

Dr. SMS – a Mobile-health Information System for Kerala

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Abstract :

The paper presents the Dr. SMS project started by the Government of Kerala to provide comprehensive information on health-related resources via the short message service (SMS). Backed by a database of health infrastructure in 10 out of 14 districts in the State, the facility can provide timely information on medical facilities available in that locality including contact phone number, specialities and super specialities.

Keywords: MDG, IT, ICT, KSITM, Inclusive, Growth, E-Governance, M-Governance, E-health, mHealth, GIS, GPRS, SMS, Dr.SMS, Short Code

Introduction

We live in a global economy; an economy that allows for unrestricted and free movement of goods, services and labour trans-nationally. Projected as an answer to the ills of fragmented economies, the uninhibited freedom of movement that the global economy presents has the potential to bridge gaps between the haves and have-nots. All said, the benefits of the globalised order cannot be achieved all by itself; it needs to have planned and well-thought-after strategic interventions.

It was with the intention of spreading out the benefits of globalisation amongst all that the world leaders committed to forming and implementing the Millennium Development Goals. Agreed to by the world leaders in the United Nations Millennium Summit of 2000, the Millennium Development Goals (MDG) are a set of eight measurable and quantifiable goals to be achieved by 2015. The goals are, (i) eradicate extreme poverty and hunger (ii) achieve universal primary education (iii) promote gender equality and empower women (iv) reduce child mortality (v) improve maternal health (vi) combat HIV/AIDS, malaria and other diseases (vii) ensure environmental sustainability and (viii) develop a global partnership for development.

The Millennium Development Goals have a unique status even considering the proliferation of targets and commitments. They are unique owing to several reasons. First, is the fact that they represent a compact between all the world's major economic players and that the commitment to the goals come from the highest political levels. Even international organisations like the International Monetary Fund and World Bank have explicitly expressed their accountability to achieving these goals. Second, the goals are clearly achievable considering their minimalist nature. Third, there are clear yardsticks for measuring the performance against the goals, facilitating easy monitoring¹.

¹ <http://www.endpoverty2015.org/goals>

The International Monetary Fund (IMF) has chalked out a Six-Point Agenda for accelerating progress towards the MDGs. The six points are, 'Sustain and broaden the growth of momentum', 'Achieve better results in human development', 'Integrate development and environmental sustainability', 'Scale up aid and increase its effectiveness', 'Harness trade for strong, inclusive, and sustainable growth' and 'Leverage IFI support for inclusive and sustainable development'. A quick look at the Agenda reveals that inclusive growth forms the core strategy towards achieving the MDGs².

Inclusive Growth

The term inclusive growth is finding increasing usage in the lexicon of Government leaders, economists, planners and academicians globally. This has emerged from increasing consciousness that growth, which is an increase in some quantity over time, does not by itself indicate that people are better off. Growth, as has been the experience, is often lopsided, leaving out a good majority of the population from its benefits. Inclusive growth arrives as a plausible solution to this, by which all sections of the people can benefit from the growth process.

Ali and Son (2007)³ clearly spell out the significance of growing interest on inclusive growth. "While some level of growth is obviously a necessary condition for sustained poverty reduction, and strong average growth has been accompanied by a sharp reduction in poverty, the evidence is clear that growth by itself is not a sufficient condition. Growth does not guarantee that all persons will benefit equally. Growth can bypass the poor or marginalized groups, resulting in increasing inequality. High and rising levels of income inequality can lower the impact on poverty reduction of a given rate of growth, and can also reduce the growth rate itself. High inequality also has implications for political stability and social cohesion needed for sustainable growth... reducing inequality has become a major concern of development policy, a concern that has generated interest in inclusive growth".

