

E-HEALTHCARE SERVICE QUALITY OF PATH LABS- CUSTOMER SATISFACTION AND ITS ASSOCIATION WITH DEMOGRAPHIC VARIABLES

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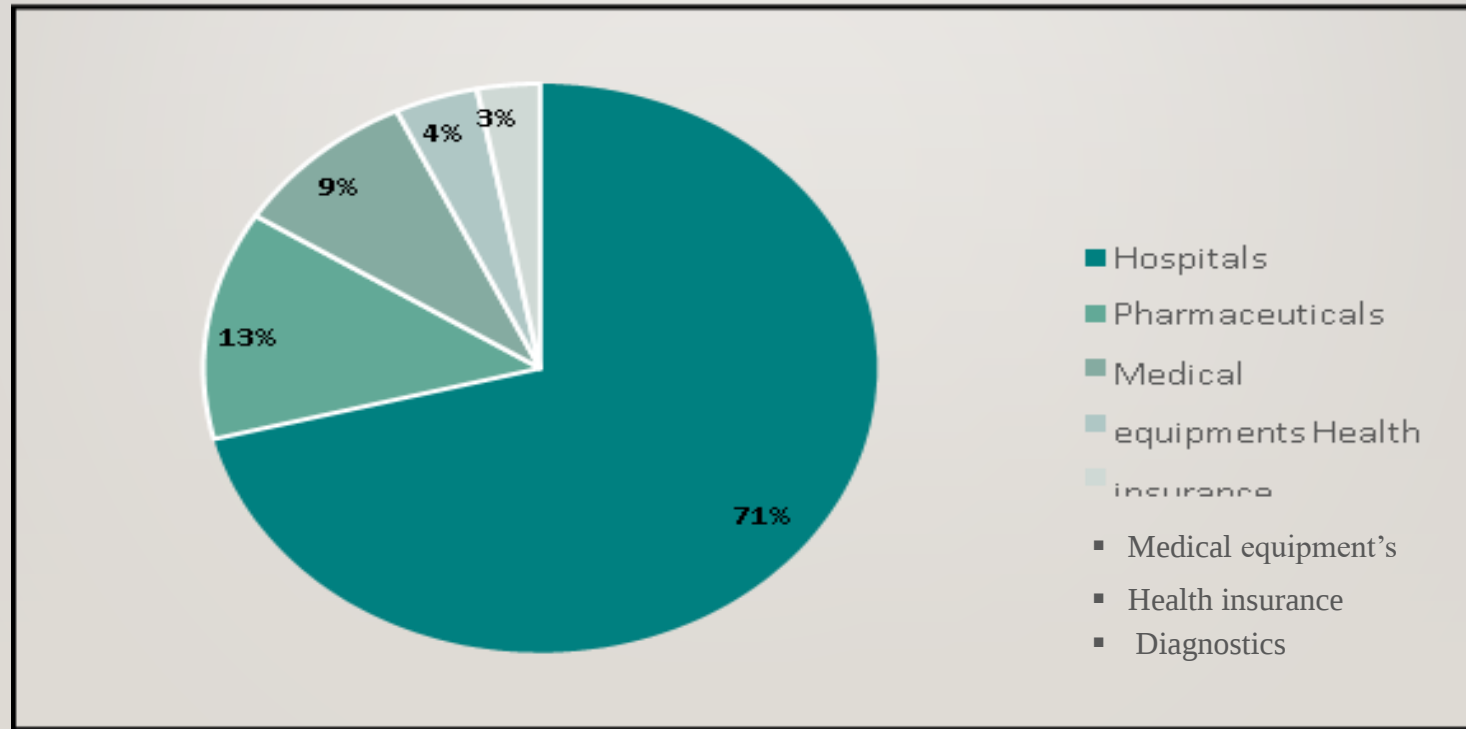
INTRODUCTION

I. OVERVIEW OF THE HEALTHCARE INDUSTRY

- Healthcare industry in India is one of the largest sectors in terms of revenue as well as employment. The Healthcare industry comprises majorly of hospitals, medical devices, clinical trials, telemedicine, medical tourism, health insurance, pharmaceuticals, etc.
- During the past 2-3 years, India's healthcare industry is growing and surpassing estimates because of its improved coverage, services, and rising investment by both public and private parties.
- Indian healthcare delivery system is classified 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 centers (PHCs) in rural areas. The private sector provides majority of secondary, tertiary and quaternary care institutions with a major concentration in metros, tier I and tier II cities

