

SUMMER TRAINING PROJECT

MADE BY

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MBA (Hospital and Health Management)

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PART- 1

Assigned by faculty Mentor

WORK FROM HOME PROJECT- Literature Review

The changing landscape of Indian Hospitals- *Implementation of Technology innovations and challenges associated with them*

Introduction

Technological innovations and its adoption by the healthcare industry has evolved over the years.

There are various kinds of technologies being used across Indian hospitals. This project emphasizes on the uses and implementation of four major types of Technology innovations in Indian hospitals- Robotic Surgeries, Artificial Intelligence, Big Data and Electronic Health Records (EHR).

Despite all the hullabaloo around the potential of such innovations and its adoption in the healthcare sector, unfortunately, India has been relatively slow on this front, when compared to its peers in other developing countries.

The reasons underpinning this anomaly can be figured out by taking a closer look at the challenges plaguing the adoption of such measures.

OBJECTIVES

- To lay down the importance of implementing technology innovation for the future evolution of healthcare.
- Describe the various types of healthcare innovations presently being used in the hospitals.
- To understand the Existing Challenges that hinder the adoption of technology innovation in Indian Hospitals.
- To analyze the existing challenges and provide the suitable suggestions for the same

METHODOLOGY

This study is based on:

- Review of past studies,
- Reports, and other
- Refereed articles.

In order to plug the gaps in information needed to base this study upon, a comprehensive survey literature was done using tools like – pub med, google scholar, Research Gate, etc

*The information from these sources were **assessed, structured and analyzed** to device possible solutions that may prove useful in tackling the primary challenges.*

Reasons for Technology Adoption

**HEALTHCARE
ACCISSIBILITY &
AFFORDABILITY**

**EFFECTIVE AND VALUE
BASED HEALTHCARE
DELIVERY**

DECISION MAKING

REVENUE GROWTH

**CONSUMER
SATISFACTION**

**HIGH PRECISION &
BETTER OUTCOME**

MARKETING

TYPES OF HEALTHCARE TECHNOLOGY

ROBOTIC SURGERY

A new “gold standard” in healthcare

- Used for minimally invasive surgeries
- High precision - which helps the surgeon in minimizing errors and post-operative complications eventually resulting in better healing/quicker recovery of the patients.
- Minimal chances of infection.
- Less pain and blood loss of the patient, during and after surgery.
- Most commonly used types: Da Vinci Robotic system, Veebot, Hanako etc

