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Table of Contents

International Journal of Business Analytics

Volume 7 • Issue 2 • April-June-2020 • ISSN: 2334-4547 • eISSN: 2334-4555

Special Issue on Marketing Analytics: Developing New Conceptual Frameworks, Theories, and Measures to Understand the Emerging Use of Data Analytics

Guest Editorial Preface

Research Articles

Book Review

The *International Journal of Business Analytics* is indexed or listed in the following: Cabell's Directories; Google Scholar; INSPEC; SCOPUS; Web of Science Emerging Sources Citation Index (ESCI)

Guest Editorial Preface

Special Issue on Marketing Analytics:
Developing New Conceptual Frameworks, Theories, and Measures to Understand the Emerging Use of Data Analytics

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The main objective of the International Journal of Business Analytics (IJBAN) is to advance the next frontier of decision sciences and provide an international forum for practitioners and researchers to present useful and innovative ideas and work. The special issue of IJBAN on Marketing Analytics-Developing New Conceptual Frameworks, Theories, and Measures to Understand the Emerging use of Data Analytics has attempted to bring forth the innovative work in marketing analytics.

The field of business analytics has improved radically over the last few years, providing business users with better insights, particularly from operational data stored in transactional systems (Kohavi et al., 2002). Quite simply, the Big Data era is in full force today because the world is changing. Through instrumentation we're able to sense more things, and if we sense it we tend to store it (or at least some of it). Through advances in technology, people and things are becoming increasingly interconnected – and not just some of the time, but all of the time. The interconnectivity rate is a runaway train (Zikopoulos et al., 2012). Social media have reduced the effectiveness of traditional market research techniques. Marketers can overcome that effect by employing some of the social media related techniques that have become available (Anthony et al., 2012). With the advent of powerful, enabling big data technology, the concept of measuring one media channels' "assist power" to another media channel (i.e. TV's assist in bolstering social media' effectiveness) is becoming more practical. As online becomes a critical brand vehicle integrated performance measurement intuitively becomes more important (Nichols, 2013).

The purpose of this special issue has been to develop new conceptual frameworks, theories, or measures that explore the emerging use of data analytics in business. This issue has discussed the current state of marketing analytics and its significance as a standard marketing research tool in the twenty-first century. Marketing analytics is the practice of managing and studying metrics data in order to determine the ROI of marketing efforts, as well as the act of identifying opportunities for improvement. Understanding marketing analytics allows marketers to be more efficient at their jobs and minimize wasted web marketing dollars. The three kinds of analytics: descriptive, prescriptive and predictive. The descriptive Analytics is about looking at historical information that Airbnb has on its website that looks into reports that say how often a property is rented, in which place, and why and what is happening in terms of change in rental rates over time. This is basically summarizing past information. In predictive models, we look at how we take all the review sentiments, star ratings and property attribute to predict its sales. And then in prescriptive, analytics, optimization becomes important. It guides the ways to optimize the prices in any city to improve the rental prospects of properties. Thus, the analytics allows us to improve the marketing planning process at different stages. The papers in this issue have presented the different data analytics tools used for marketing

by industry. The decision tree is a simple way to visualize decision, a kind of predictive analytics. Omnichannel retailing experience is not possible unless analytics is applied. The marketing analytics enable the online retailers to customize the changes in the channels usage engaged in delivery of products to end users. The data analytics in virtual reality leads to big data visualizations. The online retailers use the virtual reality to change the retail experience of customers. The airline industry also employs the data analytics to maximize the revenue, smart and safe flight, check the real time baggage status, personalized offers. The advanced data analytics is utilized by the Government for making the informed decisions. The descriptive analytics enable to get the insights from the historic data available in repository and the governance becomes effectives. The journal brings forth the authors who have discussed their work on the role of marketing analytics for some of the industry and even in online governance. The Industry extracts the insights from the big data and lead to better decisions and growth. The technology has given multifold advantage to the analytics in showing results. The machine learning tools, virtual reality have facilitated the marketing analytics drastically. The business transformations have led to better services for the customers and the revenue has multiplied. The digitization has strengthened the territory of analytics. The big data is stored in the virtual warehouse and cloud computing has expanded the customer experience.

The first paper 'Conceptualizing the Role of Data Analytics and Technology in E-Governance: An Insight' by Parag Shukla and Mayank Mathur has discussed on the significance of data analytics for e governance. The motto of various e-governance plans is to empower citizens and promote the use of information and communication technology (ICT) infrastructure. The government has an agenda to make all major services accessible to all the citizens by opting for the digital route. The government also aims to provide customized services to all the citizens and even reaching to the bottom of the pyramid (BOP) by low cost technological interventions. The E-Governance initiatives would provide universal digital literacy to empower citizens to use digital platform/ devices.

