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E-Health Point: Water Distribution & Health Insurance Report

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GLOBAL SOCIAL BENEFIT FELLOWSHIP

E-HEALTHPOINT: WATER DISTRIBUTION & HEALTH INSURANCE REPORT

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Project Background

The Global Social Benefit Fellowship (GSBF) launched in January 2012 as an interdisciplinary program of mentored, field-based study and research for Santa Clara University undergraduates within the GSBI™ worldwide network of social entrepreneurs. The fellowship studies the application of innovative technologies and sustainable business models to underserved communities across the globe as a vehicle for practical social justice.

Beginning in June 2012, our team spent 6 weeks in Bathinda, Punjab working with E-Healthpoint (GSBI™ 2008) and the rural communities it serves. Under the direction of Dr. Sumeet Ahluwalia, Associate Vice President & Head of Health Operations, and Amit Jain, CEO, we conducted research in order to produce recommendations for standardizing the existing water distribution model, and assessing the potential for offering rural health insurance.

The results are included herein.



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Executive Summary

In order to make recommendations for water distribution restructuring and investment, we calculated current and potential revenue at each site. Potential revenue figures are based upon our proposed shared revenue model and include unmet demand for water distribution.

Field visits to waterpoints indicated significant existing demand for water distribution, but due to multiple limiting factors, distributors were unable to cater to all households expressing interest in water delivery.

A detailed framework provides a way to evaluate efficiency and productivity of current and future water distribution sites taking into account number of households reached, number of distributors necessary, distributor vehicle type among other key factors. Distribution logistics including can ownership is also addressed under the proposed model. In response to a lack of can ownership policy and enforced regulation regarding types of water containers used, we present a can purchasing plan along with recommendations for maintenance and tracking of EHP-owned cans. The water distribution assessment also includes management and quality control recommendations, setting forth key issues to be addressed when establishing a set protocol regarding waterpoint operations and an acknowledgment of the total quality management critical to ensure provision of high quality clean water to customers.

Community awareness of health services offered by EHP was assessed based upon survey results from six of eight healthpoints. These results were segmented into above poverty line (APL) and below poverty line (BPL) groups to measure market saturation and to better understand unique barriers to participation.

We present a comprehensive view of community health insurance (CHI) schemes currently in place in India with the intention of providing a framework from which EHP can base further health insurance initiatives. Four critical success factors for any CHI scheme are outlined, as well as a discussion of potential challenges to their implementation.

Water Distribution

Revenue, Pricing, and Ownership

EHP's existing method of water distribution varies across waterpoints with the labor being outsourced to third-party individuals. In the existing method of outsourcing, all distribution revenues from daily household delivery go directly to the water distributor, with EHP seeing none of those funds. This system makes it difficult to monitor the growth of impact and to respond to consumer concerns. Because water distributors are not affiliated with EHP, it is impossible to ensure that high quality clean water is ultimately reaching the consumer.

Figure 1: Distribution Revenue Per Site

Site Location	Total Distribution Revenue (rupees/month)
Lakri Khanda	12,500
Kila Park	12,500
Bicchi	7,000
Baghwali	11,500
Maur Road	7,500
Bucho Mandi	2,400
Rampura Municipal	8,000
Rampura Bhagat Singh Chowk	15,250

Figure 1 shows the monthly revenue distributors receive at each of 8 sites studied. Values are based on interviews conducted with the help of EHP Project Managers. From these sites alone, total distribution revenue amounts to

Rs 76,650 per month.

Based on these values, projected distribution revenue across all 100 waterpoints amounts to an estimated

Rs 11,497,500 per year.

This is an opportunity for EHP to significantly increase water revenues, but the current method of outsourcing distribution must be changed.

Shared Revenue Model

An alternative distribution model involves that revenue be shared between the distributor and EHP. This is based on a revenue percentage determined by EHP. The monthly distribution rate paid by each household will be determined collaboratively between EHP and the distributor (has knowledge of income levels of the local market).

