

Landscape of Inclusive Business Models of Healthcare in India

Business Model Innovations



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This report titled 'Landscape of Inclusive Business Models of Healthcare in India' has been written for the International Finance Corporation (IFC) and Wadhvani Initiative for Sustainable Healthcare (WISH) by Deloitte Touche Tohmatsu India.

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Foreword



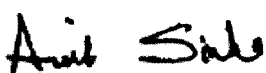
Improvement in delivery of affordable quality healthcare is a clear development challenge to address the needs of the base of the pyramid (BoP) population. Over the last few years, there has been an emergence of innovative self-sustainable, 'inclusive business models' and India is emerging as the hub of such innovations which cater to the healthcare needs at the BoP. Some of these are working directly with the BoP segment whereas others are working in partnership with Governments and/or part of Government healthcare schemes to maximize reach and impact.

Whereas these innovative models have shown great potential, only a few have gone to scale and thereby maximized impact. Hence, it is important to view the eco-system in which they operate including regulatory issues, value chains of which they are a part, support services, as well as enterprise-level issues. This would enable stakeholders to gauge what is needed and examine what role they can play to improve the ecosystem. In addition, knowledge of the various healthcare innovations is also scattered. A systematic information base and understanding of health inclusive businesses, their challenges and success drivers, is a felt need for this sector.

The World Bank Group places great importance on healthcare and In India the joint World Bank-IFC Inclusive Business program is focused on catalyzing the growth of inclusive business to increase and improve access to healthcare services for the under-served. The Wadhvani Initiative for Sustainable Healthcare (WISH Foundation) is focused on promoting universal access to healthcare for the BoP population.

IFC and WISH have partnered to launch this study on 'Landscape of Inclusive Business Models in Healthcare in India'. This report is accompanied by a database of 85 health inclusive businesses which will be updated by WISH periodically and covers a range of sub-sectors. The report presents issues relating to barriers for scaling at different levels for a health Enterprise. It provides suggestions on key drivers for success and also the challenges to be overcome. Finally, it informs the ecosystem enablers on how they can facilitate by providing support services including funding.

We hope that the study will provide information and analyses to facilitate a dialogue on developing an enabling ecosystem which supports scale and sustainability of these innovative and inclusive business models.



Anil Sinha
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This report is a product of collaboration between International Finance Corporation (World Bank Group) and Wadhvani Initiative for Sustainable Healthcare (WISH). It aims to inform the healthcare ecosystem of the opportunities in the health inclusive business space and suggestions for catalyzing growth of innovative business models in the health sector.

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LIST OF ABBREVIATIONS

ASHA	Accredited social health activist
B2B	Business to business
B2C	Business to consumer
BoP	Bottom of the pyramid
CGHS	Central Government Health Scheme
CHC	Community health center
CHW	Community health worker
COPD	Chronic obstructive pulmonary disease
DFID	Department for International Development
ECG	Electrocardiogram
HER	Electronic health records
GDP	Gross domestic product
GIAN	Grassroots Innovations Augmentation Network
GNM	General nurse midwives
HDI	Human development indicators
HMIS	Health management information system
HNI	High net-worth individuals
HRH	Human resources for health
IBM	Inclusive business model
IDF	International Diabetes Federation
IFC	International Finance Corporation
IMR	Infant mortality rate
IBM	Inclusive Business Models
MIM	Monitor inclusive markets
MMR	Maternal mortality ratio
MNC	Multi-national corporations
NCD	Non-communicable diseases
NGO	Nongovernmental organization
NHM	National Health Mission
NIPI	Norway India Partnership Initiative
O&M	Operation and management
PE	Private equity
PHC	Primary health center
PPP	Public-private partnership
RCH	Reproductive and child health
RSBY	Rashtriya Swasthya Bima Yojana
TB	Tuberculosis
USAID	United States Agency for International Development
VCF	Venture capital fund
WHIMS	Wireless health incident monitoring system

OPERATIONAL DEFINITIONS

Sl.No.	Term	Operational Definition
1	Bottom of the pyramid	Population earning below \$3,000 per person per year in purchasing power parity (as defined by IFC and WRI) ^[1]
2	Inclusive business model	Organizations that help expand access to goods, services, and livelihood opportunities for those at the base of the pyramid in commercially viable, scalable ways. ^[2]
3	Healthcare focus	As per the scope of this study, the identified healthcare focus areas are hospitals/clinics and outreach models, and healthcare technologies.
4	Impact investing	An investment approach that intentionally seeks to create both financial return and positive social or environmental impact that is actively measured. ^[3]
5	Ecosystem	The environment – social, economic and political – within which a healthcare organization is located and the different stakeholders that exist and influence its functioning.
6	Industry facilitator	Entities that are not themselves direct participants in healthcare provisioning, but play a vital and catalytic role in helping healthcare organizations to become operational and achieve scale. They are present in the wider ecosystem of the concerned firm, and often influence trends and a collection of firms/organizations.
7	Not-for-profit	Organizations that do not have a stated profit motive from the sale/provision of their offerings. Typically registered as societies, trusts, and Section-25 Companies (in India).
8	For-profit	Organizations with a clearly stated profit motive through the sale of their offerings. Typically registered as sole proprietorships and companies.
9	NGOs	Not-for-profit and non-governmental charitable or grant-based organizations working primarily to provide social goods or mobilization to poor communities
10	Public-private partnerships (PPP)	Partnerships set up between governments or quasi-governmental institutions and private organizations (either for-profit or not-for-profit) to provide specific health products/services while leveraging the unique skill-sets of both parties. This does not include outsourcing of mandated government services to private providers, but where private organizations sell their offerings to the poor by using public systems or public financing.
11	Tier I cities	Cities with a population of 1 million and above
12	Tier II cities	Cities with a population between 500,000 to 1,000,000
13	Tier III cities	Cities with a population between 100,000 to 500,000

1 http://www.ifc.org/wps/wcm/connect/as_ext_content/what+we+do/inclusive+business/news+and+highlights/defining+the+base+of+the+pyramid, accessed on December 2, 2013

2 Jenkins, B; Ishikawa, E; Geaneotes, A; Baptista, P; and Masuoka, T (2011). Accelerating Inclusive Business Opportunities: Business Models that Make a Difference. Washington, DC: IFC

3 World Economic Forum Mainstreaming Impact Investing Working Group

EXECUTIVE SUMMARY

INTRODUCTION

An estimated four billion people who earn less than \$3,000 a year (or approximately \$8 a day)^[4] form the base of the pyramid (BoP)^[5]. BoP populations are chronically underserved when it comes to basic necessities—especially healthcare. Despite challenges of access, the BoP population represents a significant unfulfilled demand. The BoP healthcare market in Asia is estimated at around \$95.5 billion.^[6]

Traditionally, the government is the major provider of healthcare services for the poor, especially in rural and peri-urban areas. Charitable trusts and NGOs have played a complementary role. The private sector is predominantly focused on providing healthcare services in urban areas—tier I and II cities. However, more recently, the private sector has started to address the large market potential in smaller towns, and is expanding focus to tier III towns and beyond. The private sector is developing innovations to address the challenges of health inequities, improving healthcare access and balancing quality care with affordability.

IFC defines inclusive business models (IBM) as enterprises that help expand access to goods, services, and livelihood opportunities to those at the base of the pyramid in commercially viable, scalable ways.^[7]

The context of India—poor health indicators, a globalized economy, the government's willingness to work with the private sector, and recognition of the poor as clients rather than beneficiaries—has led to the emergence of inclusive business models in the Indian economy.

A number of for-profit and not-for-profit organizations have emerged as inclusive business models in India. Also, many organizations work with the government to provide healthcare services through public-private partnership (PPP) models. This IFC and WISH study provides an overview of the landscape of inclusive business models in the healthcare sector. It includes challenges they face, strategies they adopt to succeed, and suggestions on how the ecosystem can enable and facilitate their growth.

KEY RESEARCH FINDINGS

This study involved a mixed-method approach using secondary and primary research to identify 165 inclusive business models in India. Twenty-four organizations were selected for primary research and deep-dive analysis through in-depth interviews with key stakeholders – investors, donors, policy makers, and sector experts. The details of 165 IBMs were analyzed to determine area/disease focus, geography, financing options, year of inception, and target segments. The findings are discussed briefly in the following section:

4 IFC and World Resources Institute used purchasing power parity methodology to arrive at a cut off of \$3,000 per person per year to describe those living at the base of the pyramid.

5 http://www.ifc.org/wps/wcm/connect/as_ext_content/what+we+do/inclusive+business/news+and+highlights/defining+the+base+of+the+pyramid, accessed on December 2, 2013.

6 The Next 4 Billion - Market Size and Business Strategy at the Base of the Pyramid by World Resources Institute and IFC

7 Jenkins, B; Ishikawa, E; Geaneotes, A; Baptista, P; and Masuoka, T (2011). Accelerating Inclusive Business Opportunities: Business Models that Make a Difference. Washington, DC: IFC

What healthcare needs and diseases do IBMs focus on?

The most common category is the hospital and outreach model, which constitute 65 percent of Indian IBMs. 35 percent work in the area of medical technologies. The majority of IBMs focus on multiple diseases – ranging from TB and malaria to cardiovascular and neurological diseases (48 percent). This allows the IBMs to have high patient volumes, leading to increases in efficiencies and profitability. Reproductive and child health (RCH) and nutrition is the second most popular focus at 16 percent. Here IBMs are able to access funding as well as leverage public systems/programs.

How old are the IBMs?

Almost 70 percent of the IBMs are less than 10 years old. Older IBMs are primarily in the hospitals and outreach category – the more traditional and less risky model to serve healthcare needs. IBMs in the technology category are relatively young with—55 percent of IBMs less than three years old.

Where are the IBMs?

IBMs are not equitably distributed across the country. In India, most enterprises are located in the southern states (33 percent), more specifically in the two cities of Chennai and Bangalore (17 percent). A significant number (31 percent) in the healthcare technology category are in these two cities. Other cities with high proportion are Delhi (12 percent) and Mumbai (10 percent). IBMs are concentrated in areas where there are facilitative ecosystems and incubators. Availability of infrastructure, such as transport connectivity, is also a factor impacting the presence of IBMs. This is a primary reason for the majority of IBMs being located in the southern states.

What population segments do IBMs focus on?

The need to balance between servicing a target segment with low paying capacity (and no insurance) and running a profitable business has led most for-profit IBMs to largely focus on people earning \$5 to \$8 a day. Lower income categories are catered to by not-for-profit organizations and the government.

How do IBMs raise funds?

The institutional statuses of organizations determine primary sources of funding that IBMs access. The Indian landscape has equal numbers of for-profit and not-for-profit entities; around 41 percent and 42 percent respectively. Around 16 percent of IBMs are public-private partnerships (PPPs).

Almost all IBMs had more than one source of funding. Impact investors were the major source of funding, at 46 percent.

MODELS OF HEALTHCARE IBMs - CHALLENGES AND SUCCESS STRATEGIES

IBMs were classified into two categories to understand challenges they faced and strategies used:

- Business to Consumer (B2C) models or those that predominantly serve end-consumers directly and
- Business to Business (B2B) models or those that supply to institutions that further serve end consumers.

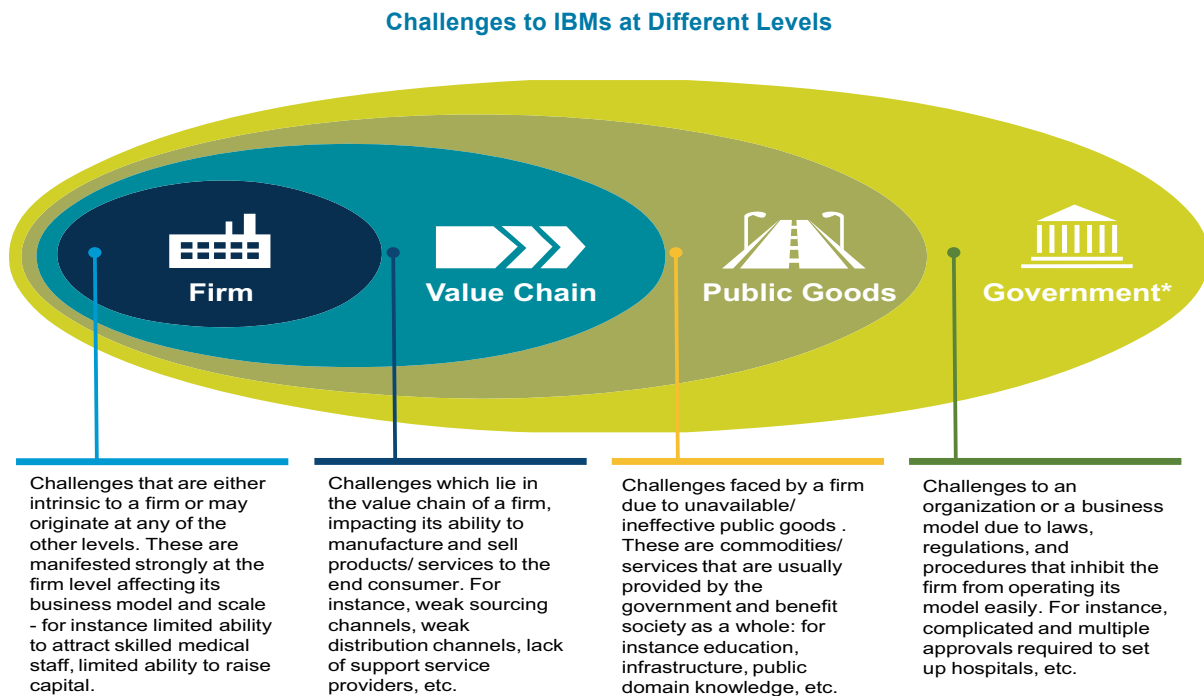
Each category has two models:

- B2C models: (i) primary care delivery and outreach and (ii) secondary and tertiary care hospitals
- B2B models: (i) standalone devices and consumables and (ii) networked devices and technologies.

The models and their key features are described in the following table:

Models	Key Features	Examples
Primary care delivery and outreach	First contact care providers, located close to patients Focus mainly on promotive-preventive care, health education, basic curative care	Swasth India Ziqitza Arogya Parivar
Secondary and tertiary care hospitals	Hospital chains focusing on in-patient care Provide diagnostic tests and treatment, including surgical procedures across multiple specialties	Glocal Healthcare Vaatsalya GNRC
Standalone devices and consumables	Frugal innovations and healthcare products Innovative low-cost diagnostics and therapeutic devices not dependent on technology/information networks or infrastructure/skilled caregivers	Embrace Innovations AYZH Axio Bio Solutions
Networked devices and technologies	Technology-enabled integrated medical devices that conduct diagnostic tests and leverage communication networks to provide effective care Information systems including software solutions for hospitals, clinics, laboratory, etc.	Swasthya Slate Dimagi Dhilcare

IBMs in healthcare have unique challenges in serving the poor while maintaining profitability. The scaling barriers framework formulated by Monitor Inclusive Markets was used to analyze challenges faced by B2C and B2B IBMs at four different levels: the firm level, value-chain level, public-goods level, and regulatory and policy level. The different levels are described in the following figure:



* For this study, the outermost layer Government is considered a 'regulatory environment' and not a provider/funder of healthcare services

B2C models of primary care and outreach units and secondary and tertiary care hospitals: challenges and business model initiatives

The following table summarizes the major challenges faced by B2C models and some business model initiatives to overcome these challenges.

Challenges	Business Model Initiatives
Firm Level	
<ul style="list-style-type: none"> ▪ Limited viable business models in primary care ▪ Large patient volumes and catchment size critical for viability ▪ Need for a combination of medical and managerial skills puts pressure on the business model ▪ Limited ability to attract well-trained paramedical and medical personnel. 	
Value-chain Level	
<ul style="list-style-type: none"> ▪ Shortage of well-trained medical personnel ▪ Limited paying capacity of patients and inadequate insurance coverage ▪ Weak referral linkages with public/private primary care providers ▪ Lack of low-cost, high-quality medical equipment and maintenance services ▪ Delays in payments by institutional customers (including government) ▪ Limited investor interest in primary care models. 	
Public-goods Level	
<ul style="list-style-type: none"> ▪ Low ability of patients to assess/differentiate quality of services ▪ Poor health-seeking behavior leading to delays in seeking care ▪ Lack of market information and cross-learning from successful models ▪ Poor infrastructure and lack of supportive ecosystem impedes attraction and retention of personnel ▪ Poor connectivity, limiting access and reach of patients to the hospital. 	<ul style="list-style-type: none"> ▪ Improve value proposition by offering additional diversified services ▪ Leverage local community as health educators/ outreach workers to optimize on costs ▪ Increase productivity/ efficiency of resources using capacity building and para-skilling ▪ Build hub and spoke models to expand coverage while increasing efficiency ▪ Asset light strategies to reduce capital costs ▪ No frills strategy to reduce operating costs.
Government/Regulatory-environment Level	
<ul style="list-style-type: none"> ▪ Regulations restricting scope of care provided by paramedics to address the scarcity of health personnel ▪ Complicated and multiple approvals required to set up hospitals ▪ Risk of lack of continuity of government policy/ regulations. 	

B2B models of standalone devices and consumables and networked devices and technologies: challenges and business model initiatives

The following table summarizes the major challenges faced by B2C models and some business model initiatives to overcome these challenges.

Challenges	Business Model Initiatives
Firm Level	<ul style="list-style-type: none"> ▪ Leverage existing distribution channels and resources to market products ▪ Conduct pilot programs or proof-of-concept studies for new products to attract customers and investors ▪ Form strategic partnerships with healthcare delivery players to increase acceptance and expand distribution chains ▪ Expand scope of products to provide analytics services, program management, etc. in addition to one-time sale of products or software ▪ Reduce cost of manufacturing by indigenous production.
<ul style="list-style-type: none"> ▪ Long product development cycle and lack of opportunities to test efficacy delays commercialization and revenue generation ▪ Need for high investments at early stages ▪ Lack of robust marketing/distribution strategies and networks/linkages with other stakeholders ▪ Need for a combination of technical and managerial skills puts pressure on the business model. 	
Value-chain Level	
<ul style="list-style-type: none"> ▪ Low-cost products require high purchase volumes to attain viability ▪ Dependence on healthcare providers/partners who can utilize solutions/take these solutions to consumers ▪ Weak technical skills of distribution partners impeding use of innovative solutions ▪ Linkages with government are difficult due to complex procurement rules. 	
Public-goods Level	
<ul style="list-style-type: none"> ▪ Lack of awareness among channel partners/buyers/patients about availability and benefits of innovative products ▪ Inertia and resistance to change in 'remote care delivering' behavior by doctors using mHealth, telemedicine models ▪ Consumers tend to associate low price with poor quality leading to lower acceptance for frugal innovations ▪ Irregular and unreliable telecommunications networks and electricity supply impede successful use of solutions ▪ Lack of market information, incubators, and research settings to test efficacy of the innovations, 	
Government/Regulatory-environment Level	
<ul style="list-style-type: none"> ▪ Ambiguous regulations for medical devices industry leading to limited indigenous manufacturing and, thereby, higher costs ▪ Absence of quality standards certifying efficacy/accuracy for new solutions. 	

SUGGESTIONS TO ENABLE SUCCESS AND OVERCOME CHALLENGES

The ecosystem within which IBMs operate significantly influence their own success and growth. Firms often are unable to effectively resolve key systemic barriers. Their own key enablers—impact investors, donors, governments and networks, incubators and accelerators—can undertake various initiatives to encourage new IBMs and facilitate existing ones to reach their desired impact and scale. To be truly effective, industry facilitators must respond not only to scaling barriers in a given situation, but also specific constraints on firms that prevent them from resolving these barriers. The following section presents brief descriptions of the roles of ecosystem enablers.

Impact Investors

Impact investing offers opportunities to creatively fund projects that may otherwise go unfunded. It also helps to scale up organizations with viable business models that meet pressing healthcare challenges, which are often not attractive for commercial investors. Impact investors could support IBMs by:

- Innovative financing
- Investing in idea/early-stage innovations
- Forming investor networks and circles
- Providing advisory services and mentorship
- Providing trading platforms and results measurement.

Foundations, Donors, and Development Agencies

Donors and development agencies can play an important role providing organizations technical support, supporting development of standard treatment protocols, quality guidelines, and advocating critical reforms to create a more facilitative ecosystem. They could support IBMs by:

- Channeling funding and technical support to IBMs and support research, proof of concepts
- Taking funding decisions to be responsive to context
- Supporting initiatives like defining quality standards, raising health awareness
- Supporting advocacy.

Government

The government's support—as a regulator, as a vehicle for scale, and with its ability to overcome challenges related to public good—is essential to encourage new IBMs and facilitate existing ones to reach their desired impact and scale. Some ways in which the government could facilitate growth and scaling up include:

- Purchasing and scaling innovative solutions
- Relaxing procurement rules for IBMs offering innovative products
- Incentivizing the private sector to serve BoP markets
- Reducing bureaucratic delays and simplifying procedures/approvals

- Accrediting and endorsing new solutions
- Setting up venture funds/allocating part of existing funds to healthcare IBMs
- Strengthening demand-side financing
- Generating health awareness
- Increasing availability of human resources for health
- Undertaking systematic need-gap assessment to better plan medical education
- Facilitating and exploring reforms for para-skilling
- Improving infrastructure.

Networks, Incubators, and Accelerators

Networks and associations can play an important role by undertaking initiatives that facilitate industry as a whole, but may not be attractive or possible for individual organizations. Incubators or accelerators can help early-stage impact enterprises by providing mentorship, incubation and technical assistance. Specific suggestions for them include:

- Facilitating ecosystem growth
- Mentorship and strategic advisory services.

THE WAY FORWARD

This report focuses on the context in which inclusive business models have emerged in India. The complexities of the healthcare sector impact these organizations – posing challenges to their operations, sustainability, and scale. While governments, impact investors, donors, and other key stakeholders need to play a crucial role in catalyzing the growth of these initiatives, the IBMs, in turn, need to leverage this support and facilitation strategically.

CHAPTER 1

INTRODUCTION

BACKGROUND

An estimated four billion people live at the base of the pyramid (BoP)^[8], a term that describes individuals earning less than \$3,000 a year (or approximately \$8 per day)^[9]. The BoP population is chronically underserved when it comes to basic necessities, especially healthcare. Poor health outcomes contribute negatively to overall human development and are detrimental to economic productivity.

Despite challenges of access, the BoP population represents a significant unfulfilled demand. For instance, the health sector market for the four billion BoP population globally is estimated to be approximately \$158 billion. Asia, with its large BoP population (2.9 billion)^[10], has the largest BoP health market of \$95.5 billion. This market represents 83 percent of the region's population and 42 percent of its aggregate purchasing power—a significant share of Asia's rapidly growing consumer market. In spite of this sheer size and demand, BoP markets are primarily rural, challenged with deep inequities, are poorly served, and dominated by the informal economy and hence often not integrated into the global market economy.

Inclusive Business Models

Healthcare has seen high numbers of innovations in the last decade. While these have spanned the entire spectrum of the care and the value chain, a significant number has focused on serving the BoP on demand or supply side. Several inclusive business models exist in healthcare delivery and outreach and in medical technologies that have significant potential to improve the landscape and health outcomes for the poor.

NEED AND OBJECTIVES OF THE STUDY

An understanding of IBMs in the healthcare sector, the challenges they face, and the strategies they adopt is lacking. A deeper understanding will allow key stakeholders to play an enabling role in catalyzing inclusive business activity in healthcare in South Asia.

This study addresses this need by mapping healthcare IBMs in India. It covers the following elements:

- Setting the healthcare context in India
- In-depth analysis of the IBM landscape: organizational stage of development, area of healthcare focus, disease priorities, geographical distribution, and key sources of funds
- Analysis of models that organizations have adopted to serve healthcare needs of the poor
- Understanding the major challenges organizations face in reaching desired impact and scale
- Suggestions and potential action points for stakeholders in the ecosystem that will enable growth and scaling up of IBMs in healthcare.

8 http://www.ifc.org/wps/wcm/connect/as_ext_content/what+we+do/inclusive+business/news+and+highlights/defining+the+base+of+the+pyramid, accessed on December 2, 2013.

