



ROLE OF WI-MAX BROADBAND IN REGIONAL ECONOMIC DEVELOPMENT

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ABSTRACT:

Digital India is an ambitious mission of the Government of India which seeks to transform India into a digitally empowered society and knowledge economy. The initiative is powered by three key vision areas and nine strong pillars that shall pave the way for all round implementation by 2019. The vision areas of Digital India included digital infrastructure as a utility to citizens, governance and services on demand and citizen's empowerment. Broadband Highways, Universal Access to Mobile Connectivity, and Public Internet Access Programme are among the essential pillars of this programme.

Greater broadband access, particularly for large parts of the rural population, can be the force to drive integration of the unconnected and the underserved in economy, thereby helping to enhance the overall value of the network. Greater broadband access has the power to augment productivity of the agricultural sector as well as small enterprises, facilitate easier and more efficient participation of the rural population in governance, generate new employment opportunities, and enable a host of services like e-commerce, e-learning, e-banking etc. As an increasing number of Government services are also being electronically delivered, expanding rural Internet access has become a matter of urgency and is essential in fulfilling the vision of Digital India. Moreover, rural broadband access will help to address multiple service deficits that arise due to other infrastructure related constraints that affect the rural population. The potential gains from increasing such access are tremendous – the Report of the Committee on the National Optic Fibre Network (NOFN) in its projections of the economic benefit from BharatNet estimated that an additional 2.5 crore Internet users by 2018-19 would result in economic benefits of Rs. 66,465 crore due to direct, indirect and spillover benefits of Internet access. It follows that the slow rate of growth in Internet penetration has had significant opportunity costs in terms of potential benefits that are being foregone.

The Information and Communication Technologies play an important role in rural development. The Empowerment of rural communities are crucial for the development of the rural region. Bringing the people in the rural region in the mainstream of the digital technologies to access and adopt modern technologies is a major concern now. Rural Development implies both, the economic development of the people and greater social transformation using electronic governance (e-governance). In order to provide the rural people in Maharashtra with better prospects and opportunities for economic development, agricultural development and management, marketing management, increased participation of rural people in usage and adoption of information and communication technologies (ICTs) is envisaged. This paper aims to explore the nature, role and relevance of the Electronic/Digital Governance using ICTs and wireless technologies for agriculture and rural development in the rural regions. It also aims to study the impact of e-governance on rural development and methods for improving local environmental governance having regard particularly to the range of interests and actors involved in e-governance.

THE BENEFITS OF WIRELESS INTERNET ACCESS

India is increasingly embracing wireless technologies. Cellular phones based on various wireless technologies have revolutionized telecommunication in India. Whereas the growth of fixed-line subscribers

has slowed over the past several years, cellular usage has sky rocketed, nearly doubling in 2003 and growing by 159 percent so far in 2004, with 1.4 million new subscribers added every month. But these cellular technologies have not been sufficiently applied to deliver the broadband data connectivity to households in rural areas due to high both cost and complexity. Yet, India needs a way to provide widespread Internet access. With widespread wireless broadband facilities, the Indian information technology (IT) industry would grow beyond cities reaching out to the rural populace. Students in rural areas could video conference with educators across the country, and entertainment programs could be telecast to remote and otherwise unreachable areas along with Internet telephony services, using technologies like Voice over Internet Protocol (VoIP). Improved communication could bring remote villages into the mainstream world economy. Information access could speed rural productivity and the faster communication between producers and suppliers would fuel greater demand for Indian products.

ROLE OF WIMAX IN E-GOVERNANCE IN RURAL INDIA:

The Empowerment of Rural communities is crucial for the development of Rural India. Bringing the rural people into the mainstream of the digital technologies is a major concern now. Rural Development implies both the economic development of the people and social transformation using e-governance. In order to provide the rural people with better prospects and opportunities for economic development, increased participation of rural people in electronic governance through information and communication technologies are envisaged. In near future, rural population is likely to increase with further increase in poverty aggravating social, economic and environmental problems. Due to these problems, management of different services, natural resources and financial resource mobilization in rural areas, it would be necessary to study the application of e-governance using Information and Communication Technologies (ICTs)/wireless technologies for its economic development.

STRENGTH OF WIMAX IN RURAL AREA

WiMAX shares Wi-Fi strength of not requiring expensive wires and cables and of allowing cheaper use of unlicensed spectrum. In addition to this, WiMAX provides additional range. Wi-Fi provides coverage of about 10 km, but WiMAX offers a range of up to 50 km. An increase in range is particularly important in the densely populated rural areas, since the number of people covered by a single tower is rather small compared to urban areas. No matter what, having a tower and the range of the tower that increases the number of households served cuts down considerably on cost and would encourage service providers to establish themselves in rural areas. Just like Wi-Fi, WiMAX is an economically feasible option for rural India. However, the profits may not match that made in the urban areas. WiMAX also offers data transfer rates higher than 802.11a, 802.11b, and 802.11g, though not as high as the fastest Wi-Fi speed of 802.11n.

WEAKNESS OF WIMAX IN RURAL AREA

Even though WiMAX is economically feasible, it is still potentially expensive to install and maintain with less than desirable payback in rural areas to keep service providers away from using it there. Even though WiMAX is better equipped for some rural parts in India than Wi-Fi, WiMAX is more expensive to install. Thus, even companies that were willing to provide wireless service to rural India, were not readily willing to spend the additional cost for installing WiMAX when they felt that Wi-Fi service was sufficient. Because of the cost of WiMAX, companies that possessed licensed spectrum are not very likely to make the investment in rural areas. Even though some unlicensed spectrum was still available for use in rural areas, much of the spectrum goes unused, causing even more limited service for rural areas. Use of unlicensed spectrum causes problems with collision responses and data loss that are not as prevalent with licensed spectrum.

LIMITATIONS OF WIMAX

WiMAX is suitable technology for next generation with potential applications such as cellular backhaul, hotspot, VoIP mobiles and broadband connection, but it has some limitations as under.

- 1) Low bit rate over Long distance: WiMAX technology offers long distance data range of 50 km or 30 miles and high bit rate of 70 Mbps. That is fine, but both these features do not work together well. With the increase in the data distance/range, the bit rate reduces and vice versa.
- 2) Speed of connectivity: The WiMAX has other drawback that user closer to the tower can get high speed up to 30 Mbit/s, but the users at the cell edge of the tower may obtain only up to 14 Mbit/s speed.
- 3) Sharing of bandwidth: In wireless technology, the bandwidth is shared by users in a specified radio sector. Therefore, functionality quality could go down if more than one user exists in a single sector.
- 4) Mostly users have a speed of 2 to 8 or 12 Mbit/s. For better results, additional radio cards need to be added to the base station to boost the capability.

CONCLUSIONS

WiMAX is satisfactory solution for rural connectivity and it is a new standards-based wireless technology gaining rapid acceptance around the world. It is capable of delivering broadband Internet service and extending services like Internet telephony throughout India without major disruption to transportation and other services. Unlike wired solutions, it requires no blocking of traffic, no digging miles of trenches for laying telecommunication cables, no ruining blocks of roads to provide Internet services, no waiting on massive infrastructure build-out projects, and no overhanging cables that could snap anytime. WiMAX offers a fast, affordable, convenient solution to India's widespread Internet access required to start e-governance for rural administration, agriculture development and management and also for educational development. WiMAX delivers greater throughput and greater scalability to suit consumer's needs. WiMAX is suitable option for starting the e-governance at grass root level in rural area.

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