msbc

mobiles for social & behaviour change

case practices from southern india

contents

introduction

India has more than 930 million mobile subscriptions[1]. This is up from about 300 million in year 2002 and is expected to reach 1.35 million subscribers by 2016. The mobile penetration rate is more than 50% and there is room for further growth. The reach and penetration of mobile phones is almost universal and all-inclusive. The BoP segment has also not been left untouched. The latest data suggests that more than half of the total mobile phones sold in the previous year were smart phones. This suggests that technology is reaching the entire population faster than imagined. This technological surge has also resulted in innovative uses of mobiles for social and developmental impact.

There is a rising demand for communication network, access and services in the rural areas as well. This is substantiated by the TRAI data on growth rate in mobile usability indicators and mobile penetration data, which suggests that the rural wireless subscribers increased from 350.37 million at the end of Sep-13 to 359.67 million at the end of Dec-13. In addition, the rural subscription increased at the rate of 2.65% in Dec-13 as against the decline rate of 0.21% in Sep-13. The share of rural wireless subscription increased from 40.25% to 40.58% in total wireless subscription in this quarter. It is estimated that by 2015, more than 90% of the total population will come under the "coverage gap". This will further enhance the services and access networks including demand for 2G and 3G services. In the given scenario, the stakeholders have set their eyes on themes like network extension in the rural areas, network upgrading, innovative and customized applications, and convergence. The intra- and inter-departmental focus under the National Mobile Governance Framework is expected to spur the service delivery. The onus has shifted to the public agencies like Universal Service Obligation Fund (USOF) to step up mobile networks and coverage.

In this context, it might be interesting to note that rising mobile reach has a new meaning in the social empowerment. Mobiles have become an effective tool for social and behaviour change. The digital inclusion has raised the social position of underserved populations like women. Many mobile-based interventions by the government, non-government organizations (NGOs), bilateral agencies and private sector players have provided local solutions in locally suitable context to many problems. This scenario has resulted in elevated status of mobile phones as an instrument for social and behaviour change. A review of 20 practices for this paper indicates that the mobile phones have emerged as an effective mechanism to derive project impacts in areas like- information dissemination, training of frontline workers and interpersonal communication, and project monitoring and tracking. The case studies are drawn mostly from practices in the Southern India, including Karnataka, Tamil Nadu, Andhra Pradesh and Kerala. These practices and projects have been effective on various aspects, whilst have also faced multiple challenges like the inertia against the social and behavioural adjustment vis-à-vis age-old conventional practices.

In this context, there is a need for policy support for the priority sectors - educationm, health, water and sanitation and women & child development. The key to success and greater good can be in collaborative support from the government and other key stakeholders. There is also a need for considering and establishing the mobile phone as an essential utility device and as a potent tool for bringing about social and behaviour change. The need of the hour is to establish a central corpus to support such projects, for research and development aspects and for policy support. This paper on various projects presents the key areas of emphasis in the mobiles-for-development space in India. The challenges against which these practices were conceptualized and devised and the results they are yielding are also discussed here. The paper is expected to emerge as a guide for various stakeholders regarding the various ways in which mobile phones are emerging as a tool for social and behavior change, and the manner in which mobiles hold relevance to support the efforts for development globally.

[1]TRAI 2014 Reort on Telecom Subscription (http://www.trai.gov.in/WriteReadData/Press-Realease/Document/PR-TSD-May,%2014.pdf)

health management information system (hmis)

mobile technology for accurate data collection and better disease management by frontline health workers

the challenge

With rising population, the country is facing an acute shortage of expert health professionals who can properly diagnose and treat the masses. The problem is worse in rural areas where well-qualified doctors do not like to venture, because of various reasons including poor infrastructure and lack of urban facilities.

the solution

SughaVazhvu Healthcare has developed a Health Management Information System (HMIS), which is a cloud-hosted application, built on an open source platform. Located in Tanjore District, Tamil Nadu, SughaVazhvu comprises of doctors, nurses and field coordinators who work as a team for making access to healthcare a reality for rural populations. The application has both web based and mobile based versions to enter the data of patients. The web version is used at the clinics accessed over laptops by physicians, while the mobile version is used in the field by community health workers and accessed over low cost android phones. During the enrolment exercise where the entire catchment population demographics are recorded at the household level, down to the GPS co-ordinates through a mobile based intervention, the HMIS is instrumental. The enrolled population is issued bar-coded identity cards

sughavazhvu healthcare has developed a health management information system (hmis). which is a cloud hosted application on an open source platform mobile phones are deployed in community and to the health workers for accurate data collection and better disease management.

and these form the seed database for the clinic. Additional modules built within the HMIS are used to document patient visits, maintain diagnostic information, schedule follow-ups and help in disease management. Other than capturing a detailed history of patient-physician interaction, HMIS has fully functional units for inventory and supply chain management, human resource management, inclusive of training and integration with android based mobile platforms for data integrations. Modules such as monitoring and evaluation, clinical audit, clinical data analysis and community disease mapping aided by geo-visualization have also been developed. Hand-held android phones are deployed within the community to aid in screening interventions for different diseases like Cardio Vascular Diseases, conducting socio economic surveys and for enrolment activities. Mobiles are given to the field level functionaries for patient data collection, which empowers them to function better and with more accuracy.

the result

As a result, there have been over 50,000 patient footfalls; almost 2000 women have been screened for cervical cancer. The service has touched over 10,000 lives through school programs and screened over 6,000 adults for cardiovascular risk factors using android phones. The progamme was started with a flagship partnership with UPenn, School of Nursing. It holds the potential of training 700,000 India medicine providers to competently provide first-line primary care in the rural India. The teams were successful in delivering healthcare services to 6003 patients through various channels such as Community and Vision Camps, school based Anaemia Screening and household rapid risk assessments. Theme-based days are also organized regularly for the patients.