Figure 2: Shared Revenue Model Sample Data

Water Subscription Rate (rs/mo)	75
Distribution Rate (rs/mo)	100
Total Households	80
EHP's Revenue Percentage	20%
Distributor's Revenue (rs/mo)	8000
EHP's Profit (rs/mo)	1525
Distributor's Income (rs/mo)	6475
Profit Shared with EHP (rs/mo)	1525
Households Needed to Recover Shared Profit	15.25

The values in Figure 2 are based upon a formulaic model included in the attached spreadsheet.

Figure 2 shows the results of our variable pricing model, included with functional formulas in the attached spreadsheet. Water subscription rate, distribution rate, number of households, and EHP’s revenue percentage can be adjusted to give outputs of EHP’s monthly profit, and number of households needed to recover the profit shared with EHP. In our proposed model, the water distributor will be compensated with a free water subscription, and the distributor has incentive to reach new homes, thus increasing customer base, in order to make up for income he now shares with EHP.

Scope & Unmet Demand

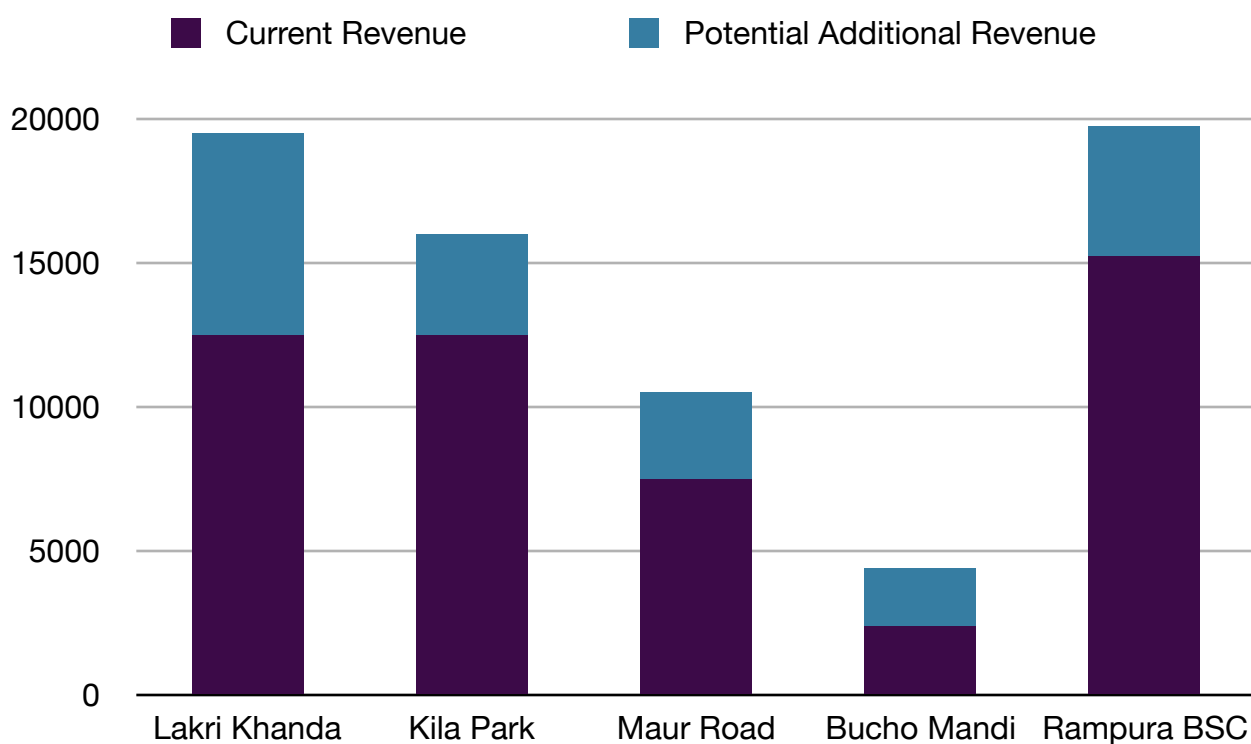


Figure 3: Potential Additional Revenue from Unmet Demand in Distribution

Distributors at 63% of waterpoints reported unmet demand for water distribution. Figure 3 shows the current revenue levels per site in violet, with the potential additional revenue based on unmet demand (by estimated number of households) in blue. Each bar as a whole represents the total distribution revenue per site if unmet demand is met. Building upon values from the sites in Figure 1, total distribution revenue incorporating unmet demand would increase from Rs 76,650 to

Rs 96,650 per month.