Figure 1 Segment-wise break-up of Indian Healthcare Industry 2019

- Growing incidence of lifestyle diseases, rising demand for affordable healthcare delivery systems due to the increasing healthcare costs, technological advancements, the emergence of telemedicine, rapid health insurance penetration and government initiatives like e-health together with tax benefits and incentives are driving healthcare market in India



- The Indian Health tech industry was valued at ~\$1.9bn in 2020. By 2023, it is expected to reach ~US\$ 5B by 2023 at a CGAR of 39%
- India is expected to rank amongst the top 3 healthcare markets in terms of incremental growth
- Since 2020, the healthcare information technology market is growing 1.5 times from current \$1 bn
- By 2022, the diagnostics market is expected to grow at a CAGR of 20.4% to reach \$32 bn from \$5 bn in 2012
- During 2015-20, the in-patient market is expected to grow at a CAGR of 13%
- The Indian telemedicine market is expected to grow at a Compound Annual Growth Rate (CAGR) of 20% to reach \$32 mn from \$15 mn
- Over the next 10 years, National Digital Health Blueprint can unlock incremental economic value of over \$200 bn for the health sector.

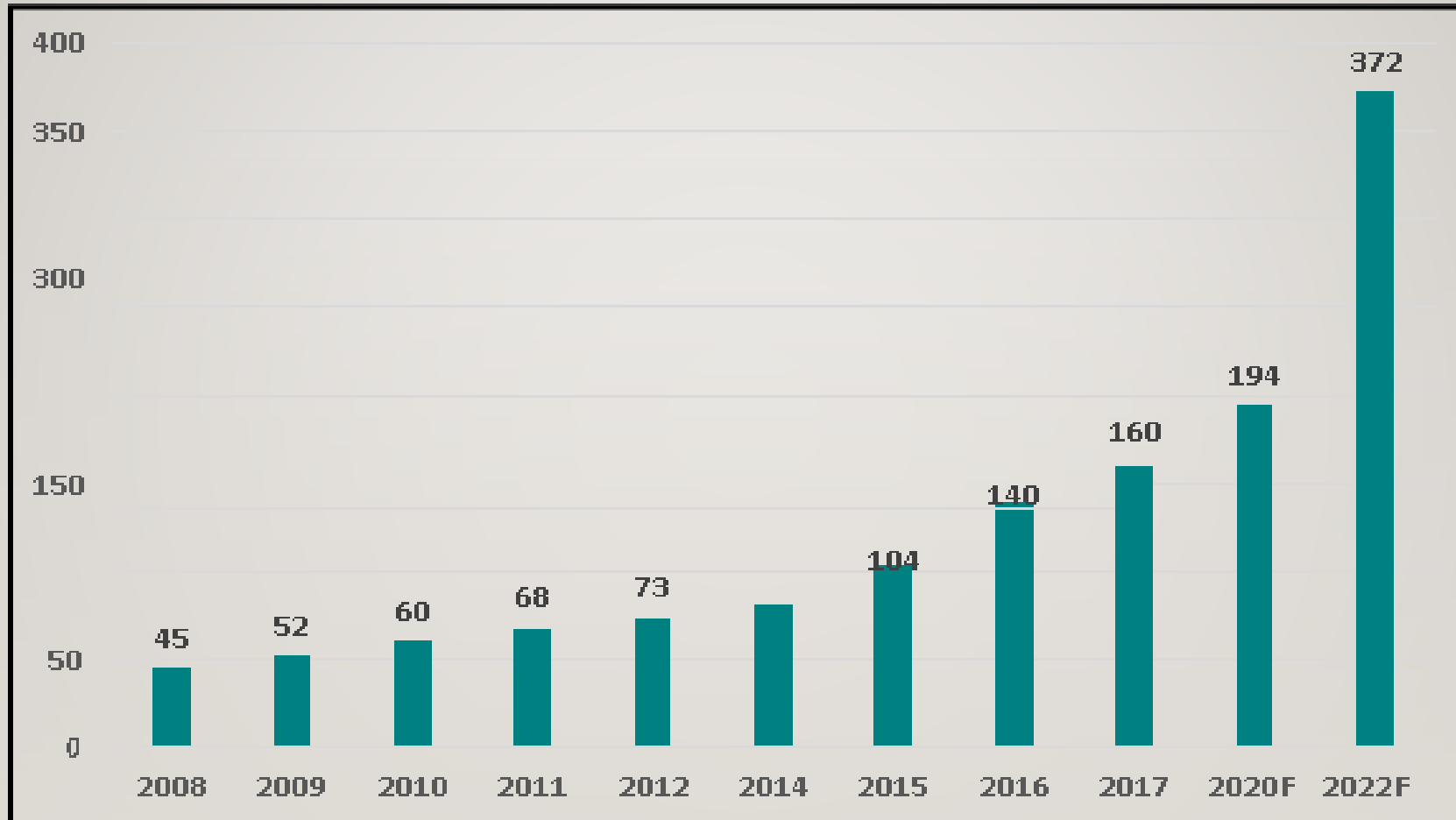


2. MARKET SIZE OF INDIAN HEALTHCARE SECTOR

- The healthcare market can increase three-fold to Rs. 8.6 trillion (US\$ 133.44 billion) by 2022. In Budget 2021, India's public expenditure on healthcare stood at 1.2% as a percentage of the GDP which is expected to increase to 2.5 percent of the country's GDP by 2025.