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category	m-Health

arogyashreni

technology-enabled community based monitoring system of primary health centres

the challenge

Under the ambit of National Rural Health Mission (NRHM), there are many institutional set-ups designed with an intention to create awareness about the health care services. These set-ups also play a role in empowering the communities to have knowledge of their entitlements. At the village level, these institutions may be categorized into Aarogya Raksha Samiti (ARS) and Planning and Monitoring Committee (PMC) at the Primary Health Centre (PHC) level, and Village Health and Sanitation Committee (VHSC) at the revenue village level. Certain barriers like information asymmetry, power imbalance, inefficient decentralization, and excessive bureaucracy hinder the proper functioning of these institutions.

the solution

A technology enabled community-based monitoring mechanism was devised by GRAAM with the objectives of developing a sense of ownership among the community. The technology also aims at reducing the information asymmetry and enabling local representatives to have a voice and look for local problems and solutions. This can thereby help in achieving sustainable outcomes with respect to Primary Health Centers. In order to implement this, a questionnaire was developed

arogyashreni is a technology-enabled community-based monitoring mechanism that utilizes interactive voice response system (ivrs) for ensuring sound monitoring of facilities and services at phcs and for reviewing phc progress.

with 79 questions on various aspects of PHC functioning and it was installed on a toll-free Interactive Voice Response System (IVRS). Any selected community member can answer the questions for his respective PHC.

the result

The responses generated by IVRS are validated by physical verification. On the basis of these responses, district-wise ranking of PHCs was generated. Such ranking helps in community monitoring. Further, the changes due to community monitoring are documented. So far the project has been implemented in seven taluks of Mysore district where there are 139 PHCs. Out of 139 PHCs, 119 exist in the rural areas of Mysore district and remaining 20 are in the urban areas. Rural PHCs were the focus of the project. The project reached out to at least 565 community members who were part of the Planning and Monitoring Committees of the PHCs serving their villages. Out of these 233 were women. The project demonstrates the use of low-cost technology in minimizing data integrity issues, and enhancing community ownership over their own resources. The monitoring process is a joint assessment because of the sense of ownership by the community, rather than a mere inspection.

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category	m- Health

p-hmms

mobile-based system for efficient data entry and analysis under pptct programme

the challenge

The Prevention of Parent to Child Transmission of HIV/AIDS (PPTCT) programme's objective is to counsel, test and treat pregnant women who are HIV positive so that the transmission of virus to the child can be prevented. The process involved was generally manual where the field workers used paper forms, booklets and registers to record details of the service and treatment provided. The data was aggregated manually in most of the cases and was uploaded to the computer software systems for the purposes of reporting and analysis. Since the system was largely manual at the field level, it was very difficult for the filed workers to maintain proper records. Also, possibilities of data inconsistencies were high.

the solution

Health Management and Monitoring system (P-HMMS) is a mobile application that can be installed on a low cost mobile phone that was provided to every outreach worker (ORW). The mobile application provided the functions like enrolling new antenatal mothers, getting automatic work lists for the day/week (For example, HIV test due, Monthly ART visit due). The solution also has web-interface that can be accessed from any internet connected computer. In addition, automatic generation

> **p-hmms is a mobile-based system that helps in validating data entry data analysis and effective tracking of mother and baby under pptct programme. it generates all the required reports to monitor the work of outreach workers (orws).**

of all reports required by all the stakeholders of the program may be done. Closed User Groups were being established so that ORWs could now have face-to-face communication with the patient.

the result

644 ORWs, District Project Coordinators and counselors were trained on the PHMMS in the year 2012. Manipur, Tamil Nadu, Gujarat, Puducherry and Kerala started reporting through this mobile based application in 2012. The mobile based real time monitoring and tracking system PHMMS was also enabled for Nagaland, Mizoram, Assam, West Bengal, Odisha, Uttar Pradesh, Bihar Rajasthan, Mumbai, Delhi and Madhya Pradesh in the next three months. The initiative enhanced the accountability of data as now it could be easily tracked, for example, which ORW punched in which case and what had been done about that case. Soon a system of SMS alerts was also developed to compliment the operations. The impact of PHMMS has been huge as it has given cost effective tool for preventing the transmission of an almost incurable disease.

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category	**m- Health**

peer water exchange programme

affordable technology to get frequent updates on project progress and long-term operation and impact

the challenge

Around a billion people lack access to safe drinking water while 2.6 billion lack access to hygienic and dignified sanitation facilities. Progress against these global crises has been slow despite several decades of efforts. Many rural water and sanitation projects are plagued by inefficiencies and a majority of them do not meet the initial expectations of success. In addition to tough field conditions, there is shortage of computers, lack of computer literacy and little or no internet connectivity. This scenario creates a high level of opacity in the progress of the project. Long-term impact assessment programs are extremely expensive and virtually non-existent in present times. Therefore, it becomes very difficult to track and monitor the progress of such programmes.

the solution

Peer Water Exchange's (PWX) launched an SMS interface for receiving field reports on water and sanitation projects. This SMS-based reporting is designed for monitoring the implementation and post-implementation of the projects, by the people who are directly affected by it. Field personnel living and working in remote areas can send in SMS notes which are attached to the project reports

peer water exchange is an sms-based reporting system for monitoring and reporting on the implementation and post-implementation of water and sanitation solutions by the people affected.

transparently on the website. Field reports help managers and funders to monitor, track and address the issues. The technology behind PWX SMS Reporting is standard SMS technology at client side; and SMS gateway is txtWeb (by intuit) and Android gateway. The solution is free for non-profit members serving their communities. If the projects generate revenue or the operator is not non-profit, a monthly fee is charged per project. Three organizations have participated in the pilot, which are Project Well in Bengal, and Ekoventure and Humana People to People India in Tamil Nadu. PWX will gather feedback and will attempt to roll out the system across India.

the result

The intervention is already being utilized by four organizations in India, and three more are trialing. This service has helped in connecting the field personnel working in remote areas without internet coverage. PWX converts the SMS received into a status report attached to the main project report on PWX. Field reports help managers and funders who work from far away locations to keep track of progress of the project and any issues and act on them. These reports allow the entire organizations to learn and share since they replace bi-lateral communications with broadly visible storage and distribution channel. The natural extension would be to have beneficiary villagers (the billions without water and sanitation) report on the projects themselves on a regular basis, thus allowing them to share the results of development

