

LEVERAGING BIG DATA FOR HEALTH CARE

Ritu Aggrawal* and Deepshikha Kalra

Associate Prof, At Management Education & Research Institute, New Delhi.

Article Received on 13/07/2016

Article Revised on 02/08/2016

Article Accepted on 23/08/2016

***Corresponding Author**

Ritu Aggrawal

Associate Prof, At
Management Education
& Research Institute,
New Delhi.

ABSTRACT

There has been lot of changes in the health care sector of India during the last six decades both government and private sectors have taken significant measures to improve the quality of service but as this sector is multilayered which makes it complex and difficult to unlock its true potential and scope for innovation. This paper focuses on the problem faced by patients and doctors due to health data available in different

forms and at different places. It suggests how Big data can provide solution to these problems.

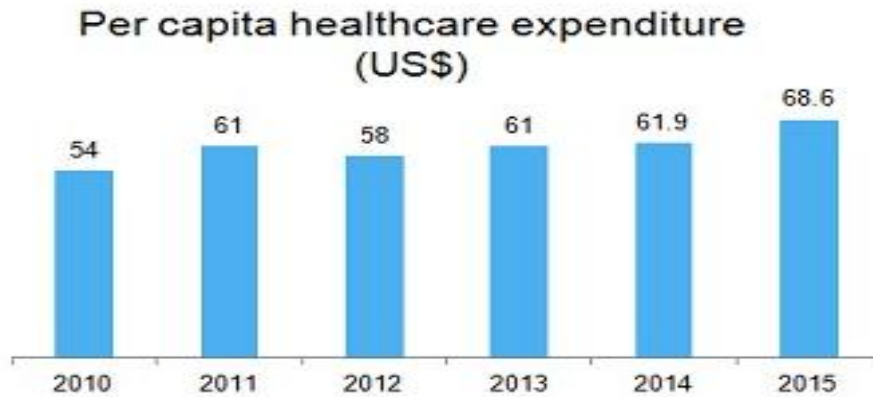
KEYWORDS: Big Data, Health care, National Health System (NHS).

INTRODUCTION

Health care is one of the promising sector industry with lot of technological and regulatory changes going on. Increasing expenditure by both public and private sector has lead to the tremendous growth of health care industry in India. This is due to rising disposable income, easy access and awareness of personal health & hygiene. The total industry is expected to reach US \$ 280 billion by 2020 growing at a rate of CAGR of 16%. Penetration of health insurance has further intensified the growth. The government of India wants to develop India as a global health care hub. It has created National Health Mission (NHM) portal for providing effective healthcare services.

Indian health care system is still working on curative rising system with lots of communicable disease still present and with rising population, disposable income changes in lifestyle has further strengthened. Despite of this it is the most neglected sector as India

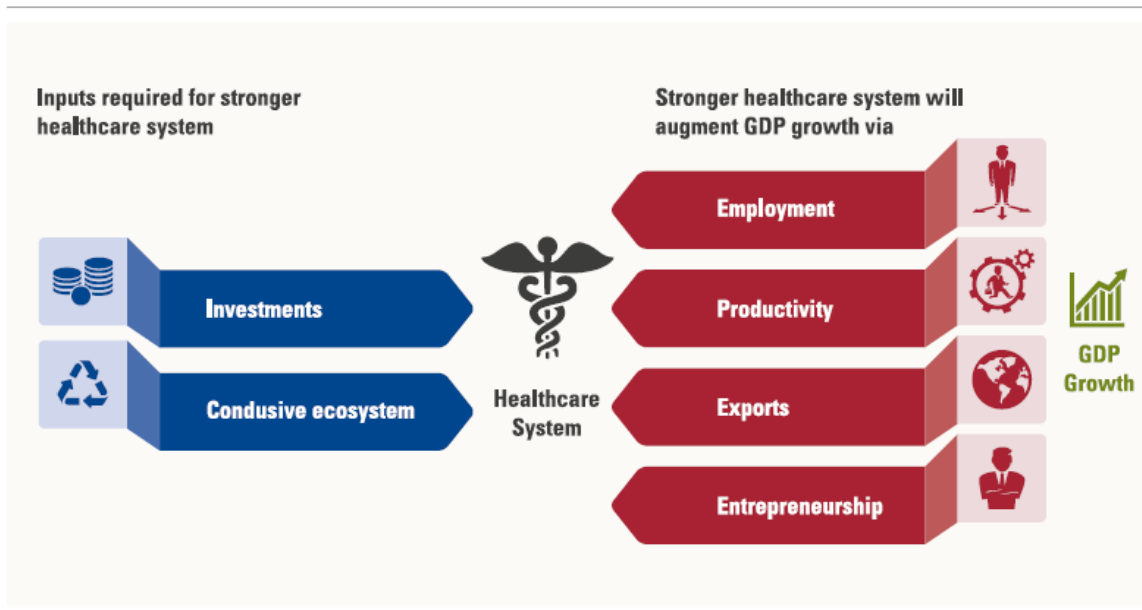
spends just 4.2% of its GDP on health care with just 1% contributed by the public sector, which is the lowest globally.



