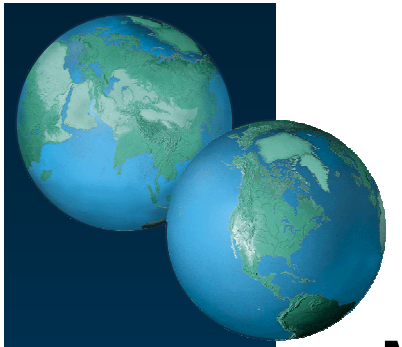


MONITOR GROUP

2008

AMSTERDAM
BEIJING
CAMBRIDGE
CHICAGO
DUBAI
FRANKFURT
HONG KONG
JOHANNESBURG
LONDON
LOS ANGELES
MADRID
MANILA
MOSCOW
MUMBAI
MUNICH
NEW YORK
PALO ALTO
PARIS
SAN FRANCISCO
SÃO PAULO
SEOUL
SHANGHAI
SINGAPORE
STOCKHOLM
TOKYO
TORONTO
ZURICH

Market Based Solutions to Social Change in India

Low-Cost Service Delivery in Health & Education

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development and Cooperation SDC

ORIENT GLOBAL

IDFC

the David & Lucile Packard FOUNDATION

ICICI Bank

IFC

THE ROCKEFELLER FOUNDATION

SIR DORABJI TATA TRUST

PATH
A catalyst for global health

Delhi, June 16, 2008

This document provides an outline of a presentation and is incomplete without the accompanying oral commentary and discussion.

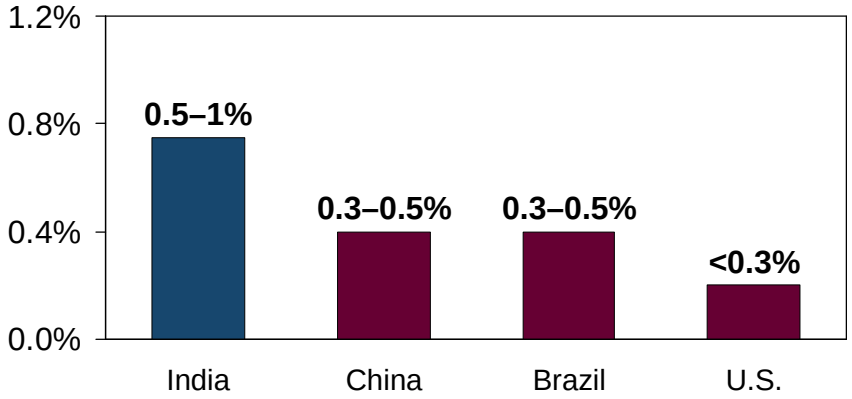
Case Study

Aravind: Context

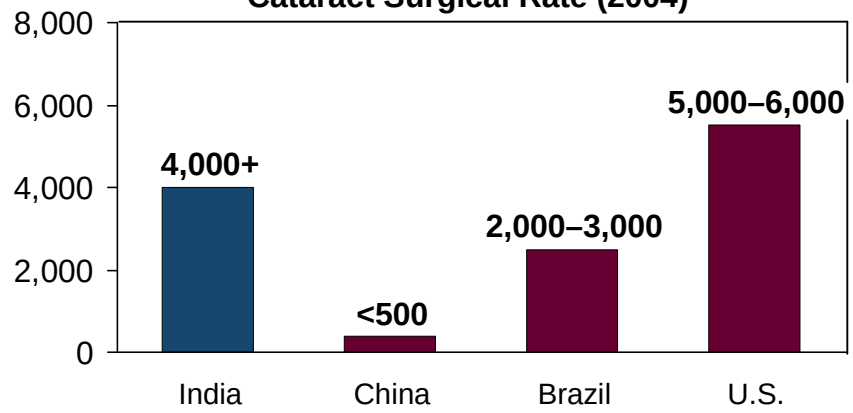
ARAVIND EYE CARE

India has the largest blind population in the world, 63% of which is cataract and easily curable. While surgical rates are high, much remains to be done

Prevalence of Blind (% of population), 2002



Cataract Surgical Rate (2004)[1]



- India has the **largest blind population in the world**
  - 15 million blind; another 210 million are visually impaired and at risk of going blind
    - 75% of the vision loss is preventable / treatable
- **Cataract accounts for 63% of the blind**
  - 3.8 million become blind due to cataract each year
- While India's cataract surgical rate (CSR) has improved, it needs to increase further
  - Number of operations is **far below** the level required to take care of **incidence** and clear the **backlog**
- Lack of doctors and **uneven distribution** limits access
  - There are 11k ophthalmologists for 1.1 bn population in India relative to 60k for 300 mn in U.S.
  - Most doctors are located in urban areas while a majority of the blind are in rural India

"The distribution of ophthalmologists favors urban over rural setting by a factor of ten"

– Kumar & Bachani, 1996

[1] CSR — Cataract Surgical Rate refers to number of cataract surgeries performed per million of population per year

Source: WHO statistics, WHO – Cataract blindness: Challenges for 21st century (2001), Productivity: Getting Cataract Patients by Thulasiraj, Monitoring and evaluating cataract intervention by Kumar & Bachani, Disease Control Priorities in Developing Countries, NPCB Statistics, Secondary Research, Monitor Analysis