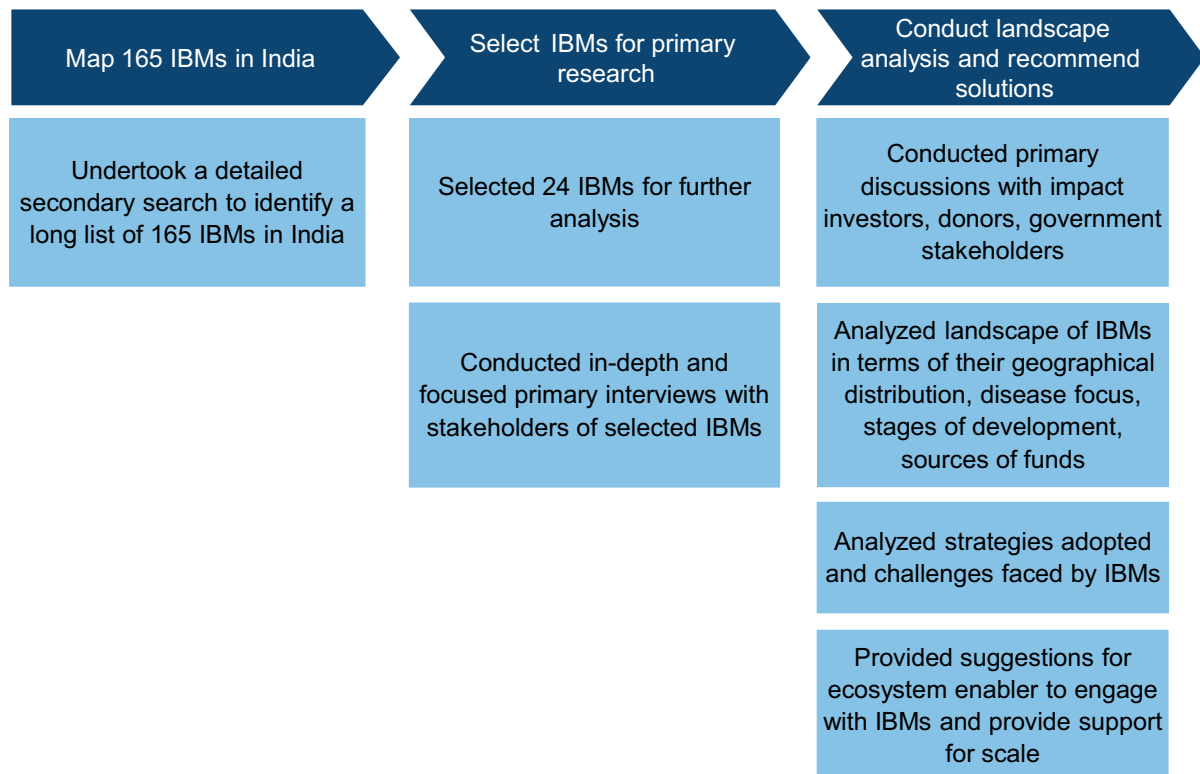
9 IFC and World Resources Institute used purchasing power parity methodology to arrive at a cut off of \$3,000 per person per year to describe those living at the base of the pyramid.

10 The Next 4 Billion- Market Size and Business Strategy at the Base of the Pyramid by World Resources Institute and IFC

APPROACH AND METHODOLOGY

The landscape analysis involves a mixed-method approach, with detailed literature review of publications, analysis of secondary data, and collection and analysis of primary data through in-depth interviews. Data from all sources were triangulated and analyzed. The following figure provides an overview of the methodology followed.

Figure 1: Methodology followed for the study



Annexure I details this study's approach and methodology.

Secondary Review

Review of IBMs: A list of 165 IBMs in India was compiled after extensive secondary research.

Review of Literature: The team reviewed relevant documents obtained from secondary sources. These documents were mainly of two types: (i) literature about the healthcare scenario in India, the social enterprise and impact investing sectors, policy and ecosystem initiatives, and other sectoral publications (including reports and Points of View published by Deloitte and Monitor Inclusive Markets); and (ii) literature about specific IBMs/organizations in the form of case studies, evaluations, news reports, and other literature.

Primary Research

Twenty-four organizations were selected for primary research and deep-dive analysis. The organizations included in the deep-dive are listed in annexure II.

Data collection methods used for primary research included in-depth interviews with stakeholders from the selected IBMs and with experts from the sector representing investors, donors, and policy-makers. Annexure III lists stakeholders interviewed as a part of this study.

CHAPTER 2

HEALTHCARE CONTEXT IN INDIA

INTRODUCTION

India is one of the world's fastest growing economies, as well as home to approximately 35 percent of the world's poorest people^[11]. The state of healthcare in the country shows this dichotomy as well.

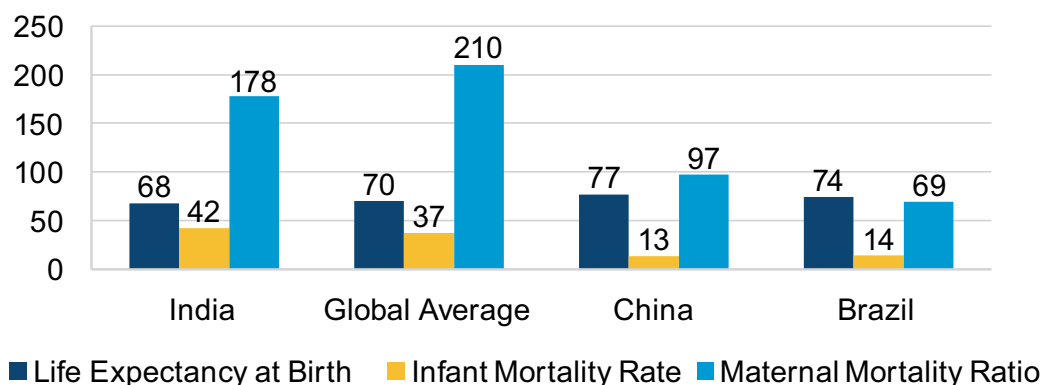
India is recognized as a destination for world-class healthcare. The private sector has created state-of-the-art infrastructure, quality clinical processes, and efficient administrative systems. The public health sector has also made significant progress, Flagship public health programs like the National Health Mission (NHM) and the Rashtriya Swasthya Bima Yojana (RSBY), have helped improve key health indicators such as the maternal mortality ratio, infant mortality ratio, institutional deliveries, and polio eradication.

However, given India's vast population and the complex nature of healthcare delivery, there remain huge challenges in ensuring equitable and quality healthcare for the entire population.

HEALTHCARE STATISTICS

Despite considerable progress, India lags behind global averages and other low and middle-income countries in terms of health indicators such as maternal mortality ratio (MMR)^[12] at 178, infant mortality rate (IMR)^[13] at 42, and life expectancy at 68 years.^[14]

Figure 2: Key health indicators^[15]



11 R. Kanbur and A. Sumner, "Poor Countries or Poor People? Development Assistance and the New Geography of Global Poverty" (grey paper, Institute of Development Studies, Brighton, UK, 2011)

12 SRS, 2013

13 ibid

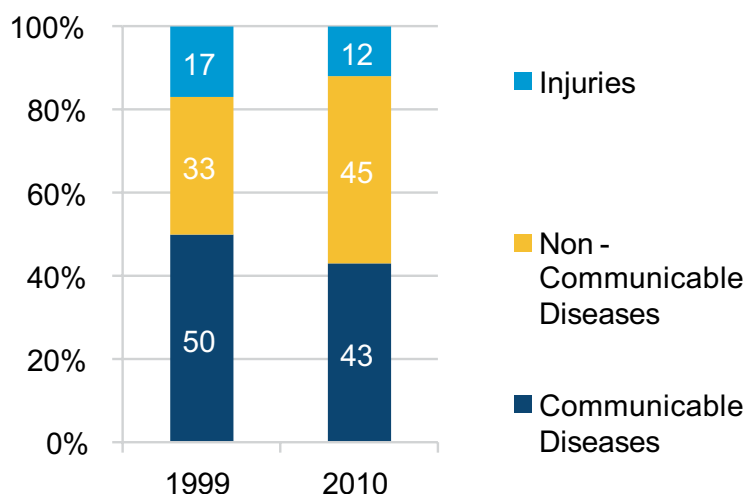
14 WHO 2012

15 Source: World Bank 2010, World Bank 2011, World Bank 2012 and SRS 2013

India also faces a dual disease burden. On one hand, it struggles with issues related to poor reproductive and child health and communicable diseases like malaria and TB, while, on the other, the incidence of non-communicable diseases (NCDs) has increased from 33 percent of the disease burden in 1999^[16] to 45 percent in 2010^[17]. NCDs are expected to increase to 76 percent of the disease burden by 2030. According to the International Diabetes Federation (IDF), India will become the diabetes capital of the world; the number of diabetes cases in adults is expected to increase from 38 million in 2010 to 46 million by 2015^[18]. Coronary heart disease is the leading cause of death in India. There were 47 million coronary heart disease patients in 2010; this is expected to increase to 62 million by 2015^[19]. Similarly, patients with chronic obstructive pulmonary disease (COPD), the second leading cause of death in India, will increase to 23 million in 2015, from around 21 million in 2010.^[20]

In addition, there are increasing disabilities and mortalities due to accidents. In fact, India accounts for around 10 percent of road crash fatalities worldwide.^[21]

Figure 3: Burden of disease^[22]



16 Global Burden of Disease, 1999

17 Global Burden of Disease, 2010

18 National Health Profile, 2010

19 ibid

20 Indian Study on Epidemiology of Asthma, Respiratory Symptoms and Chronic Bronchitis (INSEARCH), 2012 and Lung India 2012

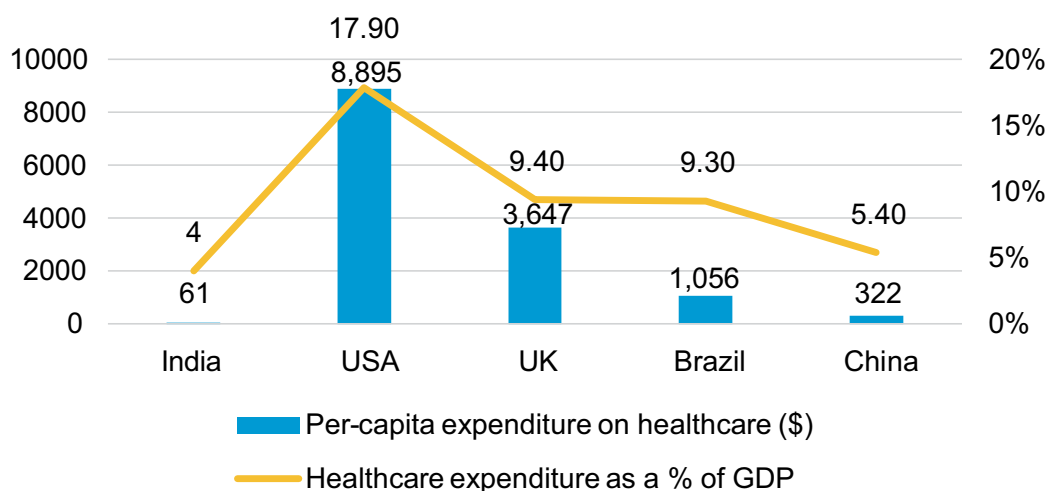
21 WHO, 2013

22 Source: Global Burden of Disease, 1999 and 2010

HEALTHCARE EXPENDITURE AND INSURANCE COVERAGE

India spends only 4 percent of its GDP on healthcare, which is much lower than other countries. As a result, India's per capita expenditure on health at \$61 is also lower than other countries. Figure 4 shows healthcare expenditure as a percentage of GDP and per capital expenditure on health in India, the U.S., United Kingdom, Brazil, and China. Public expenditure on health in India, at 1.3 percent of the GDP, is among the lowest in the world.^[23] Out-of-pocket spending on healthcare is approximately 67 percent of the country's total health expenditure.^[24]

Figure 4: Healthcare expenditure^[25]



Overall, health insurance coverage is low with only around 19 to 21 percent of the population insured. Of this, 16 percent is covered by social insurance like the government's RSBY and other state-sponsored insurance schemes^[26] where financial protection offered is extremely limited (less than \$500 on a family floater basis). Private schemes that offer a higher value protection cover only 3 to 5 percent of the population.^[27] In addition, both commercial and social health insurance schemes cover only in-patient care and do not cover out-patient consultations and diagnostic expenses or expenditure on drugs and medicines.

23 The World Bank

24 Ministry of Health and Family Welfare, Annual Report to the People, September 2010

25 The World Bank

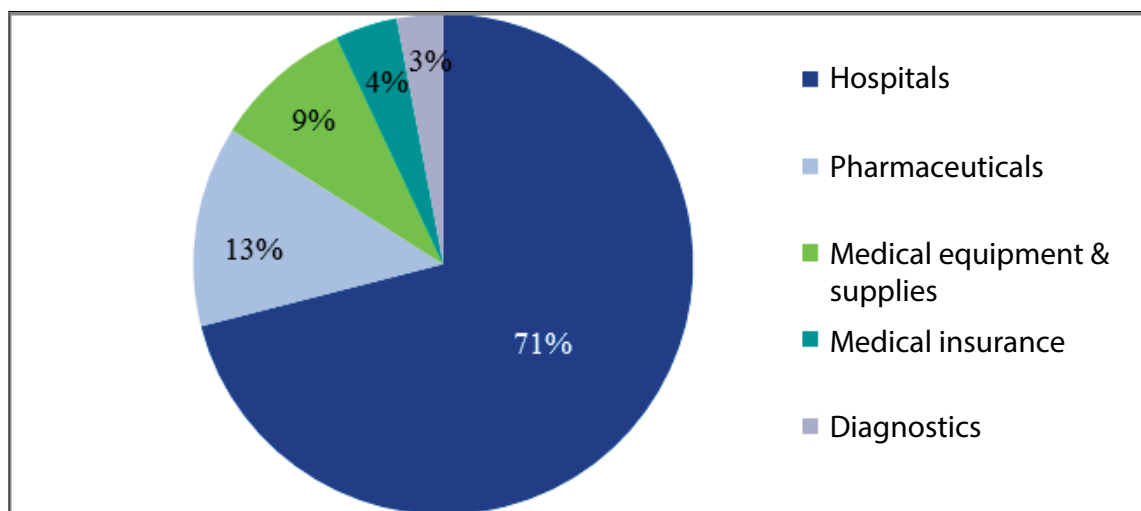
26 The World Bank - Government Sponsored Health Insurance in India: Are You Covered?

27 ibid

INDUSTRY SIZE, GROWTH AND STRUCTURE

The Indian healthcare industry has grown from \$51 billion in 2008 to \$78 billion in 2012 (CAGR 11 percent). It will grow at an estimated annual rate of 19 percent to reach \$280 billion by 2020.^[28] Healthcare delivery through hospitals and clinics contribute to the largest share of revenue at 71 percent. Pharmaceutical and medical equipment and supplies contribute 13 percent and 9 percent respectively. Insurance contributes to only 4 percent of market revenues.^[29]

Figure 5: Healthcare revenue share-2012 (\$78 billion)



This report focuses on healthcare delivery and medical technology sectors. The sections below give a brief description of how these sectors cater to the needs of the population.

HEALTHCARE DELIVERY

The healthcare delivery space in India is highly fragmented and populated by various players adopting different formats, providing varied levels of service, and catering to different patient segments.

Public healthcare follows a three-tier structure comprising primary, secondary, and tertiary care. It encompasses hamlet-level community health workers, village-level sub-health centers, and primary health centers (PHCs), block-level community health centers (CHCs), district-level secondary care hospitals, and state-level tertiary care hospitals.

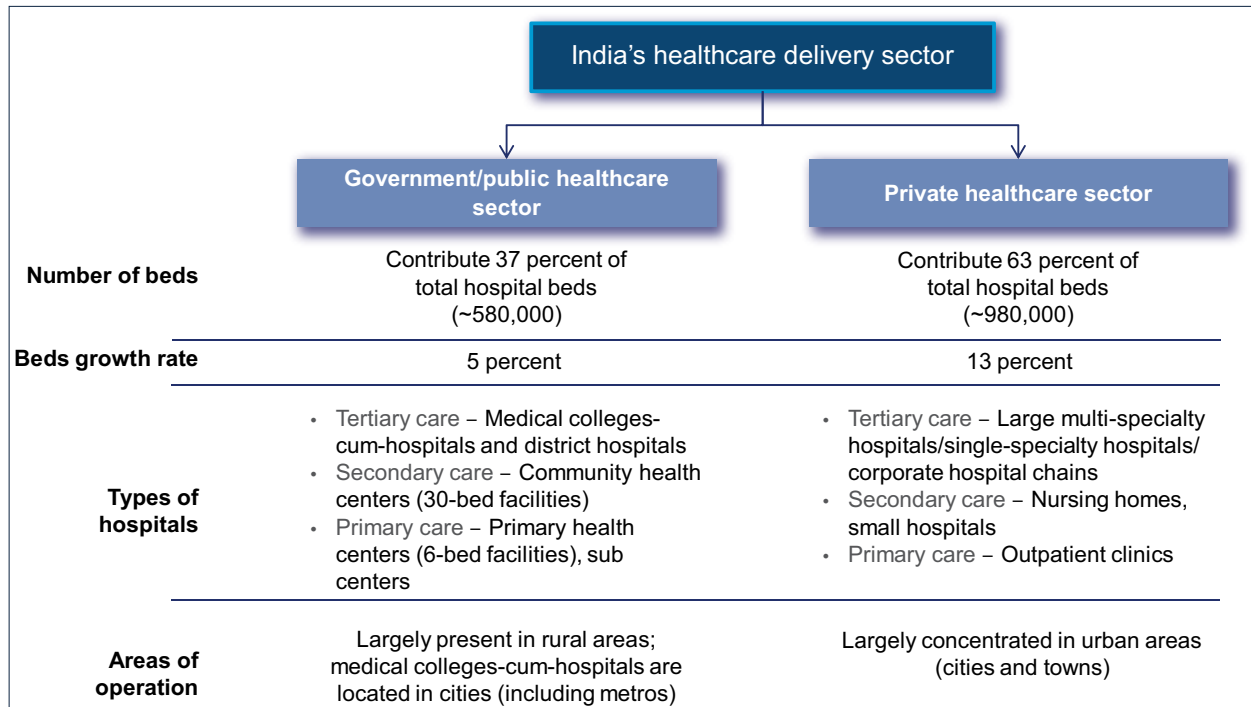
The private sector, on the other hand, is heterogeneous with diversity in kinds of players. It ranges from not-for-profit and for-profit organizations, corporate hospitals, and standalone healthcare service providers.

28 Indian Healthcare : The Growth Story [http://www.indianhealthcare.in/index.php?option=com_content&view=article&catid=131&id=168%3AIndian+Healthcare:+The+Growth+Story]

29 IBEF (India Brand Equity Foundation)

Figure 6 below provides a snapshot of India's healthcare delivery sector.

Figure 6: India's healthcare delivery structure



Rural and peri-urban areas are served largely by public facilities. The organized private sector is concentrated in metros. Tier I cities and smaller towns depend on small clinics and nursing homes. The private sector is growing rapidly and is expanding to smaller cities and towns.

MEDICAL DEVICES AND TECHNOLOGIES^[30]

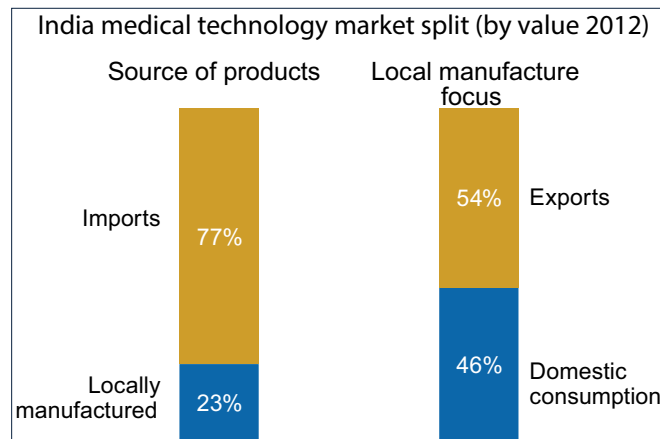
The Indian medical device, equipment and technology market was valued at \$4.4 billion in 2013. It is growing at a CAGR of 15 percent and is expected to become \$7.8 billion by 2016.^[31]

The growth of the medical devices industry is largely being driven by growing awareness among providers and consumers on advances in medical technology, increased investments in healthcare services, and the country's evolution into a medical tourism hub.

30 Medical devices, medical equipment and medical technologies are being used interchangeably in the industry

31 "Progressive change Impetus to Medical Technology through Innovation, Incentivisation and Regulation" - A theme paper released at the 6th Medical Technology Conference – "Medical Technology and its Vital Place in Healthcare in India," by CII and Grant Thornton, 2013

Figure 7: Medical technology market industry split^[32]



While the medical technology market is expanding, there is significant reliance on imports to meet domestic consumption. Figure 7 depicts the market split of medical technology in India. Around 77 percent of medical devices sold in India are still imported. Simultaneously, 54 percent of what devices manufactured in India are exported to the U.S., Europe, Middle East, and Southeast Asia.

The medical technology industry in India faces some challenges. The regulatory environment is ambiguous and complex. Multiple levels of government agencies/departments are involved in enforcing guidelines. The medical devices industry has no distinct status and is clubbed with pharmaceuticals. As a result, challenges that are unique to the medical devices industry are often not recognized.

KEY GAPS IN HEALTHCARE PROVISION

These are the key gaps in healthcare provision in India:

Low levels of expenditure on healthcare: As discussed in the previous section, India's expenditure on healthcare is extremely low at 4 percent of its GDP, translating to a per capita expenditure of \$61. This results in inadequate infrastructure and resources for healthcare, which impacts quality of care available to the population.

Inadequate infrastructure and human resources for health: There is a huge shortfall in infrastructure and human resources for health. India lags far behind the global average in terms of number of doctors, nurses, and hospital beds. This has a direct impact on the quality of healthcare available to the people.

India requires an estimated 1 million more doctors and 2.3 million more nurses to meet healthcare needs of the existing population.^[33]

Table: Infrastructure and human resources for health

Infrastructure and Human resources	India	Global median
Number of physicians/10,000 population ^[33]	6	15
Number of nursing and midwifery personnel/10,000 population ^[34]	10	33
Total number of hospital beds/10,000 population ^[35]	9	30

Low affordability of healthcare services due to high levels of poverty and low insurance cover:

Almost 70 percent of India's population lives below \$2 a day.^[37] As discussed in the previous sections, insurance cover in India remains low. Only around 20 percent of the population is covered by social or commercial insurance. This impacts affordability of healthcare services for a majority of the population.

These gaps are further compounded by the complexities of healthcare in India.

Needs vs. wants conundrum: While there is a universal 'need' for healthcare, health-seeking behavior and 'want' for healthcare services is low due to lack of awareness and low affordability. This is especially true of preventive and promotive care service.

Broad range of determinants of health: Outcomes in health are a function of several determinants that lie outside the ambit of the healthcare domain. Apart from biological factors, socio-cultural, and political factors also determine health status, health-seeking behavior, and access to care. For instance, early marriages and early childbearing, religious and cultural dietary practices, are social issues that impact health.

Multiple ministries and departments handling different aspects of health:^[38] Several government departments are responsible for different health determinants: nutrition, sanitation, pharmaceutical products, etc. This leads to the lack of a cohesive and integrated health policy and action.

Different kinds of private sector providers cause difficulties in ensuring compliance with regulations and in providing quality services: The urban rich population has access to state-of-the-art, world-class medical infrastructure and quality care while 70 percent of the population in rural areas grapple with basic healthcare challenges. Healthcare services are provided by a range of for-profit/not-for-profit/NGOs/charitable organizations, formal/informal practitioners, standalone/chain providers, single specialty/multi-specialty facilities, and traditional Indian systems of medicines. This makes it difficult to uniformly ensure quality and compliance with regulations and protocols.

33 WHO 2013

34 World Bank 2010

35 World Bank 2010

36 World Health Statistics 2013, WHO

37 World Bank, 2010

38 The Ministry of Health and Family Welfare, Ministry of Women and Child Development, Department of Pharmaceuticals under Ministry of Chemicals and Fertilizers, the Department of Biotechnology under Ministry of Science and Technology look after different aspects of healthcare policy and provisioning

Complex and changing disease burden: As discussed in the previous section, India struggles with a complex disease burden with poor RCH indicators, prevalence of communicable diseases, and an increasing burden of non-communicable diseases. Interventions must be designed in the context of the changing disease burden, age, gender, and socio-cultural factors.

TRENDS IN HEALTHCARE

Public-private partnerships

Given the lack of access to and availability of quality affordable healthcare (public or private) for the majority of the population and the complex disease burden faced by the country, the Indian government has engaged the private sector to provide health services through public-private partnerships (PPP). In a PPP, the government enters into a partnership with one or more private partners. The private partners deliver services so that the objectives of the government of delivering quality healthcare services are aligned with the profit or other objectives of the private partners.