Source: World Bank, BMI Report, TechSci Research

Health care system has a potential to improve the economy of the country. For this it just requires a conducive ecosystem and investment. With the growth of FDI and Telemedicine lot of private players are attracted towards the sector which paves the way for frugal innovations and new models like data analytics for cost reduction and enhanced level of care for patients with high returns.

Healthcare drives the GDP growth



Source: KPMG in India analysis, 2015

To build a conducive ecosystem, awareness of the generation and storage of health data should be known.

Role of Big Data

In health care a lot of data is produced on a daily basis but most of it is textual in nature. The traditional statistical techniques have a limitation in terms of using textual data. Today even EHRS(electronic health records) too store data in separate data bases hence considered on individual basis i.e. data is studied in Isolation resulting in every time treating the patient from scratch. This is the reason that common drug allergy cases are still common. Today's customer well versed with technology, demands a comprehensive and holistic treatment. There is a need to combine such data and generate meaningful results for effective treatments and patient handling. Big data is an answer to all such challenges.

Big data has extremely large data sets that may be analysed computationally to reveal patterns, trends, and associations, especially relating to human behavior and interactions. Or in other words, Big data can be considered as a production system with lots of input and an output having utility. It has four important dimensions: volume, velocity, variety and veracity.

In terms of health care volume of data is quiet high because of large number of data being assimilated trough hospital admission statistics, MIS of hospitals, Individual Clinics, insurance firms and even behavioural data from social media. Variety is also their because of different ailments and each individual having different demographics and medical history. Velocity here refers to the speed at which the changes in health record must be managed. Veracity dimension refers to standardization of data which is the biggest challenge, despite of having standard protocols. Medical practitioners are well versed with these protocols, but whether they are actually followed and store is still unpredictable.

In healthcare Big Data uses data to produce better profiles of illness that helps organisations for better patient management and reduce cost. It improves the bottom line as productivity is enhanced by 0.5to 1%, reduces risks and sometimes surfaced the insights that are otherwise hidden. With the reduction in prices of analytics software and technologies like cloud computing more and more organisations are using this managerial revolution.

Big data also has potential to enhance the quality of healthcare delivery and transform the industry through the information generated by it. Even if there's nothing wrong with you, access to huge, ever growing databases of information about the state of the health of the

general public will allow problems to be spotted before they occur, and remedies – either medicinal or educational – to be prepared in advance.

Big data helps in improving clinical diagnosis through predictive analysis based on retro data of patient. It may also help the practitioners to share their knowledge and be updated about the latest advancements in protocols, research and drug line treatment. For various disease like AIDS, cancer etc, Doctors would be able to know in advance the immunity state/ allergy of a patient towards various drugs hence a better treatment even using other alternative medicine like Ayurveda, homeopathic etc could be started from day one. This massive data reduces long term administrative cost as hospitals can avoid repeat visits and ensures a big support around a wide range of medical and health care functions including decision support, surveillance for various disease and mass health management. As per McKinsey & Company Report Big data would account for more than \$ 300 billion savings to the Global Health system by 2020. It could also help medical researchers to develop new treatment as they have an access to the latest information stored. Health care organisations have joined hands with corporate for analyzing history of patients data generated from various sources like medical and insurance records to deliver customized health package. Today medical certificate is a mandatory document before joining any school, college or an organisation, but hardly any organisation actually uses it. They are kept in files as it is there in paper form only. If this information is digitized and linked with UID number of a citizen then this pool of data will be of great help as lot of emergencies could be dealt. In US most hospital systems and health insurance firms have the history of patients even if they switch their physicians and in UK NHS has health records on all the ailments and also family history of the patient. There is a need for start-ups in India to enter into this sector in order to digitize these health records and introduce new models and ideas to improve.

CONCLUSION

The ethical, privacy, security, regulatory and technological challenges makes the implementation of big data complex and difficult in low and middle income countries but the rewards it offers cannot be ignored. Looking at present scenario and systems of India, we are still not prepared to leverage the full benefits of big data and analytics. Doctors should realize and ready to accept and follow treatment protocols instead of their own judgement. Patients should change their lifestyle.

REFERENCES

1. <http://www.pwc.in/industries/healthcare.html>
2. https://www.hdfcbank.com/assets/pdf/privatebanking/Sector_Update_Indian_Health_care_Industry_March_2015.pdf
3. [http://www.India_healthcare_Inspiring_possibilities_and_challenging_journey_Executive_Summary%20\(6\).pdf](http://www.India_healthcare_Inspiring_possibilities_and_challenging_journey_Executive_Summary%20(6).pdf)
4. Mc Kinsey report on The Big Data Revolution in Health Care Accelerating Value and Innovation, January 2013.
5. Raghupathi and Raghupathi Health Information Science and Systems., 2014; 2: 3., <http://www.hissjournal.com/content/2/1/3>