



Summer Training Report

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**Telemedicine-
causing a paradigm
shift in healthcare**



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Assigned by Mentor

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Introduction

Definition of Telemedicine- Telemedicine can be defined as the **delivery of healthcare services** with a blend of Information and Communication Technology(ICT)-connecting **patients and service providers** who are geographically in **different locations**, to exchange patient data for diagnosis, treatment and prevention of diseases and injuries.

During the lockdown period, in the wake of the pandemic, there were restrictions imposed on mobility of patients, and all OPDs were shut. This particularly made management of patients with chronic diseases extremely difficult. **Ministry of Health and Family Welfare along with NITI Aayog** released the first **official guidelines for Telemedicine** practices in the country. These were aimed at allowing registered medical practitioners to providing remote consultation in supersession of the Medical Council of India.



Literature Review

Literature	Summary
Mishra et al(2009)	The article is a work of research in the field of Telemedicine, by professors of SGPGI, Lucknow. It discusses the global telemedicine projects help other countries like Africa in need through its telemedicine initiatives.
Ganpathy (2014)	The article introduces the context of Telemedicine, Contribution of the Apollo group and the author's personal experience during the development phase of telemedicine with Apollo Hospital Group, since the inception.
Mathur et al(2017)	The paper discusses in detail about the Indian scenario of Telemedicine, its validation in the healthcare system.

Objectives

The main aim of this project was to **scrutinize and discuss the existing telemedicine framework** in the Indian healthcare delivery because of its intriguing feature of revolutionizing healthcare. The focus is also to look upon the **dawn of telemedicine**-The Post-Covid era will have to follow strict social distancing norms, so telemedicine will be the new normal.

Methodology

The report is based on secondary data. Information was collected from search engines- **Google Scholar and PubMed**. In addition, various websites were also searched like- MOH&FW, WHO, ISRO, Apollo Hospital group, School of telemedicine and Biomedical Informatics under SGPGIMS-website. Other internet sources- economic times, foxnews, World Economic Forum and student papers.

Findings and Discussions



Telemedicine utilizes the advanced electronics, ICT(Information and Communication Technology) and related applications in the area of healthcare delivery and is also used in providing education to patients and healthcare professionals. Telemedicine applications are divided into two broad categories-

- STORE AND FORWARD or Asynchronous type
- REAL TIME or Synchronous type

HISTORY OF TELEMEDICINE IN INDIA

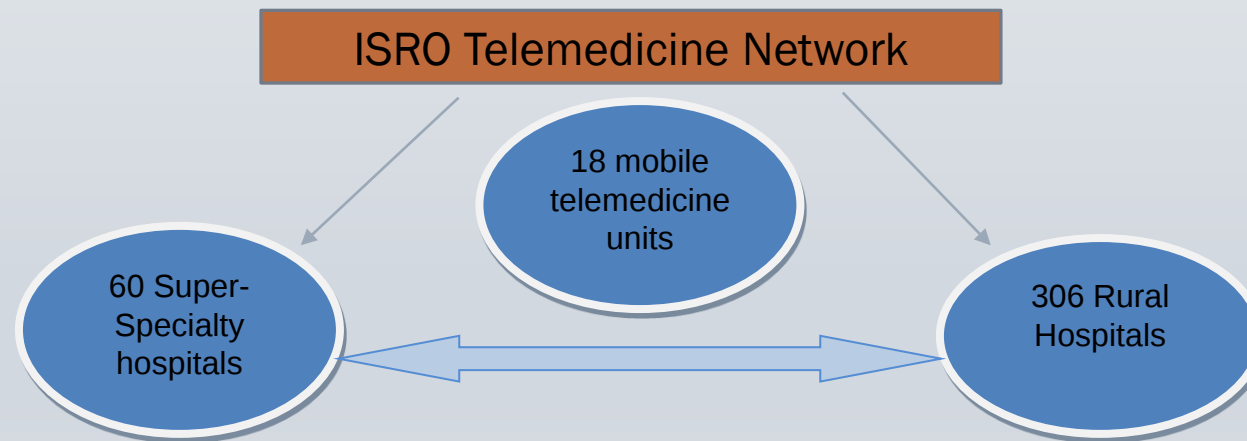
An initiative was proposed by the Indian Government, along with the involvement of various State Governments, and tie-up of Department of Information Technology(DIT), Indian Space Research Organization (ISRO) in 1999.

Telemedicine and its regional distribution

DIT as the main facilitator of telemedicine initiatives, rolled out projects in different states of the country for the overall development of technology and standardization of telemedicine. As a result of it, there are more than **75 nodal centers** nationwide to support research and development.