The International Policy Centre for Inclusive Growth (IPC-IG) of the United Nations Development Programme sees inclusive growth as "both an outcome and a process. On the one hand, it ensures that everyone can participate in the growth process, both in terms of decision-making for organising the growth progression as well as in participating in the growth itself. On the other hand, it makes sure that everyone shares equitably the benefits of growth. Inclusive growth implies participation and benefit-sharing. Participation without benefit sharing will make growth unjust and sharing benefits without participation will make it a welfare outcome"⁴.

² <http://www.imf.org/external/np/exr/facts/mdg.htm>

³ Ali, Ifzal and Son, Hyun Hwa (2007), "Measuring Inclusive Growth", *Asian Development Review*, vol. 24, no. 1, pp.11- 31, retrieved from <http://www.adb.org/documents/periodicals/adr/pdf/ADR-Vol24-1-Ali-Hwa-Son.pdf> on 10th March 2010

⁴ <http://www.undp-povertycentre.org/pages/newsite/menu/inclusive/whatisinclusivegrowth.jsp?active=1>

The fact that growth by itself does not guarantee equity is supported by data facts and empirical research, as in a study conducted in Andhra Pradesh by Dev (2007)⁵. The study assigns agricultural growth, employment generation and poverty reduction, social sector (health and education) and reduction in regional and other disparities as the four important elements of inclusive growth. The study, after comparing data of last two decades, has concluded that growth alone does not lead to inclusive growth. In spite of recording appreciable growth rates, as indicated from the Gross State Domestic Product (GSDP), inclusive growth could not be achieved due to problems in the four elements of economic growth. "The average annual growth rate was 6.9% during 2002-07 and 7.8% during 2003-07. However, there are problems in the four elements of inclusive growth. Growth of agriculture particularly crop sector is very low. Employment growth in the postreform period (1993-94 to 2004-05) is the lowest in the country. The recent data shows that literacy levels are also low as compared to many other states. The National Family Health survey (NFHS III) indicate that A.P.'s rank for infant mortality is 11 out of 17 states in the year 2005-06". The study further noted Andhra Pradesh cannot achieve Millennium Development Goals.

Thus, it may be summed up that inclusive growth is economic growth which is a necessary and crucial condition for poverty reduction. Inclusive growth has a long term perspective and is concerned with sustained growth or growth that is broad-based across sectors. Inclusiveness refers to equality of opportunity in terms of access to markets, resources and unbiased regulatory environment for businesses and individuals⁶. With regards to inclusive growth in India, the economist Prime Minister Dr. Manmohan Singh has said that it would call for heightened investment in rural infrastructure, spurt in credit for farmers and increase in public spending on education and health care.

Technology and Inclusive Growth

Of all the technology solutions available to us today, Information and Communication Technologies (ICT) are very widely known today. It needs no special reiteration that the 21st century is the age of the Information Technology. Information and Communication Technologies (ICT) have come to have an all-encompassing character with their limitless scope for adaptive applications.

In democracies ICT has an enabling one and one that helps catalyse the process of change by making information more accessible and usable to the masses. The real beauty of ICT lies in the fact that it equips us with information to make informed choices. Technology has the power to take us to a different and necessarily better path. "In the most productive settings, ICTs enmesh individuals and organizations in networks of information and

⁵ Dev, Mahendra S (2007), "Inclusive Growth in Andhra Pradesh: Challenges in Agriculture, Poverty, Social Sector and Regional Disparities", Working Paper 71, Centre for Economic and Social Studies, Hyderabad, retrieved from <http://www.cess.ac.in/cesshome/wp%5Cwp-71.pdf> on 10th March 2010.

⁶ <http://siteresources.worldbank.org/INTDEBTDEPT/Resources/468980-1218567884549/WhatIsInclusiveGrowth20081230.pdf>

collaboration—whether accessed by mobile telephones, dial-up computers or broadband Internet terminals—which heighten awareness and increase performance. ICTs have helped narrow the digital, rural-urban and gender divides, within nations and across geographic boundaries. In this way, ICTs are playing a crucial role in both national wealth creation and global competitiveness. Indeed, the acronym “ICT” might be thought of as standing for the integration of information and the collaboration of individuals and organizations which result in the transformation of political, social and economic activities”⁷.