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category	Water and Sanitation

logistimo: managing public health supply through mobile phones

mobile supply chain management for better service delivery at primary health centres

the challenge

Rural health system performance depends fairly on strong supply chains. It is important to ensure that the medicines and supplies are reliably available at the point-of-care, exactly when needed. At present, logistics is constrained by lack of real-time visibility of inventory and demand across the network. This data is essential for appropriate decision making at all levels of the value chain. But minimal connectivity with remote sub-centers and only periodic visibility of primary health center (PHC) conditions limit the efficacy of the system, culminating in unreliable availability of medicines, excessive waste and thus underserved communities.

the solution

Logistimo aims to ensure availability and quality of vaccines and medicines in Primary Healthcare Centers (PHCs) in villages by optimizing the drug supply chain using mobile phone and web technology. It provides the village-level pharmacists and health workers with a mobile application that enables effective inventory management, and helps build their capacity and results in better stock management. The process leads to increased consumer awareness on drug usage. Consequently, this can lead to improved health outcomes, wherein consumers can avail of drugs in

logistimo's project optimizes the supply-chain of drugs using mobile phones and ensures availability and quality of vaccines and medicines in primary healthcare centers (phcs) in the villages. it empowers the health workers by optimizing their performance and also aids in monitoring and tracking.

a timely and correct manner. In addition, child mortality can be prevented through increased routine immunizations. The supervisors and District Health officials can also effectively monitor and manage health worker performance and stock availability across their districts, using these mobile applications and web browsers. Further, health workers can connect with each other via social networking on mobiles and can leverage this platform for solving problems quickly, sharing best practices and hence improving the quality of service.

the result

The project was deployed in July 2012 in 29 PHCs run by Karuna Trust in Karnataka. It is now being used across 300+ health facilities across 2 districts of Chamarajanagar and Shimoga. In March 2014, Logistimo was deployed in 2 districts of Uttar Pradesh (Bareilly and Shahjahanpur) in partnership with Immunization and Technical Support Unit, Ministry of Health and Family Welfare, Government of India. Today there have been over 250,000 transactions and events triggered through the platform, and user adoption continues to grow and improve. Across the total sites and roughly 150 health commodities, responsiveness to bottlenecks have improved more than 10-fold and vaccine availability hovers around 94%. The project has optimized supply-chain of drugs using mobile phones at all levels.

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category	**m-Health**

students health information tracking system (swhits)

protecting the health of children through mobiles
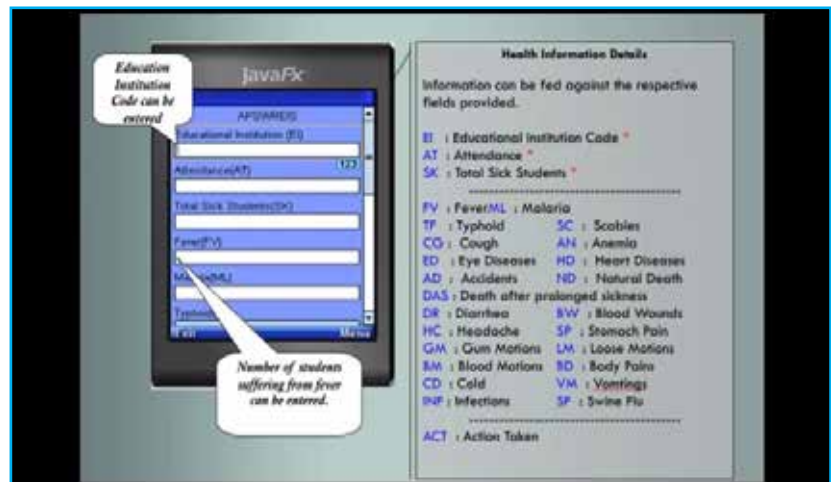
the challenge

There is a gap witnessed in the dissemination of information concerning students' health, especially school-going children. In the residential schools, there is a gap in the health monitoring of children staying away from home. Andhra Pradesh Social Welfare Residential Educational Institutions Society (APSWREIS) has 353 residential educational institutions with total student strength of 1.54 lakh, funded by the State Government and administered by an IAS officer. Also, the manual methods make the tasks strenuous, expensive and not always yield the expected results.

the solution

Students Health Information Tracking System was developed to fill in the gap witnessed in dissemination of information concerning students' health. It was aimed at providing better monitoring mechanism of the health of the school children, increasing transparency and reviewing whether a hygiene environment is maintained in these residential institutes. The Principals/Medical Officers of the residential schools which are often located in remote areas send daily status of the general health of children as an SMS to the centralized office. A simple software application, using templates to furnish these basic details, is installed and used on the mobile

swhits is a tracking system devised to address and bridge the gap witnessed in the dissemination of information concerning students' health in the residential schools.

phones of the school authorities to simplify the process of sending the SMS. This is done depending on the health status of the pupils from an institution over a period of time. This is done using a simple software (J2ME application), which is used to furnish the basic details on the mobile phones of the school authorities. MIS reports are developed in various formats including tabular, graphical charts and Google maps. The administrator is alerted with a blinking signal on the Google map when an institution reports more than 10 pupils suffering from a single category of disease. Another facility integrated in the application shows the direction on the Google map from an institution to the nearest Primary Health Centre (PHC).

the result

The innovation here is the use of widely accessed form of simple technology, in bridging the gap of information between the administration and the grass root level institutions. This project is a student health information tracking system that helps in monitoring mechanism and reviewing of the hygiene. Till July 2014, the project has reported information about 353 institutions and about 1.5 lakh students. It has proved to be an innovative scheme in monitoring the health status of poor children from disadvantaged sections of the society enrolled in these residential schools.