Case Study

Aravind: Overview

The Aravind System provides end-to-end eye care services and does 285,000 surgeries per year, in a system that has been configured for the B60 customer

Managing Trusts

Aurolab (Manufacturing Unit, 1992)

- Cost of lenses brought down from $200–**$5** per pair
- Diversified into other ophthalmic products
- R&D

Exports to more than 80 countries

Aravind Hospitals (1976)

- **Specialized in eye care**; 60% cataract, 40% other eye surgeries
- **Commercially Viable**
  - Even though 70% of surgeries performed **free of charge**
- **At Scale**
  - Grew from an 11 bed clinic to over **3,600 beds**
  - Screens more than **2.3 million patients** a year

Management and Training Institute (LAICO)

- Capacity building, including for other hospitals (domestic and international)
  - Fee for service model
- Training for internal staff

AMECS — "Managed Eye Care"

- New growth model
- Partners with well-known, local organizations
  - Partner provides capital expenditure, network, brand
  - Aravind runs the hospitals (staff, marketing, systems)

Walk-in patients

Eye Camps

Vision Centres

Source: Secondary Research, Monitor Analysis

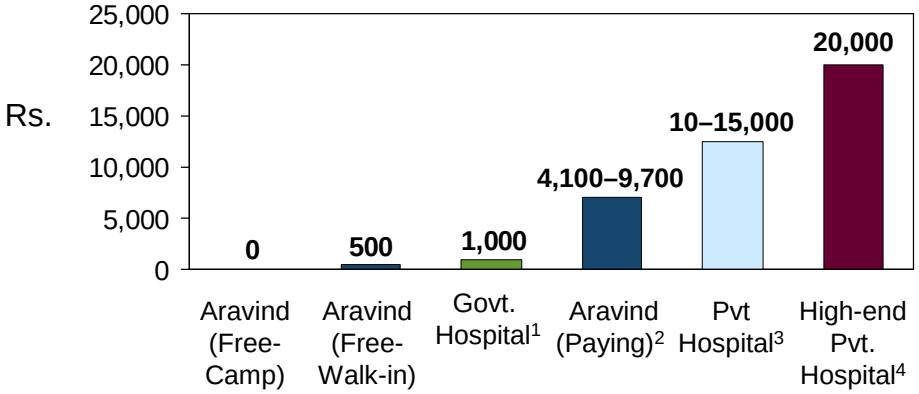
Case Study

Aravind: Pricing

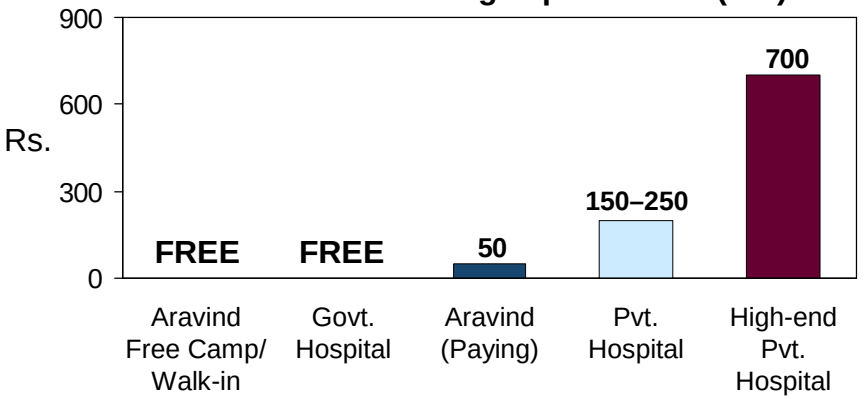
ARAVIND EYE CARE

Two-thirds of Aravind's patients get treated for free or minimal price, the remaining that pay, do so at close to market rates

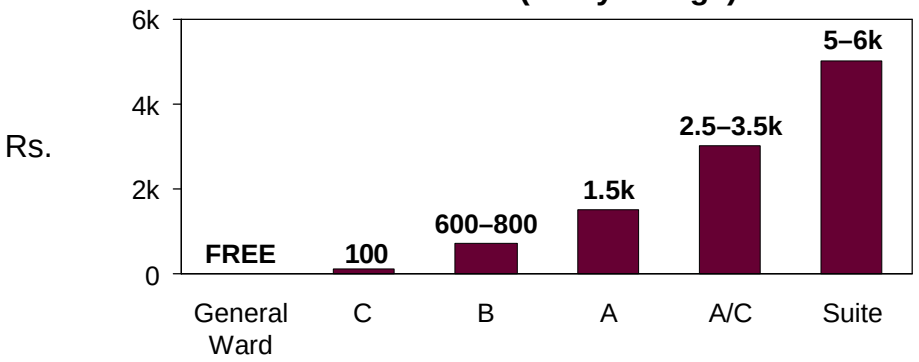
Price Comparison — Cataract Surgery with Basic IOL



Out-Patient Charges per Patient (Rs.)