Traditionally, the government has engaged with the private sector by contracting or outsourcing services. For instance, the Chiranjeevi Yojana was a PPP between the Gujarat government and private health facilities to address shortage of obstetricians at public hospitals. Other PPPs include private players providing advanced diagnostic services like CT scans and MRIs by setting up diagnostic centers at government hospitals and emergency ambulance transport services using call centers across the states.

Operation Asha uses eCompliance, a biometric tool which uses fingerprint scanners to track TB patients' adherence to medication. The TB centers in villages and urban slums are training community members to become TB health workers and eCompliance- has been designed for last mile delivery to the BoP. Operation Asha works in partnership with the government and the Revised National Tuberculosis Control Programme.

Recently however, PPP models are moving towards true partnerships where government collaborates with creators of innovative and cost-efficient health solutions to provide quality healthcare. In fact, in several cases, innovators create solutions tailored to the government as a potential user/buyer and the poor as target customers.

The government is expected to continue playing a key role in providing healthcare by increasingly engaging the private sector.

Increasing Investment in Healthcare by Private Equity Players, Entrepreneurs, and Corporations

The healthcare sector has seen an immense increase in investments from private equity (PE) players. The total PE investments in healthcare increased from \$0.5 billion (29 deals) in 2011 to \$1.3 billion (44 deals) in 2012.^[39] The healthcare delivery segment has driven the bulk of healthcare investments, accounting for 60 percent of the total funds invested. Seven of ten PE deals, by size, were in the delivery segment. Further, investments were across the care spectrum. Primary care NationWide clinics, single specialty ophthalmology chain Vasan Eye Care, in-vitro fertilization chain Bourn Hall India, and tertiary care hospitals Medanta' and Fortis, among others, received funding from various players. This trend is expected to continue and healthcare delivery will remain a key investment area for PE firms.

A number of corporate houses and entrepreneurs have also entered the healthcare space. For instance, the HCL group has forayed into healthcare by setting up a chain of primary clinics. The promoters of Dabur India have formed a joint venture with the U.K.-based Healthcare at Home to tap the under-penetrated home healthcare market. HCG started as an oncology hospital and now has a network of 27 centers across India. Existing corporate hospitals are looking to expand their presence and set up health facilities in tier II and tier III towns.

Frugal Innovations

The private sector, MNCs and Indian players, are increasingly driving frugal innovations in healthcare. Technology is increasingly being used in both product and process innovations to increase healthcare cover in scalable and cost-efficient ways. For example, healthcare providers use telemedicine to connect remote rural populations to medical advice from specialists, which was, until now, unavailable to them. Organizations like GE and Philips have developed low-cost point-of-care support and diagnostic devices. Indian organizations like Forus, MediVed, and Perfint Healthcare have also developed innovative and low-cost solutions. Patient monitoring, emergency medical response, and HIS are some other areas where technology is playing a key role in expanding healthcare.

Emergence of Inclusive Business Models to Cater to the BoP

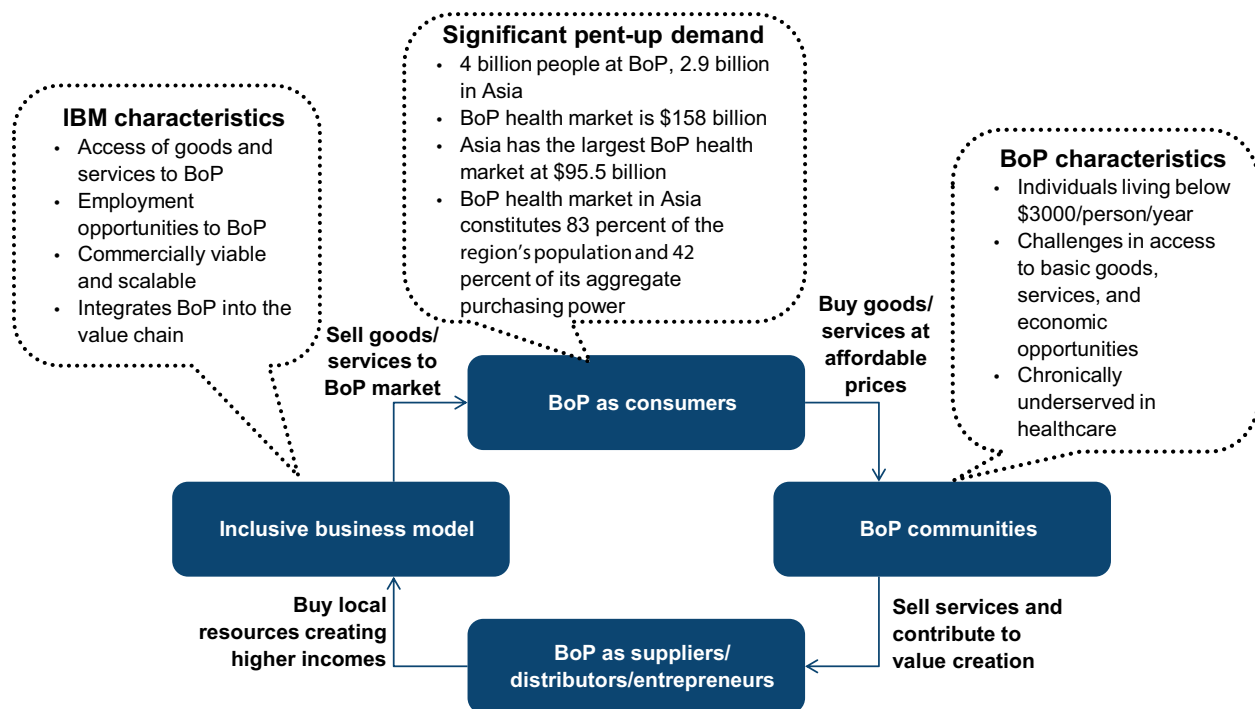
Traditionally, only the non-governmental sector has considered those at the bottom of the pyramid as beneficiaries. Over the past decade however, the private sector has recognized the large market potential at the BoP. The BoP health market in Asia is estimated at around \$95.5 billion.^[40] The private sector is now looking at this largely untapped market by developing innovations to address the challenges of health inequities, improving healthcare access and balancing quality care with affordability.

39 India Private Equity Report 2013: Indian Private Equity and Venture Capital Association

40 The Next 4 Billion- Market Size and Business Strategy at the Base of the Pyramid by World Resources Institute and IFC

IFC defines inclusive business models (IBMs) as enterprises that help expand access to goods, services, and livelihood opportunities for those at the base of the pyramid in commercially viable, scalable ways.^[41] The fundamental thought behind the concept of IBMs is to integrate the BoP into the value chain – on the demand side as clients and consumers and on the supply side as employees, producers, and business owners.

Figure 8: Integration of the low income communities in the value chain for IBMs



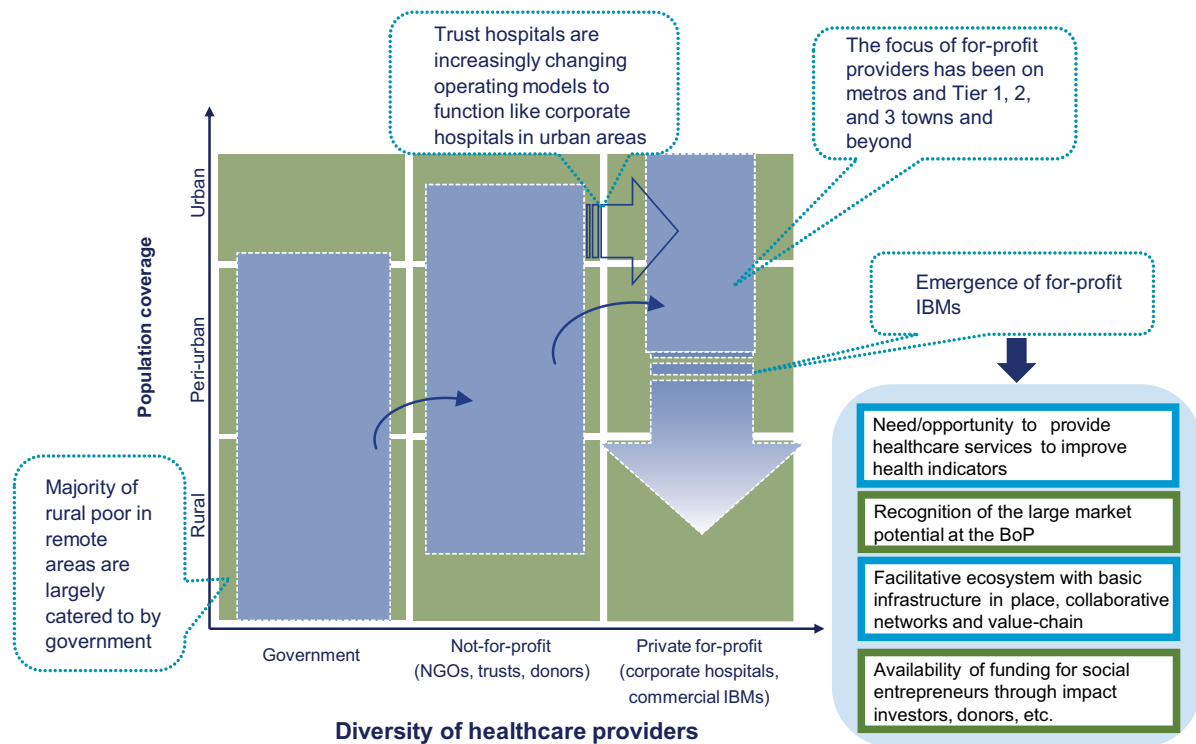
IBMs build bridges between businesses and poor communities for mutual benefit in the supply chain, in the workplace, and in the marketplace, while not losing sight of economic profitability. For the poor this means higher productivity, sustainable earnings, and greater empowerment.

In India, IBMs have emerged in the context of poor health indicators, a globalized economy, willingness of the government to work with the private sector, and the recognition of the poor as clients rather than beneficiaries.

41 Jenkins, B; Ishikawa, E; Geaneotes, A; Baptista, P; and Masuoka, T (2011). Accelerating Inclusive Business Opportunities: Business Models that Make a Difference. Washington, DC: IFC

Figure 9 depicts the evolution of the economy in India and the emergence of IBMs.

Figure 9: Emergence of IBMs in India



Numerous inclusive business models operate in the healthcare space. This study specifically considers IBMs focusing on:

Healthcare delivery and outreach through primary, secondary, and tertiary healthcare services for the BoP by innovations in processes and/or business models, and affordable distribution and delivery channels for healthcare services, medicines, and/or devices.

Medical technologies, including transformative and disruptive innovations such as low-cost technologies in diagnostics, radiology, pathology, and mobile-based interventions.

CHAPTER 3

LANDSCAPE OF HEALTHCARE IBMs IN INDIA

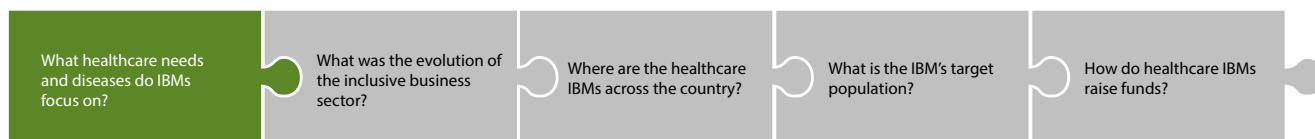
INTRODUCTION

Numerous social enterprises/inclusive business models in the healthcare space help expand access to products and services to BoP populations in commercially viable, scalable ways. The healthcare IBM landscape in India includes enterprises that are trying to address a range of challenges that the poor face as consumers. While some IBMs attempt to address the challenges of providing good quality affordable healthcare, others try to provide basic services at scale, while still others introduce new healthcare solutions through disruptive innovations.

This chapter presents answers to five key questions, helping build a nuanced understanding of the IBM landscape in India, namely:

1. What healthcare needs and diseases do IBMs focus on?
2. What was the evolution of the inclusive business sector?
3. Where are the healthcare IBMs across the country?
4. What is the IBM's target population?
5. How do healthcare IBMs raise funds?

The analysis in the following sections is based on triangulated data from (i) the secondary analysis of the 165 IBMs that form the “universe” of this study, (ii) in-depth primary research through case studies and detailed profiling of the 24 IBMs selected, and (iii) primary research through in-depth interviews with key stakeholders and sector experts representing IBMs, investors, donors, policy-makers, and other industry facilitators.



WHICH HEALTHCARE NEEDS AND DISEASES DO IBMs FOCUS ON?

This section focuses on the analysis of the distribution of IBMs across hospitals and outreach models, and medical technology; and the diseases that are being commonly addressed by the healthcare IBMs in India. The analysis is based on the long-list of the 165 IBMs in India.

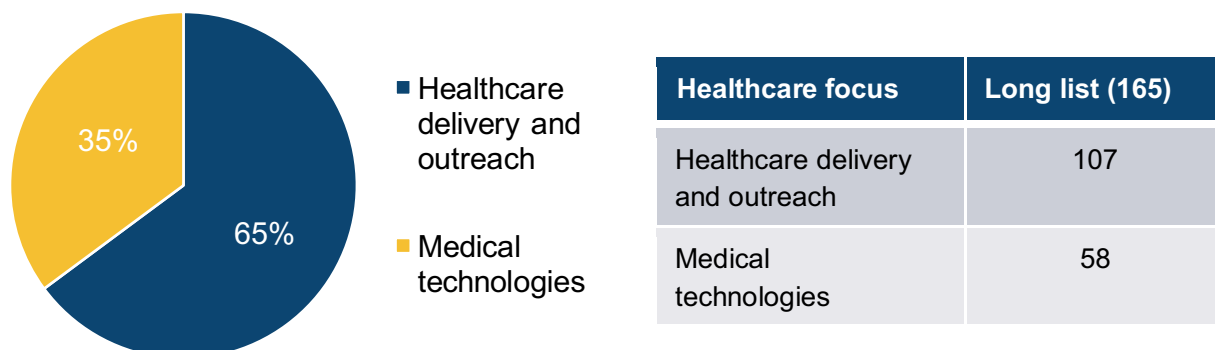
Area of Healthcare Focus Of IBMs – Healthcare Delivery and Outreach and Medical Technologies

A majority of the IBMs focus on a combination of two or more healthcare areas. However, for the purpose of this study, discrete categories have been considered based on the predominant focus of the IBMs.

Most of the 165 IBMs focus on healthcare delivery and outreach, constituting 65 percent of the IBMs. 35 percent of IBMs work in the area of medical technologies.

Figure 10 classifies of IBMs according to healthcare focus.

Figure 10: Healthcare focus of IBMs in India



CHARACTERISTICS OF HEALTHCARE AREAS

Research for this study found different trends and strategies to address needs of BoP patients in the two healthcare focus areas of healthcare delivery and outreach and emerging medical technologies:

- Healthcare delivery and outreach is subject to** increasing competition, rising real estate costs, and tough operating environments. A large number of healthcare providers are exploring new IBMs to tap BOP patient segments, lesser penetrated geographies, while enhancing service offering levels. For example, some IBMs have set up chains of multispecialty outpatient clinics for primary care. Investments in primary care contribute to preventing complications in chronic diseases and reduce secondary and tertiary overcrowding by managing simpler health problems at the primary level. This allows secondary and tertiary centers to focus on high-end treatment and, in turn, improve processes and cost efficiencies.

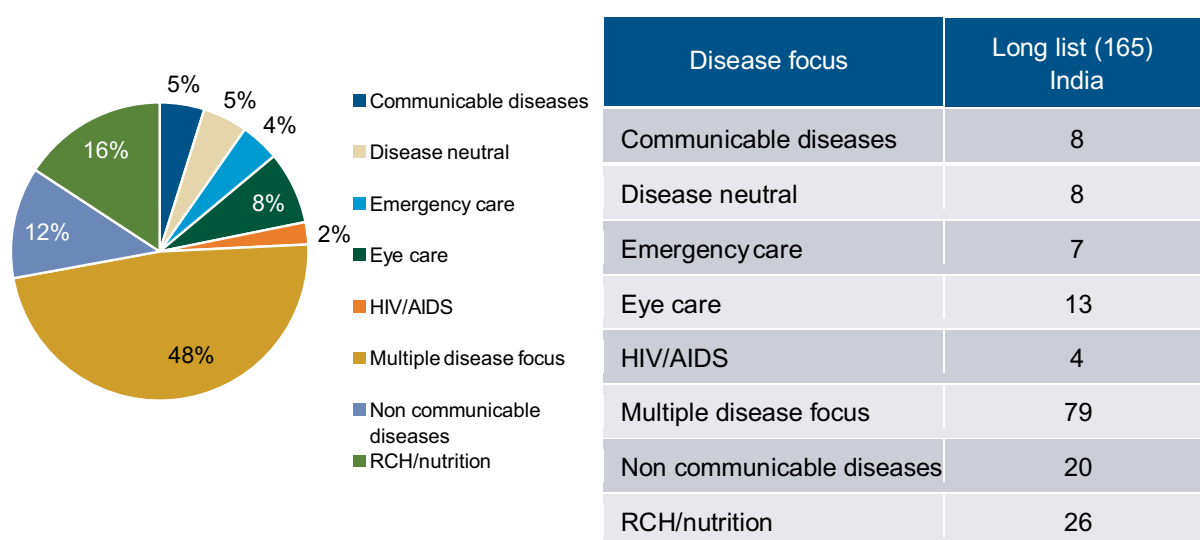
Enterprises also leverage existing channels/systems, involve local communities in supply chains, and train women from poor communities to function as frontline health workers, who diagnose basic illnesses, distribute essential medicines and other health products such as locally manufactured sanitary napkins in their catchment geographies. These models help decentralize healthcare, improve referral linkages, leverage local resources, and above all, generate employment and build capacities.
- The use of **technology in both product and process innovations** in healthcare is key to achieving the goal of coverage through scalable and cost-efficient ways. IBMs have used telemedicine to connect remote rural populations to medical advice from specialists, which were until now unavailable to them. IBMs have also developed low-cost medical devices and diagnostic tools to reduce the costs of healthcare.

Disease Focus of IBMs

In the context of BoP patients, most diseases contribute to disproportionately high burdens of mortality and morbidity. The poor are also under-served with respect to healthcare services and products. Given this reality, IBMs must consider epidemiology and scope for profitability and scale in choosing their primary focus for interventions.

An analysis of the disease focus of IBMs was undertaken by free listing all diseases mentioned in the secondary data. Eight disease categories were arrived at by combining similar diseases/broader disease areas. Figure 11 presents these disease categories and the distribution of IBMs across these categories.

Figure 11: Disease focus of IBMs in India



The majority of IBMs in India focused on multiple diseases (48 percent), ranging from TB and malaria to cardiovascular and neurological diseases. Reproductive and child health (RCH) and nutrition was the second most popular focus, with 16 percent working in this area. It is also apparent that Indian IBMs have diversified into non-communicable diseases and eye care.

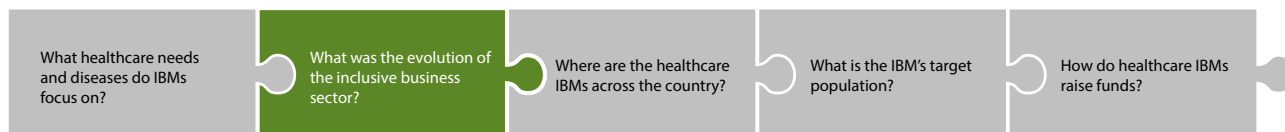
Further analysis also shows that certain specific areas such as mental health, disability, and cancers are still significantly underserved.

FACTORS DETERMINING FOCUS ON SPECIFIC DISEASES

This study shows that IBMs have a **skewed disease focus because they choose their disease focus based on high volumes, epidemiological trends, and availability of funding**. The following key insights were derived from stakeholder analysis on reasons behind IBMs' choices of diseases:

- **Target multiple diseases for high patient volumes, which leads to increases in efficiencies and profitability:** IBMs focus on a range of diseases to improve cost efficiencies since almost the same capital expenditure and channels can optimally be used to serve more patients. From a revenue perspective, focusing on multiple diseases diversifies the risk of limiting the revenue stream to just one area.
- **Focus on RCH ensures greater availability of funding and the ability to leverage public systems/ programs due to donor and government priorities:** Most international donor agencies including DFID, USAID, and BMGF prioritize funding for maternal and child health issues. Additionally, several government programs and subsidies in India such as the Janani Shishu Suraksha Yojana (JSSK), ambulance services for institutional deliveries, and childhood immunization has made it possible for IBMs to leverage their benefits. Stakeholders also reported that **volumes in this area are very high** (given the high total fertility rates) and the **risks and need for specialization are limited**. This increases efficiencies, reduces costs of setting up services, and avoids the challenges of attracting and retaining highly specialized medical professionals.
- **Target non-communicable diseases, due to high volumes:** The emerging burden of non-communicable diseases is contributing to higher volumes. As a result, many IBMs focus on NCDs, primarily diabetes and cardio-vascular diseases. Of the 20 IBMs focusing on NCDs, seven addressed cardio-vascular diseases and four diabetes. This is congruent with epidemiological data that shows the rising incidence of NCDs in India, with the number of diabetes cases expected to increase from nearly 60 million in 2011 to 100 million by 2030 and a loss of 4.3 million DALYs (disability-affected life years) by 2020 to heart disease.
- **Focus on eye-care due to the lower risk and lower investments involved:** Another reason behind the choice of eye-care is the success of the Aravind Eye Care model, which has inspired newer enterprises to adopt different elements.
- **Low focus on mental health, disabilities and oncology due to complexities related to the diseases, low patient loads and limited opportunities for scale** due to a low prioritization by the government.

To conclude, IBMs focus on diseases that offer large volumes of patients, involve less complex and standardized procedures, and require low investment to maintain sustainability and profitability.

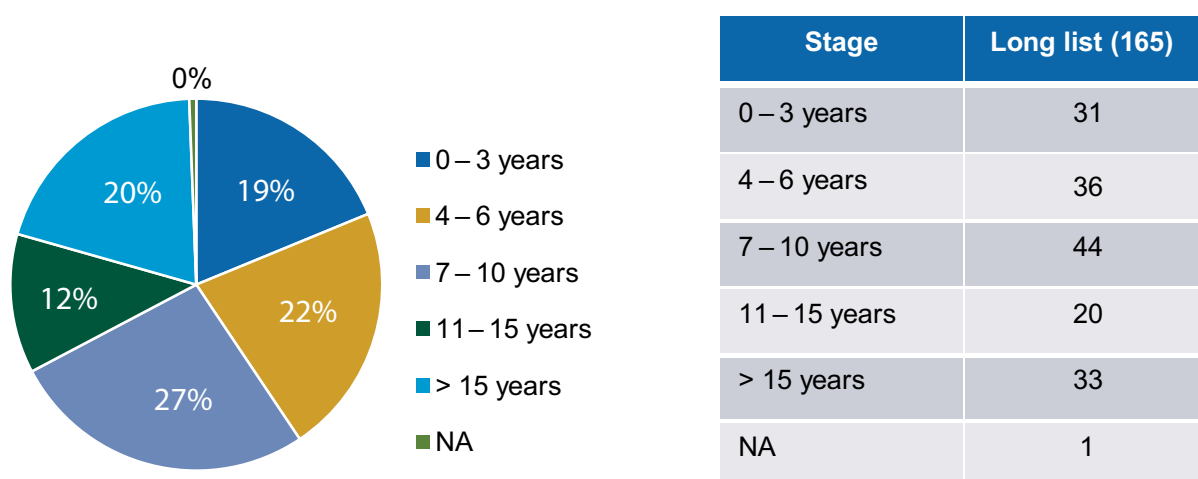


HOW OLD ARE THE IBMs? ORGANIZATIONAL STAGE OF DEVELOPMENT

This section focuses on the organizational stage of development of the IBMs. The analysis was made from the list of 165 IBMs across different categories. healthcare delivery and outreach and medical technology.

Figure 12 classifies IBMs according to how many they have been in existence/operation.

Figure 12: Life-stages of healthcare IBMs in India



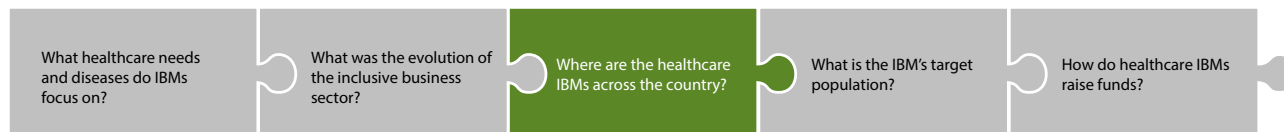
The inclusive business space in India is young. The traditional approach of the private sector serving the poor was primarily through charitable organizations/NGOs supported by grants and which typically do not have cost recovery mechanisms or revenue streams. Recognizing the BoP as a potential market for products and services, seeing them as clients rather than beneficiaries, is a relatively new development in India. As a result, involvement of the private sector in healthcare for the poor has expanded to include business models with clear revenue streams.