- 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 crores (US\$ 7.39 billion) in FY20.
- The hospital industry in India is responsible for 80% of the total healthcare market. As a result, it is attracting a considerable investor demand from both global in the form of FDI as well as domestic investors. The hospital industry is supposed to reach \$132 billion by 2023 from \$ 61.8 billion in 2017, growing at a CAGR of 16-17%.
- Indian medical tourism sector is growing at an astounding rate of 18% year on year and is expected to reach \$9 billion by 2020. The growth trend for Indian healthcare sector is given in **Figure 2**



Figure 2 Healthcare Sector Growth Trend (US \$billion) CAGR - 16.3%



RECENT DEVELOPMENTS IN THE HEALTHCARE SECTOR

Between April 2000 and December 2020, FDI inflows for drugs and pharmaceuticals sector stood at US\$ 17.74 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:

- On March 17, 2021, the Health Ministry's eSanjeevani telemedicine service crossed 3 million (30 lakh) teleconsultations since its launch, enabling patient-to-doctor consultations from the confines of their home, and doctor-to-doctor consultations.
- In March 2021, Virchow Biotech, a Hyderabad-based firm, and the Russian Direct Investment Fund (RDIF) announced a collaboration to manufacture up to 200 million doses of the Sputnik V vaccine in India.
- As of March 31, 2021, more than 6.30 crore vaccine doses have been administered through 10,46,757 sessions across the country.
- In February 2021, the Competition Commission of India (CCI) permitted acquisition of Varian Medical Systems, Inc.