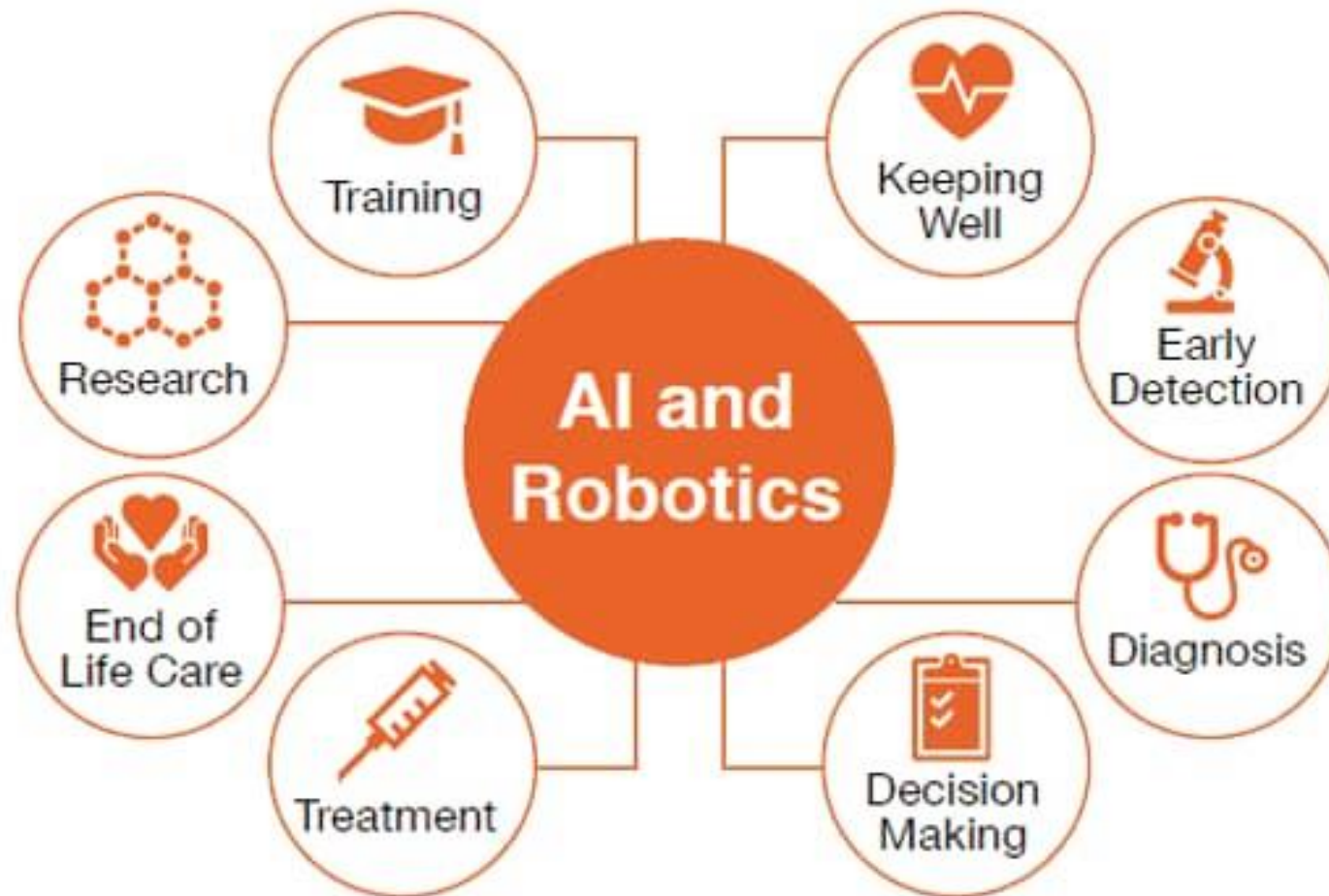
ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) is the property of computer programs, machines and systems, which has the capability to perform certain functions with intellect, creativity and with independence just like a human being does.

MACHINE LEARNING

- Machine learning (ML) is a statistical tool for fitting models to data and to 'learn' by training models with data.
- Machine learning is one of the most common forms of AI
- Precision medicine and Predictive analysis using ML