Based this data, total distribution revenue incorporating unmet demand projected across all 100 waterpoints amounts to an estimated

Rs 14,497,500 per year.

Limiting Factors

1. Vehicle:

Distributors operating bicycle pull carts, and in some cases motorized 3-wheelers, commonly expressed that their productivity is limited by the physical capital they have access to. Vehicle type directly affects the efficiency of each distribution round, determines the number of rounds that must be made each day, and accounts for customer satisfaction in promptness of water delivery (customers prefer to receive water in the morning).

2. Manpower:

Distributors gave reasons for unmet demand as an overload of labor for one individual. To solve this problem, some distributors hire an assistant and pay them 24%-40% of total distribution revenue received. There may also be multiple distributors per site, reducing productivity of each individual.

3. Logistics at waterpoint:

Multiple distributors expressed concerns about the inefficient system of can filling that takes place at each site. They have to fill distribution cans from the customer taps, which doubles the time it takes to fill one round of cans (30 minutes becomes 1 hour). There is also an issue of decreased water pressure when there are many customers at the taps.

4. Price:

In the some markets, the price of water distribution is too high while in the poorest markets it is the base price (75 rs/mo) of water that is too costly. This may indicate that EHP's services are not affordable for the poorest of the poor.

Investment Recommendations

In order to maximize impact and revenues, efficiency must be increased. In blocks containing multiple waterpoint sites, multiple bicycle pull carts or 3-wheelers should be upgraded to one 4-wheeler per block. The appropriate number of 4-wheelers is dependent upon waterpoint expansion to date. EHP would own and maintain these vehicles. This would eliminate the widespread market spoilage occurring when distributor owned vehicles break down and EHP's reputation for providing daily clean water suffers.

Figure 4: Four Wheeler Specifications for Vehicle Investment

TATA ACE ZIP	MAHINDRA GIO	PIAGGIO APE MINI
		
Price: 232,100 rs	Price: 213,308 rs	Price: 236,790 rs
Mileage: 25 km/L	Mileage: 28 km/L	Mileage: 29 km/L
Service Cost: 1,500 rs/4 mo	Service Cost: 1,700 rs/4 mo	Service Cost: 1,500 rs/4 mo
Weight Capacity: 600 kg	Weight Capacity: 550 kg	Weight Capacity: 503 kg
Expected Operating Cost: 7,615 rs/mo	Expected Operating Cost: 7,525 rs/mo	Expected Operating Cost: 7,475 rs/mo

Figure 4 presents the cost breakdown and productivity metrics for the 3 best vehicle upgrade options to be implemented at one per block. Their price, mileage, cost of maintenance (once every 4 months or 10,000 km), carrying capacity, and monthly operating cost (including service and fuel expenses) are displayed for comparison.

Logistics

The following will propose a four-step plan by which EHP may evaluate door-to-door distribution in both potential and existing EHP communities based on the number of customers at each site. These suggestions are based on the data collected at various water sites throughout our time in Bathinda and conversations with our advisor Dr. Ahluwalia.

Manual Pull Cart

The smallest customer base we encountered included 15 customers, many of whom were purchasing distribution services from EHP. For this circuit, a manual bicycle pull cart can deliver to these 15 customers within 2.5 hours, depending on customers' distance from the waterpoint. Up to ten cans may fit into a cart at once, with the distributor returning to the waterpoint once during the delivery circuit to refill cans for the next segment of the route. This scheme may be carried out for up to sixty customers, although it is advised that



once the delivery customer base exceeds forty customers, an additional driver be hired in order to help evenly distribute the delivery load between two drivers.