Payment choice by Room Type at Aravind (2-day charge)



- Payment choice varies by **room type and IOL lens** type (Rs. 500–28,000)
  - Total price can range from Rs. 4k–46k
- Aravind hospital, Madurai operations has **gross margin of ~35-40% ,** inspite of **free/minimal cost** treatment of **2/3rd customers** (primarily cataract)

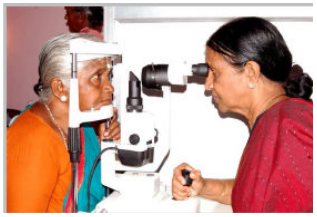
Note: IOL — Intra-Ocular Lens. Free patients at Aravind are either walk-in or brought via camps. Free walk-in patients pay Rs. 500 z(for lens). Camp patients do not pay anything and are brought through outreach camps funded by NGOs.[1] Govt. Hospitals pricing includes drugs, lens and others (IOL lenses cost Rs. 300–750), [2] Aravind price for surgery ranges by room type and includes total cost of stay, IOL lens (Rs. 500) and medicines,[3] Private Hospital comparison for a clinic in a non-metro location,[4] High-end Pvt. Hospital refers to clinics like Shroff Eye Clinic (Bombay) with non-foldable IOL lens

Source: IIMA Case Study — AECS, Interview, Secondary Research, Monitor Analysis

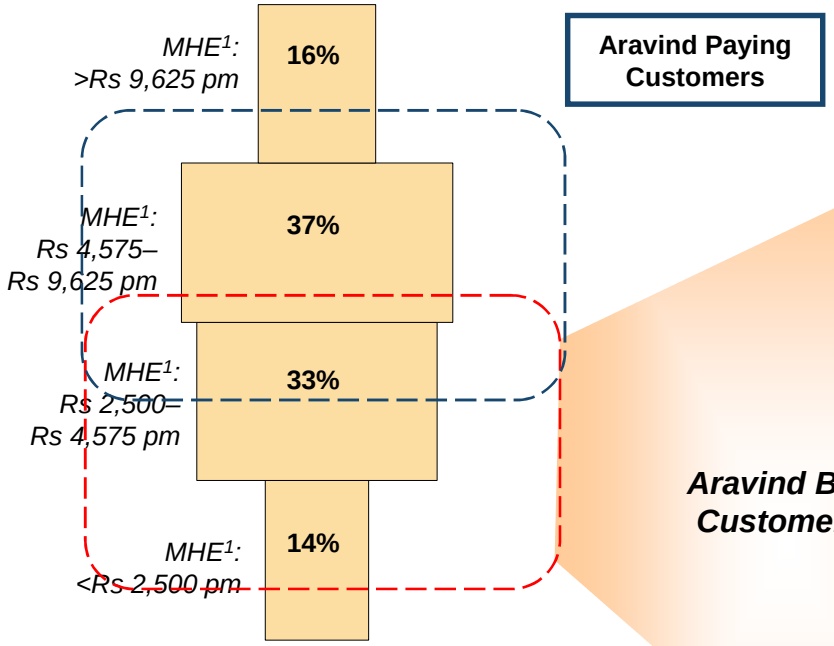
Case Study

Aravind: Customer Profile

The majority of Aravind customers are B60 with household income of Rs. 2–3k a month



Urban India Income Pyramid (2004–2005)



Aravind B60 Customers

Customer Details

- A typical Aravind B60 customer is an agricultural labourer, earning a daily wage
- He tends to be 50+ years of age
- He faces barriers of access, lack of knowledge, cost and loss of wages in his attempt to get medical care
- He along with a majority of Aravind's B60 customers, gets free treatment at Aravind and comes to the Aravind hospital via the eye camps

Customer Profile

- Example: Walk-in, Free patient — A couple from Andhra Pradesh

"We had a bad experience at the government hospital close to us. So, came here because of the quality . . . The private clinic charges Rs. 2,000. Here, we pay Rs. 500 per eye and can stay in the hospital itself"

– Customer

*"An individual who regained vision through cataract surgery generated 1,500% of the cost of surgery in **increased economic productivity** during the first year following surgery"*