An analysis of the life-stages of the 165 healthcare IBMs shows that almost 70 percent of the IBMs in India are less than 10 years old. This shows that the inclusive business sector in India is relatively new and is in its early stages of development.

A more nuanced analysis of the IBMs at different life-stages correlated with their area of healthcare intervention is interesting; older IBMs are primarily in the areas of healthcare delivery and outreach, which is the more traditional and less risky model. IBMs in medical technologies are relatively younger.

The IBM space is relatively new in India with the majority of IBMs (70 percent) less than 10 years old.

A majority of IBMs, which are more than 15 years old, are primarily engaged in healthcare delivery and outreach while the younger IBMs (0-3 years) are involved in medical technologies.



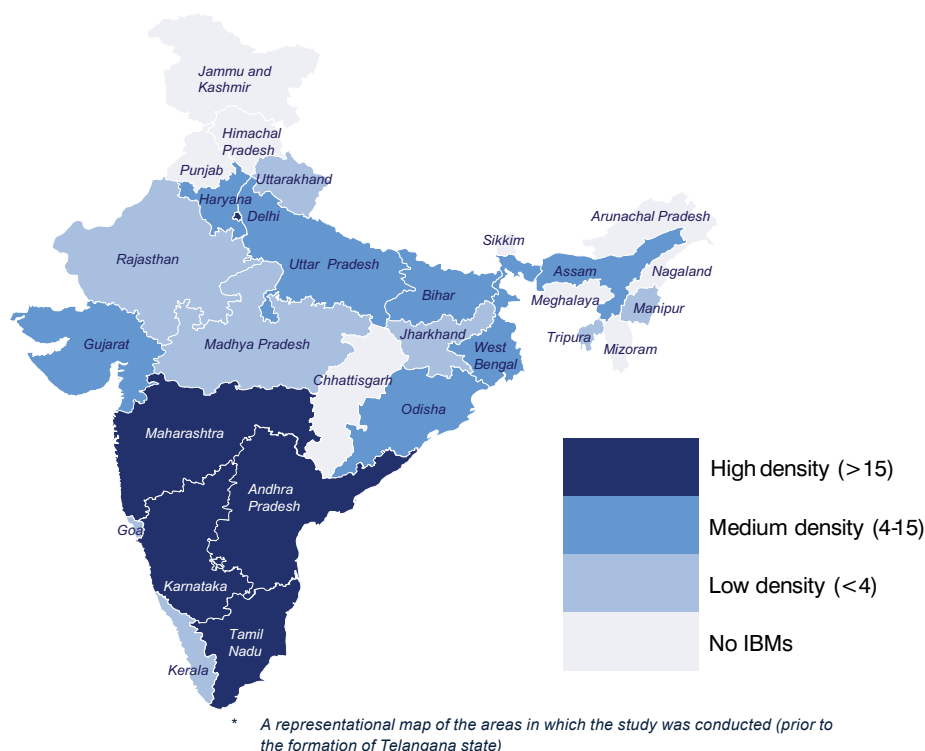
WHERE ARE THE IBMs? GEOGRAPHICAL DISTRIBUTION OF HEALTHCARE IBMs

A geographical analysis of the list of 165 IBMs shows that enterprises are not equitably distributed across the country. There are two levels of inequity that was found in the distribution of IBMs: (i) locations of IBMs and (ii) reach of their products/services.

Most enterprises are located in the southern states (33 percent), more specifically in the two cities of Chennai and Bangalore (17 percent). A more nuanced analysis shows that a significant proportion (31 percent) of IBMs in medical technologies category are in these two cities. The two other cities with the highest proportion of IBMs are Delhi and Mumbai at 12 percent and 10 percent respectively. Figure 13 shows geographical distribution of IBMs across all the states of India. The northeastern region has extremely limited representation either in location of the enterprise or in reach of services. It is noteworthy that no enterprise from the long list of 165 organizations is present in Sikkim, Mizoram, Arunachal Pradesh, Meghalaya, and Nagaland. Tripura and Manipur had one IBM each.

Locations of IBM headquarters

Figure 13: Map of India showing the geographical location of IBMs (HQ of IBMs)

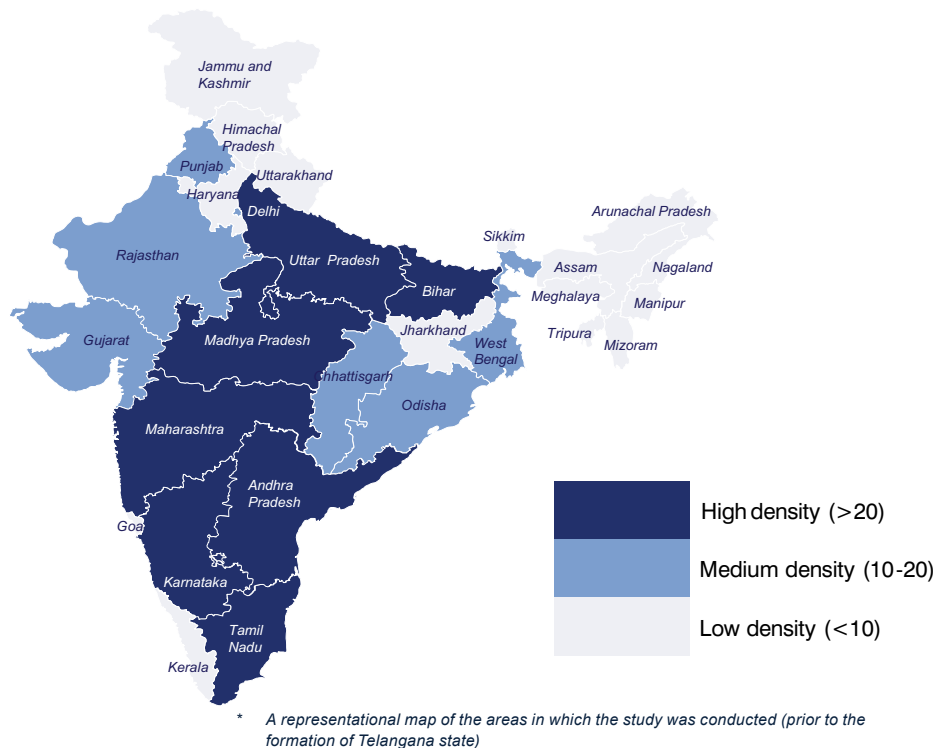


Reach of IBMs products/services

With regard to the spread of services, a number of IBMs have targeted under-served and vulnerable geographies such as the Empowered Action Group states⁴² where the health needs are very high and availability of services limited. The gaps in numbers and quality of existing healthcare services in some of these states increase the viability of setting up business, with a large untapped consumer base and unmet healthcare needs. It is interesting that only some of the vulnerable states are served by IBMs – Bihar, Madhya Pradesh, Rajasthan, Uttar Pradesh, and Chhattisgarh. Other states, like the north eastern states, Jharkhand, Uttarakhand, and Haryana continue to remain underserved.

Figure 14 shows the geographical reach of IBMs' products/services across the country.

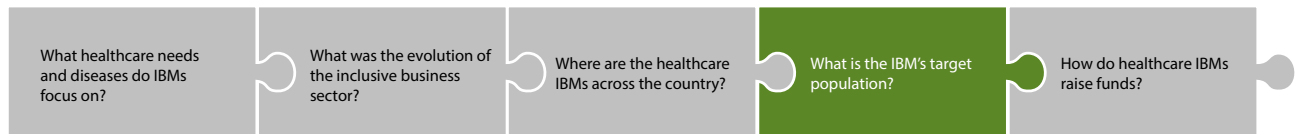
Figure 14: Map of India showing the geographical reach of IBMs' offerings



42 The Empowered Action Group states include Bihar, Jharkhand, Chhattisgarh, Madhya Pradesh, Uttar Pradesh, Uttarakhand, Orissa, and Rajasthan

This study indicates that the **strength of the ecosystem, the value-chain, and presence of industry facilitators are important in determining where IBMs are located.**

- **Facilitative Ecosystem:** The presence of technology companies in Bangalore is a significant contributor to the higher number of healthcare technology IBMs in this city. The presence of development organizations, donor/funding agencies and access to policy-makers are the main reasons behind the high concentration of IBMs in Delhi. Mumbai being the financial capital with a high number of investors and corporate head-quarters is the main reason behind the preference for this city. The presence of other IBMs and a vibrant private sector encourages the growth of IBMs in certain geographies.
- **Presence of Incubators:** The presence of industry facilitators and incubators in the southern states/cities of Bangalore, Chennai, and Hyderabad determines of why these cities have more IBMs. This includes the IIT Chennai IT Park and the IKP Knowledge Park.
- **Better human development indicators:** Maharashtra and the southern states have relatively better HDIs in terms of poverty, literacy, and health. This impacts the paying capacity and awareness levels of target consumers and the availability of trained human resources.
- **Better governance indicators:** This is the determining factor in Tamil Nadu, Delhi, Karnataka, and Maharashtra
- **Better infrastructure:** Chennai, Bangalore, Delhi, and Mumbai, especially due to their metropolitan status, have better road, rail, and air transport connectivity, access to and ability to retain better human resources, and existing channels of distribution to consumers. Primarily due to these factors, **most IBMs are concentrated in urban and peri-urban rather than in rural areas.** The number of IBMs that have focused on rural India are negligible. Poor infrastructure poses a barrier for services offered by IBMs, access of IBMs to other geographies, HR talent, and other facilities
- **Political unrest and conflicts that disrupts markets** is one of the main reasons behind the absence of IBMs in Jharkhand, Chhattisgarh, and the north-eastern states of India.
- **Scale and expansion of the services of IBMs do not follow specific trajectories,** but are determined by different factors. While some have expanded into areas where they see market potential, others have expanded based on partnerships they have developed. IBMs have typically begun in tier I and tier II cities and then spread to other geographies based on several factors. Expansion is generally upwards or horizontal.



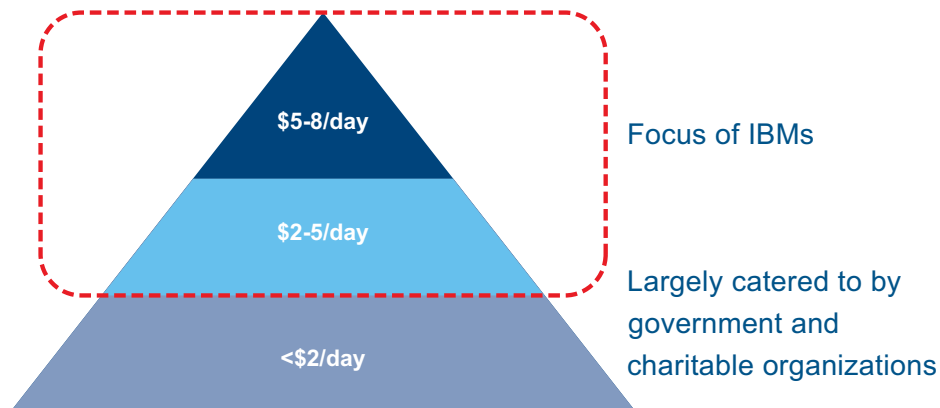
WHAT POPULATION SEGMENTS DO IBMs FOCUS ON?

IBMs have the twin objectives of profitability and social impact. The organizations need to price and position their services in a certain way to meet these objectives.

The BoP population—those living below \$8 a day—can be segmented into those below the poverty line (described as those living below \$2 a day) and those living between \$2 and \$8 a day.

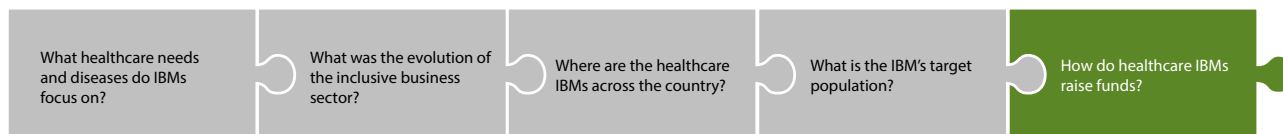
This study found that while many IBMs begin with the aim of providing services to the poorest, pressures to be profitable prompts them to focus on segments that have the ability to pay, as well as bear the indirect costs associated with healthcare. Hence, the target population for IBMs is those living between \$2 to \$8 a day. The segment living below \$2 a day are dependent on government and charitable organizations. Those living below \$2 a day are not a focus segment for IBMs. However, IBMs cater to this segment through PPPs and government insurance schemes like RSBY and Arogyasri.

Figure 15: Target population for IBMs in India^[43]



IBMs find that the population segment living between \$5 to \$8 a day are generally easier to reach due to their geographical locations (urban and peri-urban areas). This segment also has higher levels of literacy and hence, demand for healthcare services is generally higher.

43 Figure not to scale

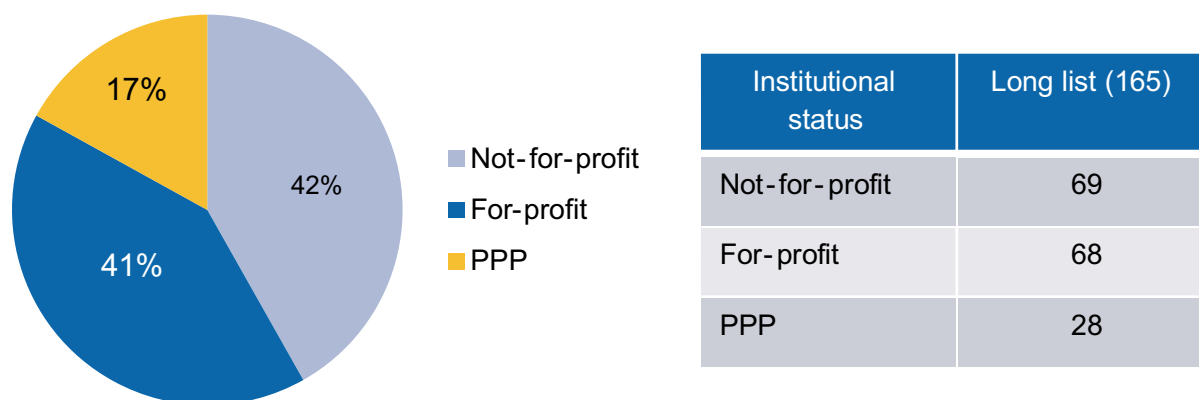


HOW DO IBMs RAISE FUNDS?

This section examines how different IBMs, based on their legal status (for-profit, not-for-profit, or hybrid) raise funds. The analysis has been carried out on the long list of 165 healthcare IBMs. The section also describes the different kinds of funders: impact investors, donors, angel investors, and high-net worth individuals.

One critical differentiator in raising funds is whether the IBM is for-profit, not-for-profit, or a hybrid of both. This determines the primary sources of funding that IBMs access, and within that, the different financial instruments available to them.

Figure 16: Institutional status of IBMs in India



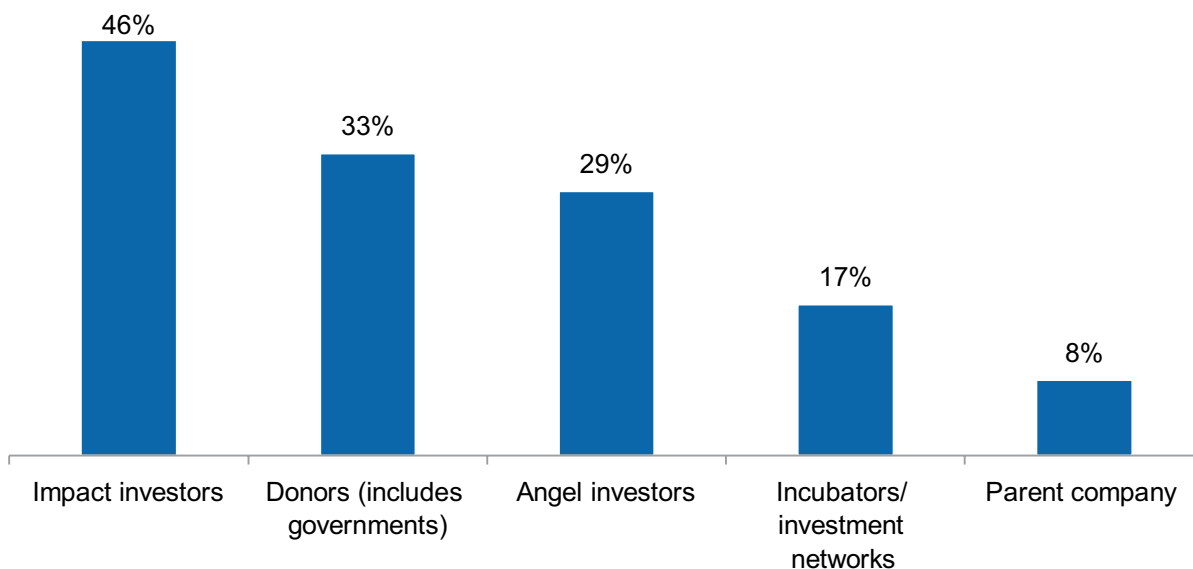
Our analysis of the 165 IBMs shows that the Indian landscape has equal numbers of for-profit and not-for-profit entities at around 41 percent and 42 percent each. The third category includes PPPs, which constitute 16 percent of the IBMs.

A growing trend observed in the Indian landscape is the emergence of hybrid models or the transformation of not-for-profits into for-profits, as these are better placed to secure financing and scale over time. The reverse trend is also apparent, where for-profit enterprises have set up not-for-profit arms, primarily as part of expansion of value chains and diversification. For example, two for-profit IBMs, Ziqitza, and GNRC, have set up training institutions as not-for-profits. The main reason behind this is to access tax benefits and subsidies available to not-for-profits, especially in the area of training/education.

Almost all IBMs had more than one source of funding, either more than one investor category, or different investors within the same category.

Figure 17 presents the major sources of funding for IBMs in India.

Figure 17: Major sources of funding for IBMs in India




The instruments of finance that most IBMs use include equity, grants, and debt. Impact investors are the main source of equity, while grants come from donor agencies. PPPs access funds from governments, paid for services rendered to the BoP, or for operation and management (O&M) contracts.

It was also noted that the instruments and investor interest varied across life-stages, and consequently risks, of the IBMs. Early stage IBMs with higher risks are mainly set up through promoter's capital and investments from high net-worth individuals or angel investors. Entry of institutional investors and investment funds occur only after IBMs achieve proof of concept, and typically complete about two years of operations. 100 percent of the 165 IBMs are above two years of age.

Impact Investors

Development finance institutions are leading capital providers in the impact investment market. Generally, they prefer to be catalytic and provide anchor funding, and thus are most active in first-time funds or investments. A common way for mainstream investors to invest in IBMs is through impact investment funds. Equity is the most common instrument used by impact investors to finance IBMs.



These funds are differentiated by their institutional context, target sector or geography, use of subsidy, and expectations of returns. Generally, these funds target market returns, although many are structured as non-profit organizations and typically provide a mix of grants, subsidized loans, and equity investments in undercapitalized sectors in frontier markets. They also often provide pioneer funding and seed capital. Select examples of such organizations that have invested in healthcare IBMs include Acumen, Ennovent, India Innovations Fund by IKP Investment Management Company, UNITUS Seed Capital, Insitor Management, and Aavishkaar.


Impact investing in India extends back to 1982, when the Ashoka Foundation provided grants to Indian social entrepreneurs. However, it was not until recently that India witnessed an increase in the number and size of investments in businesses with clear triple bottom lines. In 1997, Grassroots Innovations Augmentation Network (GIAN) became India's first non-profit socially-minded venture capital fund (VCF). In 2001, Aavishkaar became the country's first for-profit counterpart. Since then the number of players and the size of each fund have increased considerably. Some of the largest actors in the healthcare field include Aavishkaar, Acumen Fund, and Unitus.

The recent growth in capital available to IBMs indicates that the market is far from saturated, but at the same time, very few funds have made successful exits from their investments. However, as business models evolve and mature, this is likely to change. The number of IBMs seeking investments at various stages of development is increasing rapidly. The recent growth in capital available to IBMs indicates that the market is far from saturated. However, the balance between creating impacts and getting financial returns is difficult. Besides this, investment instruments have not kept up with innovations. Often, traditional instruments are not enough to address the needs of IBMs and their promoters at different life-stages of the enterprise. While most impact investors provide IBMs with 'patient capital', financial returns remain a high priority.

Donors

Donors and foundations are key sources of funds for IBMs that are registered as not-for-profits. Additionally, for-profit IBMs also access donors for awards or research grants instituted by these agencies.

In India, donor agencies and foundations play a complimentary role to investment funds in promoting IBMs. Areas such as research, developing proof of concepts/pilot tests, and scaling into geographies and client bases involve unviable costs and are unattractive for commercial investors. Support from donors in the form of grants or awards have proved extremely valuable in these cases. The Gates Foundation partnered with IKP Knowledge Park for a grand challenge to fund innovations in delivery of TB care. IKP Investment Management Company has launched the India Innovation Fund focused on innovative healthcare and life-science solutions. The World Bank's Development Marketplace, USAID's SHOPS, and DFID through its UK-AID are also examples of donor agencies being involved in the inclusive business space. USAID-FICCI's Millennium Alliance acts as platform to bring together impact investors, venture capitalists, corporate foundations, early investors, and donors to support and scale innovations. The Millennium Alliance provides social enterprises with seed funding, business incubation, networking opportunities, and technical assistance and also assist organizations to access equity and debt financing.



Donor agencies and foundations have greater scope to engage more effectively with the IBMs registered as for-profit entities. Common funds like the India Innovation Fund can be used as instruments to support for-profit enterprises.

Angels and High-Net Worth Individuals

High-net worth individuals (HNIs) and angel investors are a popular source of funds for IBMs. Angels and HNIs have flexibility and a high level of discretion when making investment decisions. In many instances, they have more autonomy than other capital providers. They also often have fewer stakeholders to manage. Due to these reasons, angels are often the primary and only source of capital (besides promoter capital) for idea stage IBMs. Almost all IBMs in our primary research reported having at least one angel investor during their first two years.

CHAPTER 4

HEALTHCARE IBMs - MODELS AND CHALLENGES FACED

Providing healthcare services, especially to the poor, present a number of complexities and challenges. For-profit IBMs in the healthcare space address health needs of the poor, while ensuring financial viability. Social enterprises/IBMs have adopted different models to address these needs in innovative ways. This chapter is based on primary research conducted for this study.

Healthcare IBMs – Models Overview

The preceding chapter analyzed IBMs in the healthcare space, classifying them into hospitals and outreach models and medical technologies. IBMs can also be classified into four distinct models. These models were formulated on the basis of type, characteristics, and operating models of the organizations. The models are:

- Primary care delivery and outreach
- Secondary and tertiary care hospitals
- Innovative devices and consumables
- Networked devices and technologies.

IBMs serve end consumers directly (B2C models) or they serve institutions that further serve end consumers (B2B models). The first two models— primary care delivery and outreach and secondary and tertiary care hospitals— are predominantly B2C models, while the other two models— innovative devices and consumables and networked devices and technologies— are mainly B2B.

The following table lists the key features of each model and organizations which are representative of the model.