The author Manu Sharma and Sudhanshu Joshi in their second paper 'Online Advertisement using Web Analytics Software: A Comparison using AHP Method' focuses on the online advertisement using data analytics software. An AHP-based approach was applied in all the disciplines and has proven its potential in helping decision makers for their selection decisions. This study is designed and implemented to help web advertisers, marketing firms, and decision makers to select web-analytics software. Although this study has taken four software only but the same evaluation method can be replicated for several web-analytics software. Advertisement analytics is a part of advanced marketing analytics where the impact of advertisements can be analyzed.

The third paper 'Airline Choice: A Comparison of Classifiers in Traditional Analysis vs Decision Trees' presented by Archana Shrivastava, James Daniel Paul, J K Sharma discuss on decision tree, a machine learning tool. Decision trees are the most powerful Machine Learning tools. A decision tree can clearly represent decisions and elucidate them in decision analysis. They are widely used for automated decision making. The research analyses the classification accuracy of the traditional Anova, regression and the decision trees like the MSP tree and the Rep tree.

The last paper of the special issue has explained about the strategic initiative of fashion retailer with the title 'From "e" Retail to "Omni" Channel Retail: A Strategic Initiative of a Fashion Etailer'. According to the estimates by Redseer Consultants, fashion industry contributes to major percentage of online retailers in India. No doubt, myntra has gone extra miles to achieve leadership by taking novel initiatives like 'try n buy', 'app only' and now the upcoming one- 'Omni-channel retailing'. A close survey revealed that myntra had kept on changing its strategies from time to time to remain upgraded and provide meaningful experience to the shoppers.

The special issue has thereby proposed new conceptual framework, theories and provided measures to understand the emerging use of data analytics.

The book review on 'Research Methodology and its Applications in Management' has been completed by Mukesh Chaturvedi and he has presented the abstract of the book. The book review discusses on the various chapters included by the book author and the applications of research added

to the area of management. This is an attempt to present the simple form of book on research for the management students, scholars and corporate. This book has referred various books on research available in market and tried to simplify the concepts. The book comprises of four chapters in which first chapter discusses on research, its nature and scope. The chapter has inclusion of types of research, steps in research process and scales of measurement. The learning objectives of the first chapter are to understand the role and relevance of research in management, the steps in research formulation process and different types of research. The second chapter has research design, classification of designs and data collection methods. The learning objectives of second chapter are to understand the framework intended to arrive at the answers to research questions and to comprehend the different research designs. The third chapter depicts the details on sampling design which includes types of sample and steps in sampling. The learning outcome of this chapter includes the understanding of the concepts of sampling, sample size measurement and sampling methods. The fourth chapter includes the data analysis part where preliminary investigation of data, processing and tabulation is elaborated. Hypotheses testing and Confidence intervals are mentioned in the chapter with examples. The chapter further includes Univariate analysis, bivariate analysis, parametric and non-parametric tests.

The journal expects the readers to extract the information related to marketing analytics and market measurement tools. The technology has expanded the wings of marketing analytics and the future of technology enabled marketing analytics is all set to begin with new models, frameworks and possibilities for better business prospects in the world.

Surabhi Singh
Guest Editor
IJBAN

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Conceptualizing the Role of Data Analytics and Technology in E-Governance:
An Insight

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ABSTRACT

Big Data in the current context is an asset for any government body as it helps in efficient and effective governance with the help of technology so as to create and build a citizen centric approach. As digitization has become an integral part of everyday life, data collection has resulted in the accumulation of huge amounts of data that can be used in various beneficial application domains. Effective analysis and utilization of big data is a key factor for success in many business and service domains. The Government of India initiated a Big Data exercise by collecting data in various forms, namely, PAN card data, voter ID card data, AADHAR data, BPL data, etc., which was meant to pass on the benefits of a specific nature to the beneficiaries. Various schemes have been conceived and implemented by different state and central governments wherein Big Data has been generated and has helped the beneficiaries in different facets of receiving the benefits. The next step of all these smart initiatives and smart data is to logically and correctly use the data for transiting the current policies into the futuristic levels. This paper selectively reviews and analyzes the Indian policy context regarding Big Data, data analytics and the associated technology requirements in the e-governance context.

KEYWORDS

Big Data, Data Analytics, E-Governance, Technology Shifts

INTRODUCTION

The data usage in the last few years has grown exponentially, the International Data Corporation (IDC) gave a report in 2011, as per which the generated and copied data size being used in the world was 1.8 ZB. In the succeeding five years this data size increased further nine times. The terminology of 'Big Data' is being much used in the current Academia, research, perceived usage and also in the Social media interactions (Sai and Abualigah, 2017). The Big Data has the potential to enhance the process of decision making as also efficiency and effectiveness of any organization, provided the correct analytics of the data is done by the organizations. It also assists in reducing the cost of new technologies and the computing time gets reduced drastically, the decision-making process and a plethora of aims and objectives also tend to get achieved by Big Data (Davenport & Dyché, 2013).