– Survey amongst Aravind Eye Care patients

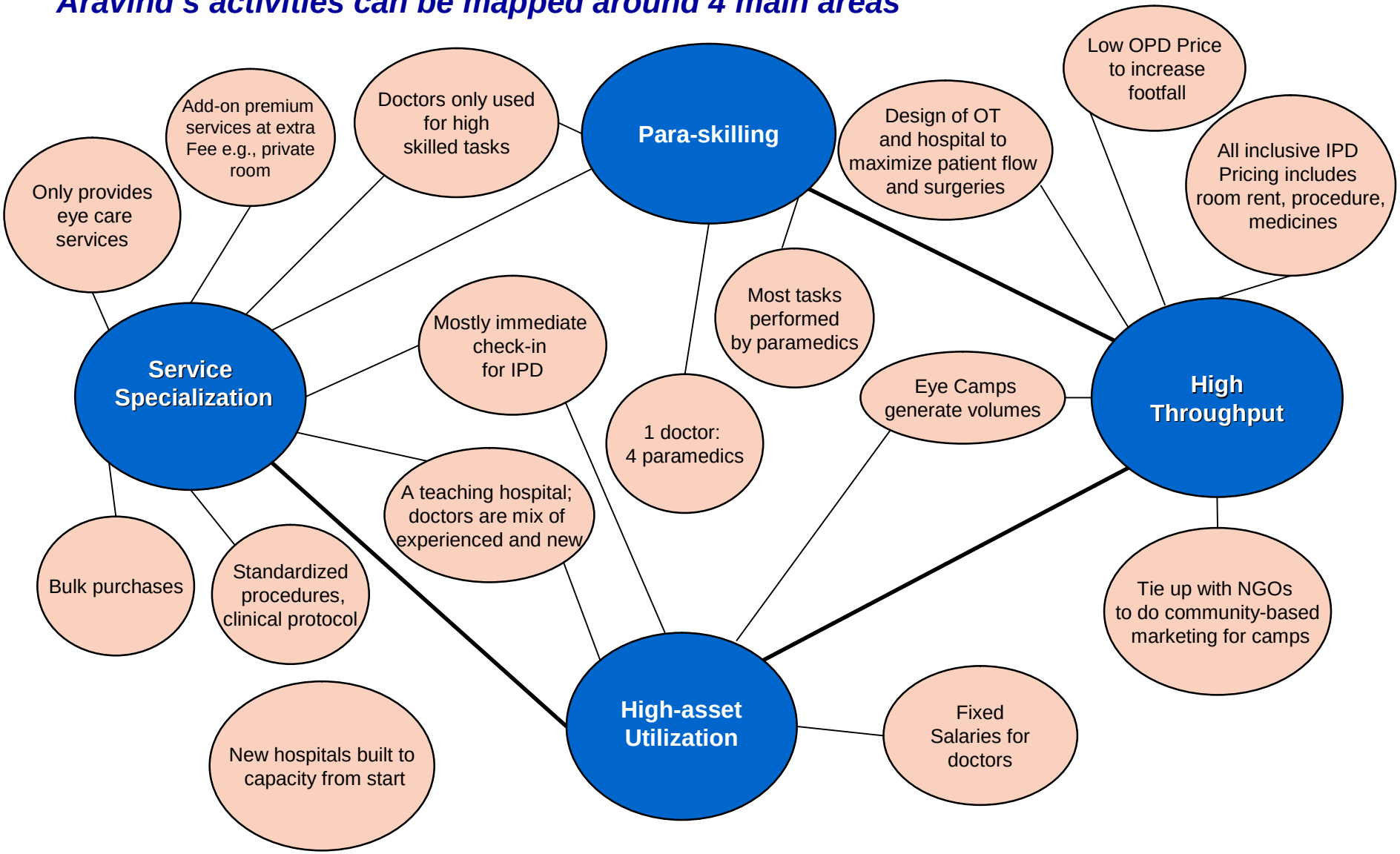
[1] Monthly Household Expenditure

Source: NCAER, Secondary Research, Interviews, Monitor Analysis

Case Study

Aravind: Activity System

Aravind's activities can be mapped around 4 main areas



Source: Interviews, Secondary Research, Monitor Analysis

Case Study

Aravind: Para-skilling(1/3)

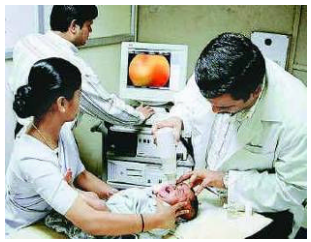
ARAVIND EYE CARE

There are four components to para-skilling that Aravind effectively employs

Para-skilling

- **Disaggregation of Task**

- **Appropriate skill-usage at every step**



- Patient Registration
- Vision & Refraction Test
- Prelim. Examination
- BP/Eye Tension/Dilation
- Final Diagnosis

- **Standardized Process/Protocols**
- **Training**

Source: Interviews, Secondary Research, Monitor Analysis

Case Study

Aravind: Para-skilling(2/3)

Aravind has pioneered the disaggregation of its delivery mechanism by breaking up the process and using skill-appropriate labour at every step

Aravind Eye Care — OPD

	Time (min.)	Staff
Patient Registration	5	Medical Records
Vision and Refraction Test	10+10	Trained Refractionist
Prelim. Examination	20	Jr. Doctor
BP/Eye Tension/Dilation	30+30	OPD Sisters
Final Diagnosis	5	Doctor

Total Time/Patient: <2 hours
Time of Doctor: 5%–10%

Aravind Eye Care — IPD

	Time (min.)	Staff
Patient Registration	5	Medical Records Staff
Pre-Operation Counseling	10	Trained Counselors
Case-Sheet & Patient Room Assignment	5+5	Medical Records Staff / Ward Sister
Pre-operation Medicines / Tests	15	OT Sisters
Surgery	10–15	Doctor
Post-operation Care	5	OT Sisters
Post-operation Counseling	10	Trained Counselors

Total Surgery Time/Patient: 1–1.5 hour
Time of Doctor: 10%–15% vs. 30%–50% in Private Clinic

Source: AECS Case Study (Harvard, IIMA, IIMB), Secondary Research, Interviews, Monitor Analysis

