Technology Driven Healthcare Management

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Abstract:

The good health is a precious asset a human being can have. It is very difficult to remain healthy for lifetime. Due to increased pollution, sedentary lifestyle, increasing take of junk foods and growth of technology has led to various health problems around the globe. Healthcare industry has provided us the measures for dealing with these health problems and shift to a good health and good life. Before advancement in technology the products and services offered by healthcare and pharmaceuticals industries were not reachable to rural and distant areas. The techniques of telemedicine, Artificial intelligence based analysis, telemedicine etc have contributed in high growth of healthcare services in both developed and developing countries. The penetration of technology will lead the healthcare industry to tremendous success in the coming future. This paper is an attempt to analyze the contributions of technology in healthcare services delivery, the growth of healthcare products and investments done for technological advancement etc

Keywords:

Healthcare management, Telemedicine, Artificial intelligence, Covid 19, India

Introduction:

Healthcare has become one of India's largest sector, both in terms of revenue and employment. Healthcare comprises hospitals, medical devices, clinical trials, outsourcing, telemedicine, medical tourism, health insurance and medical equipment. The Indian healthcare sector is growing at a brisk pace due to its strengthening coverage, services and increasing expenditure by public as well private players.

Indian healthcare delivery system is categorized into two major components public and private. The Government, i.e. public healthcare system, comprises limited secondary and tertiary care institutions in key cities and focuses on providing basic healthcare facilities in the form of primary healthcare centres (PHCs) in rural areas. The private sector provides majority of secondary, tertiary, and quaternary care institutions with major concentration in metros and tier I and tier II cities.

India's competitive advantage lies in its large pool of well-trained medical professionals. India is also cost competitive compared to its peers in Asia and Western countries. The cost of surgery in India is about one-tenth of that in the US or Western Europe. India ranks 145 among 195 countries in terms of quality and accessibility of healthcare.

India is a land full of opportunities for players in the medical devices industry. The country has also become one of the leading destinations for high-end diagnostic services with tremendous capital investment for advanced diagnostic facilities, thus catering to a greater proportion of population. Besides, Indian medical service consumers have become more conscious towards their healthcare upkeep.

Indian healthcare sector is much diversified and is full of opportunities in every segment, which includes providers, payers, and medical technology. With the increase in the competition, businesses are looking to explore for the latest dynamics and trends which will have positive impact on their business. The hospital industry in India is forecast to increase to Rs. 8.6 trillion (US\$ 132.84 billion) by FY22 from Rs. 4 trillion (US\$ 61.79 billion) in FY17 at a CAGR of 16–17%. The Government of India is planning to increase public health spending to 2.5% of the country's GDP by 2025.

India's competitive advantage also lies in the increased success rate of Indian companies in getting Abbreviated New Drug Application (ANDA) approvals. India also offers vast opportunities in R&D as well as medical tourism. There are vast opportunities for investment in healthcare infrastructure in both urban and rural India.

Market Size

The healthcare market can increase three-fold to Rs. 8.6 trillion (US\$ 133.44 billion) by 2022. Indian medical tourism market is growing at 18% y-o-y and is expected to reach US\$ 9 billion by 2020. There is a significant scope for enhancing healthcare services considering that healthcare spending as a percentage of Gross Domestic Product (GDP) is rising. The Government's expenditure on healthcare sector has grown to 1.6% of the GDP in FY20BE from 1.3% in FY16.

Health insurance is gaining momentum in India. Gross direct premium income underwritten by health insurance grew 17.16% y-o-y to Rs. 51,637.84 crore (US\$ 7.39 billion) in FY20.

