

Public Administration and the Big Data: An Indian Perspective

Sneh

Master of Arts in Public Administration

Abstract: *This study intends to assess the role of Big Data in the public administration. Big Data is the new subject which is gaining popularity rapidly due to its expected utility. An attempt has been made to assess the potential and challenges in using Big data in various government departments/ ministries. For this purpose, various initiatives of the Indian Government in various departments has been the focal point of this study. It is being noticed that Indian Government is making extensive use of big data in its policy making and decision taking. Also, government still needs a lot of improvement in preparing itself to face the challenges posed by the big data.*

Keywords: Big Data, Public administration, Policy making, e-Governance

1. Introduction

In 21st century, information technology has considerably influenced the almost every aspects of human society. In particular, the information technology has changed the lifestyles of human beings as individuals and as well as society. In particular, mobile handsets and computers equipped with internet, cloud computing, machine learning, artificial intelligence etc. is the basic needs of the urban millennials which has resulted in exponential growth of data in a variety of forms, providing the basis for more rational and efficient public decision-making. Also, the technology has given power to public to participate in the decision making of public administration through their electronic gadgets thereby increasing transparency, supervision, and accountability in governance.

Due to generation of big data there is need to process this data qualitatively with due care so that it can be analyzed for decision making in public administration. It is believed that data is the new currency. In this study, an attempt has been made to assess the impact of decision making by various Indian Government wings with the help of insights derived from analysis of big data on the public at large. For this purpose, some key Indian Government departments and ministries are worked upon to see how these are using technology and technological tools to achieve this purpose.

2. Big Data: Introduction

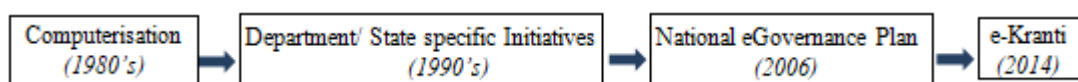
As per Oxford dictionary, data may be defined as the quantities, characters, or symbols on which operations are

performed by a computer, which may be stored and transmitted in the form of electrical signals and recorded on magnetic, optical, or mechanical recording media whereas big data is defined as extremely large data sets that may be analysed computationally to reveal patterns, trends, and associations, especially relating to human behaviour and interactions. There are four main characteristics of Big data viz. volume, velocity, variety and veracity which are explained as follows:

- **Volume:** the amount of data that businesses can collect is really enormous and hence the volume of the data becomes a critical factor in Big Data analytics.
- **Velocity:** the rate at which new data is being generated all thanks to our dependence on the internet, sensors, machine-to-machine data is also important to parse Big Data in a timely manner.
- **Variety:** the data that is generated is completely heterogeneous in the sense that it could be in various formats like video, text, database, numeric, sensor data and so on and hence understanding the type of Big Data is a key factor to unlocking its value.
- **Veracity:** knowing whether the data that is available is coming from a credible source is of utmost importance before deciphering and implementing Big Data for business needs.

Evolution of Big Data into Public Administration

Big data is the primary product of the digitisation by Indian Government. The following is the timeline of the initiatives of Indian Government towards digitisation:



e-Governance in India has persistently evolved from computerization of Government Departments to initiatives that encapsulate the finer points of Governance, such as citizen centricity, service orientation and transparency.

The National e-Governance Plan (NeGP)

The National e-Governance Plan (NeGP) was an eGovernance project conceptualized at the national level

with an aim to "Make all Government services accessible to the common man in his locality, through common service delivery outlets, and ensure efficiency, transparency, and reliability of such services at affordable costs to realise the basic needs of the common man". The strategy adopted was centralized planning and decentralized planning. The Government initially approved the National e-Governance Plan (NeGP), comprising of 27 Mission Mode Projects