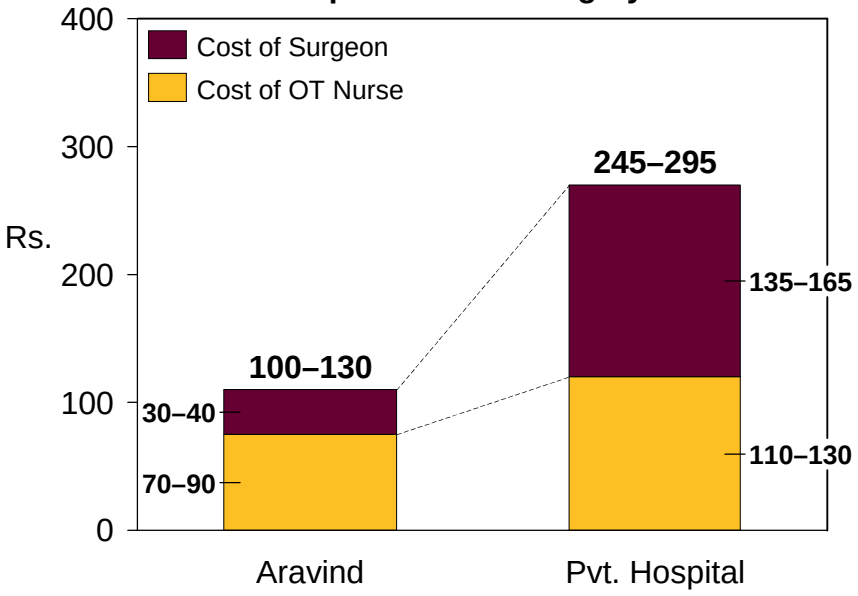
Case Study

Aravind: Para-skilling(3/3)

ARAVIND EYE CARE

Para-skilling helps Aravind lower cost and increase efficiency

Cost of Medical Staff (Doctor, OT Nurse) per Cataract Surgery[1]



Advantages of Para-skilling at Aravind

1
- **Reduced** the **cost of medical staff** per cataract surgery **to 45%** of a private hospital
  - Aravind: 1 surgeon, assisted by 4 in-house trained staff
  - Private: 1 surgeon, assisted by 1–2 qualified nurses

2
- **Increased utilization** of expensive resource **(doctors)** by using para-skilled staff for all tasks except final diagnosis and surgery
  - 45% of total staff are clinical paramedics

3
- Further **cost reduction amongst paramedics** by keeping the ratio of employee to trainees at 60:40
  - Employee wages start at Rs. 3,300/month vs. Trainee stipend of Rs. 500–700/month

4
- Increased productivity due to **specialization by activity** for a paramedic (MLOPs are trained in a particular category and further specialize in the same)
  - For example, OPD nurse may specialize in pediatric OPD

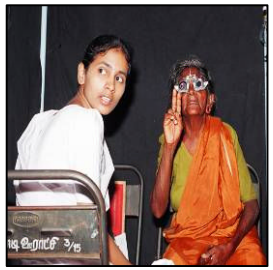
[1] Aravind: Doctor salary-Rs. 24,000/month,200 surgery/month, 26% of time on surgery; OT Nurse-Rs. 3,900 (4 nurses assist 1 operation), 220 cases assisted per month
Source: AECS Case Study (Harvard, IIMA, IIMB), Secondary Research, Interviews, Monitor Analysis

Case Study

Aravind: Paramedic Profile(1/2)

ARAVIND EYE CARE

Paramedics form the backbone of Aravind, running everything from outpatient care to operating theatres



"Paramedic" / MLOP

- Paramedic refers to "Mid-level Ophthalmic Personnel" staff consisting of 10 categories
  - **Clinical staff**: Refractionist, Counselors, OPD, OT, Ward
  - **Non-clinical staff**: Medical Records, Catering, Optical Sales and Technician, Housekeeping, Instrument Technician and Stores
- **Typical Profile:** Girls from poor families in rural areas, Class XII (40%–50% marks)
  - Focus on girls who have no chance to go for further education and **low aspirations** (family background)

Recruitment and Training

- **Recruitment**: Aravind relies on 3 ways of recruiting — engages with School Principals, 'word of mouth', and notice at Aravind's OPD waiting halls
  - Application consists of written essay, and in-person interview with girl and parents to test for the right **'attitude'** and **common sense**
- **Training**: All paramedics undergo 2 year training; 6 months of basic course, rest on-the-job in different categories

"*Our job is to make an ordinary person, extraordinary*"
– Dr. Natchiar, Director, HR

Salary

- All paramedic across categories are **paid equally**
  - During training period: Rs. 500 for 1st Year and Rs. 700 for 2nd Year; Free meals, accommodation and medical assistance
  - Starting Salary: Rs. 3300/month (increases to Rs. 5,000–15,000/month)
  - Short-term posting at non-base hospital paid an extra Rs. 3,000/month

Incentives

- **Responsibility**: MLOPs are given responsibility of running most Aravind systems, e.g., new hospital in Lucknow was started by them

"At Aravind, MLOPs run everything from patient flow, to arranging the cases for operations"
– Dr. Haripriya, Head, Cataract

- Attrition of 7%–8% in initial years; most stay for long period of time
  - Average duration at Aravind is 10 yrs

