be defined as a technological platform that bridges the communication with government proceedings and citizen in order to increase the productivity of effort towards nation development using Information and Communication Technology. With an advancement of ubiquitous technologies and its adoption in e-governance, there has been significant generation of unstructured data that demands performing analytical operation. Each technique is briefed to understand the methodology adopted by the researchers. The proposed system also introduces a novel mechanism where hashing is performed as a means of data indexing operation that directly contributes to distributive data mining and data retrieval process over cloud clusters.*

**Keywords:** *e-Governance, Knowledge Discovery, unstructured data, cloud environment.*

### INTRODUCTION

This paper outlines the existing research-based techniques that claim to have contributed to the improvement of the e-Governance framework. The contribution of this paper is that it reviews the existing system and briefly outlines about the research gap existing in the area of e-Governance. After reviewing existing research approaches on e-Government, it is found that generated unstructured data has never being subjected to any contextual mining operation till date. This results in very manual process of data storage and retrieval system rendering the complete system very costly. Therefore, in order to address this research gap, the proposed paper presents the solution by redefining the e-Governance framework using open source software by incorporating a novel clustering mechanism for better mining operation.

#### Existing Approaches in e-Governance

The prime emphasis of working on e-Governance framework is mainly to ensure relaying of various forms of services rendered by the ministry of a particular nation. Following are the brief outlines of the research papers that have been reviewed while carrying out the proposed research work towards e-governance.

Belwal and Sharma [1] have presented a study one-Governance with respect to cloud computing. According to author, the cloud computing offers highly distributed a service that potentially assists to host the e-Governance application to be executed properly. According to the author, there are various beneficial of cloud-based services towards electronic governance e.g. scalability, better recovery, usage of green technology, flexible storage system, etc. But the study has also highlighted about the issues that cloud computing possess while hosting e-Governance services e.g. ineffective auditing, security, lack of standards, interoperability, etc.

Pandya and Patel [2] have presented a discussion about the data security problems associated with the existing e-Governance model in India. According to the study finding, there is a significant contradiction between the practiced e-Governance securities with that available in existing e-commerce application. There are various instances where various web portals of e-Governance are reported to possess potential security vulnerabilities. Finally, the authors commented that adaptation of certain existing optimization techniques in soft computing could be one of the better solutions to resist such issue.

Chaushi et al.[3] have discussed about the maturity factor involved in designing e-Governance framework. The authors have discussed existing maturity models of e-Governance e.g. Public Sector Process Rebuilding Model, United Nations' Five Stages Model, Layne and Lee's 4 stage model, The World Bank Stage Model, etc. The paper has also discussed the comparative analysis of all these maturity models to find that there is still a wide open scope of improvement in it.

Sathya and Deepamalar [4] have presented a study where they have addressed a problem pertaining to traffic

management in e-Governance model. The paper has discussed the usage of e-Governance model in wireless adhoc network with mobility condition to invite problems associated with task scheduling as well as resource discovery. A framework is build using grid-based tools that has the capability to identify the source of congestion using resource broker and offers solution to resist it.

Dash and Pani [5] have presented a study that emphasizes on the issues associated with the cloud infrastructure maintenance with the e-Governance projects. The paper illustrates the challenges of implementing cloud-based models in the e-Governance framework and especially highlighted the issues pertaining to the security problems in cloud computing environment. By reviewing this paper, it has been found that apart from cloud computing, the prime obstruction towards successful implementation of e-Governance in India are poverty, language dominance, technical literacy, unawareness, infrastructure, inequality, and impediments for the Re-Engineering process. The paper finally outlines certain challenges associated with e-Governance model that are overcomes by using cloud e.g. improving accountability and transparency, minimizing cost, enhancing service delivery, promoting economic development, enhancing public administration, etc.

Manor et al. [6] have addressed the problem associated with the security factor in e-Governance model when hosted in cloud environment. The presented work mainly emphasizes on securing the dynamic access rights. An enhanced Huffman technique of adaptive nature has been implemented in this work using standard encryption technique by enhancing the famous RSA security algorithm. The study outcome is assessed with respect to time factor mainly as well as storage space to find that presented technique offers better security performance.

Almarabeh et al. [7] have also discussed about the growing issues of adopting cloud services on hosting e-Governance framework emphasizing on user satisfaction and efficiency of e-governance. The paper has discussed about the link between the cloud services and e-government considering the case study of Iraq. Different forms of e-Government applications of Iraq have been discussed in this paper.

Perlasamy and Rama [8] have presented a model for e-Governance using statistical approach considering the case study of a national telecom sector in southern state of India, Tamil Nadu. The approach of the study was quite simple, where the authors have collected reviews from the survey questions and then applied SWOT analysis as well as cluster analysis as the medium of performing data analytical approach. The paper has also theoretical description for signifying the importance of clustering operation in performing mining methods.

Priyambodo and Suprihanto [9] have introduced a networking system to emphasize on the security system of e-Governance considering mainly data security aspect. The technique presented by the author is basically considered as an alternative approach for securing the data used in e-Governance.

Adrees et al. [10] have presented a unique framework where multiple forms of the e-Government applications have been designed and implemented considering the case study of Sudan. The technique mainly emphasize on minimizing the operating cost in the existing system where a special tool for documenting the existing process.