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category	m-Health

sms reporting tool for wash projects

mobile-based reporting tool for effective monitoring and tracking of the project

the challenge

As Blue Planet Network CEO Lisa Nash explains, the challenge in the water, sanitation, and hygiene sector is that a great deal of attention is paid to project implementation. But unfortunately up to half of these projects may not be very successful within the first five years, not because of poor implementation, but because there wasn't enough thought about sustainability at the outset. Therefore, in the WASH sector, it becomes crucial for any project to be viable, while also catering to people's needs, and with cultural acceptability. Continuously monitoring the indicators for sustainability guarantee the success of a project.

the solution

Blue Planet Network created an SMS reporting tool to help its members improve their effectiveness while making it easier for anyone anywhere to engage with their work. Various organizations, funders, academics, governments and community members around the world may be connected to plan, implement, monitor, and collaborate on safe drinking water projects. Field notes are automatically added to projects to ensure that all staff is updated, can identify and resolve issues quickly, and can build on great new ideas wherever they emerge.

the sms reporting tool developed by blue planet network is a tool to help project implementers in monitoring and tracking the project and thereby help in improving its effectiveness.

the result

Since deployment, 5 of the member organizations: Ekoventure, Gram Vikas, Palmyra, Project Well and Watershed Organisation Trust (WOTR) have utilized the tool to increase the impact and sustainability of more than 13 water and sanitation projects across India. Project Well utilizes Blue Planet Network's SMS reporting tool to provide status reports on water projects that use modern bore-dug wells. In 2012, Blue Planet Network began a pilot of its SMS-based monitoring system in India. Blue Planet Network's service enables communities, and the member organizations equipped with basic cell phones, to monitor and report on safe drinking water and sanitation installations.

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category	**Water and Sanitation**

next drop

mobiles for monitoring and tracking of water availability

the challenge

The problem of shortage and irregular supply of water is prevalent everywhere. With searing temperatures, India is struggling to keep the domestic water supply going and many Indian residents have to rely on water trucks to get enough supply for their homes. Nearly one million people of Hubli get water only every three to five days, for about four hours a day, a situation not unusual in water-starved India. Water is released by valve-men at odd times throughout the day, which means consumers often have to wait by their taps for hours. Most of the people in the area cannot afford large tanks or wells to store water.

the solution

NextDrop has devised a mobile phone- linked system which connects the valve-men to the engineers and customers. A missed call has to be given on 07795590931 to mobilize a phone, and then the system provides information on water availability to residents via automated calls and text messages and provides information to utility engineers through web based dashboard. It serves water utilities by collecting rich data on true water delivery outcomes and making live data accessible to water utility engineers so they can quickly identify and address problems. Valve-men

next drop provides information on the water availability to residents via automated calls and text messages and provides information to utility engineers through web based dashboard.

measure the level of water in reservoirs every day, and then NextDrop calls them every hour to get information on the levels. NextDrop sends the information to the engineers, who decide which areas should get water at what times, and how much, depending on supply. They then text the valve-men, who in turn text the customers and let them know exactly when the water will be released.

the result

The project has minimized the time spent waiting for water and allowed the consumers, who are basically women and children to do other productive activities. The project has brought transparency in the water distribution system. In addition, the project has addressed the problems the households face by using unsafe and expensive water, thereby reducing the risk of water borne illness. NextDrop now charges Rs. 10 per month for their service, and over 25,000 Hubli households have signed up already. Bangalore One, Government of Karnataka has now tied up with Next Drop Smart Water Systems Pvt. Ltd. for delivering the service. Citizens who have already registered with Next Drop for receiving SMS Alerts on water distribution schedule of KWB can pay their renewal fee at all Bangalore One Centers. Four packages are available for renewal based on the period of renewal.

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category	**Water and Sanitation**

fisher friend mobile application

a mobile application for dissemination of vital livelihood support information to the fisher folk

the challenge

The devastating tsunami in 2004 brought to forefront the plight of Indian fishermen and the communities who are dependent on fishery for their livelihood. Lack of access to relevant real-time information and dependence on line-of-sight navigation led to huge loss of lives and property which could have otherwise been prevented. It was found that about one-third of the families affected by the 2004 Indian Ocean tsunami were linked to the fishing industry in India.

the solution

The project is a result of collaboration between MSSRF, Qualcomm (financial and technical support), Tata Teleservices and Astute Technology Systems (application developers). After a thorough need assessment of the fisher communities and incorporation of feedback from the central stakeholders, the tool was designed for information dissemination for fisher communities. The app provides important and timely information about the weather, local fish markets, potential fishing zones, sea safety measures and precautionary methods, and government schemes in the local language Tamil. The sources of this information are INCOIS, Coast Guard and Tamil Nadu Fisheries department. Since 2013, the application is implemented in

the fisher friend project of the m.s. swaminathan research foundation (mssrf) in tamil nadu and puducherry leverages mobile technology to provide vital livelihood information and to send alerts to the fisher folk.

Android system. MSSRF had distributed phones to the fishermen for the project. In Jan 2014, based on the feedback, FFMA phase- II programme was launched in which the application was upgraded to include alerts like disaster alerts, alert when the fishermen approach a maritime border about a few kilometers from the actual point, and emergency contact numbers. Since FFMA Phase-II, the information was made available in Tamil, Telugu and English, and will soon be available in other languages of coastal areas of Maharashtra, Gujarat, Orissa and Karnataka.

the result

It was found that about 90% of the fishermen in coastal areas of Tamil Nadu use this application to make decisions on whether to fish or not. In addition, 23 percent of the studied participants said that the application saved their lives, provided economic benefits and assisted them in accessing government subsidies. As a result, the application has been downloaded nearly 9,000 times from the Tata App zone. This application is helping fisher folk make better choices and avoid hazardous situations. It is also enabling them to conduct their livelihood operations in a safe and profitable manner.

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category	**Disaster Management**

sevamob

mobiles for health care service delivery to the doorstep

the challenge

India lags far behind in the development indicators, and more so on the health related indicators. On indicators like infant mortality, child malnutrition and maternal mortality, it fares worse than some Sub-Saharan African countries. We have just one hospital bed for 879 individuals versus World Health Organization recommendation of 1.9 beds per 1,000 citizens. The Indian government spends just 4 per cent of the GDP on healthcare, leading to out-of-pocket expenditure from the individuals, comprising about 61 per cent of the total expenditure on health. There is even greater disparity in low-income communities, where there is limited access to primary healthcare. In rural areas and smaller cities, the main source of primary care is government-run primary healthcare centers, which are understaffed and laden with inefficiencies.

the solution

Sevamob utilizes mobile technology to transform the delivery of primary healthcare and insurance to low income consumers in the developing countries. At a small monthly subscription, SMSs are sent on basic primary care and medicines and prescriptions are delivered on-premise by mobile clinics with the help of mobiles.

sevamob harnesses mobile technology in a sustainable manner to deliver primary health care at the doorstep. mobiles are used for delivering health care services and medicines with a subscription model and for also maintaining patient records.