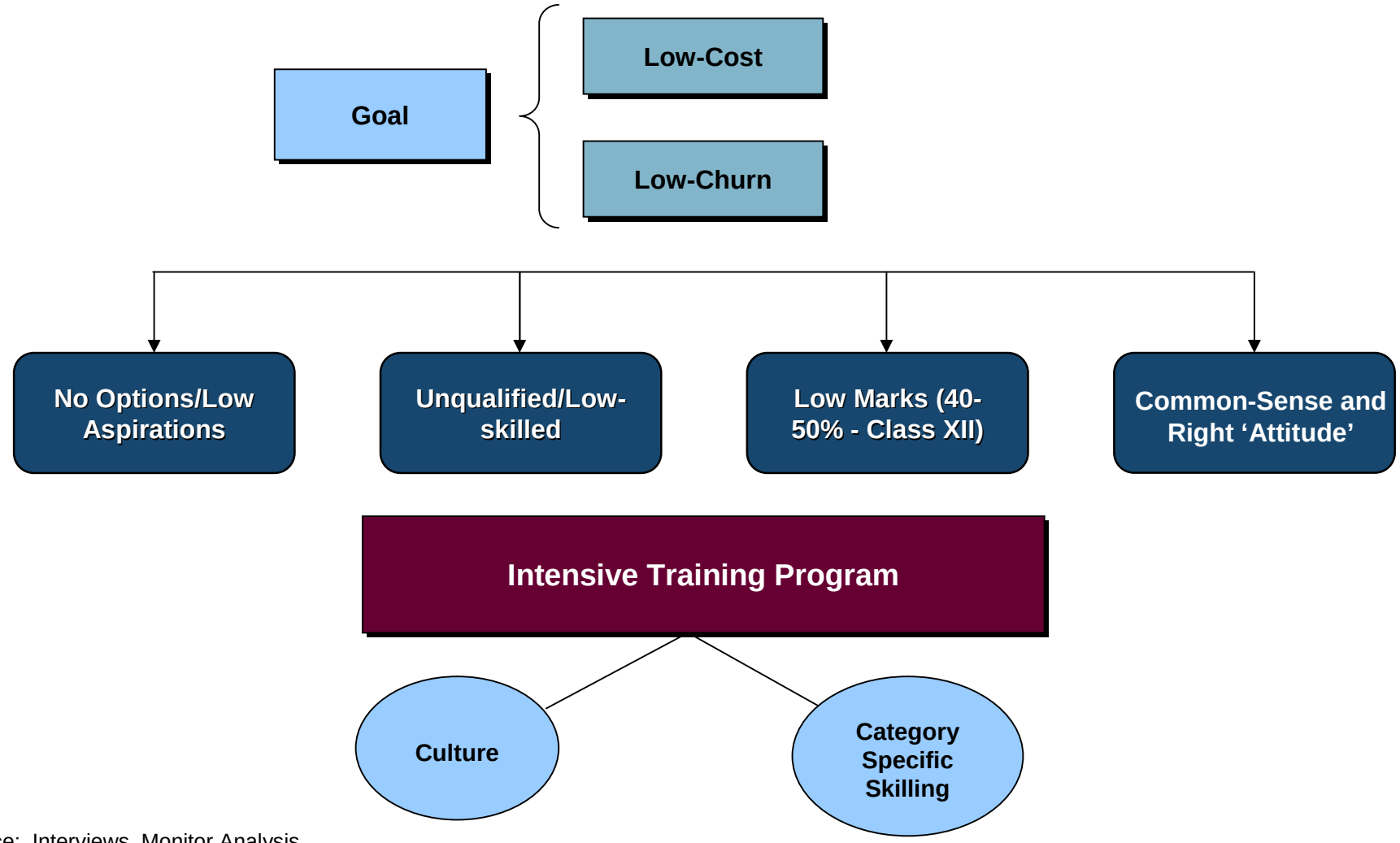
Source: Interviews, Secondary Research, Monitor Analysis

Case Study

Aravind: Paramedic Profile(2/2)

ARAVIND EYE CARE

Aravind's recruitment criteria and training program has resulted in high retention rates for paramedics



Source: Interviews, Monitor Analysis

Case Study

Aravind: HT-Patient Acquisition

Aravind generates its throughput via camps (free end-to-end service), free walk-in service (minimal surgery charges) and low OPD fee

Outreach Camps, Free end-to-end Service

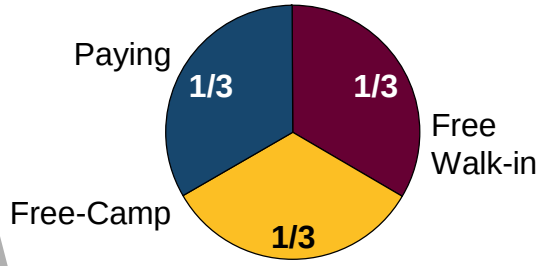
- Outreach camps provide eye care access in rural areas and improve Aravind's asset utilization
  - Acceptance initially <50%; required strategies like free treatment, transportation, food, door-to-door follow–up
  - Cost of treatment borne by Aravind, grant-in-aid (by government for lens only)
  - **1/3rd of Aravind throughput** comes from **outreach camps**

- No. of camps/month (Madurai): 30–35 (320 OPD/camp)
- Patient acceptance rate: 88%
- Camps organized with prior publicity, sponsored by Trusts / NGOs (Rs. 10,500 per camp)
- No. of staff: 1 doctor, 3 paramedics, 1 counselor, 2 opticians can screen 200 patients