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(MMPs) and 8 components, on May 18, 2006. 4 more mission mode projects namely 'Education', 'Health', 'Posts' and 'Public Distribution System' were added to NeGP portfolio in 2011. As part of NeGP, core ICT infrastructure has been created by MeitY. This includes State Data Centers, State Wide Area Network, State Service Delivery Gateways, Mobile Seva and eGov AppStore. More than 1.2 lakh Common Service Centers were made operational as service delivery outlets across all the States/UTs. With the learnings from the experience of implementation of NeGP over the last 7 years and an analysis of Strengths, Weaknesses, Opportunities and Threats of NeGP revealed several issues mainly in terms of lack of proper dose of Government Process Reengineering in Government Schemes / projects / applications / databases, lack of integration & interoperability amongst Government Applications & databases, limited scope of existing Mission Mode Projects, lack of leveraging emerging technologies like Mobile and Cloud and lack of Inclusive Mission Mode Projects like Women & Child Development MMP, Social Justice & Empowerment MMP etc. e-Kranti has been designed to address the aforesaid challenges.

e-Kranti (Transforming e-Governance for Transforming Governance)

Considering the critical need for transforming e-Governance and promote mobile Governance and Good Governance in the country, the approach and key components of e-Kranti have been approved by the Union Cabinet on 25.03.2015 with the vision of "Transforming e-Governance for Transforming Governance".

The key principles of e-Kranti are as follows:

- 1) *Transformation and not Translation* - All project proposals in e-Kranti must involve substantial transformation in the quality, quantity and manner of delivery of services and significant enhancement in productivity and competitiveness.
- 2) *Integrated Services and not Individual Services* - A common middleware and integration of the back end processes and processing systems is required to facilitate integrated service delivery to citizens.
- 3) *Government Process Reengineering (GPR) to be mandatory in every MMP* - To mandate GPR as the essential first step in all new MMPs without which a project may not be sanctioned. The degree of GPR should be assessed and enhanced for the existing MMPs.
- 4) *ICT Infrastructure on Demand* - Government departments should be provided with ICT infrastructure,

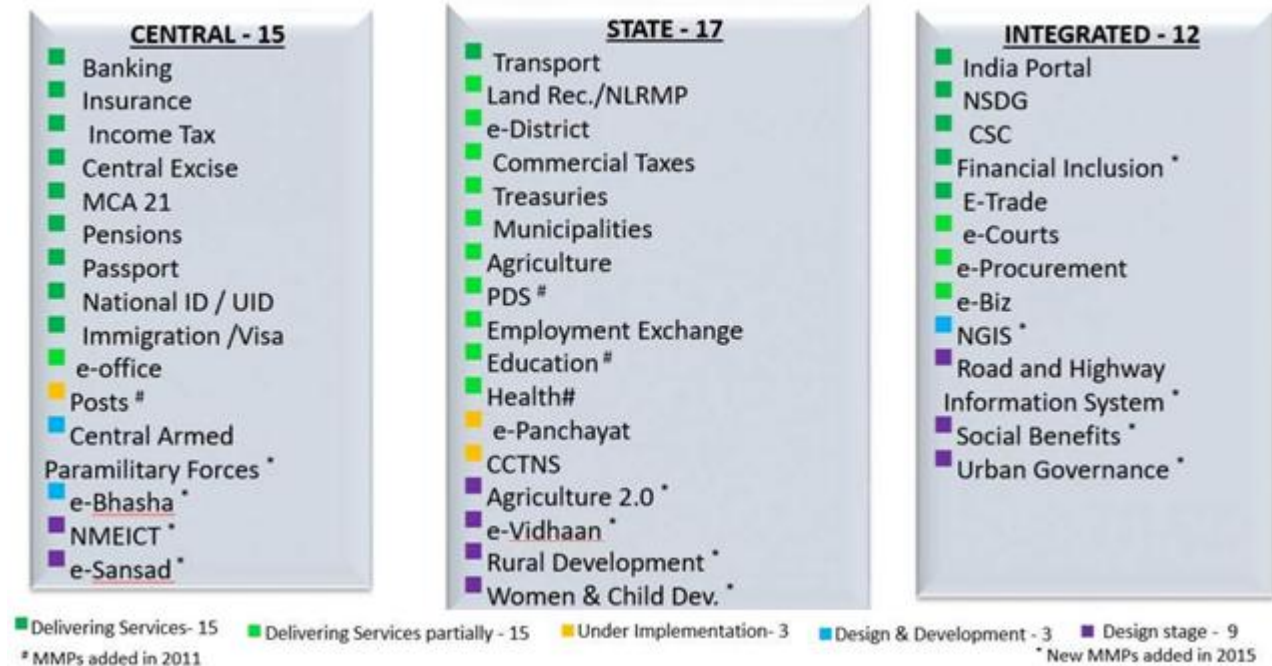
such as connectivity, cloud and mobile platform on demand. In this regard, National Information Infrastructure (NII), which is at an advanced stage of project formulation, would be fast-tracked by DeitY.