Table: Models and key features of healthcare IBMs

Model	Key Features	Organizations
Primary care delivery and outreach	<ul style="list-style-type: none"> First contact care providers and principal points for continuing care. Located close to patients either through clinics, outreach workers, health camps, or mobile medical vans Focus mainly on promotive/preventive care, health education, basic curative care, screening, diagnostics, provision of over-the-counter drugs Wide disease focus including communicable diseases, non-communicable diseases, basic reproductive and child health services, and emergency care. Also focus on determinants of health like nutrition, sanitation, etc. Healthcare providers like community health workers, para-skilled professionals, paramedical professionals, medical social workers often play an important role in this model. 	<ul style="list-style-type: none"> Swasth India ERC Eye Care Arogya Parivar SevaMob Ziqitza^[44]
Secondary and tertiary care hospitals	<ul style="list-style-type: none"> Hospital chains focusing on in-patient care Provide diagnostic tests and treatment including surgical procedures. Also provide specialized consultative services by doctors specializing in specific diseases/organ systems Hospitals provide medical and surgical interventions across multiple specialties. 	<ul style="list-style-type: none"> Glocal Healthcare Vaatsalya Healthcare Soalni Healthcare NephroPlus GNRC Medical LifeSpring Hospitals Welcare HealthSystems
Standalone devices and consumables	<ul style="list-style-type: none"> Frugal innovations and healthcare products that make healthcare available, affordable and accessible to the poor Innovative low-cost diagnostics and therapeutic devices These devices/consumables are not dependent on technology/information networks or infrastructure/skilled caregivers for their use. 	<ul style="list-style-type: none"> Embrace Innovations AYZH Axio Bio Solutions
Networked devices and technologies	<ul style="list-style-type: none"> Technology enabled integrated medical devices and information systems Integrated devices screen patients and conduct diagnostic tests, and leverage communication networks/technology solutions to provide effective care Information systems include software solutions for hospitals, clinics, laboratories, etc. 	<ul style="list-style-type: none"> Swasthya Slate Dimagi Dhilcare iKure Techsoft OTTET Telemedicine uNotify E-Compliance

44 Ziqitza provides emergency ambulance care but has been included in the Primary Care Delivery and Outreach model since it is the first point of contact for patients. It also has outreach services in the form of mobile medical vans and provides primary care tele-consultations through a medical helpline

Healthcare IBMs – Challenges Framework Overview

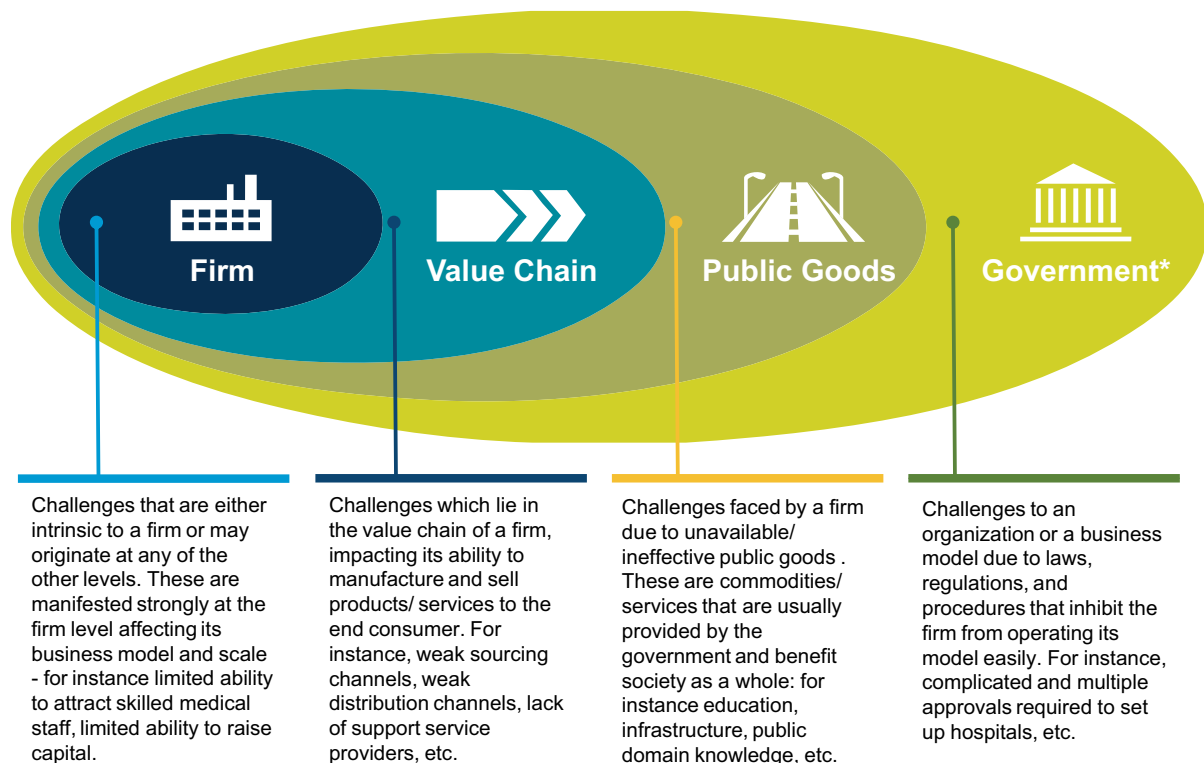
IBMs in healthcare face unique challenges serving the poor while maintaining profitability, given the complexities of healthcare sectors in low-resource settings like India.

This report uses the scaling barriers framework formulated by Monitor Inclusive Markets to analyze the challenges faced by IBMs at four different levels:

- Challenges at the firm level
- Challenges at the value-chain level
- Challenges in the sphere of public goods
- Challenges due to regulatory and policy frameworks

Figure 18 shows the framework being used to describe the challenges at the various levels.

Figure 18: Challenges to IBMs at different levels



* For this study, the outermost layer Government is considered a 'regulatory environment' and not a provider/funder of healthcare services

The following sections describe the four healthcare models – primary care delivery and outreach, secondary and tertiary care hospitals, standalone devices and consumables, networked devices and technologies.

Challenges faced by organizations under each model are described through the framework described in figure 18. The sections also present some strategies used by the organizations to provide affordable, high-quality healthcare to the poor. Data from primary research, as well as secondary literature was used to define and illustrate each of these models, challenges, strategies, and case-studies.

Many challenges/barriers to scale are common among the four different models. However, the framework was applied to each model to comprehensively understand these challenges and their unique implications for the different kinds of IBMs.

MODEL 1: PRIMARY CARE DELIVERY AND OUTREACH MODELS

The primary care delivery and outreach model comprises first contact care providers. A key feature of primary care is the universal need for it. Typically, primary care and outreach models—including clinics, pharmacies, mobile units, health camps, and home-based care—are located closer to the patient, and facilitate access to healthcare.

The structure of primary care practice includes teams of medical and paramedical/non-medical health professionals. Dependence on advanced skills is minimal and crucial roles are played in service delivery by non-medical providers like community-health workers, para-skilled professionals, and paramedical professionals.

IBMs within this model are engaged in a range of healthcare services such as preventive/promotive care, health education and health behavior change, basic curative care, and pre-hospital care to patients, including forms of emergency care.

Of the organizations surveyed for this study, those representing this model are:

- **Swasth India:** Provides primary healthcare services through a network of clinics in Mumbai's urban slums. Its services includes general healthcare, dental healthcare, pathology, and medication. It also undertakes community outreach to generate health awareness.
- **ERC Eye Care:** Provides basic ophthalmic and optometrist services through a network of clinics in Assam. It also undertakes community outreach through house-to-house visits and vision camps.

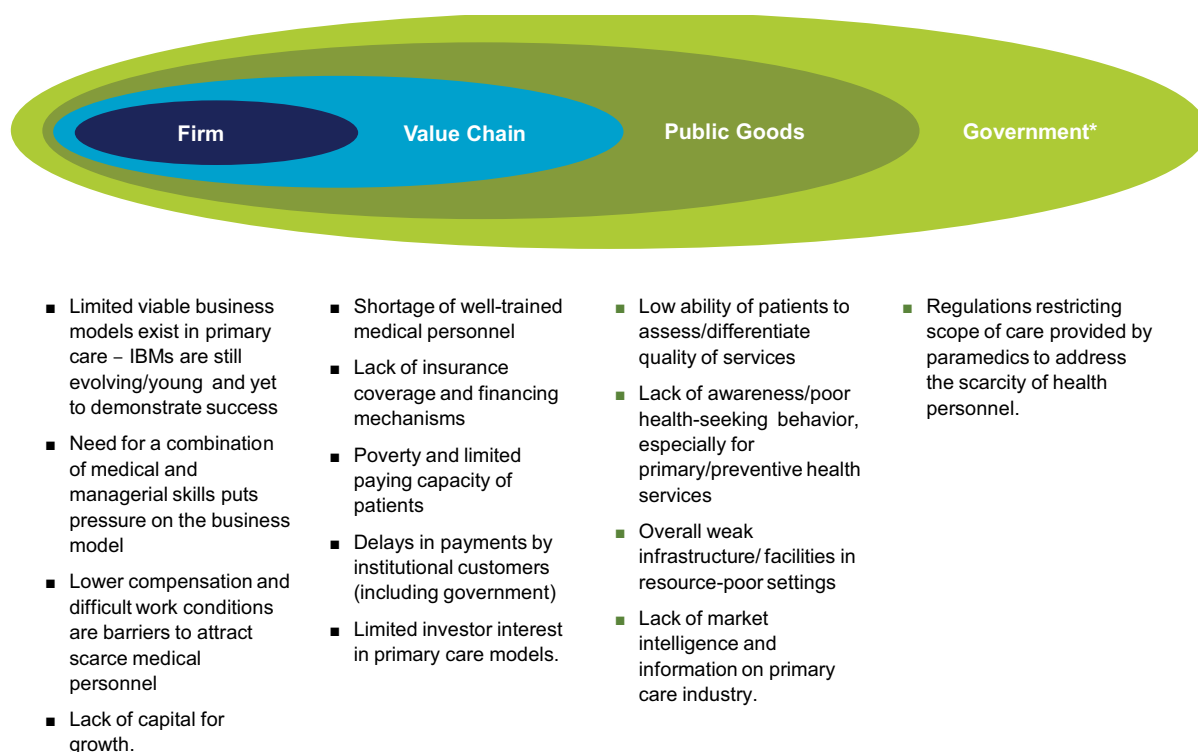


- **SevaMob:** Delivers primary care through mobile medical units in underserved areas in four states: Uttar Pradesh, Karnataka, Jharkhand, and NCR. Services includes basic primary care, medicines and prescriptions delivered to the premises of subscribers using mobile technology. SevaMob also recently launched a tele-health marketplace enabling patients to get video consultations, second opinions, and in-clinic appointments from 400 participating healthcare providers.
- **Arogya Parivar:** A social initiative by Novartis (a multi-national pharmaceutical firm) that increases access to medicines in underserved areas through health camps and collaborations with local doctors and pharmacies. It also provides health education to raise awareness on local diseases and preventive health measures.
- **Ziqitza:** Provides a range of emergency care and pre-hospitalization services through its fleets of ambulances, and primary care through medical helplines and mobile medical units.



Figure 19 shows the different challenges for this model at different levels: firm, value chain, public good, and government.

Figure 19: Challenges faced by primary care delivery and outreach models



* For this study, the outermost layer Government is considered a 'regulatory environment' and not a provider/funder of healthcare services

Challenges at the firm level

Financially viable and sustainable models that focus on stand-alone primary care are still evolving, and are yet to demonstrate success. Primary care models have low revenue potential due to absence of services like surgeries and in-patient care. This is further compounded by a lack of awareness among BoP patients about the need for and value of preventive/promotive care, resulting in a lower willingness to pay for such services.^[45] This impacts the viability of IBMs in this space. Because of this, primary care and outreach services were traditionally delivered by government through the public health system, emerging only recently in the inclusive business space.

In **ERC Eye Care**'s initial year of operation, regular check-ups and preventive measures were not readily sought by local communities, despite scarce ophthalmic care in the area and high incidence of loss of vision. Similarly, **Arogya Parivar** faced challenges in selling preventive medicines like calcium supplements to prevent onset of osteoporosis, a disease that disables a large proportion of its catchment population.

Overall scarcity of trained health personnel in India is a challenge at the value chain level making it difficult to attract good-quality medical and paramedical personnel. This challenge is magnified at the firm level for IBMs located in underserved areas like remote rural areas or urban slums with weak infrastructure and difficult working conditions. IBMs often offer lower compensation than what is offered at non-IBM settings. As a result, employment with IBMs is often not as attractive as with mainstream commercial ventures.

Arogya Parivar is often constrained to find personnel for its health awareness activities in remote rural areas, especially in states with poor literacy.

Additionally, these healthcare firms require core staff to have a combination of medical and management skills. With limited resources for salaries, firms often have to choose between either set of skills. A lack of formal training in medicine/public health limits decisions based on epidemiological trends and health-seeking behavior, while limited management skills results can compromise critical business areas like growth/expansion, resource optimization, and managing cost efficiencies. This can also lead to overburdening of personnel entrusted with both sets of responsibilities.

Both **Swasth India**, promoted by engineering graduates, and **ERC Eye Care**, promoted by an ophthalmologist, have faced challenges in balancing the requisite medical and managerial skills.

45 The challenge of low awareness levels amongst the BoP population is discussed in detail in the section on public good challenges

Lack of capital for growth is a common firm level challenge faced by IBMs. Lack of capital affects the ability of primary care models to grow and expand business or offer more value-added services. These firms are young, with a higher gestation period and need patient capital (that is, investment with longer-term horizon for return on capital), without which the firms find it very difficult to sustain and develop to the point of mainstream investability.

Challenges at the value-chain level

Poverty among target consumers. This has multiple implications, the most direct being low paying capacity for healthcare. As seen from primary research, IBMs in the primary care model serve the poor, with average income levels of typical consumers ranging from \$2 to \$8 per day. The poor have low willingness to access and pay for primary/preventive healthcare. Poverty also poses other barriers to desired health outcomes, for instance, the poor are cannot bear the high indirect costs of forgoing daily wages to access care.

Lack of demand-side financing and insurance coverage for primary care in the context of high poverty. This is another challenge for IBMs in this model. Currently, both social health insurance schemes like the Rashtriya Swasthya Bima Yojana (RSBY) and commercial health insurance schemes offered by private insurers cover out-patient costs, costs of medicines, or of other related primary care. This makes it challenging for organizations to create and maintain sustainable demand for their offerings in the BoP market.

The absence of comprehensive demand-side financing mechanisms impacts the affordability of primary care services offered by **Swasth India, ERC Eye Care, and Arogya Parivar**. **SevaMob's** intervention attempts to address this issue by packaging its primary care services with insurance coverage. However, most consumers continue to access primary care services only to the extent of the specified free visits covered by insurance.

Procurement and payment processes in the government system often subject to bureaucratic delays. This impacts IBMs for whom government is a significant customer. Tenders and selection of suppliers or partners for public private partnerships (PPPs) for the public health system is a long process, creating uncertainty in predicting revenue inflows and developing future plans. Once the firm is selected as a supplier, payments due to them for services offered are not timely. This creates problems meeting operational expenses as IBMs are not usually cash rich.

Ziqitza works with government in various states through public-private partnerships. It regularly faces delays in procurement, as well as in payments for their ambulatory services due to long approval processes.

Grave shortages of trained health personnel. India has an estimated shortage of at least one million doctors and two million nurses, given its population.^[46] In 2010, India had only six physicians and ten nurses/midwives per 10,000 people, much lower than the global average of 15 and 33 respectively.^[47]

Limited investor interest in primary/preventive care models lead to difficulties in expansion of operations. Investors, commercial lenders, and private-equity/venture capital firms are often uninterested in the primary care model as it requires patient capital with long gestation periods. Lack of funds makes it challenging for the firms to expand operations, which in turn leads to limited scale and low revenues.

Challenges at the public-goods level

Lack of awareness and poor health-seeking behavior among the BoP population. With primary care, this is aggravated by its “push” nature (products/services that poor consumers can and should buy because it will improve their lives significantly, but that they do not readily desire or demand) A lack of programs on awareness generation and health education from the government side has resulted in information asymmetries and, combined with limited paying capacity, made the BoP population less likely to spend on primary/preventive healthcare. Additionally, the poor typically access care only in an advanced stages of diseases when it becomes debilitating, rather than at early stages.

SevaMob, Swasth India, and ERC Eye Care faced challenges on an ongoing basis where target consumers were unaware of the benefits of investing in primary/preventive health. In response to the low demand for eye care despite widely prevalent loss of vision, **ERC Eye Care** has invested significantly in organizing regular eye camps and recruits community health workers to generate awareness, diagnose problems, and refer patients to treatment where appropriate.

BoP populations are often unable to the assess quality of healthcare services. Lack of information prevents customers from distinguishing between high-quality reliable care and easily available but irresponsible or low-quality care.

Swasth India says that the biggest competition they face is from “quacks” or untrained informal practitioners in urban slums due to their use of injections and antibiotics for minor illnesses that often do not require such medication.

46 WHO 2013

47 World Bank 2010

Poor infrastructure like road networks, erratic power supplies, and unreliable telecommunications networks common in India, especially in rural areas and urban slums. IBMs delivering primary care and outreach services must be able to reach customers close to where they reside. Poor infrastructure poses a huge barrier to achieving this on a sustainable basis, increasing costs to reach underserved communities.

Ziqitza's emergency services have faced this challenge in various rural regions of the country where the lack of all-weather road networks delays response times. **Arogya Parivar, SevaMob, and ERC Eye Care** have faced challenges in ensuring sustainable access to their offerings in remote, hard-to-reach areas.

Lack of market intelligence and information. The industry is unable to consolidate and disseminate information to help young primary-care IBMs refine their models and scale up their services. Vibrant networks and accelerators for primary care firms that can provide facilitation and support for advocacy efforts do not exist.

Challenges at the regulatory and policy level

Regulations restricting scope of clinical care provided by paramedical staff constrain primary care and outreach IBMs. Regulations restrict the scope of healthcare services that an experienced nurse can provide, despite multiple years of on-the-ground experience or training. This prohibits paramedical staff from providing curative care even if this is the best option in resource-poor settings.

Business model initiatives to address challenges faced by primary care and outreach IBMs

The major business model elements adopted by primary care and outreach model IBMs are meant to improve their value proposition to end-consumers by providing diverse services and integrated and comprehensive care to the patients. Additionally, they optimize delivery by increasing efficiency, sharing resources among multiple facilities, and employing people from the community as health educators/outreach workers. These elements can be described as follows:

- a. **Improve value proposition by offering additional diversified services:** Consumers often demand higher forms of care or specialized care that goes beyond the scope of primary and outreach care IBMs. To maintain their relevance and value-proposition to target consumers, primary care firms expand their value-chain to offer other related services. These are provided either directly or through referral networks with secondary/tertiary care facilities or in partnership with other healthcare-based institutions (like health insurance players)

In addition to outreach emergency care, **Ziqitza** provides training on basic and advanced life-support, and offers placement services to other organizations to address the human resource gap in the area. **Ziqitza**, in partnership with state governments, also operates a health helpline that offers free tele-consultations with doctors. **ERC Eye Care** is expanding to include secondary care ophthalmic hospitals to address the huge unmet need in its areas of operation. **SevaMob** has partnered with a public health insurance player to offer personal accident and hospitalization cover to its target patient base, which can be purchased along with outpatient care.

- b. **Leverage local community as health educators/outreach workers to optimize on costs:** Most IBMs in this model have integrated components of health education and community awareness to increase health seeking by target consumers. Firms have also commonly **involved local communities as distributors** of their offerings, training them as community outreach workers, health educators, and drug distributors.

ERC Eye Care's Vision Assistants (EVAs) are women from local villages trained to raise awareness on eye care. They contribute significantly towards increasing demand for ERC's services. **Swasth India's** community outreach workers are residents of local communities. They undertake health awareness in their catchment slums and organize school health camps.

- c. **Build hub and spoke models to expand coverage while increasing efficiency:** In this, IBMs set up clinics (or facilities) in a hub and spoke model. The spokes are generally the first point of contact for the patients, while hubs have advanced facilities. Facilities located in central locations (hubs) receive referrals from facilities set up in remote/low-population areas (spokes). This helps IBMs achieve a wider coverage of patients with lower investment.

While basic diagnostic tests are conducted at **Swasth India's** medical centers, more advanced tests are done at the central hub, which also has the laboratory.

Illustrative Case Study – Swasth India

The case of **Swasth India** illustrates key features and challenges of the primary-care delivery and outreach model.



Swasth India provides low-cost primary healthcare services to the urban poor in Mumbai's slums. Starting operations in 2011, Swasth has a network of 12 primary healthcare centers.

Each Swasth medical center offers end-to-end basic healthcare solutions. A typical Swasth clinic offers consultations, medicines, diagnostic tests, computerized health records, and discounted referrals. *Health services like consultations and medicines are bundled as packages*; rates depend on the complexity of the health issue, with an average bill of around \$1.50. The centers maintain detailed patient histories as electronic medical records, which are available across centers and accessible to patients. Centers are

staffed by one doctor, one dentist, and two or three health assistants. *Doctors are available eight hours a day at the centers, especially in the evenings to suit the working population.*

To create and sustain demand for its primary care offerings, Swasth *employs local community members as outreach workers*. These workers engage in awareness generation on diseases, drugs, and the importance of early detection through home visits. To complement this, regular Swasth Melas are organized within the communities, which offer check-ups and health education.

With increasing demand from their catchment communities, Swasth *expanded its value chain to include diagnostic tests and some specialized care*. Pathology tests are conducted in-house, while more advanced tests are conducted through partnerships with Apollo and Thyrocare. Additionally, specialized care offerings such as dental services were introduced at select centers. Swasth also has a referral network connecting patients to advanced care facilities, which patients can access at discounted rates.

Despite its nominal prices, Swasth *faces challenges in generating demand for its general consultations* due to *lack of awareness among consumers and poor health-seeking behavior*.

Another major challenge is *inadequate access to finance*. Swasth has not received institutional funding, and has largely sustained itself on ad-hoc angel investments.

Despite these challenges, Swasth reaches a population of around 1.2 million low-income people, with its centers reporting around 2 million patient visits till date. In addition to its centers' coverage, Swasth's twelve health workers and twelve empanelled schools reach out through community mobilization and health-awareness activities.

Data from a 2013 study indicates that 62 percent patients were visiting Swasth clinics for more than two months, implying that once a user visits a clinic, there is a high probability of him/her returning. Also, 87 percent respondent customers were earlier visiting informal clinics, indicating that, over time, the community has started to acknowledge the benefits offered by Swasth. This indicates that Swasth's model is attractive to target consumers and has the potential to demonstrate impact over time.

MODEL 2: SECONDARY AND TERTIARY CARE HOSPITALS

The secondary and tertiary care model comprises hospital chains or standalone facilities providing in-patient hospitalization care. This model provides specialized consultative healthcare services through doctors specializing in specific diseases/organ systems (such as oncology, cardiology, neurology, and gynecology). The services consist of medical investigations and treatment, including surgical procedures, management of chronic diseases, skilled attendance during childbirth, intensive care and forms of emergency care. Super-specialized tertiary care services such as cardiac surgery, joint replacement surgery, advanced neonatology services and other complex medical and surgical interventions also form a part of the offerings. Services also include special diagnostic and therapeutic services such as biopsy, medical imaging, pathology, and dialysis.

Most models also provide primary care services through outpatient physician consultations, basic diagnostics, and, in some cases, outreach services. These services are provided with the aim of becoming an integrated provider and using primary care services as a driver to attract a wider population base for inpatient hospitalization.

Typically, facilities under this model address select diseases based on existing demand-supply situations in catchment regions, disease incidence and prevalence rates, availability of specialist doctors, capital investment required, and paying capacity of target populations.

Of the organizations surveyed for this study, those representing this model are:

- **Glocal Healthcare:** Operates a chain of five 100-bed hospitals in West Bengal, providing primary and secondary care services for 95 percent of the disease load in its catchment areas. Glocal is expanding and opening hospitals in Uttar Pradesh, Bihar, and Odisha. It also owns a company, Indigram, that provides customized training for manpower skills development.
- **LifeSpring Hospitals:** Operates a network of small (20-25 bed) maternity care hospitals in Andhra Pradesh. The hospitals provide antenatal care, postnatal care, deliveries, family planning services, pediatric care, diagnostic services, and healthcare education in surrounding communities.
- **Vaatsalya:** Operates a network of hospitals providing primary and secondary care in tier II and III towns in Karnataka and Andhra Pradesh. The hospitals focus on gynecology, pediatrics, general surgery and general medicine, nephrology, and orthopedic care.



- **Soalni Hospital:** Operates a hospital in Palwal, Haryana that offers inpatient and outpatient services, diagnostics, critical care, and pharmacy.



- **Nephroplus:** Operates a chain of clinics/ set-ups in hospitals providing kidney dialysis services. It also runs Enpidia, a training academy for dialysis technicians and nurses.



- **Welcare Health Systems:** Offers diagnostic and consultation services for diabetic retinopathy through screening set-ups inside existing diabetes centers, general hospitals, and other health centers.