AI AND ROBOTICS IN HEALTHCARE

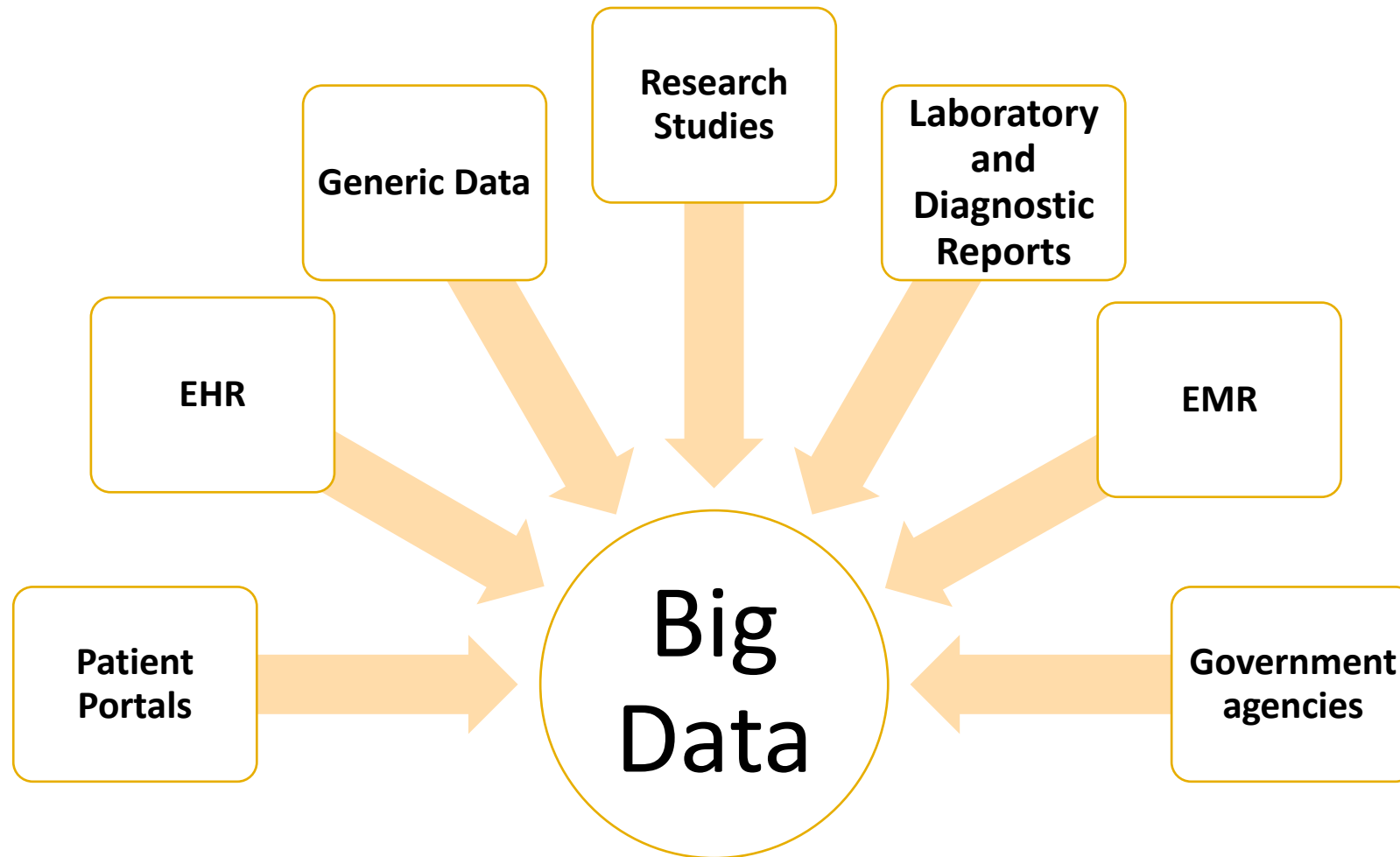


Big Data

Big Data refers to large & varying data sets, that can be collected, stored and later analyzed to provide insights.

- Often used for healthcare analytics
- Collection and structuring of large complex data sets collected from various departments of the hospitals, patients, devices, etc., and is analyzed for improving the services and efficiency of the organization.