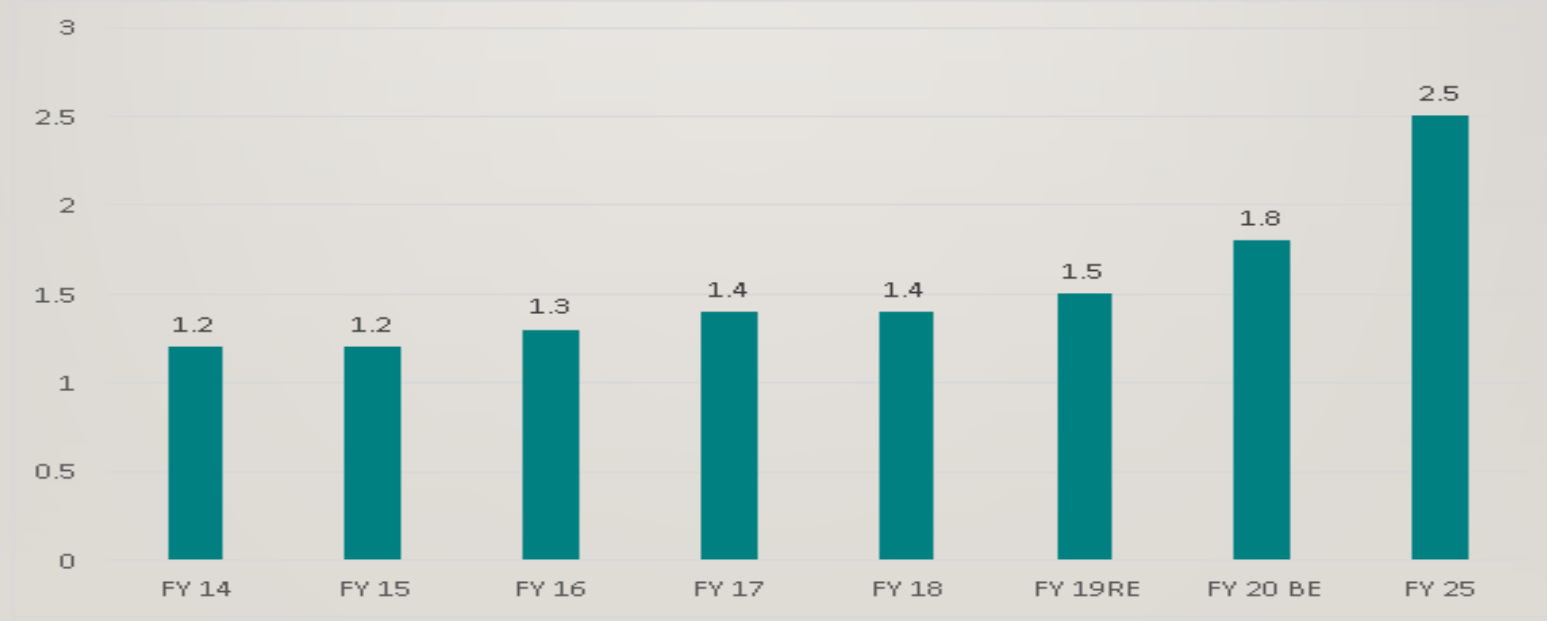


- In February 2021, the Minister for Commerce and Industry of India, Mr. Piyush Goyal, and the UK Secretary of State for International Trade, Ms. Elizabeth Truss MP,
- In February 2021, Prime Minister Mr. Narendra Modi laid the foundation stones for two hospitals and launched 'Asom Mala', a programme for state highways and major district roads, in Assam. He also added that approximately 1.25 crore people in the state are being aided from Ayushman Bharat Scheme.



PER CAPITA HEALTHCARE EXPENDITURE IS ON THE RISE

- This is due to rising income, easier access to high-quality healthcare facilities and greater awareness of personal health and hygiene.
- Economic prosperity is driving the improvement in affordability for generic drugs in the market.
- In Budget 2021, India's public expenditure on healthcare stood at 1.2% as a percentage of the GDP.
- The Government is planning to increase public health spending to 2.5% of the country's GDP by 2025. The share of healthcare in GDP is expected to rise 19.7% by 2027.



GROWTH DRIVERS

1 .GROWING DEMAND

- Rising incomes and affordability.
- Growing elderly population, changing disease patterns.
- Rise in medical tourism.
- Better awareness of wellness, preventive care and diagnosis.

2 .POLICY SUPPORT

- Encouraging policies for FDI in the private sector.
- Reduction in customs duty and other taxes on lifesaving equipment.
- NRHM allocated US\$ 10 billion for healthcare facilities.
- National Health Insurance Mission to cover entire population

3 .FOCUS

- Expanding R&D and distribution facilities in India.
- Use of modern technology.
- Providing support to global projects from India.

4 .MERGERS AND ACQUISITION

- Rising FDI and private sector investment.
- Lucrative M&A opportunities.
- Foreign players setting R&D centers and hospitals.



OPPORTUNITIES IN HEALTHCARE INDUSTRY

Health Infrastructure

- **54 million doctors required by 2025 for growing demand**
- **Over US\$500 is expected to be spent on infrastructure by 2025**
- **Ensure quality in healthcare with value driven programs and missions**

Research

Report on Longitudinal Ageing Study of India (LASI) Wave-1 will be used to implement spectrum of services to elderly and most vulnerable patients

Health Tech

- **India Accelerator (IA) announced its plan in December 2020 to accelerate Indian Healthcare systems through startups**
- **e- Healthcare services on the rise majorly due to the pandemic**

Medical Devices

Due to rising geriatric population, increased awareness and declining cost of medical services, this industry is expected to grow and reach US\$ 11 billion by 2022

2. INDIAN DIAGNOSTIC INDUSTRY

- The Indian laboratory diagnostics industry, estimated at USD 6 billion, is growing at a healthy rate of 13–14% per annum. With more than 1 lakh labs in India, the industry is highly fragmented and the largest of the organized players has a market share of less than 5%. The industry plays a significant role on the care continuum, be it for diagnosis, prevention, monitoring or treatment. Today, 70% of medical decisions across the globe are based on laboratory results.