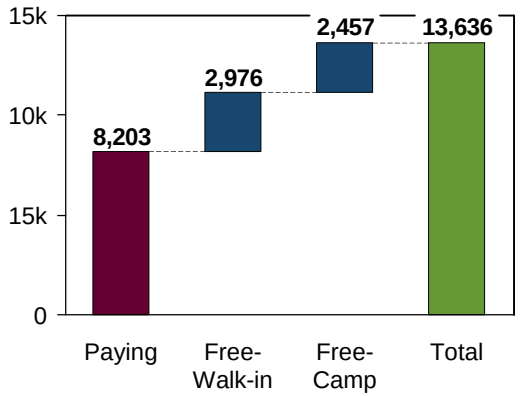
Walk-in Patients

- **Free Walk-in:** Free OPD, low-cost (Rs. 500 or more) of cataract surgery and Aravind's reputation brings in patients
  - Free walk-in patients account for **1/3rd** of Aravind's throughput
- **Paying Walk-in: Low OPD** fee (Rs. 50) increases hospital footfall
  - Aravind has **structured payment choices** for **paying patients**, starting at Rs. 4,100
    - Paying prices are ~**20%–30% lower** than market prices
  - Patient acceptance rate are high due to systems in place
    - E.g., counselors engage with patient to help them decide the type of surgery, lens, rooms, etc.

No. of Customers (Cataract) by each Channel



No. of OPD Customers/Week[1]



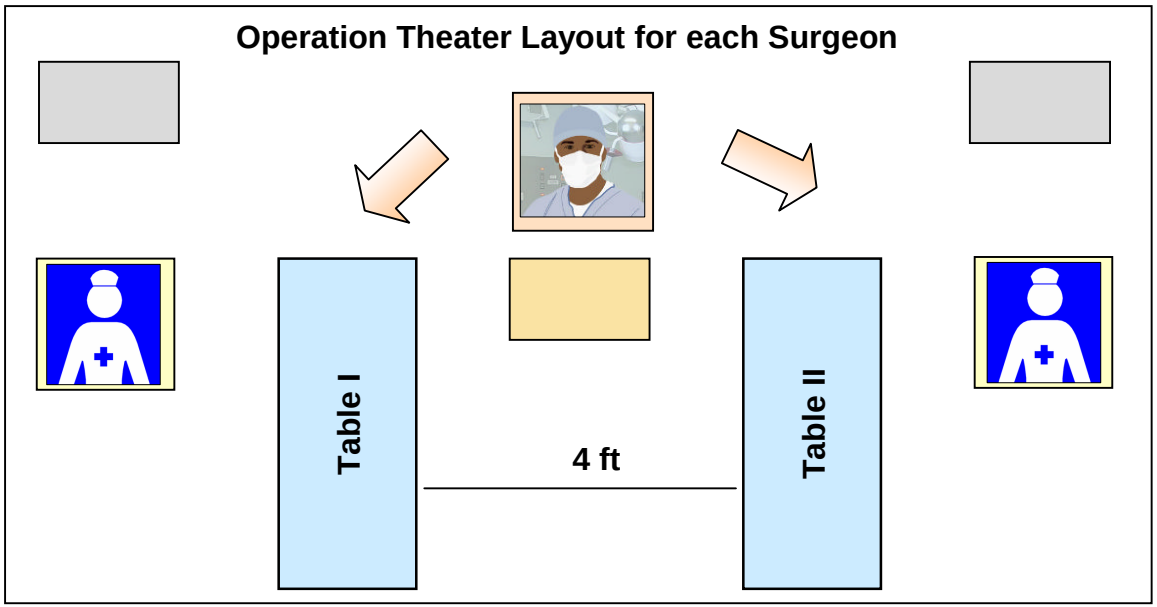
[1] OPD occurs at the camp site and only those requiring surgery or further check ups are transported to the hospital
Note: Data for Surgery is for Aravind Hospital, Madurai for 2007–2008
Source: WHO-Global initiative for eliminating world blindness (1997), Aravind Annual Report 2007-08, Secondary Research, Interviews, Monitor Analysis