Role of Big Data in Healthcare

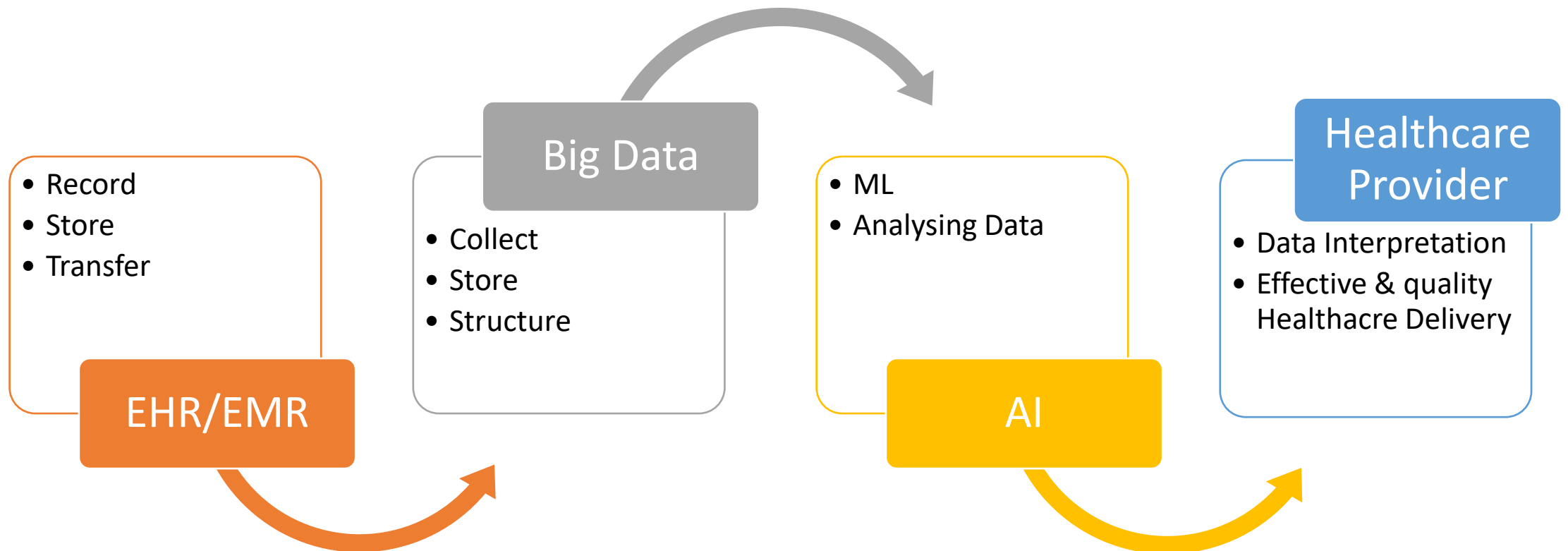


Electronic Health Records (EHR)

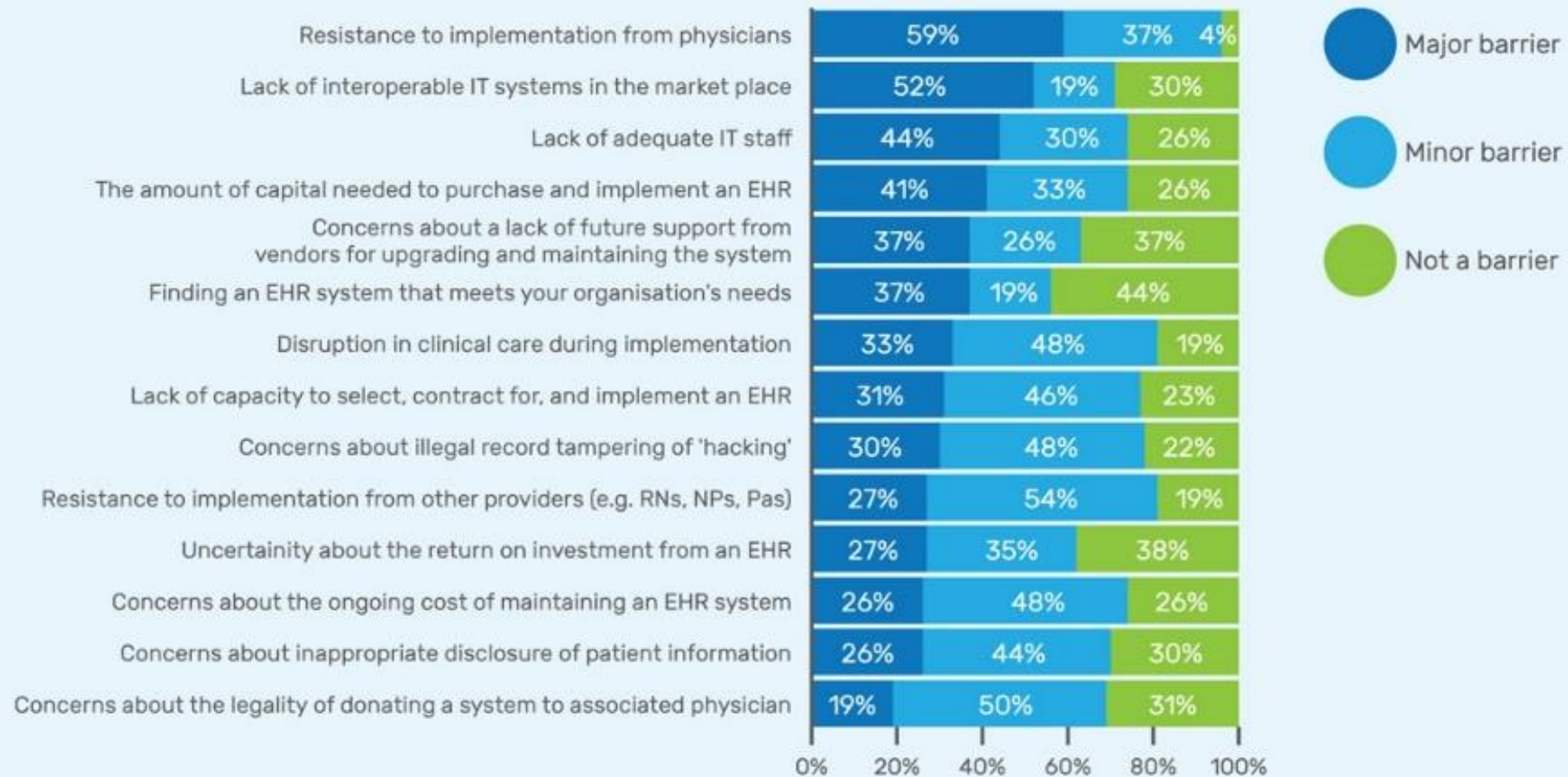
EHR is the real time record of a patient charted digitally.