The accent on inclusive growth comes from the fact that inclusiveness is a pre-condition to sustainability. Nations cannot hope to have sustainable development without catering to inclusiveness. While there can be no doubt inclusive growth calls for concentration in infrastructure, especially rural infrastructure, agriculture, education and healthcare, technology can be achieved as a means to achieve the above. Making available updated and state-of-the-art technology solutions to the have-nots of the population at affordable prices can help to foster inclusive growth. In fact ICT can provide solutions at a fraction of the cost of traditional solutions and reduce public spend in areas like healthcare, education, financial services and public services.

The power of ICT to transform notwithstanding, the fact remains that “only a fraction of our global citizens have been touched by technology. There are many across the world, who still stand on the other side of the digital divide. Specifically, technology is reaching only a small fraction of the youth and young adults that need it most, the citizen-consumers that are the heart and soul of techcentered innovation and commerce in the “more developed world”.”⁸

E-Governance

The growing realisation that technology can exert itself only if they are properly distributed led to the concept of citizen-centric ICT solutions. Citizen-centric applications came to the fore with the understanding that technology by a good percentage of the population was by default and not by design. Concerted efforts were taken to ensure that ICT remains not as a tool of the ‘haves’ but equally of the ‘have-nots’ as well. The period from mid 1990s in India saw the birth of some sector-specific citizen-centric applications. Largely nurtured by the civil society, these applications soon began to find favour with the masses, even though the financial self-sustainability of the application/project remained questionable.

The beginning of this decade saw a spurt in citizen-centric applications. With increasing acceptance of ICT in governance, planners and policy makers came out with solutions to incorporate ICT in governing mechanisms, thus concretizing e-governance in the country. One of the states that led the country is Kerala, which pioneered the Akshaya project in 2002. An initiative of Kerala State Information Technology Mission, the nodal IT implementing agency of the Government, the objective of the Akshaya project was to propel ICT enabled citizen-friendly initiatives by first making at least one member in each

⁷ download.microsoft.com/.../MS_Interface_April_June_07.pdf

⁸ download.microsoft.com/.../MS_Interface_April_June_07.pdf

of the 6.5 million families of Kerala e-literate. Through this e-literacy programme, the Government wanted to address and redress three issues, viz., low Internet penetration, low e-literacy rate and high costs of availing services. With e-literacy taken care of, the Akshaya project was to emerge as a platform for implementing many e-governance programmes.

E-Health and mHealth

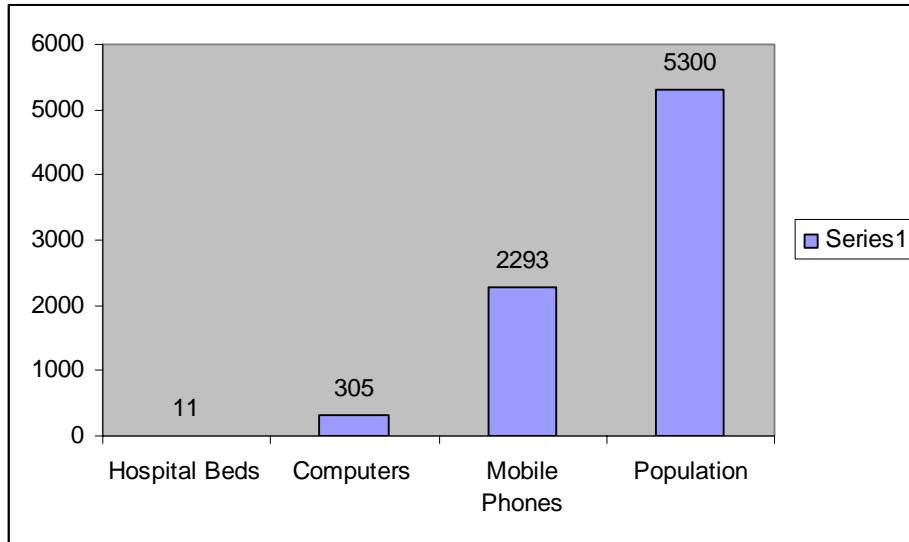
One of the key factors in achieving inclusive growth is ensuring inclusiveness in health care. With the emergence of Internet and associated technologies, various ways were thought to use them productively to improve health care; giving rise to E-health. E-health is essentially the application of Internet and other related technologies to improve the access, efficiency and effectiveness of health care.