A distributor operating a manual pull-cart reaching 15 customers earns Rs 1,750 per month. Research found that most distributors hold union jobs during the afternoons that they were able to attend upon completion of morning delivery routes with EHP. This helped supplement the family income and was an integral part of each distributor's family financials. It is suggested that EHP either continue to maintain flexibility in allowing these distributors to keep both jobs (understanding the time constraints this poses) or adequately adjust these distributor's pay or rates in order to accommodate the needs of the distributors.



Motorized Pull Cart

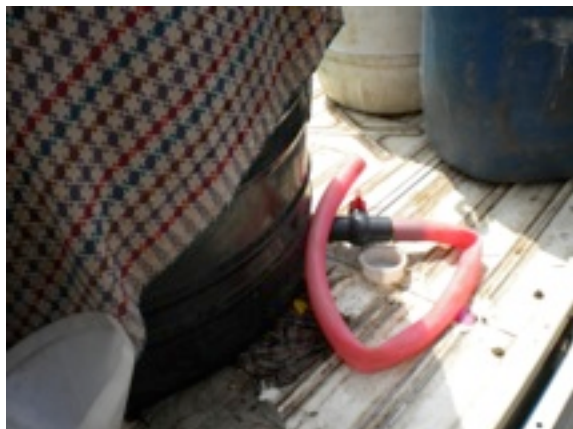
For water sites serving at least sixty distribution customers, the vehicle should be upgraded from a manually operated pull-cart to a motorized cart (motorcycle with cart attached to rear wheel and frame). It should be noted that this motorized cart allows the

distributor to reach not only more customers within the immediate area of the water site, but is especially useful in reaching widely dispersed customer bases where there is no high concentration customer area, which may be a common situation when scaling in a saturated community. The average cost of a motorized cart is Rs 20,000. The maximum households that can be reached is around 100, but this varies widely with the layout of the village and the spread of households.

Automated Vehicle Delivery

For the highest volume sites, customer bases numbering over 115, an automated vehicle is the most efficient way to deliver water to customers. For these sites, it is also advised that a 1000L tank be purchased in order to decrease the number of trips required to reach all customers. It is important to note that the use of the large tank introduces a higher risk of contamination in the transfer of water from the tank to the customers can. This requires the establishment and execution of strict water-handling protocol to be followed by all EHP employees, distributors, and water operators (see below for examples of the operations protocols suggested).





Can Ownership

To further standardize the distribution process, we recommend that customers be required to purchase a water can upon subscribing for water with EHP. For those unable to pay the upfront cost, a 6-month payment plan could be arranged and added to the regular monthly subscription fee to be collected by the water operator. With this suggested method, EHP would also be required to purchase another set of cans that would be stored, filled, and cleaned at the water site, to maintain quality of the cans and subsequently the water that fills them. The water distributor would fill one cart load of cans (~10) at the water site, deliver the cans to each customer, and pick up the customer's empty can from the day before. Upon returning to the water site, the distributor would drop off the customer's cans for cleaning by the water operator or a member of the field staff, collect and fill ten more cans from the water site, and continue on the route. In this instance, EHP would be required to stock each water point with the double the maximum cart load for each distributor. Customers would have a cleaning fee added to the monthly subscription to account for supplies and labor.

For high volume sites, where 1000L tanks are in use, customers would be required to purchase personal cans but not required to pay an additional cleaning fee in addition to the monthly subscription. The proper tank would be selected to allow for easy cleaning and low chance of contamination.

Management & Quality

Control

In order to preserve brand equity and reputation, processes must be enforced or revised such that the reputation of the brand is not compromised. This applies most pertinently to water distribution procedures and management of waterpoint staff.



Waterpoint Operations Protocol

Observations of interactions between Water Operators, Field Coordinators, and customers indicated areas of miscommunication and a lack of established protocol regarding waterpoint operations. Key issues to be addressed include:

- Knowledge of current pricing and promotions
- Customers can only use current subscription cards
- Customers can only take water in designated EHP cans
- Maintenance issues be reported regularly to FCs

Total Quality Management

EHP's value proposition emphasizes the provision of high quality clean water, making it essential that a product of high quality reaches the end user. A large number of potential points of contamination were observed throughout the study of the water distribution process. In thoroughly understanding the importance of minimizing and eliminating water contamination, Water Operators can maintain the high quality of EHP's product and while delivering the intended social impact.