The full-time mobile teams have B.D.S. doctors and sales representatives who carry android tablets with mobile software installed in them. Once a patient is subscribed to Sevamob's scheme, the teams pay a visit to their homes with Android tablets. These tablets have mobile software which can operate even without a wireless network so that it can be accessed in the remote rural areas. For advanced care, the teams are supported by MBBS doctors, a 24x7 call center and a network of third party service providers like hospitals and diagnostic centres. In addition, basic primary care is performed for the subscribers at their doorstep. The services include dental care, vision screening, checking blood pressure, blood sugar, pulse, temperature, nutrition planning, etc. Medicines are also dispensed for common ailments. An integral part of the venture is the mobile app used by field officers, which captures patient demographics and maintains electronic medical record on sign-up. The complete workflow can be monitored without network.

the result

Sevamob has signed more than 2100 subscribers and is covered by 4 field teams. It also claims a monthly subscriber retention rate of 80%. Up until mid-2012, Sevamob was mainly targeting rural areas, but the program is now looking at moving more into urban areas, selling bulk subscriptions to schools, employers, women's organizations and labor unions. With this model, Sevamob expects that each field team will be able to cover 1000 patients. By 2016, they plan to have 1, 20,000 subscribers. The model has been replicated by a partnering organization in Liberia which has established contact with 44 schools and 30 churches.

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category	m-Health

voicenet

voice based information transaction system deployed for icds

the challenge

ICDS is one of the world's largest programs for pregnant women and early childhood development providing supplementary nutrition, immunization, health check-up, referral services etc. The success of the ICDS program is hampered by enormous amount of data generated and distortion in government records. National Research Development Corporation (NRDC) approached Prof. Jhunjhunwala, a well-known lecturer at IITM, directing the Telecommunications and Computer Networks group (TeNeT) to suggest a solution for the success of Integrated Child Development Scheme (ICDS). He found out that the focused population is mostly illiterate so a voice-based solution available in their local languages would be successful. He asked Uniphore to assist for this purpose.

the solution

Uniphore's VoiceNet system Personalized Voice based Information Retrieval and Transaction System (PVIT), integrated with mobile phones with verification and local-language voice-recognition was deployed to aid medical care distribution in India. Initially, the program was implemented in the Anganwadi centres in Madhya Pradesh, where ICDS executes its functions. The work process was very simple. After

voicenet system is a personalized voice-based information retrieval and transaction system which is being deployed for an ambitious use in integrated child development scheme (icds), for supplementing the scheme in a literacy-neutral manner.

identifying herself in the voice biometrics system, a mother accesses the system by calling through her cell phone. All this can be done vocally, making the program literacy- neutral. After verification of her identity, she can get access using voice to more details about her kid's health and advantages she has obtained from ICDS. This information is instantly submitted on a web portal, where the administrators can view it in real time. This web portal stores all the information regarding the child's weight, supplementary nutrition packets received, immunization schedules, growth charts, etc.

the result

The use of Voice Net in ICDS was designed as a lead effort to analyze the effect of such technology on non-urban growth and welfare schemes. It has received many achievements and popularity now. The information was accurate, the process was transparent, and the follow-up was immediate. Also, the enhanced data collection process enabled better service delivery and more efficient operations. This proven technology was used to collect maternal and child health information and monitor the delivery of ICDS services in Madhya Pradesh, where malnutrition-related mortality is higher than sub-Saharan African countries. About 589 mothers, 702 children, 9 Guardian and 3 supervisors had registered themselves between the months February 2010 to June 2010, enabling immediate analysis of health information and monitoring delivery of services. The data collected using Voice Net was viewable on the ICDS web portal by various stakeholders, state and central government officials ensuring transparency. The users, most of whom were Below Poverty Line, rural and tribal mothers with little or no education, were comfortable in using the voice based system as it was in their local dialect and the system proved successful in health data collection and monitoring.

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category	**m-Health**

mdhil health

health care informational content disseminated through mobiles

the challenge

The founder, Nandu Madhava, felt that there is a dearth of access to relevant health related information to many. He felt that health is not a problem for merely the bottom of the pyramid. He looked at health as a universal issue prevalent in all sections of Indian society. Even in higher income groups, lifestyle related disorders are rampant. Issues like sexual and reproductive health are tabooed and thus lead to prevalent diseases as they are not discussed in the open, and people do not have easy access to authentic and correct health care information.

the solution

mDhil services deliver health related content through mobile phones. It initially began as an SMS based service that was available through mobile service providers targeting people between 17 to 25 years of age in tier I & tier II cities as this group is the early adopter of mobile and web technology. Sexual health is also a huge topic in this age group and so is women's health. mDhil designs the content that is sent out to subscribers by consulting with doctors, NGOs, clinics, specific groups and students. This is to ensure that the content that the subscribers receive is relevant to them. Consumers can obtain this content in a number of ways. mDhil partners

mdhil health provides health care informational content related to issues like sexual and reproductive health lifestyle-related diseases women health general health skin care beauty and others; via mobile phones and social media.

with telecom operators to create message packs that subscribers can choose and they pay for. Another channel where consumer can get this information is through mDhil's website and Youtube. Once mDhil designs the content, videos on the topics are also created and uploaded either on the website or in the specific channels on Youtube. These are available both in English and Hindi. Further topics include: general health, tuberculosis, diet, stress, skin care/beauty, and diabetes.

the result

Currently, the company has over 2, 00,000 subscribers. mDhil measures user satisfaction in terms of website traffic, content views, and user engagement. Of these, user engagement is critical, since it indicates how compelling and useful the content is. mDhil has successfully used social media channels to significantly increase user engagement. It has over 2, 40, 000 followers on Facebook, and is popular on Youtube and twitter as well.