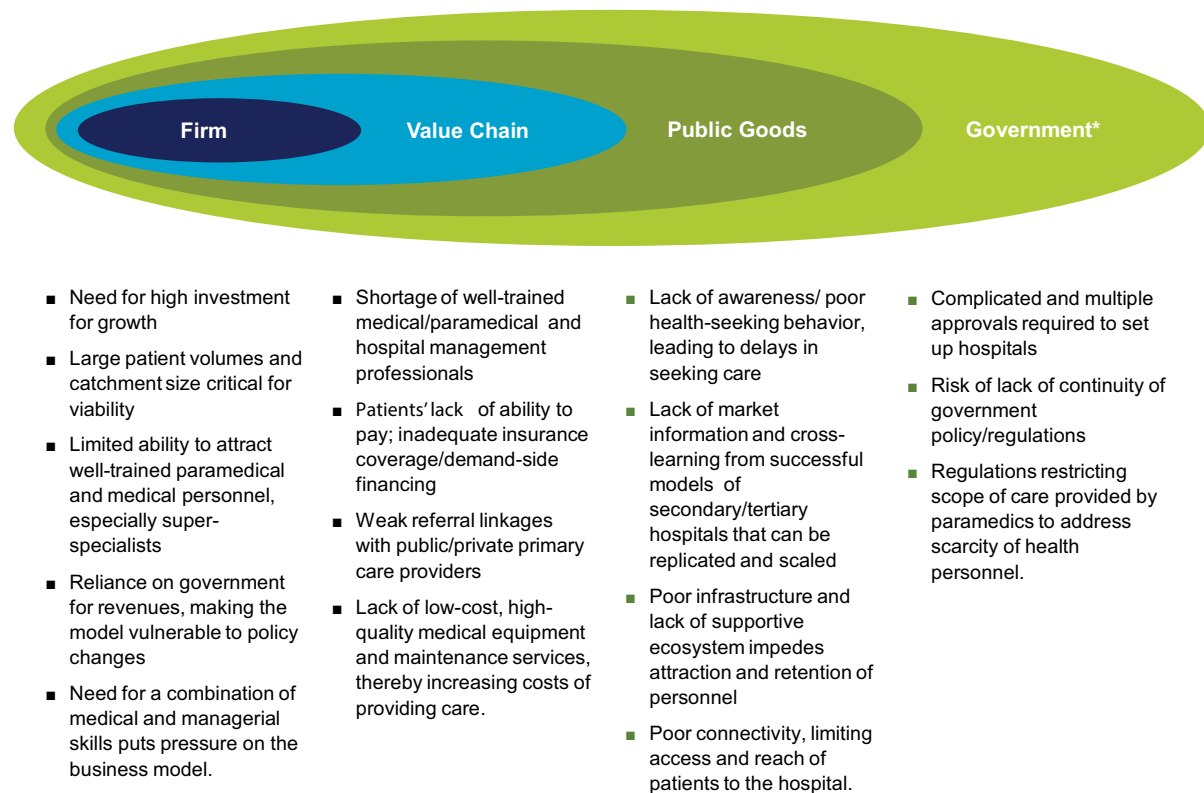


- **GNRC Medical:** Operates a 100-bed tertiary care hospital in Guwahati, Assam. The hospital provides care in most specialties (OPD, IPD, diagnostics, and pharmacy). GNRC also runs two mobile medical units to raise awareness and improve health-seeking behavior in the community.



Figure 20 shows the different challenges that operate at the different levels for this model.

Figure 20: Challenges faced by secondary and tertiary care delivery models



* For this study, the outermost layer Government is considered a 'regulatory environment' and not a provider/funder of healthcare services

Challenges at the firm level

High investments required to set up secondary and tertiary care hospitals. Costs of land, buildings, equipment, and other infrastructure is high. Availability of sufficient capital, therefore, becomes a basic requirement for establishment and scale up of secondary/tertiary care hospitals.

Viability of hospitals is critically dependent on large patient volumes and bed occupancy. However, patient volumes depend on the size of the catchment population, disease incidence rates, and paying capacity. The situation is worsened by the lack of transportation infrastructure in remote/rural areas. This is a barrier for patients to travel distances to access hospital services. IBMs thus find it difficult to be viable in locations with smaller catchment populations.

Glocal Healthcare faced a challenge in defining their optimal catchment to ensure adequate patient volumes and yet be easily accessible to their target consumers. Initially, Glocal set up 30-bed hospitals at sub-divisional levels covering populations of 30,000. Lower demand and inadequate volumes made the firm soon revise this strategy to setting up hospitals in larger towns covering populations of around 3 million. The expanded catchment area contributed to higher volumes and Glocal doubled the size of its hospitals to 100-beds to respond to increasing volumes.

Challenges related to human resources are ubiquitous across firms. The overall scarcity of trained health personnel in India is a challenge at the value-chain level. Secondary and tertiary hospitals require general physicians, specialist doctors, and nursing staff. Specialists are significantly more expensive, and IBMs often find it difficult to afford them. Additionally, a number of these hospitals are located in underserved contexts like rural or peri-urban districts with weak infrastructure and difficult working conditions. This makes it even more difficult to attract and retain highly-skilled health professionals.

Almost all IBMs included in the secondary and tertiary care delivery model face challenges related to human resources. The biggest challenge faced by **GNRC Medical** is attracting and retaining specialists, in response to which they increased compensation packages and offer incentives like housing and profit-sharing. **Vaatsalya**, on the other hand, used the desire by a specialist to reside in a particular town as a critical determinant (besides other factors) to locate their hospitals. Recruiting specialists who want to be based in their home-towns due to familial ties ensures low attrition.

A combination of medical and management skills among core staff, as well as trained hospital managers are required. With limited resources allocated for salaries, firms often must choose between scarce skills – specialist doctors or trained managers?

Limited management training and skills among hospital staff is a widespread challenge. Hospital managers are a scarce resource, as not too many such courses are offered by management institutes in India. The limited numbers of specialized managers that are available are not attracted by opportunities in these firms, instead preferring large corporate hospitals. Attracting and retaining highly trained management professionals is challenging for IBMs. As a result, critical business decisions like growth and expansion, operational efficiencies, resource optimization, and forming partnerships across the value chains are often compromised.

Finding hospital managers and retaining them were challenges faced by **GNRC Medical** and **Vaatsalya**, especially in their initial years. **GNRC** mentored its second rung in advanced strategic management with the help of a global consulting firm, and has a partnership with Singapore National Hospital to offer training in hospital management to GNRC's core staff. **Glocal Healthcare** recruited highly skilled management professionals and inducted them into the firm through equity ownership.

Reliance on government schemes, especially insurance and demand-side financing programs to serve the BoP population. Some organizations leverage government and social health insurance schemes, as most of their target consumers are unable to afford in-patient healthcare. However, while social schemes provide assured revenues, the risks are unpredictable policy changes that adversely affect the coverage under them. Such factors make it risky for secondary and tertiary care hospitals to be overly dependent on social welfare programs.

Challenges at the value-chain level

Poverty among target consumers and inadequate insurance coverage has implications for the firm. The typical patient of the hospitals in this model earn in \$2 to \$10 per day. In-patient and specialist services offered by these hospitals are unaffordable for the poor as out-of-pocket expenses. Additionally, hospitalization involves very high indirect costs, such as patients and families forgoing daily wages, cost of accommodation and food during the hospital stay, and transportation to reach the hospital.

Demand-side financing programs and health insurance is crucial to address these costs and help BoP populations to access secondary/tertiary care. While this problem is understood and certain social insurance schemes have been launched, they cover only 16 percent of the population. Further, the annual cover is very low (RSBY, the largest social insurance scheme, provides an annual cover of only \$500 for a family of five). This makes it challenging for organizations to create and maintain sustainable demand for their offerings in the BoP market.

Primary referral networks are weak in the country. This affects secondary and tertiary care, which is dependent on effective referral linkages with primary care providers. Primary healthcare set ups, serving the BoP population, often do not have adequate infrastructure and resources to provide quality care to patients. Moreover, primary care facilities in both private and public settings are not efficiently managed and do not provide referrals to secondary and tertiary care hospitals appropriately. This leads to overcrowding of secondary and tertiary care hospitals with patients who only require primary care, resulting in low utilization of resources and infrastructure for patients needing specialized care.

Hospitals need high investments towards medical equipment. This constitutes one of the largest cost heads for IBMs. A large part of medical equipment and devices sold in India are imported due to a lack of indigenous manufacturing. Additionally, owing to limited scale, IBMs cannot get discounted pricing through bulk purchases.

Vaatsalya and **GNRC Medical** have struggled with credible and cheap procurement of high-end medical equipment. To address this **GNRC Medical** started in-house manufacturing of hospital beds, wheel chairs, and stretchers, and partnered with large multi-national medical devices companies to source cheaper versions of their products.

Regular and reliable maintenance servicing of equipment is difficult. This is due to the relatively remote locations of hospitals and the limited ability of hospitals to pay extra for maintenance services.

Shortage of trained specialists and hospital managers. These are two most common challenges faced by IBMs in this model. These were discussed in the earlier section on firm level challenges.

Challenges at the public-goods level

Lack of awareness and poor health seeking behaviors. This is discussed in detail in the previous section on primary care and outreach model. There is a high degree of delayed care-seeking behavior among the poor. Very often, low-income families do not have awareness or the money to seek primary care. This worsens health conditions and results in catastrophic episodes that are difficult to manage. Secondary and tertiary hospitals commonly get such cases where prognosis, and indirectly their performance, could be better if care was accessed on time. Additionally, post-hospitalization care, especially relapses and prevention of infections after surgeries, are more difficult to ensure in poorer patients. In case of such complications, effectiveness and credibility of the hospital is questioned.

GNRC Medical reported patients coming from outside their catchment areas to seek care at very late stages of disease progression, when treating the disease sometimes becomes impossible or involves unaffordable expenses. **NephroPlus** sees low-income patients for dialysis at late stages of the disease. Further these patients need to practice strict home-based care after dialysis, and are often unable to do so due to lack of resources and awareness.

Poor infrastructure. Bad road networks, erratic power supply, and unreliable telecommunications networks are common in India, especially in peri-urban towns and rural areas where IBMs are located. Advanced care cannot be provided without uninterrupted electricity. Hospitals also use technology to increase efficiencies with a number of them maintaining electronic medical records and procurement data. These systems need internet connectivity to function.

Patients must be able to reach hospitals easily and quickly in case of emergencies. Poor infrastructure poses a huge barrier to achieving this on a sustainable basis. Poor infrastructure also leads to a weak ecosystem of schools and other industry. This restricts doctors from choosing to work with these IBMs due to limited opportunities for their families.

The industry is unable to consolidate and disseminate information to help newer firms refine their models and scale up services.

Hospitals located in areas with weaker infrastructure, like **GNRC Medical** in peri-urban Assam have faced these challenges in their functioning.

Challenges at the regulatory and policy level

Processes to obtain mandated approvals to set up and run a hospital is lengthy and bureaucratic.

New hospitals need permissions from as many as 14 departments (for example, water board, electricity board, fire services, and directorate of drug control). A single window clearance for these processes is absent and coordination with multiple departments becomes difficult, especially for resource-constrained and entrepreneur-driven IBMs.

Regulations against by paramedical personnel providing curative/prescriptive care. This has been discussed for the previous model and is also a barrier for these hospitals. In a context where the availability of medical doctors and highly trained nurses, like general nurse midwives (GNMs), are extremely limited, this is a significant barrier. It prohibits training nurses to provide certain forms of care, often the best option available to IBMs in resource-constrained settings.

Unpredictable nature of government policies and regulations impact IBMs. Policies and programs often change with change of bureaucrats or political leadership. These sometimes have serious implications for enterprises. Decisions to accept certain treatment protocols versus others; changes in policies like the RSBY that contribute to hospitals' revenues, tax rebates, and approvals for medical/paramedical training courses, are examples of policies that have far-reaching consequences for this model.

Business model initiatives to address challenges faced by secondary and tertiary care delivery IBMs

The major business model elements adopted by secondary/tertiary care hospitals are focused on reducing investments and operating costs to provide services at lower prices, improve accessibility and affordability for patients, generate higher volumes, and grow/expand operations. These elements can be categorized into:

- a. **Initiatives to reduce capital investments:** Hospitals generally require heavy investment in land, building, and equipment, which puts pressure on the viability/sustainability of the business model as well as growth/expansion. To achieve scale while reducing investment, IBMs follow **asset-light models**, which allow them to save costs related to real estate and construction (such as land/building leasing instead of purchase). These are effective, especially in urban areas where real estate costs are high and capital expenditure is often prohibitively high for social enterprises.

Vaatsalya Healthcare leases buildings instead of owning them, allowing it to reduce capital expenses by almost 60 percent. **Glocal Healthcare** has adopted a limited liability partnership model to acquire land for new hospitals, where the land owner is given equity.

IBMs have expanded this strategy to include leasing and situating services within existing hospitals, or leasing medical equipment, thus saving costs. **Nephroplus** locates its services within existing tertiary care hospitals, avoiding building standalone clinics. **LifeSpring** has long-term lease agreements with former schools, apartment buildings, and old warehouses that are converted into hospitals.

- b. **Initiatives to reduce operating costs:** Some IBMs in secondary and tertiary care have followed a **no-frills model** to provide highly standardized, specialized offerings at reduced prices, thus increasing affordability for the poor as well as improving margins. The hospitals offer pared-down services that meet basic needs of the poor at low prices and still generate positive cash flow and profits through high volumes, high-asset utilization, and service specialization. No-frills hospitals minimize non-core capital and expenses to provide "bare bones" service and lower unit costs of delivery.

Vaatsalya's hospitals do not provide air-conditioners and high-end televisions in patient rooms, furniture and interiors are basic, and they do not have additional facilities like cafeterias. Minimizing non-core expenditure allows them to lower capital and operating costs. **GNRC Medical** undertakes various measures such as using local construction material that is cheaper; having a horizontal rather than a multi-story building, minimizing the need for elevators; maximizing natural light through sky-lights thus reducing electricity costs; and designing sufficiently ventilated buildings to reduce the need for air-conditioning across the facility. These strategies have helped GNRC to improve cost-efficiencies and environmental sustainability. **LifeSpring** hospitals are strictly no-frills; they cut costs by standardizing procedures and trimming expenses. The hospitals have no canteens, and have outsourced pharmacy and laboratory services.

Illustrative Case Study – GNRC Medical

GNRC Medical illustrates key features, strategies, and challenges of secondary and tertiary care hospitals.



GNRC Medical is a tertiary care hospital modeled as an inclusive business. Guwahati Neurological Research Center (GNRC) was operationalized in 2014 to reach low-income populations of rural and semi-urban Assam. GNRC also runs two other commercial multi-specialty tertiary care hospitals in Guwahati that do not focus on the BoP population.

With a catchment population of ten million, GNRC Medical has a capacity of 300 beds, of which 100 are already operationalized. The hospital provides tertiary care services in multiple specialties, offering a range of services that include outpatient consultations, diagnostics, in-patient admissions for medical and surgical care, emergency care, blood bank, and pharmacy. Services are priced lower than those of other private players, with price differences of more than 50 percent in some cases; OPD charges are \$1 to 2, and the first 24 hours of emergency care is provided free of cost.

GNRC also runs two mobile medical units in Assam that provide outreach services (including consultations and diagnostics) to the local population and referrals to the hospital. They also provide health education, thus generating awareness and increasing demand for the hospital's services. These units are also leveraged to understand the health-seeking behaviour of patients, their paying capacity, and challenges faced with existing healthcare facilities so as to contextualize GNRC Medical's specifications (services, bed strength and prices for different services) to the catchment population.

GNRC has employed several measures to reduce costs. The hospital was constructed by workers from the local BoP community, which reduced labor costs while simultaneously generating income opportunities for the poor, in turn increasing the attractiveness of the hospital for the poor. The hospital's exterior is clad with bamboo that acts as a natural insulator, reducing the need for air conditioning and associated costs. Other cost-reduction measures include optimization of patient flow to increase efficiency of operations and centrally managing procurement for all of GNRC's hospitals in Guwahati.

Attracting medical and paramedical staff is a major challenge for GNRC due to the low availability of personnel in Assam and the hospital's location on the outskirts of the city. GNRC has undertaken various measures to address this; a few of these include recruiting young doctors immediately after their post-graduation, offering attractive salary structures and benefits, rotating doctors from their other two hospitals to provide advanced care, and setting up a nursing institute.

Recruiting and retaining hospital managers has also been a challenge for GNRC. It has partnered with the Singapore National Hospital to offer hospital management training to GNRC's staff. Another challenge, faced by GNRC in its commercial hospitals, was delays in reimbursements from the government under the Central Government Health Scheme (CGHS). Due to these delays, and low awareness among its catchment population about government schemes, GNRC Medical has not been empanelled under either CGHS or RSBY.

Lack of reliable and cheap equipment and regular maintenance services of the equipment is difficult to ensure due to the relatively remote locations of hospitals; in response, GNRC started in-house manufacturing of non-medical equipment, for which it employs local community members.

GNRC plans to expand the capacity of its current hospital by operationalizing its remaining and adding additional beds. Further, it plans to establish ten more BoP-focused, low-cost hospitals in the next 5 years.

MODEL 3: STANDALONE DEVICES AND CONSUMABLES

Innovations in healthcare and medical products have been exponential over the last decade. This model includes inclusive businesses that offer frugal (low-cost) innovations in healthcare products and consumables. These innovations make healthcare affordable for the poor by bringing down cost of care either directly or indirectly. They make healthcare available and accessible by reaching underserved populations with high quality offerings that may otherwise be unavailable to them. Innovative low-cost screening, diagnostics and therapeutic devices, and surgical consumables included in this model have the potential to revolutionize clinical practice.

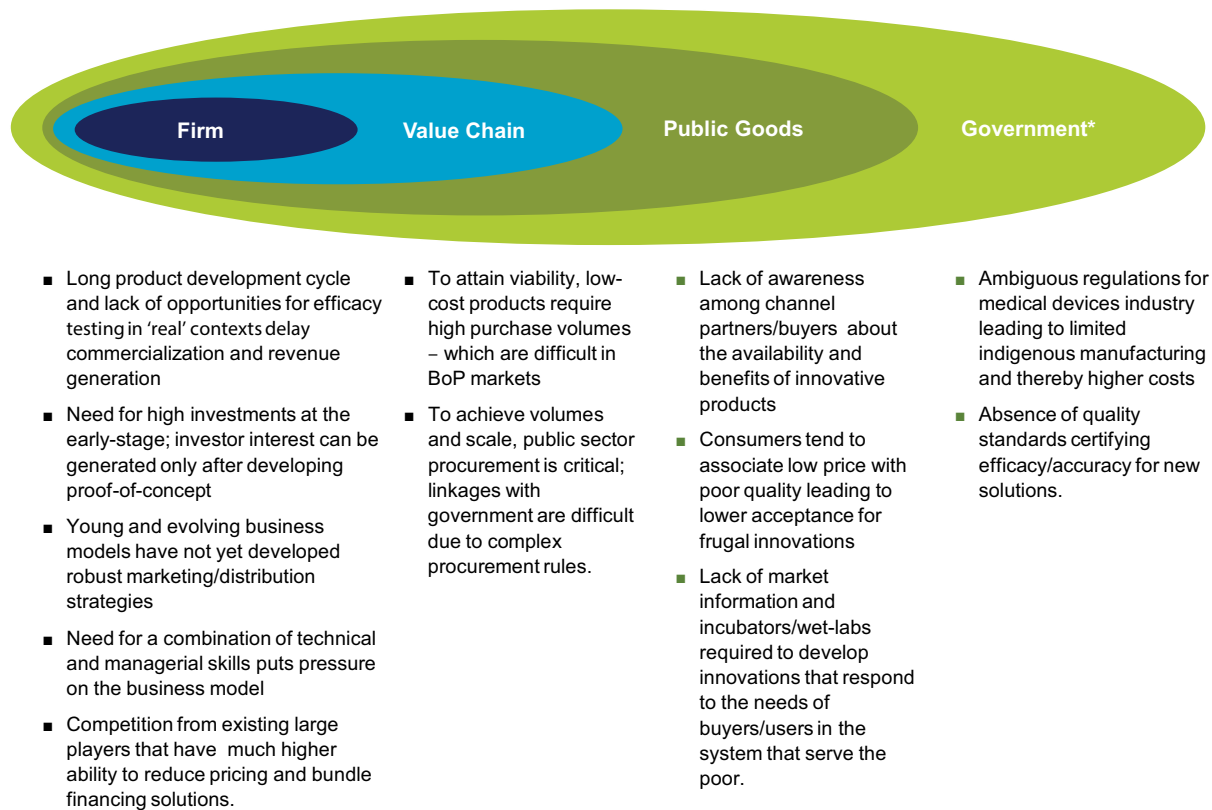
Of the organizations surveyed for this study, those representing this model are:

- **Embrace Innovations:** This company developed an infant warmer to address neonatal hypothermia. Recognizing that electricity and skilled medical staff are often not available even in areas where traditional incubators are present, Embrace Innovations developed an easy-to-use, portable infant warmer that requires minimal electricity and is priced significantly lower than conventional incubators. Additionally, Embrace incubators can be used in resource-poor settings such as rural hospitals and homes.
- **AYZH:** This company produces and distributes 'Janma,' a clean birth kit containing simple tools to ensure sanitation and sterility during childbirth. AYZH trained 340 rural health workers on the six cleans (clean hands, clean perineum, clean delivery surface, clean cord cutting and tying instruments, and clean cutting surface) and the use of the clean birth kit to reach scale in rural areas.
- **Axio Bio Solutions:** This company has developed bleeding control and wound management products using bio-materials. Its AXIOSTAT (an institutional product) is India's first emergency hemostatic dressing, and its Sureklot (a retail product) will be sold through business-to-consumer (B2C) channels such as pharmacies. The Axio Bio products can be used for a variety of applications, ranging from dental to severe trauma, at a fraction of the cost of competitor products.



Figure 21 shows the different challenges that operate at the different levels for this model.

Figure 21: Challenges faced by standalone devices and consumables



* For this study, the outermost layer Government is considered a 'regulatory environment' and not a provider/funder of healthcare services

Challenges at the firm level

Innovative medical devices often have a long product development lifecycle, delaying commercialization of the product. The product development cycle typically is 3 to 5 years and constitutes idea generation, research, design, development, testing, and commercialization. Organizations with established operations use revenues from existing products to fund research and product development for new innovations. However, new/early-stage IBMs with limited revenue generation capabilities face challenges in funding and sustaining long product-development cycles.

There is a lack of adequate opportunities to efficacy-test products in the “real” context. Most IBMs in this model were started in engineering/technology departments of academic institutions. Product innovations typically begin in laboratories, and need to be contextualized for use in settings like healthcare facilities, communities, or consumer homes. Random trials are needed to establish efficacy and effectiveness of these products for market-readiness. However, firms often do not have access to these settings nor adequate resources to conduct the research, thus delaying commercialization.

Lack of capital at early stage for technology IBMs. Firms offering innovative devices and consumables need high investments at early stages to conduct research to develop proofs-of-concept, and establish effectiveness of their products in healthcare settings, while covering operational costs. However, investor interest, especially from institutions, is generated only after developing proofs-of-concept.

The **Embrace** baby warmer was developed by students at Stanford University’s Institute of Design in 2007. The product was commercially launched in Indian markets in 2012. Funding for clinical trials and evidence building was a challenge. Besides the time taken for clinical trials, Embrace also needs to first test its products in a pilot phase to identify and rectify any operational issues. Embrace has partnered with state governments to pilot its baby warmer designed for home use. Although **Axio Bio Solutions** was launched in 2008, it only got clearance to sell its bleeding control and wound management product in 2012 and was able to commercially launch in 2013.

IBMs are yet to successfully demonstrate effectiveness of sustainable business models, especially robust marketing/distribution strategies of their products. This study found that most enterprises developing low-cost product innovations are at an early-stage, typically between 0 to 5 years. A number of these firms are still engaged in product development, and have not yet achieved significant commercialization.

Axio Bio Solutions is in the process of developing marketing and distribution channels for Sureklot, its retail product, through pharmacies. The firm is also in talks with auto makers to provide the product in first aid kits in vehicles.

The need to combine technical and managerial skills puts pressure on early-stage firms. Most promoters of firms in this model are software engineers/researchers/scientists. While they have the exceptional technical knowledge to develop the innovations, they are often faced with challenges in commercializing the product due to lack of business acumen. Indian IBMs are also constrained by a weak ecosystem for product innovation and a lack of advisory services for product design and development. This sometimes leads to sub-optimal designs that can potentially fail international regulatory certifications.

A number of IBMs in this model face competition from existing large players. Multinational medical device companies have the resources to invest in continuous research and development of innovative products. Large commercial businesses can also reduce prices or bundle financing solutions—like installment payments, free after-sales service, warranties—that make it easier for smaller providers to buy them. These factors increase entry barriers for newer innovators, especially smaller firms targeting the poor.

A hospital chain serving the BoP population – one of **Embrace's** target institutional buyers – mentioned that the low cost incubator is not attractive to them due to the lower scope of applicability compared to mainstream incubators. They also mentioned that credibility of large multi-national companies and their maintenance services were factors that deterred them from buying Embrace's products.