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The influence of modern technology can be felt in every aspect of our lives, even in the way our governments function. With smart governance, democracies around the globe are set to improve their education, security, transport, resource management, and economic infrastructure. We have built our democracies on the principle of good governance, which is a great starting point to ensure public welfare and development of the state. But people are losing their trust in the system due to the limitations of good governance like corruption, non-cooperation with the citizens, and unfair policies. Therefore, smart governance can improve the situation by creating a cooperative environment for citizens and businesses. Additionally, Information and Communication Technology (ICT) has given rise to an information-based atmosphere that can be exploited by smart governance to communicate and collaborate with businesses and citizens. And, the principles of good governance can be applied more effectively with the help of smart governance:

The developing and the new technologies propagate the advancements happening in E-Government. The uses of Information and communication Technologies (ICT) in E-Government enables government to connect with the citizens and other groups of people or associations. The direct connect of citizens with people allow government and its various agencies, to work in a transparent way, offering various facilities and functions to the citizens and other private groups. A study conducted by Grimsley, M. and Meehan pointed out that E-government systems frequently encompass strategic goals that go beyond efficiency, effectiveness and economy to include political and social objectives, such as trust in government, social inclusion, community regeneration, community wellbeing and sustainability. (Grimsley & Meehan, 2007)

Too often businesses eager to join the big data parade focus on technology. From this perspective, they acquire the newest analytical tools and assemble a mixed collection of technology stacks. However, without a clear idea of the business challenges that must be solved or opportunities that can be captured, the return on investment from this approach is limited. The best companies have shrugged off the excitement surrounding big data and adopted an approach that centers on clear business cases. Business strategy and proven use cases – individual instances of practical applications – guide investments and deployment at these companies. For example, they target increased cross sales by using analytics that offer next-product-to-buy recommendations or improved pricing strategies by analyzing consumer elasticity better. While details of implementation for each company will be unique, our research and experience suggests that excellence in four areas is crucial to gaining value from big data analytics as a complement to strategy: a solid anchor to business value, a pragmatic approach to IT, attracting scarce talent, and getting insights to the front line.

Governance is a challenge in a country as vast, diverse and rapidly developing as India. That's where new technologies can intervene, enable large scale transformation, and help in the implementation of ambitious government plans. Policymakers have been formulating innovative ways to usher in progress on paper. What they rely on is a robust infrastructure and smart solutions to translate inspiring plans to reality. The government has been spearheading radical digitalisation to induce economic inclusiveness and social transformation through initiatives like 'Digital India', 'Make in India' and 'Skill India.'

E-governance has emerged as a cornerstone of the Indian government's push to increase digital connectivity with the public. Critical to the government's stated goal of transforming India into a digital knowledge economy is speed of service delivery, enhanced efficiency, curbing corruption, and the state being able to reach out to the citizens efficiently- all of which can be boosted by e-governance. With a promised allocation of Rs 1.13 lakh crore, the government is

investing massively towards building a transparent and responsive governance infrastructure and has already launched several initiatives under the Digital India umbrella viz., Digi Locker, Digitize India Platform, MyGov, Jan Dhan-Aadhaar-Mobile (JAM), e-Sign Framework, Bharat Net and the ambitious Smart City program.

While the Government continues to flesh out the e-Governance framework, it must also consider how tapping into insightful and connected data can help drive real-time intelligence-gathering facilitate financial decisions, fraud checks, data screening, analytics and personnel checks to ensure effective implementation of plans and programs. Figure 1 shows a conceptual model of data analytics and technology in e-goverenance.

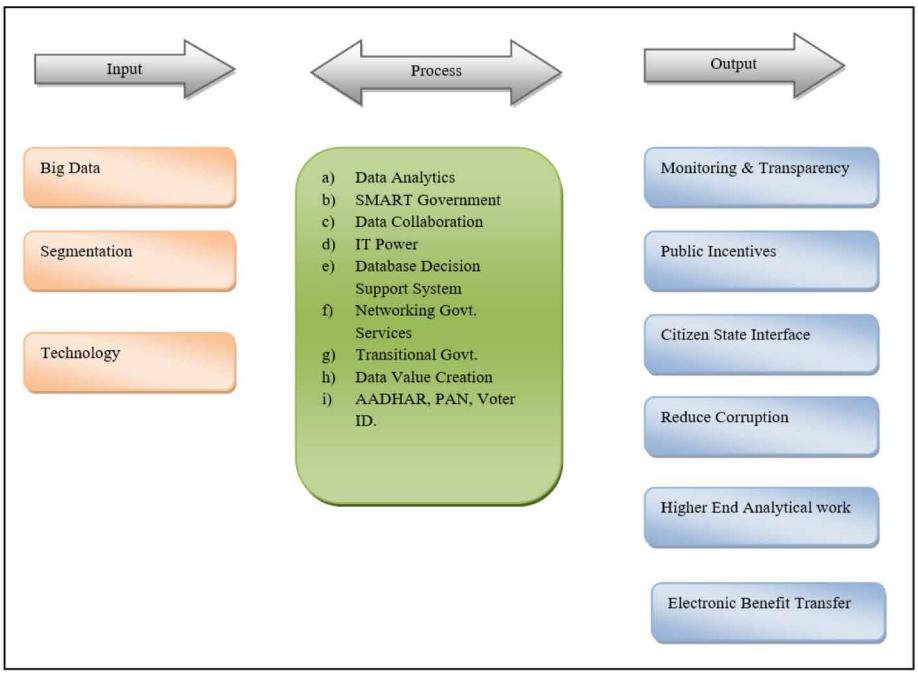
Large data gets created worldwide on a daily basis. A lot of such data is useful, and a lot's may not be used because of its nature, could be customized, or specific to a requirement. The data concerning the citizens getting collected by means of various websites, programmes of government, variety of applications through with the citizens apply for schemes, gets deposited in the data repository of various servers of the government.