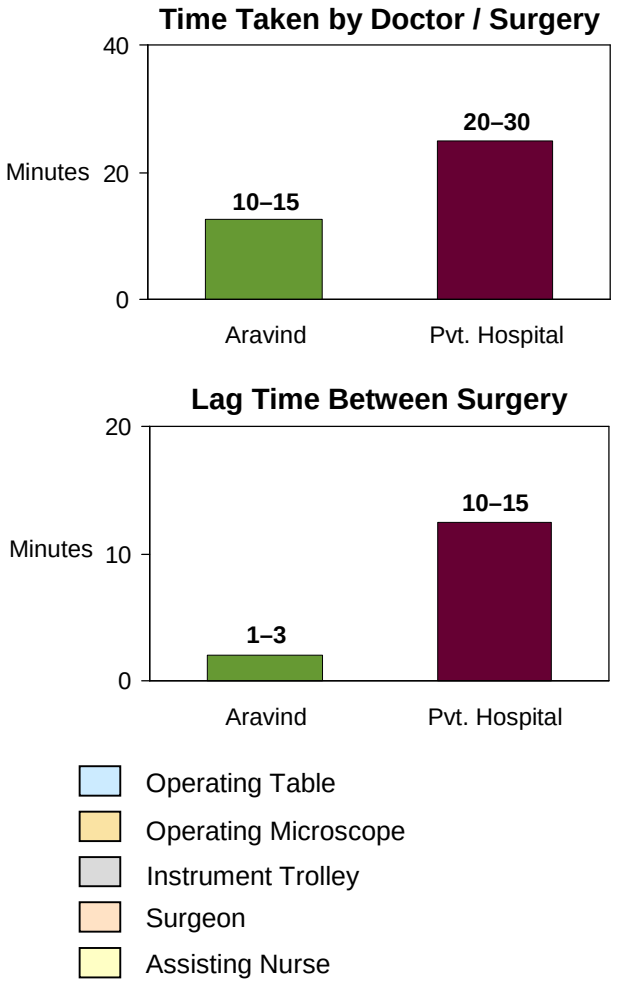
Case Study

Aravind: High Asset Utilization

ARAVIND EYE CARE

Efficient process configuration and super specialization drive high levels of productivity, further increasing asset utilization





- **Operation Theater Layout:** OT layout has 2 tables with a floor model operating microscope between them, minimizing surgeon's waiting time between operations
- **Operation Theater Workflow:** While a surgeon is operating on Table I, the assisting nurse can prepare the patient on the Table II. The surgeon moves between the two tables, supported by paramedic staff
- **Division of Labour:** With proper training, paramedical staff can perform many of the routine and also some specialized tasks

Source: Productivity: Getting Cataract Patients "Through and Out" by Thulasiraj, Interviews, Secondary Research, Monitor Analysis

Case Study

Aravind: Where it Did Not Work?

Aravind expansion into pediatrics and hearing aids failed due to reasons of commitment and lack of marketing channel

Pediatric Hospital

- Entry: Aravind opened a pediatric care hospital in Madurai
  - A large number of children go blind due to malnutrition. Aravind started nutrition camps that eventually led to involvement in a pediatric hospital
- Exit: As nutritional issues decreased, the hospital's focus became more pediatric than blindness centred and so Aravind's focus was not maintained
  - Aravind did not attempt para-skilling or any other innovation

"Heart of the leadership was in eye care"

- Mr. Thulasiraj, Senior Leadership Team

Hearing Aids

- Entry: Aravind started low-cost hearing aids manufacturing
  - Aimed at providing low-cost solution in a different field of healthcare
- Exit: No captive demand; required tremendous effort in sales and marketing and would have diverted attention from eye care

"Hearing aids was not like Aurolabs where Aravind's consumption of the high quality, low cost product was enough to keep it profitable; in hearing aids we did not have the marketing strength or knowledge" – Dr. Aravind

Transition from Consulting to 'Managed Eye Care'

- Entry: Aravind systems & processes had proved to be scalable and replicable
  - Aimed at providing consulting support to eye hospitals across the world
  - Found ability to transmit lessons and processes depended on senior leadership of the hospitals they were consulting to
- Focus on 'Managed Eye Care': Quick scale up for Aravind would be possible by the 'Managed eye care' hospital network
  - Consulting will continue but no control on the hospital limited impact
  - Going forward, Aravind plans to run the hospitals with full control on daily operations in association with partners

"We believe 'managed eye care' approach will help us grow and scale up in various states in India in a short span of time"

Source: Interviews, Monitor Analysis

Case Study

Aravind: Barriers and Challenges

While reaching scale, Aravind surmounted barriers at different stages of its growth . . . however, certain challenges remain . . .

Barriers Surmounted

Funding

- Finding start-up **capital** for expansion — founders mortgaged houses, took no or low salaries
- **Soft funding** for Aurolab (manufacturing unit) and LAICO (management institute)

Human Assets

- Difficulty in finding talent at all levels — nurses, doctors, etc. Aravind started **in-house training** of paramedics, post graduate institute for doctors and fellowship training in hospital management
- Designed the **'value-proposition' for doctors**, keeping in mind the different phases of doctor life-cycle
  - Increasing salaries to market rates in initial phase, other incentives like research, conference participation later

Stakeholder Awareness

- Increased customer awareness by **pioneering eye camps**
  - Provided access, customer education and marketing on-site
- Building trust by being strongly oriented to the poor and their problems

Operational Redesign (Processes and Systems)

- Clinical processes redesigned to ensured maximum efficiency, quality and affordability
- Technology and MIS investments to allow growth
- Moving from eye camps to telemedicine for more in-depth and regular eye care
- Aurolab expanding production from lenses to sutures to "orphan" drugs spreads cost

Input Cost

- Expensive imports — lenses cost $200. **In-house production** reduced cost to $5 a pair and jump-started Indian lens production industry

Challenges Ahead

Human Assets

- **Recruiting paramedics** challenging due to increase in job opportunities (BPO, airlines) and educational opportunities (financial loans and rural colleges)
- Lack of talent at high-level (senior doctors) and alignment with **senior leadership**, especially in new locations

Organizational Culture

- Transmitting Aravind vision and culture of constant improvement in new hospitals

Partnerships

- Community acceptance in a new location can work in favour or against Aravind, depending on the partner
- Fall out with partner could stop Aravind's involvement in the hospital

Source: Secondary Research, Interviews, Monitor Analysis