Investment

Between April 2000 and September 2020, FDI inflows for drugs and pharmaceuticals sector stood at US$ 16.87 billion, according to the data released by Department for Promotion of Industry and Internal Trade (DPIIT). Some of the recent initiatives in the Indian healthcare industry are as follows:

- In December 2020, a new COVID-19 vaccine delivery digital platform called 'CO-WIN' is being prepared to deliver vaccines. As a beneficiary management tool with different modules, this user-friendly mobile app for recording vaccine data, is in the process of establishing the 'Healthcare Workers' database, which is in an advanced stage across all states/UTs.
- As of December 2020, under universal immunization programmes, ~1.54 lakh ANMs (auxiliary nurse midwives) are operating as COVID-19 vaccinators. For further expansion of vaccinators, the government plans to take collaborative effort with states and UTs.
- In November 2020, EEPC India and the National Design Institute teamed up to facilitate and improve design and technology for the medical device industry to help meet the increasing needs of the country's health sector, especially considering the COVID-19 pandemic.
- In October 2020, All India Institute of Ayurveda signed a MoU with Amity University for Ayurveda Research.

Government Initiatives

Some of the major initiatives taken by the Government of India to promote Indian healthcare industry are as follows:

- In December 2020, the Union Cabinet approved a memorandum of understanding for cooperation between the Indian Government and the Ministry of Health of the Government of the Republic of Suriname in the field of health and medicine.
- The government plans to increase the number of research and COVID-19 RT-PCR labs to strengthen COVID-19 testing services by making COVID-19 testing affordable and more accessible to every citizen.
    - In November 2020, a mobile COVID-19 RT-PCR lab was launched at the Indian Council of Medical Research (ICMR) in New Delhi. The laboratory has NABL accreditation and is accredited by the ICMR.
- In Union Budget 2020 21, Rs. 35,600 crore (US$ 5.09 billion) has been allocated for nutrition-related programmes.
- The Government has announced Rs. 69,000 crore (US$ 9.87 billion) outlay for the health sector that is inclusive of Rs. 6,400 crore (US$ 915.72 million) for PMJAY in Union Budget 2020–21.

- The Government of India aims to increase healthcare spending to 3% of the Gross Domestic Product (GDP) by 2022.

Achievements

Following are the achievements of the Government:

- The number medical colleges in India increased to >560 in November 2020 from 412 in FY16.
- According to Sample Registration System Bulletin-2016, India has registered a 26.9% reduction in Maternal Mortality Ratio (MMR) since 2013.
- On December 14, 2020, e-Sanjeevani telemedicine service of the Health Ministry crossed 1 million (10 lakh) tele-consultations, since its launch, enabling patient-to-doctor consultations from the confines of their home, as well as doctor-to-doctor consultations.

Value Chain in Healthcare Service Management:

In the concept of strategic management, every business operates to satisfy its customers, build relationships with suppliers, and increase revenue for successful functioning in the industry. At every step of service delivery the organization tends to create value to reach its goals. The determination of value addition is analyzed using the concept of value chain suggested by M. Porter. Healthcare providers' focus on value creation is shifting towards optimizing costs. One such cost head is the cost of drugs and consumables which account for nearly 30% of the overall operating cost of hospitals. An example of value chain in healthcare sector is given below.
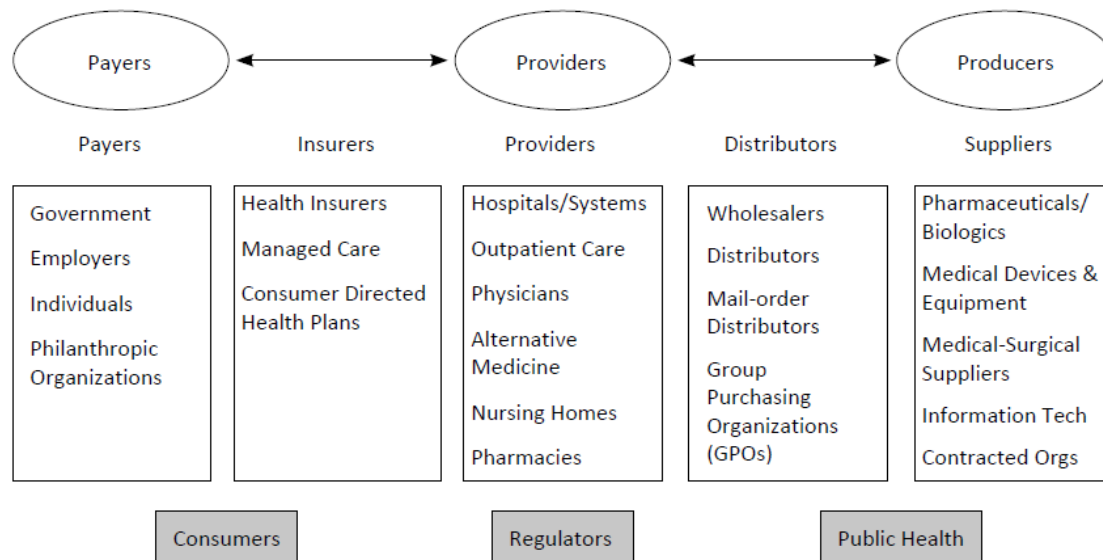
Source: Lawton Robert Burns, *The Health Care Value Chain* (2002).