In the current context, it is seen that this data is adaptively not used for E-Governance. E-Governance is the power of Information Technology coupled up with a faster database decision support system and genuine identification of the citizen beneficiary (in case of a direct benefit transfer of a government scheme), for becoming absolutely efficient and pinpoint effective.

The networking of any organization or a government department and its schemes have been possible with the advent of internet, intranet and the information superhighways, which has helped in creating government services more user-centric and transparent.

This has enabled them to identify primarily corruption, which is much deep routed, the non-performers, the necessitated pilferages, simplifying the time-taking processes, achieving goals, etc. (Turban, 1995).

Figure 1. A conceptual model of data analytics and technology in e-governance



Source: Compiled by the Authors' Based on Review of Literature

PRE-REQUISITES OF E-GOVERNANCE BY LEVERAGING TECHNOLOGY

In the following section, the authors' in this research paper have briefly outlined the pre-requisites of E-Governance by leveraging the technology.

Funds

To adopt modern technologies for smart governance, governments must know how much funds they have in their treasury and calculate the budget that needs to be allocated for the project. Various countries are allotting a huge budget for smart governance projects such as smart cities. For example, the Indian government has recently allotted over $13 billion for their smart cities project. And, it is essential that governments hire skilled professionals who can help in strategizing the approach to reduce the wastage of money. If the governments are falling short on funds, they can introduce a new tax or find private investors for their project. Additionally, developing countries may require cost-effective strategies to manage their development projects, international loans, and trade deficits.

Infrastructure

Governments should create an appropriate infrastructure to facilitate the smooth functioning of smart governance. For developing an institutional infrastructure, an eGovernance application can be used. eGovernance enables citizens and organizations to communicate with the government and exchange vital information using the internet. And, governments can keep records of citizens' personal information via a paperless medium. But data storage is a major issue with eGovernance. Hardware storage has memory limitations, while the data stored on the cloud can be hacked. Hence, a blockchain-based decentralized cloud can prove useful to overcome storage limitations and avoid data breaches. To build physical infrastructure, initiatives such as smart energy management, smart water management, smart mobility, and many more should be undertaken. For smart energy management, finding renewable energy sources, using advanced meters, and leveraging modern technologies to automate and monitor the distribution of electricity are necessary. Smart energy management aims to reduce energy prices and the impact of global warming. Whereas, smart water management will address the issues of water shortage and water purification. Using innovative technologies for improved water management can help in providing clean water for areas prone to water shortage. Meanwhile, smart mobility aims to create faster, eco-friendly, and cheaper transport alternatives. Additionally, CCTV cameras and AI can be used together for better traffic management and finding empty parking spots.

Smart education and smart healthcare are essential for developing the social infrastructure. Smart education utilizes modern technologies such as artificial intelligence and IoT to offer better educational facilities. Artificial intelligence can automate tasks such as grading tests and developing customized learning interfaces with digital textbooks. Moreover, IoT can be used for creating an interactive learning environment and attendance tracking. Smart healthcare deals with collecting patient data for remote diagnoses, remote treatment, online health records, and patient monitoring systems. Skill development centers and business parks are key parts of the economic infrastructure. Skill development centers train students and employees to make them more competent and reliable enough to contribute to the growth of industries and workplaces.

Technology

Smart governance is leveraging modern technologies for various applications. For example, AI can be used for facial recognition in smart surveillance, where local authorities can identify criminals and suspects in the crowd. Furthermore, CCTV cameras can help in traffic management by coordinating traffic lights and directing the flow of vehicles over roads accordingly.

Similarly, IoT can be used for the benefit of the government sector. IoT sensors can be installed on various outdoor objects to collect important data for analytics. For example, the tech giant Nvidia has introduced Metropolis for public safety, traffic management, and resource optimization using

IoT devices and deep learning for video analytics. Blockchain-based financial services can help in transferring and receiving payments for various organizations. Moreover, blockchain is used to execute smart contracts, where payments can be autonomously executed after pre-set conditions are met. And, the chances of fraud will be reduced due to the transparent, distributed, and encrypted network.

In the following section, an attempt has been made by the authors' in this research paper to highlight the major benefits of smart governance by leveraging Information and communication technology.