Challenges at the value-chain level

To attain viability, firms require high purchase volumes of their low-cost products –difficult in BoP markets. Firms in this model operate in BoP markets by offering products that are low-priced compared to their mainstream counterparts and conventional solutions. However, investments in developing the devices are often as high as those involved in mainstream production, thus requiring high purchase volumes to cover costs.

Target customers for these products are typically small/medium-sized healthcare delivery facilities that mostly operate on low margins and do not have high procurement budgets for medical devices and consumables. In addition, these markets are fragmented over wide geographical spreads and demand fewer numbers of products per facility. Further, these facilities often have complex procurement processes, constraining the IBMs further.

A critical way for this model to achieve such high volumes and scale is through linkages with the public health system. However, ***the rules and processes of public sector procurement are complex.*** The government mandates competitive bids among a minimum of three enterprises to award supply contracts. This is difficult to ensure in the case of one-of-a-kind solutions with no comparable products.

Embrace's low cost incubator and **Axio-Bio Solutions'** dressings are both unique innovations. Comparable products are not available in the Indian market to participate in competitive procurement processes. **AYZH** has consciously decided not to focus on the public health system since it feels that the procurement process is complicated, will be difficult to gain entry into, and will require resources to follow up with the government.

Challenges at the public-goods Level

Consumers tend to associate low price with poor quality, leading to lower acceptance for frugal innovations offered by firms in this model. This is further magnified by poor levels of awareness among channel partners and other retail/institutional buyers (like low-income families, physicians, healthcare delivery chains, and governments) about the availability and benefits of innovative products. IBMs that do not have the resources to undertake marketing and concerted brand-building initiatives are often disadvantaged due to such consumer perceptions. Further, **India does not have quality standards to certify efficacy/accuracy of medical technology solutions**, a regulatory level challenge.

AYZH has been constrained by low levels of awareness for the need of a safe birth kit for institutional deliveries. AYZH has focused on building a formal partnership with Federation of Obstetric and Gynaecological Societies of India (FOGSI) to gain acceptability for their product and to raise awareness that a clean birth kit is not required just for home births.

IBMs in the innovative devices space have emerged only recently. There has been some support from different stakeholders in the ecosystem, such as rising investor interest and links with the information technology industry and emerging technology parks. However, these **facilitation efforts have not kept pace with the high number of innovators requiring their facilitation.**

Medical devices focused incubators and wet-laboratory facilities are few and concentrated in only some parts of the country (as discussed in Chapter 2B). There is also **a lack of market information that can help develop innovations** that is relevant and contextual to needs of the buyers/users in the system that serves the poor. Such facilities and information could address a number of challenges faced by these innovators, especially during the initial phases.

Challenges at the regulatory and policy level

There have not been many large-scale commercialized product innovations in the medical devices space in India. Some facilitation from government departments has encouraged product innovations, but these are few and far between.

Ambiguous regulations for medical devices are a challenge faced by IBMs. The medical devices industry is not recognized as a separate industry and is governed under pharmaceutical regulations. Given that the needs of the medical devices space are significantly different from that of pharmaceuticals/drugs, this ambiguity results in limited focus on product innovation. Regulations and lack of incentives have also discouraged indigenous manufacturing of medical products. **Firms often have to import critical product components, which increases cost of production.**

The absence of Indian quality standards to certify efficacy/accuracy of new screening and diagnostics solutions is another challenge faced by organizations. As a result, firms offering innovative solutions are often not able to demonstrate their quality due to lack of certifying agencies, and thus lose out on their competitive advantages.

Business model initiatives to address challenges faced by standalone devices and consumables IBMs

The major business model elements adopted by IBMs with standalone devices and consumables are

- a. **Create low cost point-of-care products that can reduce the cost of healthcare delivery for hospitals/nursing homes:** These IBMs focus on reducing overall cost of delivery to patients, ensuring high level of quality and increasing convenience and ease of use by healthcare delivery personnel.

Embrace has developed easy-to-use technologies to address neonatal hypothermia in resource-poor settings at a fraction of the cost of conventional incubators, potentially lowering the cost of providing neonatal care by healthcare facilities. **Axio Bio's** AXIOSTAT has the potential to significantly lower the cost of providing emergency and critical care in a variety of settings, especially for inclusive businesses and no-frills facilities.

IBMs also try to reach end consumers directly to improve product acceptance and carry the benefits from hospital to home, thus improving outcomes and doctor/patient acceptance. **Embrace** has developed a baby warmer for home use based on modifications made to its product intended for use at health facilities.

- b. **Leverage existing distribution channels and resources to market products.** Distribution poses key obstacles to scale and viability of enterprises attempting to reach the poor. The poor are costly to reach and there are few direct channels to them. Creating custom channels and systems is often prohibitively expensive. Existing channels or networks created for other healthcare providers that give access to BoP population are leveraged by many IBMs. While some enterprises use this strategy as an integral part of their model, others leverage existing systems/channels to scale up or to increase revenue streams.

AYZH leverages existing networks of local health workers in their target geographies to distribute their Janma kits. The technical knowledge and skills of these health workers, supplemented with AYZH's product training courses, equip them adequately to market and use the safe-birthing kits.

Illustrative Case Study – Embrace

This report illustrates the key features and strategies used by IBMs producing standalone devices and consumables.



Embrace Innovations started operations in India in 2011 to make a measurable impact on neonatal hypothermia. Embrace's product is a low-cost, portable and easy-to-use baby warmer that does not require continuous power supply.

The Embrace infant warmer was designed for resource-poor settings where alternative solutions are costly, and require continuous electricity and skilled human resources to effectively use the product. Priced under \$300 in India, Embrace's products are significantly less expensive than conventional incubators. It *requires only about half hour of electricity to be able to function for 4 to 6 hours*, and can be effectively used by low-skilled health personnel. An additional benefit is the portability

of the product, which allows mothers to have increased contact with the baby unlike in traditional incubators and radiant warmers.

Embrace is in the process of *expanding its product portfolio*. While the Embrace warmer is traditionally used in health facilities, Embrace has also developed a non-electrical version for home use, which needs only boiled water. *Embrace is piloting the product with state governments* to understand any operational challenges in deploying them in rural homes.

With its baby warmer, Embrace has effectively used technology to substantially *improve efficiency in healthcare delivery processes*, and has also made healthcare more *accessible in hard-to-reach and constrained contexts, while controlling costs*.

Recognizing that public health facilities lack skilled personnel, Embrace is involved in *training health workers* on how to recognize, treat, and prevent hypothermia. Embrace is also *training community health workers and mothers/caregivers* on how to care for low-birth weight infants. The strategy of training community health workers and personnel at the health facility serves the dual purpose of ensuring neonatal hypothermia is recognized and addressed and imparting training on correct use of the baby warmer.

While Embrace's products have undergone clinical trials and have shown efficacy in "real contexts", Embrace faces a challenge in continued clinical data-collection in real settings. Collecting clinical data after the launch of a product helps build a robust body of evidence and leads to wider adoption of the product. As a young organization, this process is a challenge for Embrace due to the large requirements of resources and funds.

Embrace is a young organization in India and has *not yet developed robust marketing/distribution strategies*. This is very closely linked to the fact that organizations like Embrace, which have developed innovative low-cost products for BoP markets, *require government support and procurement by the public system to achieve volumes and scale*. However, Embrace continues to be constrained by government processes that primarily address procurement of standard existing products and not adoption of new innovative technologies. There is also a *lack of awareness among potential channel partners/ buyers about the availability and benefits of such products*, hospitals and clinics catering to the BoP population are unaware of the product and its benefits.

Despite these challenges, Embrace's products are used in fourteen states in India in more than 2000 public and private facilities and ambulances. The infant warmer is estimated to have been used by around 100,00 babies.

Embrace is helping over 150,000 infants globally and providing training on care of low-weight babies to over 10,000 individuals.

MODEL 4: NETWORKED DEVICES AND TECHNOLOGIES

This emerging model offers a wide range of clinical, financial, and information technology solutions that enable better decisions and outcomes for both businesses and patients, improve revenue cycles, drive quality outcomes, and accelerate image management and workflow. It comprises communication technology-enabled integrated diagnostics devices including telemedicine set-ups, mHealth-based remote consultations, healthcare information management, clinical decision support, and patient monitoring systems.

The model brings together low-cost screening and diagnostics devices connected by information technology and software systems that store, manage, analyze, and monitor data of patients and caregivers, leading to faster, cheaper, convenient diagnosis of patients and provision of point-of-care decision support.

Process innovations through networked devices and technologies offered by firms under this model make management of healthcare more efficient, cost-effective and accessible. Some areas where networked devices and technologies are used are:

- Portable and cheaper screening and diagnostics devices that increase access for patients.
- Innovative technologies that build networks of medical personnel, especially in remote areas. These networks keep costs low without compromising quality.
- Process innovations like electronic health records (EHR), health management information systems (HMIS), and procurement systems, to become more efficient and cost-effective.

Of the organizations surveyed for this study, those representing this model are:

- **Swasthya Slate:** This company makes an integrated tablet that can conduct 33 diagnostic tests and transfer patient data to distant physicians/caregivers using mobile technology.
- **Dimagi:** This firm provides software solutions that improves data management and case management in healthcare delivery. Dimagi's CommCare technology solution is an open-source, cloud-based platform accessible through basic cell phones. It provides community health workers with services such as patient registration and monitoring, decision support, and remote training (supported by multimedia). It also helps supervisors manage and monitor health worker performance.
- **iKure Techsoft:** The company offers remote monitoring of patients in rural West Bengal through a software application, Wireless Health Incident Monitoring System (WHIMS), installed on tablets used by local health workers. The software acts as a decision support system for health workers who can diagnose and dispense drugs based on online interaction with doctors. It is also available at iKure's rural health centers, where it is used to maintain patient medical records.
- **Dhilcare:** The company makes a low-cost, portable paperless ECG machine integrated with phone-based software, through which data can be stored and shared with doctors to facilitate reports, diagnosis, and follow-up. It enables a general practitioner to diagnose, triage, and provide basic treatment to cardiac patients at the point of care with the help of cardiologists.

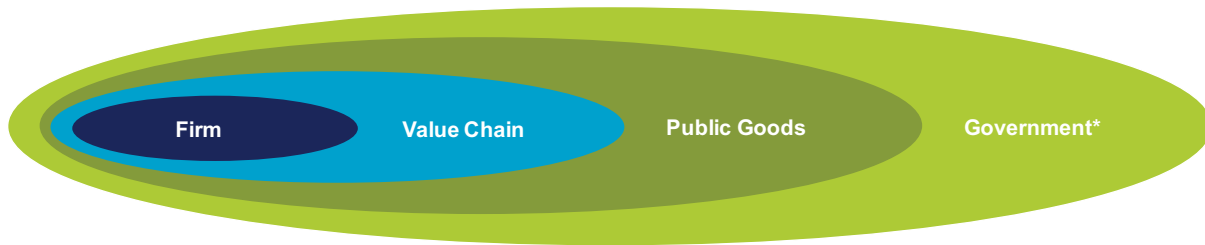


- **OTTET Telemedicine:** This firm has set up telemedicine centers in government health facilities at the village level and trains local community members to run the centers and provide tele-health services. The centers are equipped with medical equipment, telemedicine software, and video conferencing technology. It is connected to super-specialty hospitals to provide preventive care, diagnostic services, consultations, follow-up, and referrals.



Figure 22 shows the challenges that operate at the different levels for this model.

Figure 22: Challenges faced by networked devices and technology enterprises



- | | | | |
|---|--|---|--|
| <ul style="list-style-type: none"> ■ Need for ability to continuously analyze data collected by the technology platforms to provide personalized care ■ Long development cycles for technology solutions delaying commercialization and revenue generation ■ High investments are needed for research and development of technology solutions; investor interest can be generated only after evidence of relevance/efficacy ■ Young and evolving business models; have not yet developed robust distribution networks and linkages with other critical stakeholders in the health ecosystem ■ Need for a combination of technical and managerial skills puts pressure on the business model. | <ul style="list-style-type: none"> ■ Dependence on healthcare providers/partners who can utilize solutions/take these solutions to consumers ■ Weak technical skills of distribution partners impede use of innovative solutions ■ To achieve scale, linkage with the public health system is critical; difficulty in partnering with government. | <ul style="list-style-type: none"> ■ Inertia and resistance to change in 'remote care delivering' behavior by doctors using mHealth, telemedicine models ■ Low awareness and lack of acceptance of innovative technology solutions by patients ■ Irregular and unreliable telecommunications networks and electricity supply impede successful usage of the solutions ■ Lack of market information, incubators and research settings to test the efficacy of the innovations. | <ul style="list-style-type: none"> ■ Absence of quality standards certifying efficacy/accuracy for new solutions. |
|---|--|---|--|

* For this study, the outermost layer Government is considered a 'regulatory environment' and not a provider/funder of healthcare services

Challenges at the firm level

Firms need resource capabilities to continuously analyze data collected by the technology platforms to provide personalized care.

A unique service offering of networked screening devices and technology solutions is the use of data from patients to make diagnostic and treatment processes more effective and efficient. For the firms to achieve this, analysis of data has to be real-time and continuous so that decisions can be based on these analyses. Human resources, financial investments, robust and reliable technology platforms, and care pathways/standard treatment guidelines are crucial inputs to this process. However, in India, there is scarcity of capital, well-trained personnel are scarce and expensive, and technology infrastructure is under-developed. As a result firms in this model are constrained in undertaking continuous data analysis and providing consequent services.

Networked screening and diagnostics devices have long product development cycles similar to innovative devices in the previous model.

Further, the devices have to be linked with communication technology and complex software solutions to transfer and analyze data. Various phases of research to develop proof of concept, test efficacy of the solution, and contextualize it to healthcare and community settings, are all time consuming. ***This delays commercialization of the offerings and therefore, revenue generation.***

Dhilcare entrepreneurs started developing the 12-lead ECG solution while completing their academic degree in the Indian Institute of Technology Madras (IIT-M). However, the product development phase and getting the product ready for market has taken time. The organization was constrained due to lack of funding. Even after receiving funding, Dhilcare has had to modify its product to meet the specific demands of the market.

Lack of capital at an early stage is a common challenge for this model. Research and development are capital-intensive activities, requiring high investments to create innovative devices and technology platforms. These investments need to be made at the early stage of the business, a significant challenge for new entrepreneurs. Besides high cost of the research and invention, firms incur operational costs of human resources and infrastructure. ***Investor interest, especially from institutions, can be generated only after developing proof-of-concept*** and establishing effectiveness of the solutions.

Young firms are yet to successfully develop robust distribution networks and links with other critical stakeholders in the health ecosystem.

This study found that majority of these enterprises developing technology solutions are at an early-stage, typically between 0-7 years. Building links with large-scale distribution channels and partnering with key stakeholders takes time and experience in the industry.

The **Dhilcare** promoters are engineers who developed an innovative product, but were challenged by lack of capital at an early stage. They also found it challenging to develop robust networks for sale, distribution, and servicing of their product increasing cost of the product significantly.

Need to combine technical and managerial skills puts pressure on these early-stage firms.

Similar to the previous model, most promoters in this model are software engineers and scientists. While they have exceptional capabilities and technical knowledge to develop innovations, they are often faced with challenges in linking with health systems and formulating business strategies. They also often find it challenging to recruit management and healthcare professionals at relatively lower compensation packages.

Challenges at the value-chain level

Challenges in developing partnerships with delivery players and distributors. The networked technology devices and systems are predominantly B2B (business-to-business) solutions used by healthcare delivery players and personnel to improve patient care. These are innovative solutions with newer operating models and are highly dependent on acceptance by and conviction of delivery players who take them to patients. Firms are exploring partnerships with delivery players and distributors. These partnerships are still evolving without proven operating models in resource-poor contexts like India.

Channel partners sometimes do not have the technical skills to understand and use innovative solutions. Most of these technology solutions and process innovations are very new additions to the healthcare sector. Existing human resources in distribution channels do not have the skills or comfort levels to operate the devices. There are instances where technology solutions have been bought by businesses but have not been used.

While many consider technology as a solution to a wide range of issues, they are not able to use the technology effectively. **Dimagi** has recognized this challenge and provides training and capacity building to not just the health workers who are the end users of its **CommCare** but also the project managers at the partner organizations to help them understand the technology better.

Complex rules and processes for public sector partnerships and procurement. One way for this model to achieve high volumes and scale is through link and partnerships with the government. The public health system offers unmatched opportunities for firms to implement their solutions. However, partnering with government becomes difficult as the rules and processes for public sector partnerships and procurement are complex.

Challenges at the public-goods level

Inertia and resistance to change in 'remote-care delivering' behavior by doctors using mHealth/telemedicine models. Doctors are most comfortable with the conventional approach to treating patients. Remote/virtual consultations are not readily accepted. Besides being a habit, the quality, efficacy, and effectiveness of the offerings are other concerns for doctors, as they are expected to base treatment decisions on data made available by technology solutions.

Patients and end-users also hesitate to accept certain technology solutions, mainly due to poor understanding of the innovations and general low awareness about their benefits. In the absence of health awareness and education, low-income patients often use proxies to assess the quality of healthcare, such as interactions with doctor, physical examinations, prescriptions, and injections. These proxies of quality are not applicable to virtual interfaces and diagnosis through devices that are common offerings of this model.

Weak infrastructure, especially telecommunication networks are a major challenge for IBMs in this model. The technology solutions offered by this model depend completely on regular, reliable, and high bandwidth telecommunications networks and electricity supply for their functioning. However, in underserved regions of India, this infrastructure is often weak and impedes successful use where they are most needed.

Lack of sufficient facilitation efforts (such as incubators, laboratory facilities, and market information) within the ecosystem. This affects the ability of these models to effectively address these challenges. This is similar to challenges faced by IBMs in the previous model.

Challenges at the regulatory and policy level

Absence of quality standards. As mentioned earlier, innovations offered by this model are very new, are constantly evolving, and wide-ranging in their applications. Due to this, regulatory and policy processes have not kept pace. One of the challenges emerging from this is the absence of quality standards to certify the efficacy/accuracy of new solutions, which affects the ability of these models to demonstrate quality of their products.

Business model initiatives to address challenges faced by networked devices and technology IBMs

Since IBMs in this space are new and have low market share, they focus on increasing acceptance of their solutions among healthcare providers through various initiatives:

- a. **Conduct pilot programs to demonstrate utility, efficacy, and robustness of their solutions to public and private healthcare providers:** Organizations undertake multiple pilot projects or proof-of-concept studies at their own expense to demonstrate proof of functionality, efficacy, and accuracy of their solutions.

Swasthya Slate has field-tested its product in 80 locations and screened 75,000 thousand people. The field testing helped identify operational issues and demonstrated utility, efficacy, and robustness of the product.

- b. **Form strategic partnerships with healthcare delivery players:** IBMs often form strategic partnerships with healthcare delivery organizations/stakeholders to increase acceptance and expand the distribution chain.

Dimagi has partnered with healthcare delivery players and NGOs working directly with community health workers. It provides its CommCare solution to IntraHealth International, Catholic Relief Services, and to the Bihar Child Support Programme under DFID's Bihar Technical Assistance Programme to support the government's maternal and child health program.

- c. **Expand scope of their solutions and provide health personnel training, monitoring, and assistance in healthcare delivery:** The scope of some products was expanded to provide analytics services, program management, etc., in addition to one-time sale of products or software. This helps the already constrained public and private healthcare delivery organizations to adopt newer solutions.

Swasthya Slate has expanded functionality of its product. The device can now conduct 33 tests. **iKure Techsoft** initially developed a technology solution to remotely monitor patients in rural West Bengal and set up rural health centers to provide affordable primary care at the last mile.

- d. **Using existing distribution channels and resources to reach a larger base of customers/users.**

Dimagi is used by Accredited Social Health Activists (ASHAs) in India, who fall under the purview of the Government's National Rural Health Mission. Leveraging the extensive ASHA network has helped Dimagi reach a large number of beneficiaries.

- e. **Reduce cost of manufacturing by indigenous production:** Lower costs enable IBMs to sell at lower prices to healthcare organizations serving the BoP population. Indigenous production is cheaper than importing, and offers the added benefit of employment generation in manufacturing.

Swasthya Slate's and **Dhilcare's** diagnostic devices are produced in India and are cheaper than other similar diagnostic devices, which are usually imported.

Illustrative Case Study – Swasthya Slate

This report illustrates the key features and strategies used by IBMs producing innovative devices and consumables.



Swasthya Slate is a portable device developed by the Public Health Foundation of India (PHFI) to provide diagnostic services to BoP/low-income populations at their doorsteps. The device addresses challenges of inadequate access and quality of care in rural underserved regions.

The device can *conduct 33 diagnostic tests*, providing integrated care to patients requiring multiple tests. Used by frontline health workers in rural areas, the device is *connected via Bluetooth to an Android-enabled tablet containing multiple mobile applications (apps)*. The applications allow patient registration, store patient medical history, select and conduct diagnostic tests, provide and monitor antenatal, intra-natal and postnatal care, immunizations, cardio-vascular screening, and nutrition. The *data from the applications is uploaded onto a cloud server* for access by patients and doctors, which is used to monitor and ensure effectiveness of operations and provide a basis for subsequent government actions.

The solution acts as a *decision-support tool that enables frontline health workers to deliver data-driven recommendations and medical advice to patients*. Emergency/complex cases are consulted remotely or physically referred to doctors, thus limiting the need to visit healthcare facilities for screening/diagnosis and reducing burden on the public health system. The functionality of the tablet also extends to *providing health communications to patients*, aimed at improving health-seeking behavior, and *training to community workers*, aimed at improving quality and effectiveness of care.

By using the government's existing network of frontline health workers (ASHAs) to distribute the solution, Swasthya Slate has effectively *leveraged existing distribution networks and the public health system*. This has benefitted both the organization, by expanding its reach without investing in its own distribution network, and frontline health workers, by reducing work that needs to be done manually, thus allowing effective use of their time. Four frontline health workers have been involved in product design, effectively contextualizing the device to challenges and learnings of the public health system.

Since the vendor/supplier market in the medical devices space is highly fragmented, Swasthya Slate has *faced challenges in identifying the right vendors/suppliers for certain components/products* for the device. Additionally, since the tablet requires an internet connection to upload data to the cloud server, *real-time and effective usage of the device is highly dependent on telecommunication network in the area*.

The current core team, including the inventor, has strong technical/product development skills. However, as the organization now lays down its plan for growth and scale-up, it *faces a gap in terms of lack of business/commercial skills* like marketing and operations. It plans to recruit staff for these functions.

The device was commercially deployed from on March 2014, before which it was field tested in more than 80 locations worldwide, screening more than 75,000 people. The device was piloted in six districts in Jammu and Kashmir, through funding support from Norway India Partnership Initiative (NIPI). The aim is to screen and diagnose 250,000 patients each year by deploying 3,250 units over the funding period of three years.

The firm also plans to expand its coverage to a total of ten states in India in the next five years. To achieve this, it plans to work with multiple state governments, target common service centers and NGOs as potential customers, and sell directly to end-users (B2C channel).

CHAPTER 5

**MOVING INTO ACTION
– ENABLING SUCCESS,
OVERCOMING
CHALLENGES**

Previous chapters detail the healthcare contexts and inclusive business landscapes in India. This chapter addresses some of the ecosystem challenges faced by IBMs.

HOW CAN ECOSYSTEM ENABLERS HELP IBMs?

Discussions in preceding chapters show that the ecosystem within which IBMs operate have significant influence on their success and growth.

The following sections discuss some actions/initiatives that key stakeholders in the ecosystem can take to encourage new IBMs and facilitate the existing ones reach desired impact and scale. Stakeholders who can enable the ecosystem are classified into four broad categories: (i) impact investors (ii) donors, foundations, and development agencies, (iii) government, and (iv) networks, incubators, and accelerators.

Impact investors

India has a large impact investing market in terms of number and size of investments. Impact investing offers opportunities to creatively fund projects that otherwise may go unfunded. It also helps to scale up organizations with viable business models that meet pressing healthcare challenges, which are often not attractive to commercial investors.

- **Offer innovative financial instruments.** Often traditional instruments are not sufficient to address needs of IBMs and their promoters at different life-stages of the enterprise. Patient capital and subsidized debt with longer payment durations are preferred by idea-stage IBMs in the 0-1 year group. However, most investors are unwilling to provide such instruments or even invest in IBMs that have not shown “proof of concept”. Currently IBMs in this group largely depend on promoter capital and support from angel investors or high net-worth individuals. IBMs that are slightly older (1-3 years) may be more open to equity or mezzanine instruments. This study shows that commercially successful models in the 4-10 year group prefer not to dilute equity further, especially after one or two rounds of funding, and debt may be the preferred instrument.