- A reliable and safer storage of patient records.
- It safely maintains information of the patient health data and makes it available only to the authorized person. EHR is useful for the storage of data.
- Stored data can be used by the healthcare practitioners to analyze, by leveraging other technological tools like AI & Big Data, and understand the disease patterns, improve efficiency and effectiveness of the care delivered to their patients

Process of an effective Health care delivery system using HTI



Barriers to health information systems use [source: ISB Insights]



WHAT ARE THE MAJOR BARRIERS FOR INTRODUCING OR SCALING AI IN HEALTHCARE ORGANISATIONS?

Startup executive, investor and healthcare professional responses

percent



Source: Mckinsey & Company (Transforming Healthcare with AI, March 2020)

Implementation challenges of HTI in Indian hospitals

Lack of
Interoperability

Lack of Skill

Poor IT
infrastructure

Data Privacy and
safety

Resistance By
Physicians/
Acceptance

Lack of Funding

High initial Cost/
Uncertainty in
return of
Investment.

Mechanical
Damage/
Reliability

Govt.'s initiatives for HTI adoption in India

- MOHFW: EHR Standards for India – 2013
EHR Standards for India – 2016 (Revised)
- MOHFW: National eHealth Authority (NeHA)- 2015
- Ministry of Commerce and Industry: “Task Force on AI for India’s Economic Transformation” – 2017
- The Ministry of electronics and information Technology formed a ‘Policy Group’ to study AI and build a policy framework for its’ adoption.
- NITI Aayog- strategies on implementing Electronic Health Records (EHR) across India

Road Map for Indian Healthcare

- ❑ Quality of the available clinical data without errors
- ❑ Public Private Partnership- Reliable functioning cloud system for safe data storage and transfer.
- ❑ Implementation of a stronger functioning regulatory body
- ❑ “Made in India” Initiatives. Encouraging startups and private investment flows.