- 5) *Cloud by Default* - The flexibility, agility and cost effectiveness offered by cloud technologies would be fully leveraged while designing and hosting applications. Government Cloud shall be the default cloud for Government Departments. All sensitive information of Government Departments shall be stored in a Government Cloud only. Any Government Department may use a private cloud only after obtaining permission from Department of Electronics and Information Technology which shall do so after assessing the security and privacy aspects of the proposed cloud.
- 6) *Mobile First* - All applications are designed/ redesigned to enable delivery of services through mobile.
- 7) *Fast Tracking Approvals* - To establish a fast-track approval mechanism for MMPs, once the Detailed Project Report (DPR) of a project is approved by the Competent Authority, Empowered Committees may be constituted with delegated powers to take all subsequent decisions.
- 8) *Mandating Standards and Protocols* - Use of e-Governance standards and protocols as notified by DeitY be mandated in all e-governance projects.
- 9) *Language Localization* - It is imperative that all information and services in e-Governance projects are available in Indian languages as well.
- 10) *National GIS (Geo-Spatial Information System)* - NGIS to be leveraged as a platform and as a service in e-Governance projects.
- 11) *Security and Electronic Data Preservation* - All online applications and e-services to adhere to prescribed security measures including cyber security. The National Cyber Security Policy 2013 notified by DeitY must be followed.
- 12) All new and on-going eGovernance projects as well as the existing projects, which are being revamped, should now follow the key principles of e-Kranti.

3. Progress Status

There are 44 Mission Mode Projects under e-Kranti programme. These mission mode projects are grouped into Central, State and Integrated projects. The status of MMPs are as follow:

MMPs Status



4. Case Studies in Government Departments, Ministries and Various Sectors

4.1 Income Tax Department

In the financial year 2016, the Income-tax Department had initiated a 'Project Insight' with an objective to curb the tax evasion measures. Through this project the Department planned to use the contemporary technology for data mining, research and analytics against black money and tax evasion. For this purpose, the data could be sourced from other Govt. organizations and social networking sites. The motive behind it was to trace the assesseees who were at high risk of tax evasion.

Under this project, an integrated platform had been planned which would play a key role in widening of tax-base and data mining to track tax evaders. It was also leveraged for implementation of Foreign Account Tax Compliance Act inter-governmental Agreement (FATCA IGA) and Common Reporting Standard (CRS). Implementation of reporting compliance management system would ensure the timely and accurate reporting by the reporting entities. For this purpose, a streamlined data exchange mechanism was also to be set up with other Government Departments and exchange partners.

The goals for initiation of project insight was to promote voluntary compliance and deter non-compliance, Impart confidence that all eligible persons pay appropriate tax and Promote fair and judicious tax administration. The Government leveraged big data to flag accounts with sizable black money deposits. Artificial Intelligence and Machine Learning were leveraged to find patterns and trends in these bank accounts, to flag other accounts.

4.2 Ministry of Agriculture & Farmers' Welfare

Agriculture is the backbone of India's economy and the sector accounts for 18 per cent of India's gross domestic product (GDP) and provides employment to 50% of the countries workforce. But this sector has progressively declined to less than 15% due to the high growth rates of the industrial and services sectors. The country needs techniques to improve this industry and the government, with NITI Aayog is striving to help it. NITI Aayog had an agreement with IBM to develop a model for crop yield productions. This model is going to use AI and is going to help farmers to provide with real-time advice. The main objective is to improve the yields of small landholders. Apart from this ministry has also started series of digital initiatives to address the needs of farmers such as Farmer's portal, M-Kisan portal, Soil health card portal, Agmarkner portal, Seednet india portal etc.