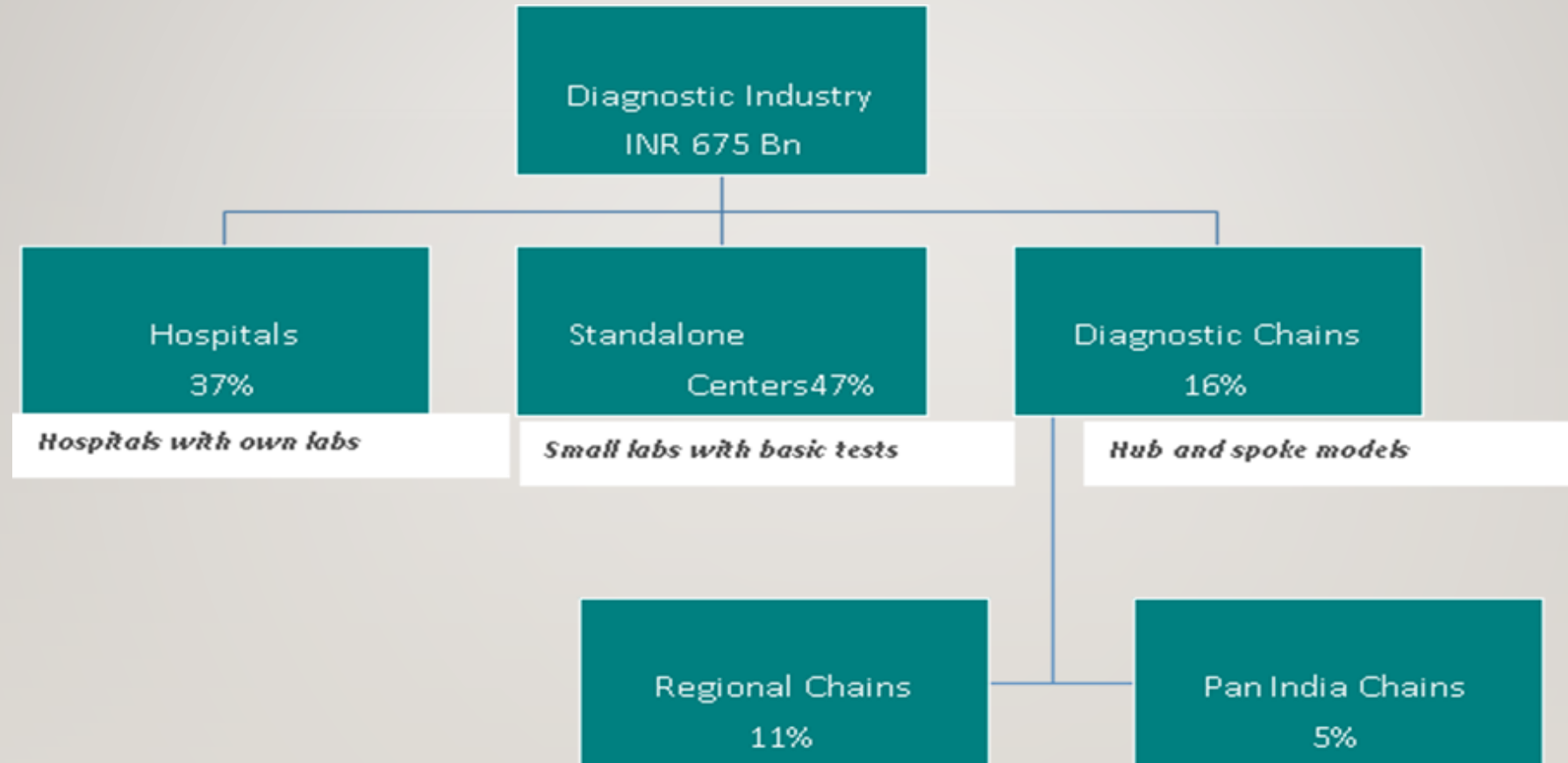
- The diagnostic segment is a critical component of the healthcare sector. Globally, ~80% of physician diagnoses are a result of laboratory tests. There are mainly 3 types of tests: Routine, clinical lab and specialty tests.
 - Routine tests: Common tests like sugar, cholesterol, HIV, pap, pregnancy, etc.
 - Clinical lab tests to monitor diseases and drug treatments
 - Specialty tests: Genetics, immunology, oncology, endocrinology and other critical segments

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1. STRUCTURE OF INDIAN DIAGNOSTIC INDUSTRY



3.BUSINESS MODEL OF DIAGNOSTIC CENTERS

In India, diverse types of laboratories are present, which are either public or private sector diagnostic laboratories, which can be further classified into 'Hospital-attached' laboratory (HAL) and 'Stand-alone' laboratory (SAL). HALs are either present within the hospital Hospital-attached fixed' laboratory (HAFL) or attached to the hospital ('Hospital-attached mobile' laboratory(HAML)). SALs are laboratories which are not attached to hospitals and run by government, individuals or corporate.