Alssbaiheen and Love [11] have discussed about various forms of issues as well as opportunities associated with the e-Government model considering the case study of Saudi Arabia. According to the authors, there are various challenges in improving the m-government application as well as various factors that affect the successful implementation of m-government. The final study finding says that existing e-Government architecture in Saudi Arabia is less improved as well as less ready for the civilians to adopt it. Moreover, governmental policies for better adoption are also questionable for successful implementation of e-Governance.

Gebba and Zakaria [12] have performed an analytical investigation towards measuring the effectiveness of e-Governance in Egypt. According to findings of this study, it says that there is very much negligible improvement of the electronic governancemodel of Egypt compared to other Arab countries. Based on survey, it was found that Egypt is one among the other Arab countries that seriously demands better e-Governance architecture.

Haider et al. [13] have adopted a standard technical adoption model to check the effectiveness of e-Government model practiced in Pakistan. The approach of this study is nearly similar as discussed in prior paragraphs. The authors have collected reviews on the basis of survey questionnaire followed by implementation of technical adoption model followed by the discussion of various challenges involved in the implementation of the e-Government models using statistical analysis.

Anand and Kamayani [14] have theoretically discussed about the various work being carried out towards improving

cloud computing architectures in e-Governance. The authors have also discussed about the e-services that are offered to the public with an aid of service oriented architecture of cloud computing. However, the emphasis was more on cloud and less on electronic governance.

Patnaik et al. [15] have presented an explicit discussion about “*Bhoomi*” that is one of the successful e-Governance application in southern state of India, Karnataka, by highlighting its essential characteristics. Some of the essential feature of it is its supportability of regional language, flexible to any size of target group, and compatible with mission critical applications. It also offers automation of back office, sufficient rigidness, supportability of integration demands, etc.

Mosa et al. [16] have discussed certain techniques of cloud computing that are applicable for e-Government services. The paper has presented discussion of various challenges associated with e-Government implementation as well as discussed various forms of the layered model in cloud computing that assists in relaying an effective services from e-Government application. The authors have also reviewed various existing technique that has discussed about the various models using migration strategy, cloud-applications, case-specific study, etc.

Niharika and Satinder [17] have presented a discussion of the cloud-based technologies and its effectiveness in supporting e-Governance application taking the case study of India. The paper has also signified the elastic scalability and cost effectiveness about adopting cloud models in e-Government applications. Finally, using SWOT analysis, the authors have presented the characteristics features of e-Governance model.

Chandra and Malaya [18] have presented a theoretical discussion about the challenges and perspective of e-Governance in India. The authors have also emphasized on certain cloud-based models e.g. G-cloud, m-government, RTI Act of 2005 along with discussion of various challenges that troubles the successful implication of e-Governance in India.

Devasena and Balraj [19] have discussed the implementation of e-Governance especially focusing on its implementation in southern states of India e.g. Kerala, Andhra Pradesh, Karnataka, and Tamil Nadu. Different forms of public services and e-Government initiatives are discussed in this paper

Goel and Kumar [20] have presented a study where e-Governance can be used to offer eradication of anti-social activities e.g. corruption considering the case study of India. The authors have considered the secondary data to find that there is a significant increase in corruption level in every 2 years in India. The paper has discussed about the certain models of e-Governance exercised in India e.g. E-DISHA, Administrative Vigilance Commission, Chief Vigilance Commission, Customs on Line, Bhoomi, Computer-aided Administration of Registration department, E-Seva, Vijayawada Online Information Center, Karnataka Valuation and E-registration, Computerized Inter-state check post, etc.

### Research Gap

From the prior section, it can be seen that there has been a significant number of studies being focusing on enhancing the e-government framework. However, there are certain open-end problems in terms of research gap that has to be yet addressed. Following are the outlines of existing research gap:

- **Lesser Implementation and More Theoretical:** The literature survey significantly shows that majority of existing research works towards e-Governance are based on either theoretical discussion or survey findings while very few of the research work has only focused on incorporating certain technical enhancement addressing on the architecture design.
- **Ignorance towards processing massive data:** It is now concretely proven by many researchers that e-Governance require cloud platform for better operation in order to cater to the distributed demands of public services. In this process, it results in the generation of larger amount of data that is highly unstructured. At present, there is no discussion about any research work to deal with such voluminous and complex data.
- **No work on Knowledge Discovery:** It is surprising to know that even after the generation of the massive data, there is no potential mining approach ever tested on such forms of unstructured data. Better knowledge discovery from e-Governance data will definitely result in betterment of public welfare.
- **Lack of Mathematical Modelling:** A mathematical modelling can potentially improve the problem formulation process existing in electronic governance framework hosted in cloud environment. However, there is no report of any such mathematical modelling. Hence, there is no significant progress in the area of e-Governance framework in existing studies.

## CONCLUSION

This study has discussed about the existing research approaches towards the improvement of e-Governance framework using various techniques. However, it is found that there has been no significant improvement in enhancing the electronic governance framework. The study outcome evidently shows that inspite of generation of large unstructured data, such data is never reported to be ever utilized in any research work.

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