Enhanced Participation of Citizens

Smart governance has created a medium for interaction between the government and citizens. With the help of ICT tools, governments can communicate with citizens. Additionally, citizens can give feedback and suggestions for the latest government programs, policies, and schemes. The feedback would directly reach their respective leaders, counselors, and city managers.

Access to Crucial Information

With smart governance, citizens can have easy access to government data related to funds, expenditure, and investment. All data except critical information that can threaten the security and safety of citizens will be transparent to the public. Hence, the transparency will ensure better accountability from the government.

Better Democracy

eGovernment can implement identification and authentication measures to prevent electoral fraud and abstention. Moreover, eID cards will offer voter registration and authentication digitally to create a convenient and secure voting system. And, secure online ballots can enable privacy and anonymity of voters.

Financial and Social Inclusion

A large chunk of the world population is underprivileged and illiterate. Such a population finds it increasingly difficult to use financial services. Thus, smart governance can help by offering banking and financial solutions for the underprivileged population. And, eIDs can be used to make payments for various products and services.

Sustainable Future

Smart governance will promote a culture of conscious decision-making. The analytics obtained with the help of modern technologies will help plan better policies that target the conservation of resources and environment, development of the community, security of citizens, better education and employment, and public welfare.

Involvement of the Private Sector

Private organizations are exponentially advanced in research and development of modern technologies. And, organizations already know the strengths and limitations of existing technologies. Therefore, private organizations can help the governments in planning for successful deployment of technologies. Moreover, private companies can be potential investors for government projects.

THE RESULTANT OF USAGE OF BIG DATA AND ITS ANALYTICS

1. **Monitoring and Transparency:** The monitoring of various budgets, schemes, the reach of the schemes to the beneficiaries, the transparency of the functioning of the organization or the Government department, can all be facilitated by carefully managing the big data and the correct acumen of its analytics;

2. **Public Incentives:** The government keeps introducing new schemes and keeps distributing different benefits to the citizens/beneficiaries. The data already collected by means of some older scheme for that specific beneficiary/citizen could be used/ linked by corrected means of data mining to ensure correct reach of the benefit. In the current context the AADHAR has facilitated such a scenario and ensured that repetitive data is not getting collected from the citizen;
3. **Citizen State Interface and Security:** The use of data analytics and data collaboration used for different government agencies can generate agility and reducing cost while providing a perfect match of services desired by the citizen. The collaborative usage of data along with its analytics assists in accurate traffic forecasting and transportation planning, leading into decongesting busy traffic roads and motorways, especially in bigger cities of our country. The critical application of Analytics, IT power and data value creation is its usage in Public safety efforts, wherein various security agencies can access data like phone records, field records and variety of transcripts, emails, etc., which they can analyze to detect specific patterns which could suggest them to derive security threats or an untoward activity and could communicate the same to the necessary security staff to be alert and operationally ready. These agencies get very regular intelligence inputs and different variety of trends could be mined to be well informed and trained rather than be surprised;
4. **Corruption and fraud detection:** The corruption and fraud though different, are prevalent much in various schemes of government and its departments, the citizens pay a heavy price to get the benefits or some documents/licenses. Data analytics and the IT power along with the predictive analytics can help in identifying the gaps in the system against corruption and prevent frauds by trend analysis. The intense usage of AADHAR, PAN or any other national identity digitized number enhances the detection of Corruption and fraud detection.

The data ecosystem as illustrated above in the Figure 2, which illustrates the accumulation of data through different sources, the types, incentives of each one of them, requirements from each focal point of data generation. The figure also signifies the importance of the data mining in such kind of data generation and how the analytics could be useful for predictive analytics for understanding the following:

- Tracking and response;
- Response to Crisis and behavior envisaged;
- Mapping of service needs of the citizens or the society;
- Predicting the demand and supply changes.