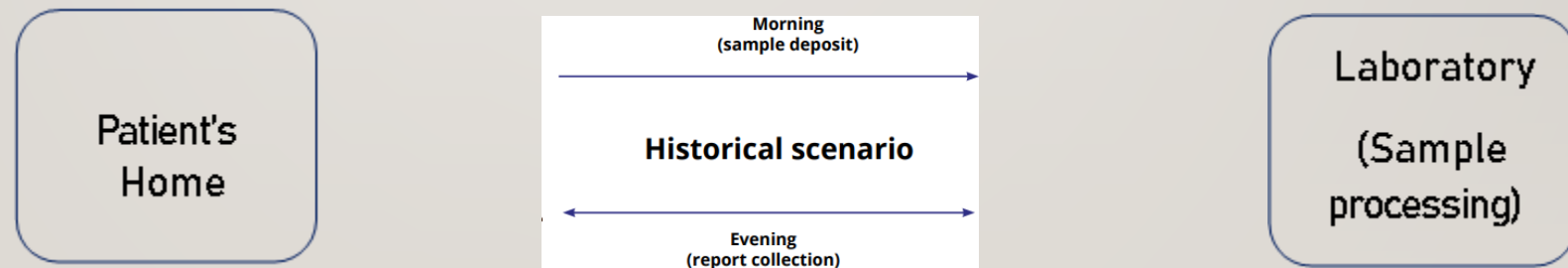
Hub and Spoke Model

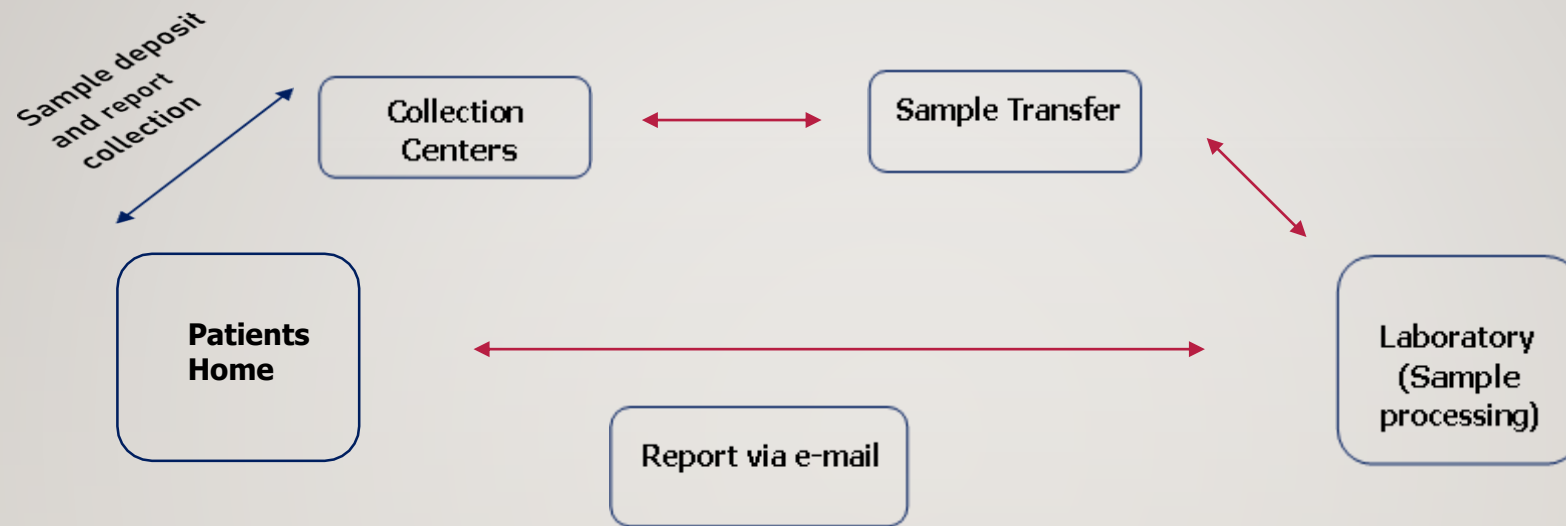
- Tier II and tier III cities have an increasing demand for improved healthcare infrastructure.
- It is proposed that a state-wide network of radiology centres and pathology centres on a hub and spoke model would be an effective model to ensure an adequate diagnostic facility across the state.
- Hub will have high end equipment like MRI & CT Scan. Spoke will have equipment such as X-ray and ECG machines which perform routine tests such as blood sugar test, blood pressure check and also act as collection centres.