Recent Trends in Healthcare Management:

The world is facing crisis during the epidemic spread by covid 19 virus. The technological advancements have led human lives a different way. If technology was not so advanced during such pandemic, then the situation of all businesses will be very worst including healthcare sector. The use of AI in the treatment of patients has created high success rates in critical situation. Some of the recent trends in healthcare system management are discussed as under.

a) **Telemedicine and Virtual care**

During the lockdown, both the patients and the healthcare practitioners realized the importance of digitalization. The number of virtual consultations has skyrocketed during the pandemic. There are several benefits of telemedicine and virtual care including the reduced risk of spreading contagion and enabling the healthcare practitioners to conduct more patient consultations in a day as the slots are pre-determined and the necessary steps of sanitization are not needed as in the cases of physical consultations.

b) **Tele-health and Digital marketing**

The pandemic has almost entirely changed how the healthcare industry in India operates. With tele-health, hospitals are now also concerned about reaching patients online, how to deliver and protect the patient information. There's almost an 80% rise in consumption of digital healthcare services after Covid-19. Healthcare practitioners and hospitals are now exploring new possibilities with digital media and it is only possible by being 'visible' online.

c) **Increased demand of Data and AI driven predictive analysis**

There has been a rapid rise in the amount of health data collection during the pandemic. When the benefits to individual wellbeing are clearly expressed, there is a readiness to share personal details. Track-and-trace programs have majorly helped in keeping infection levels under control. The corona virus pandemic has hit the healthcare industry badly which a layman may not have realized. Healthcare practitioners and organizations had to bear losses as the patients were not ready to visit the hospitals for medical procedures and surgeries.

d) **Digitalization in Public Sector**

It is great to see how the government is approaching digitalization in different sectors. The concept of 'Smart Cities' is going to promote and utilize digital infrastructure and data driven decisions to plan an entire city. Collecting, storing and processing the critical data on a large scale will open many possibilities. From

planning public transport networks, the storage of waste, the delivery of electricity, initiatives in the field of environmental health to predictive analysis Smart Cities may lay the foundation to predict and prevent future pandemics. This can be powered with additional tools like AI and IoT.

e) Data analytics to manage inventory

Currently, in small to medium hospitals, procurement is not sophisticated and involves usage of very limited technology. In near future use of analytics-driven tools which help in tracking inventory levels and deciding procurement quantity is likely to pick pace.

Conclusion:

The management of health care services is tough task. The 7 Ps of services are applied in private hospitals but negligible in government hospitals. The crisis situation resulted with the spread of Covid -19 virus has shown the importance of digitalization, telemarketing and Artificial intelligence in healthcare management. These technological advancements have contributed in proper management of healthcare sector. After the pandemic, governments and organizations are more focused towards building digital infrastructure and preventive healthcare. But for now, 2021 will be all about mitigating the devastating effects of Covid-19 and rising again. Environmental health is also a big focus, as it is high time to take initiatives to control the pollution levels, rising temperatures and sea-levels. Technology will now be an important element in service delivery of healthcare services around the globe including India.

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