- ❑ Increased Govt. Funding/ Improving Healthcare Budget Allocation.
- ❑ Regularizing and mandating the use of computers and uninterrupted availability of internet connection is a prerequisite for the adoption and use of technology like EHR, etc., in rural India.
- ❑ Extensive skill development training for all healthcare practitioners.
- ❑ Healthcare technology innovation should be designed and used in such a way that they abolish or eliminate iniquity and help build equity.
- ❑ Motivation/ Incentivization

Conclusion

Implementation of HTI is the new road map for Indian healthcare system to provide highly efficient and quality driven healthcare service with equity.

Addressing the existing challenges in Indian Hospitals regarding the implementation of Healthcare technology is a complex proposition. It requires a thorough understanding of the problems pertaining to these challenges to come up with the right solution.

PART 2

Assigned by faculty Mentor

Online Course

[Data Analytics for Lean Six Sigma](#)

Course Overview

- Designed by the University of Amsterdam in collaboration with Coursera. Data analytics techniques which are useful for Lean Six sigma improvement projects.
- Trained by Dr Inez Zwetsloot, Professor of Data Analytics of University of Amsterdam.
- Course is laid out in segments for the duration of 16 hours.
- Each segment consists of modules that cover topics on Lean Six Sigma projects, various analytical tools and hands on training in the analytical software Minitab.
- Actual Lean Six Sigma projects have been used as examples to illustrate all tools.

Objectives

- Introduction to Lean Six Sigma improvement projects and its steps.
- Introduction to Minitab and its application.
- Deep understanding of various Analytical tools specific to Lean Six Sigma improvement Projects.
- Application of analytical tools in analyzing actual lean six sigma improvement project example by hand on training using Analytical software Minitab.
- Training the learners to interpret the analyzed data.
- Towards the end of each module learners should be able to solve Lean Six Sigma improvement projects by themselves using their learnings and understanding of the application of analytical tools and be self-capable in interpreting the outcomes to come up with the right solution.

Course Contents

1. Introduction to Data Analytics and Lean Six Sigma.
2. Understanding and Visualizing Data
3. Using Probability Distribution
4. Introduction to Testing
5. Testing: Numerical Y and Categorical X
6. Testing: Numerical Y and Numerical X
7. Testing Categorical Y

Learning Methodology

- Pre Recorded Video
- Hands on Training – Actual Lean Six Sigma Projects
- Minitab- Hands on training using Minitab

Minitab is a statistical analysis software that automates calculations and the creation of graphs, allowing the users to analyze and interpret data results.

- Graded Quizzes
- Certification on Completion and pass score of 80% and above

Key Learnings

- Data analytics helps to build concrete skills one can apply on everyday decision making.
- Lean Six Sigma is a process improvement method that removes inefficiency and eliminates problems to create a structured and efficient system
- This course helps to acquire and improve the ability to think analytically to get the right approach to problem solving

Specific Learnings from the course content:

- Understanding of Lean Six Sigma and an elaborative learning of its stepwise phase for process improvement.
- Addition of a new skill set by understanding the application and working of analytical software Minitab to analyze Lean Six Sigma improvement projects and various other data and projects as well.

- Minitab is a sophisticated yet easy to use software for data analysis.
- Different types of Data - Numerical and Categorical Data.
- Analyze relationship between variables.
- Deep understanding of various analytical tools and their use in analyzing different types of data sets.
- Application of data analytical tools for Lean Six Sigma improvement projects.

- Data visualization using Minitab.
- Data Sampling Techniques
- Understanding the concept of making inference and to quantify uncertainty in the estimates.
- Nature of various data distribution (Probability distribution).
- Understanding of Hypothesis testing to arrive at decisions as objectively as possible while dealing with uncertainty in a rational manner.

A serene sunset or sunrise scene over a body of water. The sun is low on the horizon, partially obscured by a dark silhouette of trees. The sky is filled with soft, wispy clouds, and the water reflects the warm colors of the sky. The text "Thank You" is overlaid in a dark blue, italicized serif font.

Thank You