FOCUS ON SERVICE DELIVERY AND QUALITY

- ☐ Newer Delivery Models
 - ☐ Technology Focus
 - ☐ Comprehensive Test Menu
 - ☐ Quality Focus
- ❖ Few years back a patient had to spend substantial time and money to get a laboratory test done. He used to travel twice to the laboratory, in the morning to deposit the sample and in the evening or on the following day to collect his report.





- ❑ Over the years, due to the transformation of the business model with the setup of collection centers and availability of reports on app/email,

❖ **PRICE TRENDS IN THE INDUSTRY**

- Prices of lab diagnostic tests in India are amongst the lowest in the world. The modern diagnostics industry has not only ensured the availability of high-end tests in the country but also made these tests economical for people

4. OVERVIEW OF e-HEALTHCARE SERVICE QUALITY AND Its ASSOCIATION WITH CUSTOMER SATISFACTION

- India is among the few countries that has emerged as one of the fastest-growing digital economies over the past few years, characterized by 90% growth in terms of digital adoption index between 2014 and 2017. The Indian healthcare sector has adopted digital transformation to boost quality and accessibility. The digital healthcare market in India stood at US\$ 116.61 billion in 2018 and is predicted to extend at a CAGR of 27.41% to US\$ 485.43 billion by 2024
- The digital healthcare market is segmented into tele-health, eHealth, electronic health records/electronic medical records (EHR/EMR), and others (remote diagnostics and healthcare analytics).

1. PERCEIVED SERVICE QUALITY

Providers must focus on four critical characteristics of service to satisfy customers:

- Intangibility.
- Perishability
- Inseparability
- Heterogeneity



ROLE OF DEMOGRAPHICS

- As the use of technology in health care is increasing, it is essential to know sociodemographic characteristics such as age, sex, income, education, ethnicity, place of residence, and household composition of patients who are not aware or not able to use eHealth and what barriers these patients face
- Delivery of e-Healthcare services involves complex processes with multiple steps as the services differ from patient to patient.
- Disparities exist in Indian consumers based on urban and rural communities, earnings, education, caste and religion.
- The selection of healthcare services also largely depends on age, gender, education and income.

SERVICE QUALITY MEASUREMENT

- 5Qs model by Zinedine (2006) is a comprehensive model that can be useful for assessment of any service quality under five dimensions
 - Quality of infrastructure
 - Quality of interaction
 - Quality of atmosphere



5.LITERATURE REVIEW

- 1) Importance of Quality in Health Care Sector: A Review
- 2 Development and validation of an instrument to measure user perceived service quality of mHealth
 - 1) Exploring the Perspective of Service Quality in mHealth Services during the COVID-19 Pandemic
 - 1) Diagnostic Services and Healthcare: Strategies for Effective Performance
 - 1) Service Quality and Patient Satisfaction: An Exploratory Study of Pathology Laboratories in Jaipur

The quality of health care and patient satisfaction: an exploratory investigation of the 5Qs model at some Egyptian and Jordanian medical clinics

India's focus on medical diagnostic laboratories: Indian planning and programs

- 1) Designing primary healthcare systems for future in India



6.OVERVIEW OF STUDY

1. PROBLEM STATEMENT

- ☐ One of the most important parts of a healthcare system is diagnostics. It provides value to the healthcare sector by identifying diseases and risk related to health at early stage that helps in taking appropriate treatments at the right time.
- ☐ Diagnostic centers or clinical laboratory are the places for testing human specimens in order to know the information regarding patient pertaining to diagnosis, treatment and prevention of disease
- ☐ With the increase in the demand of better health infrastructure, tier II and tier III cities of India are witnessing continuous growth of diagnostic laboratories. e

2. NEED FOR THE STUDY

- ☐ This study focuses on the quality of e-Healthcare services of path labs and attempts to identify the quality dimensions, which leads to the satisfaction of e-Healthcare consumers.
- ☐ The identified quality dimensions will help in designing better e-Healthcare services and framing policies.
- ☐ It also highlights that how the demographic characteristics are associated with important quality