Contribution by ISRO

ISRO is mainly to credit for installation and set-up of all the technological resources for the development of telemedicine network in India. **ISRO's Satellite based Telemedicine Network through the Indian Satellite System (INSAT)**, was started in 2001 under GRAMSAT(rural satellite) program to extend technological support to provide quality healthcare across poor population.



OTHER CONTRIBUTING PARTNERS

- MOH&FW is promoting e-health or digital health by using ICT, with the aim of greater outreach to citizens and bring significant improvements in the public healthcare delivery.
- State Telemedicine Network (STN)- These initiatives were approved with the aim to extend the outreach of telemedicine.

Their current Projects-

- Satcom based Telemedicine nodes at **Pilgrim places**-Kashi Vishwanath Temple, Varanasi, UP, Vindhyachal, Shakti Peeth, Mirzapur, UP, Sheshnag, Amarnath Pilgrimage, J&K, Pampa Hospital, Ayyapa Temple at Sabarimala, Kerala
- JIPMER-BIMSTEC Strengthening Regional Healthcare
- National Resource Centre for Telemedicine
- Tele-Evidence

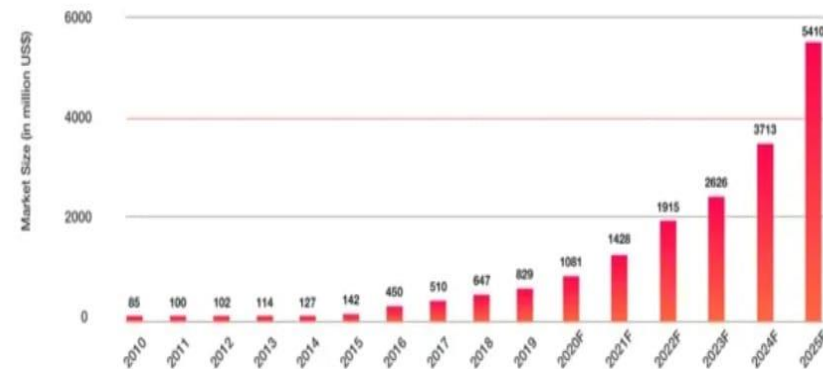
Private Players in Telemedicine

India's healthcare industry is primarily driven by start-up players now rather than large cooperation. Tracing the telemedicine history, **Apollo Hospital** was the first private player in telemedicine under the guidance of Dr. Ganpathy. The Apollo Telemedicine Networking Foundation (ATNF) a nonprofit making organization and sub-set of Apollo Hospitals group. The Apollo Hospital partnered with ISRO to establish India's **first of a kind-Rural Telemedicine Centre at Aragonda in Andhra Pradesh**. Since then, ATNF has continued its journey and grown as India's largest turnkey provider in telemedicine.

Narayana Health, is also one of the best-known examples for delivering innovative care models that lower costs, improve quality and increase access to service. UK trained cardiac surgeon Dr. Devi Prasad Shetty MD, who served as Mother Teresa's personal physician after operating on her heart attack, founded Narayana Health in 2001 in Bangalore. The potential of telemedicine has also been recognized and incorporated by him in the health model. Narayana Health was named among the 50 most innovative companies of the world.

Telemedicine Market Is Expected To Cross US\$5.5 Billion by 2025 In India

Telemedicine attributes highest market share in India health tech market



The current telemedicine guidelines in India provides a more comprehensive framework and scope for high investment from the private sector in this field.

Practo Leading The Healthtech Funding Space In India During 2014-2019

Startup Name	Foundation City	Year	Founders	Total Funding During 2014-2019 (in Mn US\$)	Funding Stage	Investors
	Bengaluru	2008	Shashank Nd, Abhinav Lal	195	Late Stage (Series E)	Tencent, Ru-Net, Rsi Fund, Thrive Capital, Trifecta Capital
	Delhi NCR	2018	Ashish Gupta	50	Seed Stage	Policybazaar Group
	Bengaluru	2017	Ashutosh Lawania, Prasad Kompalli	27.8	Growth Stage (Series B)	SBI Holdings, SBI Ven Capital, Beenext, Stellaris Venture Partners, Prime Venture Partners, Alteria Capital
	Hyderabad	2013	Shailendra Kumar Komatreddy, Sandhya Raju, Hari Thalapalli	14	Growth Stage (Series B)	The Times Group, Sachin Tendulkar, PV Sindhu, Pullela Gopichand
	Delhi NCR	2013	Saurabh Arora	11.43	Growth Stage (Series A)	Nexus-Venture-Partners, Tiger Global Management, Ratan Tata, Nexus Venture Partners

Conclusion

As uncertainty prevails, we can and have to surely rely on technology for our healthcare needs. It is a potent solution for a wide range of problems. It is surely an Entrepreneurial opportunity right now, services like tele-education, tele-health, tele-home healthcare are already flourishing. We will still have to figure out the technological disadvantages like **Data-security issues, privacy concerns, digital media manipulation, over-reliance on gadgets and job-insecurity.** And we also must overcome the problem of negligence from doctors and patients. More Behavior Change Communication is needed now to adapt to the post-covid phase and restoring normalcy.