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category	**m-Health**

tamil nadu health watch

mobile technology for disaster relief

the challenge

The devastating tsunami which struck Southeast Asia in 2004 severely impacted Tamil Nadu. To contain and reduce escalating disease incidence during the post-tsunami relief effort, health officials needed a surveillance network that allowed them to easily access and analyze disease information in real-time.

the solution

In May 2005, Tamil Nadu Health Watch was launched in the four most devastated districts. Health Watch allows health workers, even in remote areas, to immediately report disease incidence data to health officials. In turn, health managers can quickly analyze information about suspected cases, share technical information and resources, and initiate an informed response. By linking Primary Health centers with district experts and program managers, activities could be coordinated more effectively and resources (e.g., supplies, technical personnel and transport) could be allocated more efficiently. Voxiva trained more than 300 doctors from Primary Health centers using simple, easy to use bilingual manuals and interactive sessions. The training sessions were coordinated with the State to reinforce disease surveillance guidelines and outbreak response protocols.

tamil nadu health watch was a phone and web-based data collection system for disease reporting from remote areas. it helped doctors to analyze information about suspected cases.

the result

The phone and web-based data collection system strengthened Tamil Nadu's disease surveillance capabilities at the district and sub-district levels. The solution maximized the use of the existing communications infrastructure – mobile phones, fixed line and the Internet - making it a cost-effective and sustainable solution. The project has ceased operation.

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my baby diary

mobile app to help mothers on the go to get information on baby care

the challenge

In a country like India where doctor to patient ratio is 1:900, doctors are few and the work is extensive. The patients demand low cost, timely and quality healthcare coverage. For the healthcare enterprises, patient data is critical to collect and manage and hence mHealth is primarily aimed at bridging the economic divide in terms of healthcare. Mobility is the key here and mobiles can be used for preventive care as well.

the solution

My Baby Diary is a mobile application to help mothers on the go. Through this app, mothers can easily get substantial information about baby care – right from the pre-natal stage to toddlerhood. This application is developed by TELiBrahma and promoted by Johnson & Johnson. Parenting a child is quite a ride per se, and especially for working mothers who constantly oscillate their roles from one extreme to the other in a quest to maintain work-life balance. This mobile application "my Baby Diary" allows mothers to set a reminder for the next due vaccination. Other fun and interactive elements included taking pictures, trying out various hats and hairstyles on their babies, virtually dressing up the babies in

my baby diary is a mobile application to help mothers get essential information on their babies' health from pre-natal stage to toddlerhood.

animal costumes, etc. These photos could also be shared on Facebook in a single click. The app included various engaging content both for the mother and the baby. For instance, the mother can track the vaccination details, read up facts about pregnancy, labour & birth, babyhood, toddlerhood, etc. She can also instantly create a scrapbook of her baby and capture the defining moments of the baby via "Happy moments" and "my Baby Calendar" features.

the result

The app reached over 50,000 mothers in a span of 7 weeks with Bangalore recording the highest number of downloads. This mobile application looked at an opportunity to engage with young mothers – with the growing trend of smart phone users on the increase. There were challenges in maximizing the health impact rather than just the number of women and children reached.

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category	m-Health

amrita clinical decision support system

mobile phone based clinical decision support technology

the challenge

Due to acute shortage of doctors in the rural areas, it is very challenging to deliver health care services to the last mile. In this scenario, most of the rural populace visits unskilled or semi-skilled medical practitioners. These practitioners deliver health care services in the rural areas, where many deliveries are still taking place without institutional set-ups. Many-a-times they might not be able to handle medical cases with the dexterity a skilled practitioner would have. Because of this, training and skill-enhancement of such practitioners becomes very important to solve the problem of health care service delivery in the rural areas. Standardization of practices and procedures may also be instrumental in delivering health care services to the villagers.

the solution

Empowering the semi-skilled practitioners is the most practical solution for delivering health care in remote village areas. With this premise, a team of doctors from Stanley Medical College and a group of engineers from IIT- Madras and NITK started working on a decision-support technology for village health workers. Amrita Clinical Decision Support System is a mobile phone based clinical decision-support

amrita clinical decision support system is a mobile phone-based clinical decision-support technology for the village health providers which enables them to take better decisions with respect to diagnosis treatment referral monitoring and follow-up of patients' illness.

technology for the Village Health Providers (VHP). It is an antenatal, postnatal and childcare protocol app which can run the Indian languages on low-cost, JAVA-based mobile phones and has no connectivity dependence. The technology is used to provide maternal and child care services, thereby reducing mortality rates, and helping VHWs in accurately diagnosing their patients. This mobile- phone based solution can be supported by any Java, Android and Blackberry mobile phone. The health-provider needs to be trained only once and unless there is a major overhaul in protocols, they only need to update the version of the decision-support from the remote server.

the result

The way technology has been used in this project significantly reduced the pre-requisites for a villager to become a qualified health-provider. This also improved compliance and adherence to medical protocols. It was noted that the mobile phone based decision-support technology in vernacular language helps the village health-worker, in arriving at presumptive diagnosis, treatment plan, filtering cases for referral and follow-up of patients essentially deskilling the job of a VHW. The cost-effective way of investments needed for both technology and human resource makes the solution a scalable one. About 95% of the total number of pregnancies and 75% of the VHPs in the project region in Tamil Nadu were registered and monitored with the help of the app. A drop of 20% in the outpatient costs including drugs was reported as a result of its usage.

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category	**m- Health**

classcloud

technology-enabled educational delivery system

the challenge

Internet has penetrated in every aspect of our daily life from shopping to education. Educational experience has been revolutionized with online classrooms and new learning devices like the tablets etc. Nevertheless it is important to see how all this is affecting the people at the base of the pyramid who truly need access to better quality education. Many children do not have access to quality education, despite attending the schools. Despite Right to Education (RTE) act in India, the numbers have not actually resulted in qualitative improvements. The "brick-and-mortar" model of education system has in a way failed to deliver to the bottom of the pyramid.

the solution

Blended learning is a formal education program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, place, path or pace. While still attending a "brick-and-mortar" school structure, face-to-face classroom methods are combined with computer-mediated activities. Zaya provides a learning environment using computers and mobiles/ tablets. Also, regular monitoring is done to see if the project has had an impact on the learning experience of the child and necessary

classcloud is a technology- enabled solution by zaya which aids and supplements learning in the traditional brick-and mortar educational system. it is an education delivery system deployed with the help of mobiles tablets and laptops. it also contains mechanisms to monitor the level of learning for the students individually.

support is provided to the teachers in terms of using the educational resources. The main products are ClassCloud and Blended Learning. ClassCloud is an online education device, which is a cloud based mobile (2G/3G) wireless toolkit with a learning system that can run online as well as offline. This allows users to connect to the common "ZayaCloud" servers with their mobile phones, tablets, laptops and desktops. The Learning Management System that runs on ClassCloud can be updated locally without Internet connectivity and syncs up to the cloud regularly.

the result

ClassCloud strives to solve the problem of providing access to the last mile of schools, orphanages and learning centers. Since it is a cloud based system, user data is always synced to the cloud and can never be lost even if the system fails. It has reached out to 2 schools in 2 different states in India, and has also spread out to Mongolia and Indonesia.