4.3 Department of Revenue (CBIC)

GST is an Indirect Tax which has replaced many Indirect Taxes in India. The Goods and Service Tax Act was passed in the Parliament on 29th March 2017. The Act came into effect on 1st July 2017; Goods & Services Tax Law in India is a **comprehensive**, multi-stage, destination-based tax that is levied on every value addition. In simple words, Goods and Service Tax (GST) is an indirect tax levied on the supply of goods and services. This law has replaced many indirect tax laws that previously existed in India.

To see the flow of goods and how the trade is carried out in India, it had leveraged the GST network. It also released a survey that had first estimated the flow of goods across states by analysing the transaction level data made available by the Goods and Services Tax Network (GSTN). It also had an account to track the number of people migrated across the country every year using big data by using some unreserved railway passengers data, over a period of five years.

4.4 Ministry of Corporate Affairs

The Government is going to make use of big data to shell companies. Many companies that exist only on paper with the same address were found to be bogus transactions without commercial substance. The data consisting of coordinates of the registered companies will act as a key input for mining data in the ministry's IT infrastructure called **MCA21**, to zero in on companies with a common address, common contact numbers, common directors and things like that. The objective is to identify many companies having the same address using geotagging technology.

4.5 Comptroller and Auditor General of India

The Comptroller and Auditor General of India is the first organisation to roll out the 'Guidelines on Big Data Analytics' in the 2016. In this process it has also established Centre for Data Management and Analytics (**CDMA**) to carry out the data analytics on the data/ big data to flag the risk areas in audit.

CAG of India has also established **CEDAR** as the National Centre of Excellence is designed to facilitate data analytics and digital audit of revenue. It will facilitate the paper less audit of GST.

4.6 Kerala Water Authority, Government of Kerala:

The Kerala Water Authority (KWA) of the Government of Kerala is using IBM's Analytics and Mobility solutions to analyse, monitor and manage water distribution in its capital – Thiruvananthapuram. Providing equitable water supply to all the households is a challenging task and due to various reasons such as bad pipelines and unauthorised use of water, water supply is not easily accessible to the city. With the help of Big Data analytics system, the data monitored by IBM, KWA is tracking the water meters across the city. It resulted in improved revenue collection. With the Big Data solutions, KWA aims to achieve 100% success in equitable water supply with the ability to monitor and flag irregularities in water usage using sensors and intelligent meters. Apart from the above mentioned case studies, public administrators are using data in their decision making whether it be metering in electric sector, providing citizen services through government portals or using social media platforms to know the mood of the public before making a decision.

5. Challenges

With big data also comes the responsibilities and challenges to handle it. The value attached to big data also makes it prone to various threats. Some of the challenges are mentioned below in brief:

- 1) Public administrators have a tedious task of making the technological services platform very simple and interactive to make them available for general public so that its aim of providing services to citizen may be realized.
- 2) Challenges also include capture, storage, analysis, search, sharing, transfer, updating and information privacy. To tackle these, Indian Government has also

published *National Cyber Security Policy, 2013*. But the technology is rapidly changing dimension creating new complex scenario every day. Therefore, it is required to have dynamic policy on such subject by updating it regularly.

- 3) The administrators before coming with any technological platform shall work out all the nuances such as infrastructure, end product, emergency situations, alternatives etc. properly so that citizens do not face any problems. Such was the case with GST and eWay bill, in which government as well as citizens faced difficulties due to technological issues.
- 4) Ethics of Big Data analytics is an area of major debate. The issues range from Anonymization of data to what data should be collected and what use it should be put to.
- 5) Unauthorized control on such data may put the whole government system in dire strait.

6. Conclusion

I was motivated to write this article after observing the increasing role of Big Data in public administration from newspapers and magazines. The use of Big Data in private sectors for their business intelligence models also motivated me to write this article. It requires no proof that how big data is indispensable in this technological era for the governments to make public policy and in their decision making yet government needs a very proactive and dynamic measures to deal with the threats posed.

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