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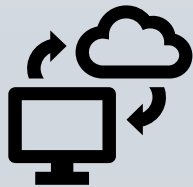
Entrepreneurship in Emerging Economies

PART 2- ONLINE COURSE REPORT

Course Objectives

- To gain familiarity with several novel entrepreneurial engagements around the world
- Explore economy related challenges both generally and in the specific institution context
- Highlights how individual entrepreneurs have managed to circumvent the limitations of the environment in which they operate to create an impact-at-scale

Learning Methodology Used



CONTENTS

Chapter 1- Characterizing the Context of Emerging Markets

Chapter 2- Achieving Impact at Scale through Entrepreneurship

Chapter 3- Branding and the stories of Entrepreneurial Ventures

Chapter 4- Creativity and Innovation as drivers of Entrepreneurship

Chapter 5- Platforms, Partnerships and Entrepreneurship

KEY LEARNINGS

Concept of institutional void- It is a term used to refer to an absence of intermediaries between buyers and sellers in each market.



If a country's infrastructure is intact (which is often in developed nations), it is relatively simple for a buyer to meet the seller and obtain a desired good or service. However, in emerging economies, a transaction between a buyer and seller is not always straightforward. **Lack of developed infrastructure and institutions, telecommunication services, intellectual property rights** hinder efficient business operations. The course provides examples throughout how entrepreneurs recognise these institutional voids and make these a site for entrepreneurial intervention.

The unique institutional context of a market determines the ways in which an entrepreneur can intervene, also determines the success or failure of a strategy. Within a given market, there can be several appropriate interventions-

REPLICATE or **ADAPT** an existing business model in that market.

COLLABORATE with domestic partners

NAVIGATE around the market's voids actively and try to fill them.

Reasons for Success of Narayana Health model

The hallmark of this model is **LARGE SCALE**, and it matters because you can take any fixed cost such as cost of equipment, hospital facilities, diagnostic equipment etc and amortize it over a large volume and this reduces the per unit cost of each surgery performed. Opportunities for negotiation from suppliers because of the large scale also facilitates further.

Economies of Scale can be defined as the cost advantage that arises with increased output of a product. Quantity produced is inversely proportional to Fixed cost, that means greater the quantity produced lesser is the per unit fixed cost. Economies of scale may also reduce variable costs per unit because of operational efficiencies

NH's Financial Model

A **Stochastic model** is adapted- this optimization is done so that Inventory of cash is always sufficient, that you don't get caught with no cash. And, you don't want too much cash because too much cash means that you're not treating enough poor patients to fulfil your mission. It's a delicate balancing act to sustain.

Branding Story of AMUL

Amul is the biggest dairy cooperative in the world today. Amul has managed to aggregate farmers into a system that it daily produces fabulous high-quality milk at affordable prices. It addresses one of the most elemental societal health issues- getting clean, safe milk from one place,

Branding- Anand Milk Union Limited-AMUL's credibility was also enhanced by getting its incredibly innovative advertising campaign. Amul is short for Amulya meaning indispensable, priceless. Marketeers also produced “Utterly Butterly Amul”. The ad agency created **a cartoon girl muppet**, and every Monday, all over India the hoardings have a new ad- commenting on some **current events that have intelligent satire**. This still happens and it is also the most successful, and longest running billboard campaign.

Health Model incorporated by Harvard Researchers in 2013 at Maha Kumbh

This was a wonderful ***Inter-disciplinary project***, where the researchers came to the festival, from diverse fields- Public Health, Architecture and Design, Business Administration from Harvard University to study various aspects in 2013. **14 hospitals** had been setup in **districts**, and the public health researchers were there to examine the health infrastructure. ***Free Healthcare*** was offered to all and had round the clock doctors and nurses.

The National Disaster Management Authority also supported the project and the physicians were also excited, where this kind of interventions made a substantial difference to people's lives. They identified the shortcomings and implemented an efficient system-

- . On busy days, physicians would see as many as 600 patients in an 8-hour shift, during which ***patient record was not maintained properly*** because of the large volume of people. So, the **intervention** Harvard scientists offered was the **technology to access patient information** easily on tablets for syndromic surveillance.
- They also recruited 20 medical interns across India, to help the physicians enter data efficiently. There were rented iPads at the 14 clinics and the commercially available software was downloaded on it with customized tools to meet the requirements. It was called **M-counter**, a system which has worked well.
- The data was synced from iPads to the cloud server through 2g or 3g internet from the sim-card and was updated on a cloud server for visualization in close to real time.

Thank You