Health Insurance

Awareness of Health Services

When determining the general awareness of EHP health services at various sites throughout Punjab, a survey was issued with the intention of collecting data on client's use of health services, interest in a health insurance package, and poverty level status (above poverty line [APL] and below poverty line [BPL]). In total, 53 customers were interviewed by community health workers. 23 respondents classified themselves as APL, 27 as BPL, and 3 did not report a status.

In an effort to maintain a short and concise survey, the number of times a client visited a healthpoint in the last year was used as a proxy for general awareness of EHP services and sites. It could be argued that no visits to healthpoints indicated good health on the part of the client, but given EHP's focus on preventive medicine, it would be expected that all clients would visit the healthpoint at least one time throughout the year for an annual check-up. In all cases, at least two-thirds of respondents (Mallan and Harike Kalan) had visited a health site within the last year, indicating a relatively high level of awareness although more could be done to emphasize the importance of preventive medicine and EHP's role in its administration.

Use of Health Services: APL & BPL

As EHP has placed an emphasis on offering low cost, high quality diagnostic testing and pharmaceuticals making health services available to all in need, survey data was collected regarding the client status in terms of the national poverty line as established by the Indian government.

At all surveyed sites, BPL clients reported fewer healthpoint visits than those identifying as APL. It is unknown what barrier prevents those below the poverty line to visit healthpoints as frequently as their APL counterparts, but cost and site location are most probable.

Perhaps more outreach and education on the importance of early diagnosis and quality care for overall health is needed to continue to attract BPL clients and patients to EHP health sites.

Community Health Insurance Models

As an organization with an established presence in communities by way of healthpoints, EHP may be in an ideal position to offer health insurance as an additional service to clients. This section of the report aims to synthesize the three basic community health insurance (CHI) designs already in place throughout India, with an emphasis on the traits that have made these programs successful.

We recommend that EHP more thoroughly understand the relationship between community member, providers, and insurers before proceeding with the roll-out of a community health insurance plan.