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adivasi tea leaf marketing (atlm) paperless workflow

a mobile app to make workflow paperless and to empower the local community

the challenge

In the Nilgiris in Tamil Nadu, populations of Adivasi tea leaf cultivators have been exploited since years by the middlemen. They could not realize the true and fair price of their produce. There was a need for a 'Community Owned Information Infrastructure' in the Adivasi community of the Gudalur Taluk in Tamil Nadu. The larger goal was to first create a successful, mature prototype, which could then be applied across a wide range of communities and situations anywhere in the world.

the solution

ATLM programme enables Adivasi tea growers to market their produce at fair prices with the help of a mobile app. ATLM is a working group within a parent tribal organisation called AMS – Adivasi Munnetra Sangam. The AMS was founded by another organisation called ACCORD, which works on tribal rights and livelihood. Both of these organizations are based in Gudalur (Tamil Nadu). This organization buys their fresh leaf and sells to processing companies. ATLM, which earlier used to work with paper receipt books and registers, has successfully implemented a mobile app for processing the orders and ingesting them into the database in a paperless workflow. This project utilized the Open Data Kit (www.opendatakit.org) to craft a

atlm paperless workflow is a mobile-based system to aid in marketing of tea leaf grown by adivasis. the mobile app developed by open data kit helps in keeping the workflow paperless by processing the orders and ingesting them into the database.

solution. The Open Data Kit is an existing open source data collection software suite aimed at the development sector.

the result

The real achievement here is that the entire solution was designed, tested and rolled out by an all-adivasi team using the Open Data Kit. It was found that modern android devices are quite capable machines, and the ecosystem was thriving with a massive range of apps and capabilities. The main purpose of this project was to demonstrate the positive change communities can bring about, with a little support and capacity building. The project was sustainable because the community was handling it directly. The project has grown quickly and rapidly with little heavy-handed intervention by the organization. By delegating duties such as training to the Adivasis, the programme achieved a level of adoption that usually requires far more extensive hand-holding.

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category	**m-Inclusion**

vbond vita

a doctor's clinic on the go

the challenge

Almost everyone today has mobile phones and also access to the internet. There are issues in providing health care in emergency cases, despite such connectivity. Therefore, this connectivity needs to be harnessed for better and faster healthcare delivery. Technological intervention will also reduce the costs of publishing reports and prescriptions.

the solution

Idea Brahma Consulting has produced the clinic management system as 'Vbond Vita' for doctors and their clinics on tablets, smart phones and web. With Vita, doctors can "Carry their Clinic" anytime, anywhere to manage patients, electronic medical record, e-prescription, referrals, appointments, Lab Management among others. Vbond Vita has comprehensive features to manage customer relationships for hospitals, diagnostic centers and health and wellness center. The solution is based on zero IT Capital infrastructure and compliments maintenance and Value Added Services for patients to improve loyalty and stickiness to the system. The Vbond Vita Clinic management system offers doctors an easy to use dashboard that is both simple and user friendly. It serves as the main portal to access various features. Any

vbond vita is a dashboard for doctors to manage patients electronic medical records e-prescriptions referrals appointments and lab management the dashboard has inbuilt features for managing customer relationships for hospitals diagnostic centres and health and wellness centres.

doctor can view his or her appointments for the day, check for any new updates on drugs etc., set their practice's operating hours as well as recharge their credits. In developing countries like India, where there are many unorganized clinics, poly clinics and small hospitals, Vbond Vita can be very helpful for medical practitioners. Since doctors are not much habitual of carrying laptops, technology based on mobile phones is convenient for health professionals to serve the patients.

the result

Not only does the project solves the problem of providing health care in emergency cases, but also reduces the costs of publishing various reports and prescriptions. The project enables these reports to reach the doctor in a record time of less than 30 seconds, even via normal GPRS connection. Within 6 months of launching Vbond Vita, almost 600 doctors are already using it. It receives over 1 lakh unique registrations per month.

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category	m-Health

dristhi: development and impact assessment of an mhealth package for rural india

m-health for maternal health

the challenge

The Auxiliary Nurse Midwives (ANMs) work at the community level monitoring and treating pregnant women and their infants. Each ANM serves a rural population of three to five thousand women and children. At present, they use paper-based reporting registries to keep track of all their patients. The paperwork for each patient is considerably burdensome and time-consuming. Each ANM carries a large stack of these paper records around with her, and this gets in the way of treating such high volumes of patients. There is a clear need to get the focus back on addressing infant and maternal mortality.

the solution

The mobile-health app, named DRISTHI, omits the necessity of carrying heavy stacks of paper registers by ANMs and enables them with real-time updating and reporting of patient records. DRISTHI mHealth system builds upon the Mother and Child Tracking System (MCTS) implemented by the National Rural Health Mission and registers all beneficiaries across the RMNCH continuum. Given the thrust towards mHealth in India, a Wellcome Trust funded project titled "Development and Impact Assessment of an mHealth Package for Rural India" is being undertaken by a

dristhi is a mobile app that helps anms in tracking maternal and infant health. moreoverit helps them in counseling of pregnant women and improves coverage rates of vaccinations for children.

consortium led by Foundation for Research in Health Systems (FRHS) and including the Department of Reproductive Health and Research, World Health Organization (WHO), and Earth Institute, Columbia University. The project, which piloted in Karnataka, develops an "mHealth Package" - a strategic mix of mobile technology applications and support materials - to support NRHM's reproductive, maternal and child health (RMCH) services. Data collected by accredited nurse midwives (ANMs) via digital forms loaded on tablets, is used to assist existing service provision through a suite of mHealth tools on tablets. These range from using multi-media content to strengthen counseling for contraceptive choice for couples of reproductive age; to the use of reminder messages to clients to increase timely antenatal care (ANC) for pregnant women. Alerts for providers are also sent to increase timely antenatal care (ANC) for pregnant women, and improve coverage rates of vaccinations for children.

the result

The project was piloted in Karnataka, and an "mHealth Package" was developed with a strategic mix of mobile technology applications and support materials to support NRHM's reproductive, maternal and child health (RMCH) services. The technology was very easy to use, was provided free of charge, and is now being developed with the intention of scale-up following rigorous pilot testing, impact assessment and revision. The resulting intervention will empower rural health workers and their clients, assisting them across the range of Reproductive, Maternal and Child Health care, integrating and streamlining data with existing HMIS standards for enhanced provider performance and population health outcomes.