In the sequence of technological innovations, it could be said that the mobile phone soon followed the Internet. And very soon mobile phone usurped the Internet in terms of penetration and use. Mobile Health or mHealth could be seen as a significant corollary of e-health and is all about providing health-related services over the mobile communications.

The advantage of mHealth lies in the fact that it creates an effective platform for bringing health care services, especially in developing countries. "With low-cost handsets and the penetration of mobile phone networks globally, tens of millions of citizens that never had regular access to a fixed-line telephone or computer now use mobile devices as daily tools for communication and data transfer. A full 64% of all mobile phone users can now be found in the developing world. Furthermore, estimates show that by 2012, half of all individuals in remote areas of the world will have mobile phones. This growing ubiquity of mobile phones is a central element in the promise of mobile technologies for health". The high penetration of mobile phones is further supported by data facts of technology and health-related services in developing countries, which have that for a population of 5300 million, some 2293 million have mobile phones, 305 million have computers and only 11 millions have access to hospital beds. This can be further understood from the column chart below, which clearly brings out that mobile phones reach further into developing countries than other technology and health infrastructures⁹.

Technology and health-related statistics for developing countries (millions)

⁹ "mHealth for Development - The Opportunity of Mobile Technology for Healthcare in the Developing World", Vital Wave Consulting. mHealth for Development: The Opportunity of Mobile Technology for Healthcare in the Developing World. Washington, D.C. and Berkshire, UK: UN Foundation-Vodafone Foundation Partnership, 2009, retrieved from http://www.globalproblems-globalsolutions-files.org/unf_website/assets/publications/technology/mhealth/mHealth_for_Development_full.pdf on 12th November 2009



Source: Reproduced from Vital Wave Consulting, Business Monitor International (BMI), International Telecommunications Union, World Bank's World Development Indicators, and the United Nations.

The advent of mHealth has further helped to bridge the technological divide that happened after the widespread growth of e-services. Any unintentional divide caused by the Internet could be rectified through the emergence of mobile phone based services, which use computer and Internet technologies as their backbone.

mHealth in Kerala

mHealth in a State like Kerala acquires high prominence in view of high levels of mobile penetration at 72%, as compared to the all-India average. mHealth also assumes significance in the conducive climate being created for mobile-related initiatives being created in the State in view of its high penetration levels. The Government of Kerala's intention to migrate from e-governance to m-governance was clearly articulated in the State Budget for the year 2010-2011 presented in the first week of March 2010.

It is in this backdrop that the present paper 'Dr. SMS – a Mobile-health Information System for Kerala' is being presented as an application for inclusive growth and sustainable development.

Dr.SMS

The State of Kerala is recognised the world over for its notable achievements in the field of health. With low per capita incomes, Kerala has managed to achieve health indicators that are par with advanced countries of the country. Kerala's mortality indicators including

death rate, infant mortality rate (IMR) and expectation of life at birth has got it a positive berth in the health status ranking across states of India as well as advanced countries. According to the data for the year 2008 presented in the Economic Review 2008, State Planning Board, Trivandrum, the death rate in Kerala is 6.8 as against 7.4 in all India, IMR of 13 vis-à-vis India's 55 and a life expectancy of 71.3 for Kerala males in comparison to 62.3 years for India (female life expectancy stands at 76.3 years in Kerala and 63.9 years in India).