Figure 5: Existing Community Health Insurance Models in India

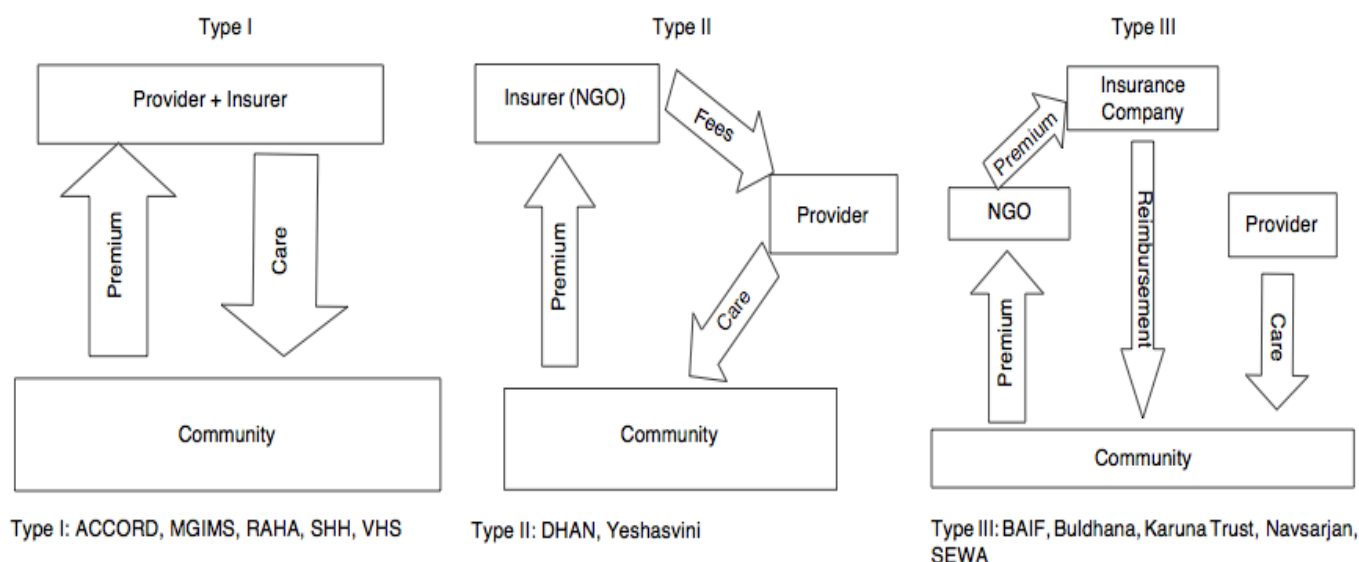


Image from: Devadsan, N., et al. "Community Health Insurance in India: An Overview." *Economic and Political Weekly*, July 10, 2004. <http://www.srtt.org/downloads/communityhealth.pdf>

Analysis of Community Health Insurance Models

Type I: A hospital provides both health care and management of the insurance program. There is a consistent attempt to maintain quality (both in medications prescribed and sold, and medical care administered) and keep costs down.

Type II: The organization (EHP) is the insurer, but purchases care from an independent provider (hospital, etc.).

Type III: EHP would purchase both care and insurance from independent providers.

In Type II and Type III schemes, it can be more difficult to monitor cost containment and quality of care, simply because these services are outsourced to an independent provider or company. In almost all cases studied, premiums averaged between Rs 20 to Rs 60 per person per year, and fixed upper limits between Rs 1,250 and Rs 100,000.

CHI Critical Success Factors

1. Affordable premium:

As mentioned before, most potential clients are willing to pay in the range of Rs 20 and Rs 60 for a yearly premium per person. It is important that this cost limit be made clear to interested insurers as this will assist the penetration of their products into the rural market.

2. Comprehensive benefit package:

Diseases like tuberculosis, HIV/AIDS, and mental illnesses are of significant public health importance and should be covered by the CHI plan. Our survey also showed that many women did not use the health services at EHP because the sites were not equipped to deliver infants; the CHI plan should cover these services as well. Lastly, chronic diseases like diabetes and hypertension were prevalent in our survey results, indicating a need for coverage under the plan that is ultimately adopted.

3. Credible insurer:

As EHP has already established strong ties with communities it is imperative to utilize these relationships to convey that the selected insurance provider

(whether it be EHP or another organization) be trustworthy with these clients' investments.

4. *Minimal administration load:*

Unnecessary documentation can lead to frustration and confusion on both the part of the customer and EHP. Streamlining processes is key for success; perhaps a mobile phone application could be developed to help track client health expenses, premium payments, and reimbursement timelines.

Potential Implementation Challenges

The inclusion of CHI initiatives in EHP's operations will require either a massive expansion of current health services or strong, trustworthy partnerships with insurance and healthcare providers. It will also require the administrative, managerial, and financial support to make these processes as seamless as possible.

Lastly, perhaps the greatest barrier to implementing a health insurance plan is the general misconception and lack of understanding amongst consumers regarding insurance and what it entails.

Throughout many of our interviews in the field, both formal and informal, many clients indicated a disinterest in paying upfront for medical services that may never be used. Many lived too far away from a hospital to justify paying a premium and thus preferred to use that money at a local doctor or RMP. Many stated that their families were too large to purchase coverage for every member. These barriers to inclusion are all important to consider when discussing a plan of this nature.

Conclusions

Based on our limited work in the field, we have identified significant barriers to broad adoption of a CHI plan. As detailed above, these barriers include:

- Current staffing limitations that prevent the full execution of this project
- Absence of relationships with insurance companies and hospitals (depending on the scheme that is decided upon), to our knowledge
- General consumer misconceptions regarding health insurance

We recommend further market studies and pilot tests before embarking on a broad program, both of which will require time and capital investment in the following areas:

- Building relationships with potential insurance and hospital partners
- Community education and outreach to change perceptions of health insurance and preventive medicine
- Addition of an EHP employee whose sole focus would be the implementation and execution of this project