The purpose of the present case study is to recognize the important predictors of quality, which are significant for consumer satisfaction with e-Healthcare services by using Zinedine's 5Qs model. It also aims to find the strength of association among the predictors of consumer satisfaction and the demographic characteristics of the respondents

3. OBJECTIVES OF THE STUDY

The objective of the study is further divided into the following secondary objectives-

- To identify the most significant variable in each quality dimension of the 5Qs model leading to the utmost satisfaction of the consumer
- To measure consumer satisfaction with e-Healthcare services using the 5Qs model and determine its important predictors
- To examine the association of demographic variables with important quality dimensions and consumer satisfaction



7. RESEARCH METHODOLOGY

- To achieve the research objectives, a structured closed-ended questionnaire was prepared that was adapted from study conducted by Zineldin in 2006.
- The questionnaire statements were modified to adapt with e-Healthcare services, divided under five dimensions, namely quality of object (4), quality of process (4), quality of infrastructure (7), quality of atmosphere (5) and quality of interaction (7).
- The demographic criteria of the respondents included in the study were geographic region, occupation, gender, age, education and income per month.
- Data was collected using online survey (Google forms) and target respondents were those who had prior experience of availing e-Healthcare services. Sample size was 300.

8. DATA ANALYSIS

1. DEMOGRAPHIC ANALYSIS

- Demographic analysis involves segregating the respondents into specific groups on the basis of age, gender, qualification, and monthly income.
- The frequencies and percentages of the 50 survey respondents are divided within the individual parameters of age, gender, qualification, and monthly income, are presented in the following tables.

1) Gender of respondent (N= 50)

GENDER					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	24	25.3	25.3	25.3
	Male	26	24.7	24.7	100.0
	Total	50	50.00	50.00	

Age of respondent (N= 50)

AGE GROUP (YEARS)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-30 years	20	89.7	89.7	89.7
	31-40 years	17	6.3	6.3	96.0
	above 51 years	13	4.0	4.0	100.0
	Total	50	100.0	100.0	

Region of respondent (N= 50)

RESIDENT					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rural	12	10.0	10.0	10.0
	Urban	38	90.0	90.0	90.0
	Total	50	100.0	100.0	

Qualification of respondent (N= 50)

EDUCATION QUALIFICATION					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Graduate	15	38.3	38.3	38.3
	Matriculate	10	3.3	3.3	41.7
	Post graduate	25	58.3	58.3	100.0
	Total	50	100.0	100.0	

FINDINGS AND RECOMMENDATIONS

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Following the investigation, it is clear that the 5Qs model is acceptable for determining e-Healthcare services in path labs. Furthermore, the findings indicate that the quality of a path lab's infrastructure, the quality of contact between service providers, and the quality of the atmosphere at path labs are major determinants of consumer satisfaction with e-Healthcare services.

Analysis of Demographics

It presents an interesting view towards adoption of e-Healthcare services. It reflects that-

- Both males and females use e-Healthcare services, indicating that gender plays no influence in technology adoption
- The majority of respondents are between the ages of 20 and 30, indicating that adoption of e-Healthcare services is more common and broadly accepted among the younger generation



9. RECOMMENDATIONS

- The ultimate goal of this study was to discover significant quality aspects that lead to overall consumer satisfaction when using e-Healthcare services from path labs.
- The study suggests that healthcare providers must focus on quality of infrastructure, quality of interaction and quality of atmosphere as these are the quality dimensions which influence the overall customer satisfaction mostly.
- For delivering e-Healthcare services online presence is must and path labs should focus on developing user friendly website and apps that renders seamless services to the customers.
- Path labs should increase their focus on establishing interactive communication with the customers, keeping in mind their needs while being reactive and responsive in nature.
- Also staff should be well versed and confident with the use of technology and efficient customer support systems might be designed.



- Focus should be more on educating customers regarding the process so that they can have adequate information at their disposal.
- Although adoption of e-Healthcare services has made the whole process much seamless and fast but there are many prospects which needs to be implemented in a better way. Practices by path labs must establish faith in the patients that these services are reliable and will only make the process easier for them.
- Customer satisfaction should match the price that customers pay for availing these services and these recommendations can be utilized to add value to the patients. This will not only help in increased adoption of these services but will also improve the customer's loyalty towards the service providers.



THANK
You!