This rosy picture can be quite misleading for outsiders who are not quite aware of the extent of health problems faced by Kerala. The glowing achievements in Kerala's mortality indicators notwithstanding, all does not seem too well with the health sector here. There have been growing concerns about the rising morbidity levels in the State, led chiefly by the increasing incidence of lifestyle related diseases like diabetes, hypertension, heart diseases and cancer. Kerala also has seen a re-emergence of infectious diseases like Leptospirosis, Malaria coupled with increasing reports on diseases like Chikungunya and Dengue. The State also has the highest road accident rate in India.

For lifestyle induced conditions like heart attacks, timely care is very essential to prevent further complications and even mortality. Known widely as the "golden hour", it refers to the first hour of a heart attack. Getting medical help during this period greatly improves chances of recovery. The "golden hour" is equally pertinent in trauma care, which also mandates rapid medical intervention to improve chances of survival.

In this backdrop, the purpose of the Dr.SMS project is to provide comprehensive information on health-related resources via the short message service (SMS). The facility has been integrated with the Short Code (537252 – KERALA in Non Querty mobile keypad), opened exclusively for m-services of the State.

Launched on 29th May 2008, the service was pilot in the district of Kozhikode (Calicut) in Kerala. The choice of Kozhikode was based on the fact that it is the third largest city in Kerala with a population of approximately 20 lakhs. Kozhikode was also chosen for the pilot because it has the highest rates of mobile penetration in the State. Kozhikode also attracts huge migrant population/tourists, who are also one of the main targets of this project. The pilot project met with overwhelming success. The service was especially lapped by the large numbers of tourist population who did not know whom to contact in case of a medical emergency. The pilot phase witnessed around 200 transactions a day, on an average.

Backed by a database of health infrastructure in 10 out of 14 districts in the State, the facility can provide timely information on medical facilities available in that locality including contact phone number, specialities and super specialities (Cardiology, Paediatrics, Opthamology), doctors, ambulance services etc. To avail the facility all that the user has to do is to send a SMS to the designated number 9495949000. The message should contain the word 'health' followed by the 'PIN-code' of the locality for where the information is sought. The service can also provide pointers to blood banks, diagnostic centres, private hospitals, speciality centres, facilities for surgery, ventilators and the like.

The Dr SMS project operates at different levels and can be availed across various media. A message with pin-code and your email ID will generate a detailed email reply to the query. The project also incorporates a health portal, which is available at www.drsmss.kerala.gov.in. This portal provides a Web-based information mechanism enabled via the Geographical Information System (GIS). Features like interactive maps, latitudes and longitudes of the health centres facilitate easy identification. The High end mobiles with GPRS can receive the details and can function in a Location Based Service mode. The establishment of a centralised Instrumentation facility at State Data Center is the database will be expanded to cover all districts of the State in the near term.

Project Highlights

- The major achievement of the project is its enshrined ability to deliver health related information to the citizens, including location hospitals, medical centres, facilities and doctors in a time-sensitive manner.
- The project is noted for its cost affordability and effectiveness. To send the message, the customer has to pay a nominal amount of 40 paise or less. The cost of the return SMS is borne by the Government of Kerala.
- The service has come to be seen as a first aid kit for any health emergency for the large number of tourists who are on the move in the town and are not aware of the whereabouts of the place.
- The project has helped hospital authorities prepare the emergency room as per the requirements as well as to mobilise the resources like specialist doctors and specialised equipment to take care of the emergency.

Conclusion

The Dr.SMS project, it is hoped, will have a significant role to play in Kerala, which has seen a rise in lifestyle related diseases like diabetes, hypertension, heart disease, cancer etc. By providing timely and authentic information, timely health care can be facilitated, thereby contributing to better disease control and management and ultimately to inclusive health care. Using the ubiquitous mobile phone to provide health-rated information at affordable costs is a great step ahead in achieving inclusive growth and sustainable development through inclusive health care.