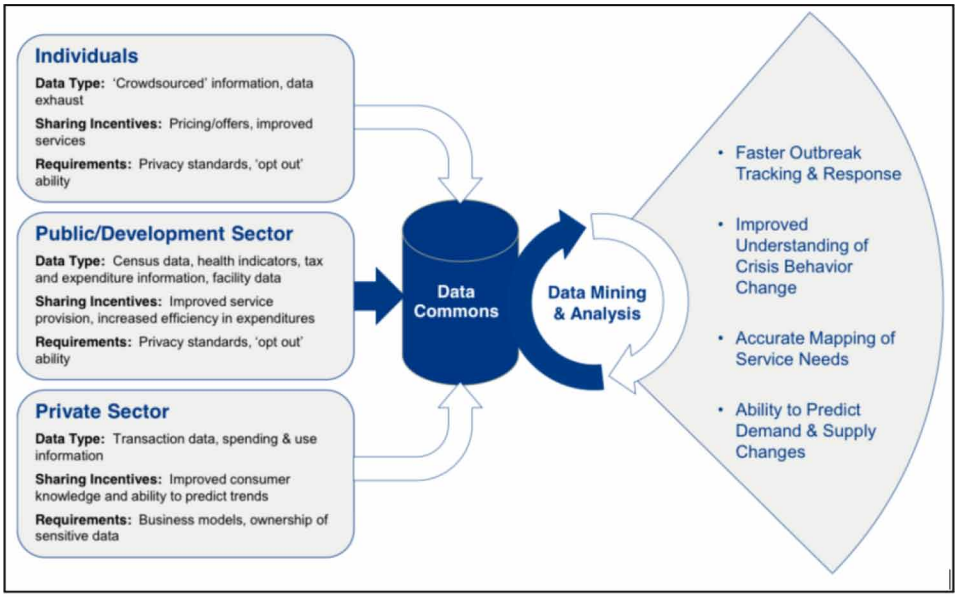
A BRIEF REVIEW OF LITERATURE

A brief review of some of these studies along with research gaps have been is given below:

Richard Heeks (2001) studied the effect of new information and communication technologies and how it can make a significant contribution to the achievement of good governance goals. The paper outlines the three main contributions of e-governance: improving government processes (e-administration); connecting citizens (e-citizens and e-services); and building external interactions. (e-society)

Countries therefore face two challenges. First, the strategic challenge of e-readiness: preparing six identified pre-conditions for e-governance i.e. Data Systems Infrastructure, Legal Infrastructure, Institutional Infrastructure Ready, Human Infrastructure, Technological Infrastructure, and

Figure 2. Model of dynamics of the data ecosystem (http://www3.weforum.org/docs/WEF_TC_MFS_BigDataBigImpact_Briefing_2012.pdf)



(Source: WEF White Paper, "Big Data, Big Impact: New Possibilities for International Development" http://www3.weforum.org/docs/WEF_TC_MFS_BigDataBigImpact_Briefing_2012.pdf)

Leadership and Strategic Thinking. Second, the tactical challenge of closing design-reality gaps: adopting best practice in e-governance projects in order to avoid failure and to achieve success.

Roumeen, Islam (2003) explored the link between information flows and governance with the objective to examine how the availability of information may affect governance. Specifically, it looks at two important factors i.e. how the availability of basic economic data affects governance and how the legal framework governing access to information might affect the quality of governance.

In some cases, there is the total failure of an initiative never implemented or in which a new system is implemented but immediately abandoned. Alternatively, there is the partial failure of an initiative in which major goals are unattained or in which there are significant undesirable outcomes. One type of partial failure that particularly seems to affect e-governance initiatives is the sustainability failure of an initiative that succeeds initially but then fails after a year or so.

Mohammad Shakil Akther et al (2007) in their study on an e-government project in Bangladesh highlight that most e-government projects within developing countries employ high-technology intervention whereas citizens are not ready for this. There are successful projects which took low end route.

This paper examines one such project to find out the reasons behind its success. The research concludes that stakeholders' participation is the driving factor for success. The major issue is not IT, but an understanding between the citizen population and their complimentary governmental entity, which acts as the critical factor for triumph in e-government. Due to the active participation of stakeholders, both the birth registration and immunization rate have increased where concurrently other unforeseen

benefits were realized; such as image enhancing of public and elected officials, use of data for school enrolment and decision making for vaccine management for society as a whole.

KEY DISCUSSIONS

The citizen centric data and other data being collected, assists the government to develop a data driven approach. The future would have a very widespread rapid implementation use of, technology and big data analytics across the government and the industry. The data repositories have to safeguard issues such as guaranteeing privacy, security, establishing standards and governance, and continually improving the tools and technologies.

The data and applications are on an incremental stage of development and usage, but the IT Power, data analytics are catalysts to rapid advances in platforms and tools. The big data, data collaboration, Database Decision support system enable in changing the entire landscape of e-Governance projects in the country, by assisting in, how data is generated, maintained, analyzed and used for taking future decisions based on the results produced. Government encourages the use of Big Data and its analytics for the future course of its projects, schemes and most important of it all the functioning of the Government (Navdeep, Arora, Sharma, 2016):

A well-integrated plan touching upon all sections of the Indian society, if implemented properly, holds a lot of promise and will transform the way citizens connect with the government. It will be very critical for the Centre and state governments to ensure citizen awareness, monitor progress of implementation and ensure smooth and efficient functioning of government services.

Globally, technology has been the biggest enabler in bringing out massive transformation in both public and private sectors. Given the complexity of implementation at such a large scale and unprecedented scope of the project, it is critical to choose disruptive and emerging technologies, which have mass reach, can be customized and are ubiquitous in nature. Considering the timelines involved, the implementation would need to be done in a lean and agile manner, apart from being cost effective and secure. Technologies such as cloud computing, mobility and analytics would be the most appropriate in enabling the vision and the pillars of the initiative. The technologies are detailed below. Cloud Computing Cloud computing enables the user to store and retrieve information irrespective of where she is located. The Indian government plans to use cloud for seamless integration between various departments and with citizens. It will provide a centralized data storage facility that will help in dissemination of information at a much faster pace.