Impact funds need to offer innovative financial instruments suited to capital needs of firms at different life-stages and to business models in BoP markets. Traditionally, investors limit offerings to equity funding. However, there is a scope to structure a mix of instruments like subsidized loans, sweat equity, patient capital, convertible debt, and equity investments with relaxed expected returns. Impact investors can play crucial roles in facilitating growth trajectories of IBMs from idea to operations and address critical funding gaps by providing pioneer funding and seed capital, especially in under-capitalized areas. Another opportunity for impact investors is to offer bridge financing to IBMs that predominantly rely on public funding, which, as mentioned earlier, takes a long time to materialize.

- **Invest in idea/early-stage innovations.** A common challenge for firms across different models is availability of limited capital in early stages. This affects technology solutions IBMs disproportionately as they have long and expensive gestation periods of research for their products. Funds are often not available from institutional investors during this stage. Impact investors must focus on early-stage IBMs to help them reach proof-of-concept and operationalize the idea. Without support, a significant number of IBMs fail in translation of idea to practice.
- **Form investor networks and circles.** Impact investors can form networks and circles to set up syndicated funds, pool resources, co-invest in synergistic opportunities, and spread risk. Investor

networks like Toniic and Ennovent Circle are effective aggregators of funds, skill-sets, and lobbying to drive key sectoral trends. This can add value by building strong ecosystems for inclusive businesses.

- **Advisory services by investors.** IBMs said having impact investors play active roles through advisory services and mentorship were significant value-additions. Limited management skills are a common challenge for healthcare IBMs. This is an area where impact investors can play an important role and contribute their business and financial modelling experience. Strategic advisory services and mentorship of investees increases chances of success for these IBMs and also increases potential for higher returns for the investors.
- **Trading platforms and results measurement.** As healthcare IBMs continue to grow, the ecosystem to support them will need to keep pace. With a rise in the number of interested investors and deals, IBM-focused trading platforms are becoming relevant, as are impact assessment standards, measurement tools, and financial advisors to support such transactions. Impact investors and development finance institutions can be at the forefront of such initiatives.

Donors, foundations, and development agencies

Philanthropic funders direct their financial resources to stakeholders to address key scaling barriers. Foundations and donor agencies are a natural fit for IBMs, given their focus on key health sector challenges affecting the poor.

- **Donors can play important roles in channeling funds and technical support to IBMs.** Areas that need interventions the most—such as the poorest strata of the BoP and remote areas that lack accessibility and basic infrastructure—are not financially attractive for investors. As a result, IBMs often shift focus from the most under-served aspects of healthcare to more profitable areas. Donor agencies and foundations can play an important role in bridging this funding gap. These agencies can also play a complementary role to investment funds in promoting areas such as research, developing proof of concepts/pilot tests, and supporting diseases/healthcare areas that are unviable for commercial investors. Support from donors in the form of grants or awards, like the Development Marketplace, the Ashoka Fellowships, and the Gates' Foundation Grand Challenge, has proved extremely valuable for IBMs.
- **Certain challenges that pertain to the larger ecosystem of an IBM can be addressed effectively by development agencies and donors.** Health awareness initiatives, improving health-seeking behaviors, and defining quality standards of healthcare are invaluable to organizations who operate in BoP markets. For example, standard treatment protocols, IMNCI guidelines or community health manuals developed by the World Health Organization are useful to organizations working for the poor. Such resources need extremely high investments, and cannot be developed by the firms themselves, or by other stakeholders in the ecosystem. Donor agencies need to continue these initiatives.
- **Donor agencies and development partners need to continue playing an active role in advocacy for critical reforms to create more facilitative ecosystems.** Donor agencies are also important stakeholders in lobbying for policy changes with the national government. Influential donor agencies can help promote universal healthcare, prioritize unmet needs and underserved diseases, provide demand-side financing, encourage research into social enterprise/inclusive businesses and develop results measurement frameworks.

Governments

The government has an important role to play in addressing the problems of BoP populations through various programs and social schemes for healthcare. As discussed earlier, lower segments of the BoP in rural areas are served only through public health systems.

Additionally, given the small scales on which IBMs operate, they are unable to address the ecosystem challenges, such as shortage of medical personnel and lack of infrastructure and are impacted significantly by the low paying capacity and poor awareness among consumers it aims to serve.

- **The government can become the preferred purchaser for IBM's products and services.** The public health system is huge and some IBMs in reported reaching scale by leveraging it. The government can become a preferred purchaser of innovative products and services provided by IBMs. This can provide the required volumes and revenues for IBMs to be sustainable, while offering them unmatched scale and reach in areas that would otherwise be unfeasible.
- **Governments can relax procurement rules for IBMs offering unique solutions.** Governments have standard procedures and procurement systems, which are often designed for mainstream organizations, rather than innovative IBMs. For instance, innovative devices and technology firms in India face the challenge of not meeting mandated minimum participants for competitive bidding. Governments can relax procurement rules for IBMs and make them more flexible to suit firms offering one-of-a-kind solutions.
- **Incentivize the private sector to serve BoP markets.** The government can formulate policies to incentivize involvement of the private sector in healthcare for the poor. Tax benefits for organizations located in remote and underserved areas, offering services to the poorest populations, and addressing priority diseases can go a long way.
- **Reduce bureaucratic delays and simplify procedures/approvals.** This can help IBMs operate more efficiently. IBMs, especially new entrants in the healthcare sector, also cited their inability to navigate and comprehend policies/regulations. Specially appointed teams in government departments can guide new businesses.
- **The government can set up or use independent accreditation agencies.** A challenge for IBMs offering innovative low-cost devices/solutions, is the lack of certification and accreditation to establish quality. To address this, government can set up its own accreditation agency or outsource to independent agencies.
- **Set up venture funds to encourage IBMs/allocate part of existing funds towards healthcare delivery.** An innovative way by which government can incentivize IBMs is by setting up venture capital funds that provide easier and cheaper access to capital or earmark existing funds specifically for healthcare delivery. Funds like the India Innovation Fund and the India Inclusive Innovation Fund have aggregated government and public sector investors to support early-stage innovations in life-sciences and medical technologies. Such funds can be extended to include innovations in healthcare delivery IBMs, especially primary care models focusing on the poor. Expected financial returns for these funds from inclusive businesses can be lower than that required by commercial investors.
- **Demand-side financing.** Given the extremely high poverty rates in India, illnesses are often catastrophic in nature, pushing households below poverty lines and placing them in debt. Governments need to supplement healthcare delivery through demand-side financing mechanisms. In India, the current Rashtriya Swasthya Bima Yojna's program design and implementation must be revised for greater coverage, higher financial protection, and inclusion of areas like OPD and diagnostics.

- **Generate health awareness.** Due to large information asymmetries and low levels of health awareness, health-seeking behavior among the poor in India is low. This affects demand for preventive/promotive care such as immunization and contraception. These are public goods, and are the mandate of the government to improve general health status of the population. The cost of educating consumers on the benefits of products with strong push characteristics, such as preventive care, is often greater than can be justified by potential profits alone. Additionally, limited scale and geographical reach of IBMs prevent them from undertaking such initiatives. Government can play a significant role in health awareness programs and increase literacy levels to improve health-seeking behavior.
- **Increase availability of human resources for health.** India faces significant shortages of trained personnel, directly affecting the capacity of organizations to offer services. Governments can play a role by increasing the number of medical and nursing schools, in certifying and accrediting existing private institutions, encouraging innovative courses and curricula (such as shorter courses).

There is also a shortage of specialists and super-specialists in the country. As epidemiological trends change, the need for certain specialists becomes more predominant. For example, with increasing burden of non-communicable diseases in India, specialists like cardiologists and endocrinologists become critical. Governments need to undertake systematic need-gap assessments for better planning of medical education. Medical colleges need to increase post-graduate seats for specific specializations, as well as introduce new courses to train doctors in emerging needs.

- **Government can facilitate and explore reforms for para-skilling of human resources to reduce the demand-supply gap.** Para-skilling is an effective tool to improve utilization of lower-skilled resources. Government can implement regulations allowing greater para-skilling. For instance, the Indian government has approved Ayurvedic, Unani, and Siddha doctors to practice elements of basic care after undergoing necessary training. This kind of measures can help primary care IBMs address some of their human resource challenges.
- **Improve infrastructure.** Poor infrastructure affects almost all IBMs. The government is the most important stakeholder in addressing these infrastructural challenges. Investments into roads and railways, transportation, and communication networks can go a long way in attracting IBMs to areas that are currently underserved, as well as help IBMs design reliable value chains. Investments in infrastructure also impacts availability and retention of human resources in organizations, as personnel prefer areas that are better connected and offer a better quality of life.

Networks, incubators, and accelerators

- **Facilitating ecosystem growth.** Networks and associations can play an important role in undertaking initiatives that are facilitative for the industry as a whole, initiatives that may not be attractive or possible for individual organizations. Networks can help address key scaling barriers through collective action that will get the attention of government policymakers. They can also help promote best practices and disseminate industry knowhow, the absences of which challenge IBMs.

Networks can also play critical roles in building partnerships between different categories of healthcare IBMs. For example, secondary/tertiary-care hospitals can partner with IBMs offering devices and technology solutions. While the former require low-cost technologies for their affordable services, the latter require delivery players to distribute their products and take them to the end consumers.

- **Provide mentorship and strategic advisory services.** Incubators or accelerators help early-stage impact enterprises by providing mentorship, incubation, and technical assistance. Incubators

also provide seed capital or growth equity to help enterprises become self-sustaining. In addition, they provide valuable strategic advisory support that IBMs working in BoP markets may not be able to access or afford. Stakeholders such as academic institutions, research organizations, and other facilitators should extend critical support to the growth and functioning of IBMs through capacity-building initiatives, research, and by generating evidence of the impact of interventions.

Initiatives like Ennovent Circle build capacities of early-stage IBMs, provide strategic support, and link them to investor networks. Such initiatives are valuable, especially for new entrepreneurs. Incubation centers at the IKP Knowledge Park (that combines investments with laboratory facilities for technology innovators) and at academic institutions like IIT-Madras, Stanford University, and MIT have contributed to the emergence of a number of IBMs, especially in healthcare technologies. Such initiatives need to be more mainstreamed.

Industry facilitators act to resolve barriers at both firm levels and in the wider ecosystem, to the benefit of many firms, not just one. Such enablers are needed because firms often cannot effectively resolve key systemic barriers on their own. To be truly effective, industry facilitators must respond not only to scaling barriers in a given situation, but also to specific constraints that prevent firms from resolving these barriers.

HOW CAN IBMs LEVERAGE FACILITATION?

IBMs sometimes lack the capabilities to leverage facilitation and resources present in their ecosystems. The action points listed in the preceding section for the enablers may not be enough to bring about desired impact and scale. Active roles of the IBMs/organizations are equally important. They must recognize, leverage, and translate such support to suit their needs. This section discusses how IBMs can leverage industry facilitation.

- **Develop a complete understanding of the ecosystem.** IBMs should develop an understanding of the ecosystem and identify stakeholders who may play an enabling role or pose barriers to its functioning. Organizations must realize that healthcare is a complex area with inter-related and multifactorial determinants. An in-depth understanding of the ecosystem is crucial to offer impactful solutions.
- **Engage with ecosystem enablers.** Enablers or industry facilitators in the healthcare space may not be in the immediate environment of the IBMs. Organizations need to be proactive and seek engagement with relevant enablers to help achieve common objectives.
- **Participate in networks.** IBMs can connect with enablers like funders, mentors/advisors, and other organizations working towards similar or synergistic goals through various networks. Often, impact through advocacy is achieved through networks, and not by individual IBMs.
- **Build strategic partnerships to strengthen value-chains to address both demand and supply side challenges.** Partnering with governments can provide unmatched scale for most IBMs. Partnerships with other IBMs across healthcare areas or across the care-spectrum can strengthen supply chains and open new avenues to reach the poor. For instance, technology IBMs need to partner with delivery/distribution providers to market innovative products; and delivery IBMs partner with those in the technology space to integrate process innovations and increase efficiencies. Partnerships for health awareness/demand generation in poor communities, shared channels for distribution, and research can significantly strengthen an IBM's value-chain and positioning.

This report has focused on the context in which inclusive business models have emerged in India. The complexities of the healthcare sector in the country impact these organizations, posing challenges to their operations, sustainability, and scale. While governments, impact investors, donors, and other key stakeholders need to play crucial roles in catalyzing the growth of these initiatives, the IBMs, in turn, need to leverage this support and facilitation strategically.

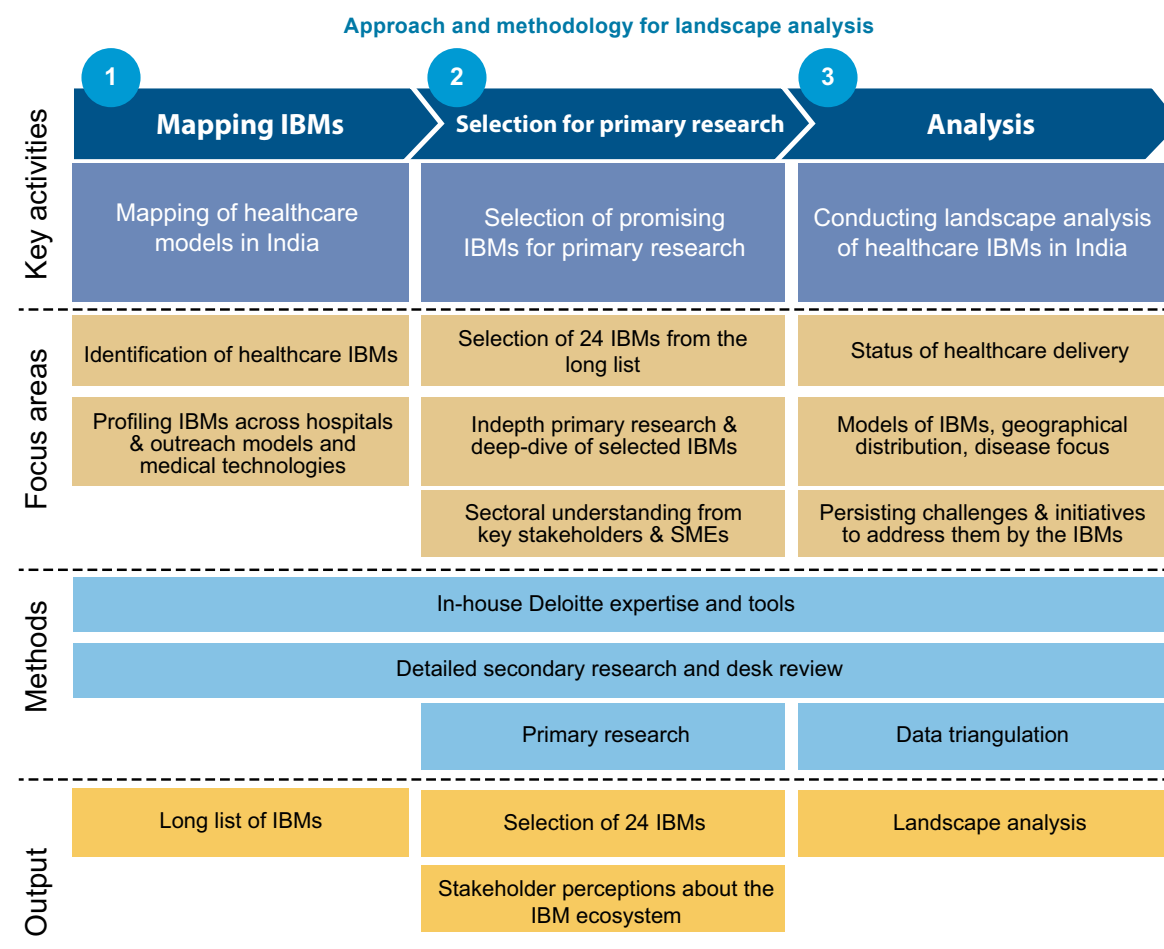
ANNEXURES

ANNEXURES

ANNEXURE I: APPROACH AND METHODOLOGY FOR THE STUDY

The Landscape Analysis involved a mixed-method approach, with detailed literature review of publications, analysis of secondary data, and collection and analysis of primary data through in-depth-interviews, case studies and observation methods.

The data from all sources were triangulated, authenticated analyzed to arrive at the findings. The following figure presents approach and methodology for the landscape analysis.



Secondary Analysis: A long list of 240 IBMs was compiled from extensive secondary research. This formed the universe of the study. The team reviewed existing rigorous and credible public data sources including published reports, data-bases, and websites to create a “universe” of relevant healthcare programs and initiatives.

Data for each of these IBMs was extracted on 17 parameters. The data focused on their objectives and interventions, geographical location and spread of interventions, financial/funding information, mode of BoP engagement, etc. Each IBM entry was validated through at least two sources – the primary source of information (such as an IBM database) and the website of the IBM. In most cases, three sources were used to close data gaps and validate information.

The IBMs were grouped into the two healthcare classification categories hospitals and outreach models and medical technologies.

Analyses of **life-stage** of the entire list of IBMs (in terms of number of years of operation), and their **legal status** – for-profit or not-for-profit – was undertaken. **Sources of funding** for different IBMs were also analyzed.

Additionally, secondary analysis of IBMs was undertaken based on **health issue/disease focus** and on **intervention models**. The purpose of this analysis was to identify most popularly intervened diseases/health issues, and those under-represented. The secondary analysis of intervention models was undertaken to identify most commonly adopted models in affordable healthcare.

Primary Research: Twenty-four organizations were selected for primary research and deep-dive analysis. Data collection methods for primary research included in-depth interviews with stakeholders from the 24 selected IBMs and with subject matter experts from the sector. Two sets of interview guides were developed for the two groups of stakeholders.

Examples of sources used to compile the universe:

Centre for Health Market Innovations (www.healthmarketinnovations.org)

Strengthening Health Outcomes through the Private Sector (SHOPS) (www.shopsproject.org)

Sankalp (www.sankalpforum.com)

World Bank Development Marketplace International Centre for Social Franchising (www.sf4health.org)

Ashoka (www.ashoka.org and www.changemakers.com)

Bangladesh Social Enterprise Project Centre for Innovation, Incubation and Entrepreneurship

Access Health International.

Document reviews of relevant material such as evaluation studies, MIS data, annual reports, and news articles about the IBMs were undertaken to supplement the primary data.

ANNEXURE II: LIST OF IBMs INCLUDED IN PRIMARY RESEARCH

Sl.No.	Name of the Organizations
1.	Arogya Parivar
2.	Axio Bio
3.	AYZH
4.	Dhilcare
5.	Dimagi
6.	E Health Point
7.	Embrace Innovations
8.	ERC Eye Care Center
9.	Glocal Healthcare
10.	GNRC Medireach
11.	iKure Techsoft
12.	Innovators in Health: uNotify
13.	NephroPlus
14.	OTTET Telemedicine
15.	Sevamob
16.	Swasth India
17.	Swasthya Slate
18.	Vaatsalya Healthcare
19.	Welcare Health Systems
20.	Ziqitza – Dial 1298 for Ambulance

ANNEXURE III: LIST OF STAKEHOLDERS INTERVIEWED

A. STAKEHOLDERS MET FROM SELECTED IBMs

Sl.No.	Name of IBM	Stakeholders interviewed	Location
1.	Ziqitza	<ul style="list-style-type: none"> Sweta Mangal (Co-founder and CEO) Vasim Qureshi (Manager – Quality) 	Mumbai
2.	Swasth India	<ul style="list-style-type: none"> Ankur Pegu (Co-founder) Sundeeep Kapila (Co-founder) 	Mumbai
3.	Arogya Parivar	<ul style="list-style-type: none"> Meghdoot Deherkar (Country Head – Operations) 	Mumbai
4.	Nephroplus	<ul style="list-style-type: none"> Sandeep Gudibanda (Co-founder and Director, Business Development) 	Hyderabad
5.	Sevamob	<ul style="list-style-type: none"> Shelley Saxena (Founder and CEO) 	Delhi
6.	Innovators in Health	<ul style="list-style-type: none"> Dr. Bill Theis (Founder) Manish Kumar (Trustee and Program Manager) 	Delhi
7.	Glocal Healthcare	<ul style="list-style-type: none"> Sabahat Azim (Co-founder and Chief Executive Officer) Paresh Singal (Chief Planning Officer) Shraddha Paliwal (Senior Manager – Strategic Initiatives) IT and Training Team 	Kolkata
8.	iKure Techsoft	<ul style="list-style-type: none"> Sujoy Santra (Founder and CEO) Vidhi Sharma (Business Development Manager) 	Kolkata
9.	ERC Eye Care	<ul style="list-style-type: none"> Dr. Parveez Ubed (Founder and CEO) Munmi Goswami (Operations Head) 	Sivasagar
10.	GNRC	<ul style="list-style-type: none"> Dr. Numal Borah (Founder and CEO) 	Guwahati
11.	Dimagi	<ul style="list-style-type: none"> Stella Luk (Country Director – India) 	Delhi
12.	E Health Point	<ul style="list-style-type: none"> Pradeep Kumar (Head – Business Development and Finance) 	Delhi
13.	Swasthya Slate	<ul style="list-style-type: none"> Dr. Kanav Kahol (Co-founder) 	Delhi
14.	OTTET	<ul style="list-style-type: none"> Sunil Bhagat (Vice President – Technical) 	Bhubaneswar
15.	Welcare India	<ul style="list-style-type: none"> Dr. TAMILASARAN Senthil (Founder and CEO) 	Chennai
16.	Dhilcare	<ul style="list-style-type: none"> Satish Kannan (Co-Founder) 	Chennai
17.	Vaatsalya	<ul style="list-style-type: none"> Dr. Ashwin Naik (Co-founder and CEO) 	Bangalore
18.	ayzh	<ul style="list-style-type: none"> Zubaida Bai (Founder and Chief Executive) 	Chennai
19.	Embrace Innovations	<ul style="list-style-type: none"> Raghu Dharmaraju (Vice-president) 	Bangalore
20.	Axio Bio Solutions	<ul style="list-style-type: none"> Leo Mavely, Managing Director 	Delhi

B. SUBJECT MATTER EXPERTS MET

Sl.No.	Organization	Name	Location
1	Insitor Management	Karan Gupta, India Representative	Delhi
2	Ennovent	Digbijoy Shukla, Director	Delhi
3	Aavishkaar	Ajay Maniar, Principal	Mumbai
4	IKP	Prasad Ede (COO and CFO)	Hyderabad
		Vikraman (Grant Manager)	
5	mHealth Ventures	Dr. Ajay Nair, Managing Director	Mumbai
6	ICTPH	Zeena Johar	Chennai
7	UNITUS Seed Fund	Radha Kizhanattam, Senior Investment Manager	Bangalore
8	Manipal Hospitals	Rajen Padukone, MD and CEO,	Bangalore
9	BMGF	Devendra Khandait, Senior Programme Officer, Strategic Partnerships	Delhi
10	MoHFW, GoI	Manoj Jhalani, Joint Secretary	Delhi
11	DFID	Meenakshi Nath	Delhi

About IFC

IFC, a member of the World Bank Group, is the largest global development institution focused exclusively on the private sector in developing countries. Established in 1956, IFC is owned by 184 member countries, a group that collectively determines our policies. Working with private enterprises in more than 100 countries, we use our capital, expertise, and influence to help eliminate extreme poverty and promote shared prosperity. IFC leverages the power of the private sector to create jobs and tackle the world's most pressing development challenges. IFC's vision is that people should have the opportunity to escape poverty and improve their lives.

About WISH foundation

Wadhvani Initiative for Sustainable Healthcare or WISH Foundation envisioned by IGATE Chairman and Co-Founder Sunil Wadhvani is working towards scaling up healthcare innovations to build an equitable healthcare system making quality primary healthcare accessible to underserved population in priority states of India.

The Foundation plays a facilitative role in healthcare ecosystem to ensure need based, high potential innovations and enterprises are identified, supported and scaled up within service delivery system to establish a sustainable healthcare innovation ecosystem.

The Foundation leads its activities under SCALE, a strategic mechanism designed in partnership with state governments that demonstrate and scale up promising healthcare innovations revitalizing delivery of primary & preventive healthcare in priority states of India. SCALE builds sustainable market and solutions at the last mile for the Bottom of the Pyramid. By 2020, SCALE Programs aim to reach 10 million underserved people with quality healthcare services in partnership with state governments of priority states of Rajasthan, Madhya Pradesh and Odisha and scale up in other high focus states.



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