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category	**m-Health**

mcheck programme

saving lives with the help of mobile phones!!
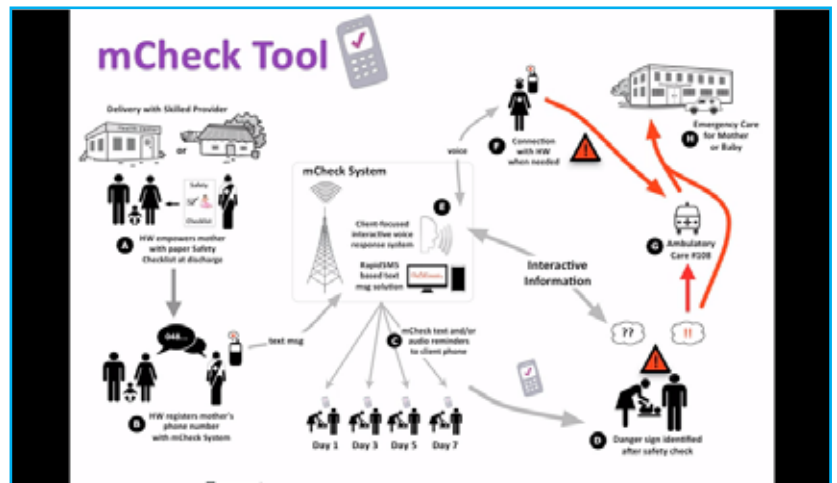
the challenge

Due to lack of guidance, many-a-times mothers and their family members are clueless on ways to identify danger signs in a woman who has recently given birth or her newborn baby, and about the actions to be taken. This mobile app is an effort to help the mothers and their family members to identify danger signs and also to encourage the mother or her family to seek appropriate care when required.

the solution

The Mother/Baby 7-day mCheck programme was developed by WHO Patients for Patient Safety Champions, a network of patients from around the globe who are committed to improving patient safety by empowering patients. This programme's aim was to help mothers and their family members in identifying danger signs in a woman who has recently given birth or her newborn baby and encouraging the mother or her family to seek appropriate care. The paper checklist was complemented by a mobile phone birth registration and voice message reminder system in order to facilitate both the delivery of the tool and use of the tool after delivery. Upon identifying any of these danger signs in either herself or her baby, the tool can help a mother make an informed decision about the severity and urgency

mcheck is a mobile app that helps mothers and family members to take care of their baby. the tool was designed to promote appropriate and timely health-seeking behaviour and ultimately reduce maternal and neonatal morbidity and mortality.

of the problem and when to access skilled care. This was a pilot project which aimed at assessing the feasibility of implementing this tool and its impact on health seeking behaviour and knowledge of danger signs for women who give birth in three facilities in Karnataka State, India during the study period. FGD was conducted with 20 mothers and their opinion / feedback was taken into consideration for framing the mCheck voice messages and pictures. Pretesting of the questionnaire was done and the pilot testing of this study was initiated in February 2013.

the result

The tool recognized evidence-based danger signs for a mother and her baby in the first seven days after birth to trigger questions that a mother can ask herself during this period. The tool was designed to promote appropriate and timely health-seeking behaviour and ultimately reduce maternal and neonatal morbidity and mortality. Mothers were able to use the tool as a trigger to call an interactive automated system in their local language that further guided their decision-making process regarding seeking skilled care.

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category	m-Health

rural health management information system using mobile / tablets

power of mobile technology to revive health care systems

the challenge

There is a need to shift the focus of community health workers to health care service delivery, from the routine tasks of data collection. For this purpose, the need was felt to empower frontline workers with hand held devices for data collection, follow-up, alerts & reminders using mobiles/tablets. To support the system, a central health database was also needed to help planning, decision makers, managers and researchers.

the solution

The pilot implementation of the system was undertaken in 20 locations at Tirur Taluk, Malappuram District in Kerala. The project was initiated as an attempt to adequately skill the front line health workers for data collection from the field, enhancing the accuracy of data, minimizing redundant entry and providing reliable storage for health data from the field through the health care reporting structure. It helps in avoiding the cumbersome paper work as per the present practice. The system envisages empowerment of the field workers and a resultant improvement in their health care delivery services. A centralized server is put in place for storing the collected data in a central database and analysis is done using statistical methods.

rural health management information system is a tool for empowering the health care workers with the help of mobile phones. mobile phones are used for accurate and easy data collection while web-based version provides timely data flow.

It is understood that this data will serve as an input for effective health planning and decision making at strategic levels. The system is a web-based one which has helped in providing timely data flow from the health worker to the Directorate of Health Services. It has also streamlined the system for timely and accurate reports to the health administration for efficient decision making. It has helped in reducing the infant mortality rates (IMR) by improving the immunization rates, by early identification of high-risk cases and thereby taking appropriate precautions.

the result

The system has proven to be very useful for timely and accurate reporting and therefore guiding the decisions at strategic levels. The report generation in standard and customized formats helps in the ability of the system to statistically analyzing the data. The system can be modified and used for other purposes as well, like various national programs like Malaria Control Program, TB Control Program, etc. and the enormous data can be put to use for greater good. The pilot deployed at 20 PHCs/CHCs of Tirur Taluk, Mallapuram, Kerala has covered about 120 health workers and has touched a population having a size of about 7.22 lakhs.

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