For example, the DigiLocker is a cloud service launched by the Indian government to provide its citizens with a shareable cloud space to store and share documents such as certificates, PAN card, voter ID, etc. Mobility enables availability of information on the go through devices such as smartphones, tablets, laptops, etc. It can be coupled with cloud to enable sharing of documents or information with other users. Citizens can communicate with the government regardless of their physical location. Diplomats or bureaucrats can gather information and take decisions on the move, which allows for faster and easier decision making.

Analytics relies on collection of large amounts of data and drawing out actionable insights. Governments across the world are using the power of analytics to better serve citizens. For example, Deloitte partnered with the UK government to build an analytics engine in London that gathered information from camera sensors and created actionable insights that helped traffic managers to handle traffic in a timely manner. The Indian government has a data repository called e-taal, which provides real-time transaction data of citizen with various departments and agencies of the government,

and quick analysis of the information in graphical and tabular form. Moreover, the government is planning to undertake 'Project Insight' that will analyze transaction data of a citizen and correlate that with the income tax data to determine whether the individual is a tax evader or not. Various other means of technology enablement, such as security of PII Data, ensure that the data remains safe throughout its life cycle.

E-governance in India is seeing a dramatic growth in the number of online transactions involving citizens and the government. The number of such e-transactions has grown by more than 200 per cent in 2 years i.e. from 840 million in 2013 to 2580 million in 2017.

The e-governance measures cited above were a success because of several existing factors:

1. Skilled workforce that was able to adopt these technologies faster;
2. Affordability of these technologies, either due to high standard of living or due to cheap availability of devices;
3. Effective execution on the ground and, at times, stringent policy measures.

This allows the government to record citizens' data comprehensively, which allows success of measures targeted at particular groups of citizens While it may not be possible to take steps like making particular system mandatory, the other factors play a major role in guaranteeing success of these initiatives. As citizens' awareness and skill levels increase, the demand and adoption of these technologies will increase too. Therefore, the supporting initiatives such as Make in India, Electronics Development Fund and Skill India, among others, will form the backbone of the success of the Digital India programme.

Where technology has overcome the physical boundaries of country borders, the government need not create limiting boundaries. Unprocessed data by itself is worthless. For a country that produces such large volumes of data and one that yearns to be the playground of global commerce, the defining importance is of data access and data analytics, not of raw data. The key is to not just have all the data in the world. What will make a difference will be in being able to keep critical data, to protect it, to be able to effectively analyze it and make it promptly actionable. Those are the areas we should be astutely strategizing on.

CONCLUSION

The AADHAR has been a game changer for a country like ours, wherein it's a herculean task to enroll the residents of the country, to introduce any governmental scheme, payout of various natures to the beneficiaries etc. AADHAR has ensured that more than 90% of population has been enrolled and hence assists the department/government for easier implementation of any scheme.

With AADHAR has posed a new dimension of Data Analytics. The Government now has the engineering and management capacity, which is required for conceiving, designing, building and operating the various governmental systems. The basic requirements, such as ubiquitous nationwide Internet access or digital key infrastructure, are now in place, which move onto the next requirement i.e. Analytics. The existing data repository with the state/Departments, would enable us for introducing various schemes of the government in a fair transparent manner, citizen would become more enabled at the state-Citizen interface locations. Most important of it all the analytics would help us to reduce corruption which is first and foremost requirement of any citizen and government.

The move from a smart government to a transitional government using the big data which is available with the Government in forms of various usable data is the next challenge and being debated at various forums. More research would be needed using the sociological and economic analysis.

To realize the vision of promoting inclusive growth through empowerment of citizens, it is important to reach out to citizens in the remotest of locations and make them part of India's growth story. Globally, technology has been the greatest enabler in causing disruptive change. India's story is no different, and the use of digital technologies to educate and empower citizens is being seen as a game-changer. Given India's vast expanse and differences in demographics across the nation, there is also a vast difference in the level of adoption among the citizenry. To ensure success of its initiatives in the digital space, the government will have to take steps across multiple functional areas, some of which are outlined below:

- **Regulatory framework:** The government should focus on putting in place regulations that ensure smooth adoption of digital services. Regulations around net neutrality, use of cash cards/ wallet services, etc. should be instituted along with the initiatives of Digital India. Regulatory clarity will build trust about government services among citizens and encourage them to opt for these services;
- **Effective implementation:** There are two key imperatives to be considered for effective implementation:
  - **Skill enhancement:** The government should focus on skill enhancement of its workforce through training programmes or hiring of private sector experts. The government can collaborate with the private sector through PPP model, consulting assignment, etc.;
  - **Planning and implementation:** The government, along with system integrators developing various platforms, should adopt agile implementation practices. The platforms developed should be 'future-proof' i.e. upgradable and scalable in a cost-effective manner;
- **Budget constraints:** The government should tap into the available pool of resources such as manpower, budgets, private sector fund, etc. in an optimal manner and should put monitoring mechanisms in place to ensure right allocation of resources at the right places. Banking institutions should be more liberal in their credit appraisal process for funding these initiatives;
- **Bridge digital divide:** There are two key imperatives for bridging the digital divide:
  - **Capability enhancement of citizens:** To enable citizens to reap the benefits of Digital India initiatives, the government should disseminate information through multiple channels and train citizens on use of technology devices and various interfaces (e.g. web portals, app, etc.);
  - **Design of digital services:** The governments should design easy-to-use intuitive interfaces. The private sector expertise can be leveraged in this aspect. Service providers (e.g. government agencies, universities, etc.) should design simple process flows such that a user can do the transactions with minimal human intervention;
- **Security and privacy:** The government and system integrators should ensure application of state-of-the-art security protocols (e.g. 256-bit AES encryption, etc.). Relevant privacy policies should be instituted by the government so that the information is not misused by people who have access to it.

The motto of various E-Governance plans is to empower citizens and promote the use of Information and Communication Technology (ICT) infrastructure. The government has an agenda to make all major services accessible to all the citizens by opting for the digital route. The government also aims to provide customized services to all the citizens and even reaching to the bottom of the pyramid (BOP) by low cost technological interventions. The E-Governance initiatives would provide universal digital literacy to empower citizens to use digital platform/ devices. Universal access to digital resources would be provided, wherein all documents would be available in digital form on the cloud. Government services would be provided in local languages and a platform would be made available to citizens for participative governance. Having taken the right steps in the direction of introducing economic reforms, it is now vital for the government to focus on implementation and execution of its policies using technology. India lags behind the targets set up by the new government in achieving the ambitious dream of providing even the remotest villages with high-speed internet.

Technology is the most crucial enabler in India's economic growth and trends in the Information and Communication Technology (ICT) sector indicate demand is expected to grow fueling growth firms in this sector. This will lead to more investment in development of capabilities and higher penetration of computer technology and mobile devices. It will be critical for India to use this growth in areas of governance and service delivery.

Getting the insights developed from big data analytics to the front line is the vital last step to capturing its value. The final stretch from analytics to profits relies heavily on getting information to frontline staff and encouraging them to act on these insights. Human nature often resists change and getting frontline staff to use recommendations proposed by big data analytics can be the greatest hurdle to success. Careful attention must be afforded this final step of implementation. Demonstrating the effectiveness of big data through pilot programs and quick wins, dispatching credible champions for the transformation, and showing how big data improve personal performance are among the tools that can bring frontline staff on board. To a point, big data analytics deserves the excitement it has generated. By capturing the value of their stockpiles of data, companies have increased sales, reduced churn, and acquired other significant benefits. But companies have also been carried away by the hype, focusing on the technology rather than the new technology's strategic justification. The real advantage of big data analytics starts with proven business cases. Then spear fishing can begin; the technology can be deployed to attack a specific problem or to seize a specific opportunity. As business cases and successes pile up, big data analytics becomes part of a company's core operating procedures, delivering its greatest value.

To realize the vision of promoting inclusive growth through empowerment of citizens, it is important to reach out to citizens in the remotest of locations and make them part of India's growth story. Globally, technology has been the greatest enabler in causing disruptive change. India's story is no different, and the use of digital technologies to educate and empower citizens is being seen as a game-changer.

Given India's vast expanse and differences in demographics across the nation, there is also a vast difference in the level of adoption among the citizens. What ails India is not e-governance deficit but governance-deficit. It is good governance that will propel and sustain economic growth in India. It is good governance that will open up new employment opportunities. Good governance can restore trust of citizens in governments and make governments accountable to them. Citizens have to play an active role as democracy cannot be healthy without participation. The country needs to make serious effort in implementing the policies. The biggest contribution of e-governance would be if it channelizes all energies, debates and resources into a singular mission of improving governance in India not just for service delivery but also in policy settings, resources allocation, and its implementation. Good governance should be technology independent so that the focus is on providing good governance to everyone. The institutions should be strengthened and re-invented in order to be competitive, efficient and accountable. Good governance is not given naturally in any system. It has to be nurtured by developing institutions of democracy. Good governance implies a framework that has well-being of the people as its focal point. E-governance in India is an evolutionary phenomenon and requires a change in the mindset of all – citizen, executives and the government. With the support of the Internet, the government processes can be made efficient, effective, and citizen friendly. There are many challenging issues lying ahead. Security is the main concern for the citizen. To be effective, e-government should be integrated within a holistic approach that includes a supportive and democratic leadership, a viable communication infrastructure, and qualified personnel to operate the new technology.

The government needs to make significant investments in areas such as IT training, assessment and awareness. The need of the hour is to maintain a proper database of all the citizens and well-developed infrastructure. The strong political will power and the social acceptability of e-governance in urban as well as rural areas are required. From the study, it is clear that e-governance initiatives have been found successful in ensuring good governance. Despite various limitations e-governance has proved meritorious service to the people at large.

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