

## BUILDING A VISION FOR THE INDIAN RURAL SECTOR THROUGH THE INFORMATION TECHNOLOGY

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### ABSTRACT

*The rural sector is important for the Indian economic development because the major population is residing in the rural sector and the natural resources and the opportunities of growth are still unexplored. This paper examines the impact of IT-based services on rural population in India. This revolution of the information technology can change the minds of people and connect it to the outside world with better options. The commercial sustainability of the rural sector is only possible through education and awareness through the internet and connectivity. The analysis highlights the common building blocks required for successful implementation and the relative strengths and weaknesses of different approaches.*

**KEYWORDS:** *Economic development, information technology, Internet, rural development.*

### INTRODUCTION

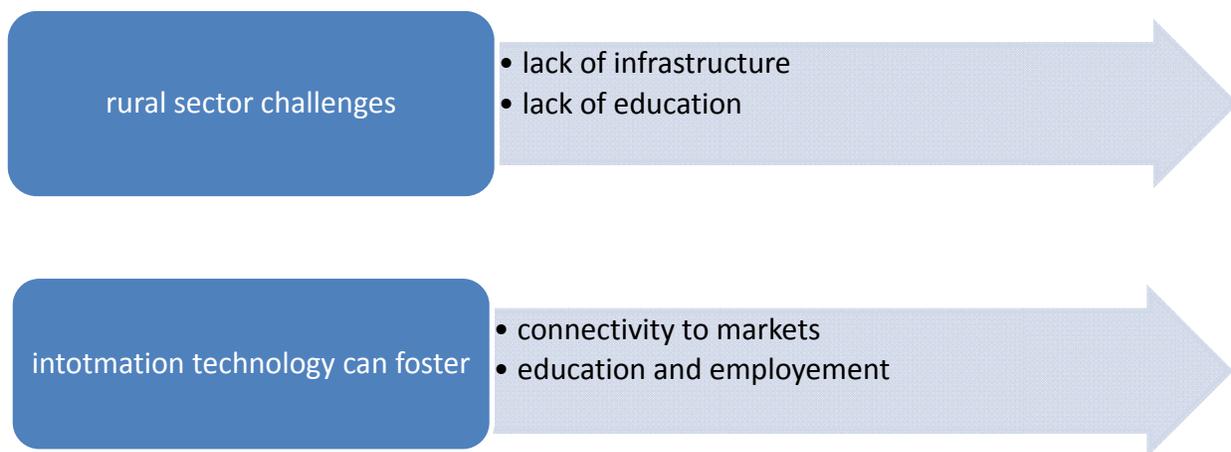
The information technology is the boom to any economy and it impacts the connectivity of the rural sector to the global world of prosperity where there are options of growth and productivity. The people can be connected to the wider markets to sell their products at better prices and profits. It may seem paradoxical that modern information technology (IT), associated in our minds with developed country markets and capital-intensive methods of production, has any relevance for a country where many millions still lack basic needs. Nevertheless, there are many efforts underway in India and other developing countries to demonstrate the concrete benefits of IT for rural populations, and to do so in a manner that makes economic sense. The impact of IT gives both static and dynamic efficiency gains. Static gains are one-time, and come from more efficient use of scarce resources, allowing higher consumption in the present. It is useful to distinguish two kinds of static efficiency gains. One kind pertains to increases in operating

efficiency, while the other comes from reduced transaction costs. In both cases, the channel for gains is through more effective and lower cost.

The second type of potential benefit comes from reductions in economic inequality, to the extent that such reductions are an agreed-upon social goal, and therefore a social benefit. However, a focus on using IT for rural development is, at least on the surface, supportive of reduced inequality along with increased efficiency and growth. The rural development through information technology includes improvements in the capabilities of the population such as education, health and nutrition, independently of any direct or indirect economic impact. The ability to participate in democratic decision-making also falls into this category. Broad-based improvements in capabilities can also have positive impacts on long-run economic well being, but this is not a necessary condition for desiring such improvements.

The information technology involves the electronic processing, storage and communication of information, where anything that can be represented in digital form is included in the term 'information'. Thus news, entertainment, personal communications, educational material, blank and filled-out forms, announcements, schedules, and so on are all information. Information goods typically have the characteristic that one person's use does not reduce their availability for another person. The government may provide information goods because they are shareable and can be used for long term.

#### FIGURE – IMPACT OF INFORMATION TECHNOLOGY ON THE RURAL SECTOR



**LITERATURE REVIEW**

Rural development in general is used to denote the actions and initiatives taken to improve the standard of living in non-Urban neighborhoods, countryside, and remote villages. These communities can be exemplified with a low ratio of inhabitants to open space. Agricultural activities may be prominent in this case whereas economic activities would relate to the primary sector, production of foodstuffs and raw materials. (Wikipedia 1999)

Economic development is the increase in the standard of living in a nation's population with sustained growth from a simple, low-income economy to a modern, high-income economy. (Allen, Annie) Also, if the local quality of life could be improved, economic development would be enhanced. (Caroll) Its scope includes the process and policies by which a nation improves the economic, political, and social well-being of its people. (Sullivan, Arthur)

Gonçalo L Fonesca at the New School for Social Research defines economic development as "the analysis of the economic development of nations."

The University of Iowa's Center for International Finance and Development states that: "'Economic development' is a term that economists, politicians, and others have used frequently in the 20th century. The concept, however, has been in existence in the West for centuries. Modernization, Westernization, and especially Industrialization are other terms people have used when discussing economic development. Although no one is sure when the concept originated, most people agree that development is closely bound up with the evolution of capitalism and the demise of feudalism."

The information development (ILD) most commonly refers to a development strategy whereby a developing country makes as a primary economic policy focus the creation and development of a national information technology (IT) sector with the express aim of relying on this sector as an engine of growth. Notable examples of such countries are India and Philipines (World Bank 2000)

Heeks (1999) asked: "Can information and communication technologies (ICTs) help to alleviate poverty in low-income countries?" His study attempts to answer that question and provides a theoretical framework for empirical studies in this area. Heeks suggests that ICTs play a role mainly as communications technologies rather than as information-processing or production technologies. Among his priorities for the development agenda are: the poor need knowledge to access, assess and apply existing information and need resources for action more than they need access to new information; the poor need access to new, locally-contextualized information more than access to existing information from an alien context; the information needs of the poor may be met by more informal information systems than by formal ICT-based systems; the poor will reap the fullest benefits of ICTs only when they know and control both the technology and its related know-how.

O'Farrell (2001) shares Heek's (1999) belief that before one can advocate for the development of ICTs among the poor, they must understand the existing information systems of the poor, how they interact with more formal information and the best way to strengthen them before intervening with new information sources and means of access sources. Access to information and knowledge are considered key enablers in poverty reduction. Although, O'Farrell (2001) focuses on some of the general debates around information and knowledge in relation to development interventions, her paper is set in the context of the expanding interest in ICTs. She explores the existing information and communication needs and constraints facing the rural and urban poor.

It appears that the slow development of some aspects of ICTs in many African countries has largely been a consequence of poor technical and financial management (and other inefficiencies) on the part of the telecommunications sector (Lefebvre & Lefebvre, 1996). The author's assessments six years ago are still relevant today. They noted that it might therefore be important to assess the adoption and diffusion of ICTs in key sectors of the economies of African countries. However, prior to this, it is important to collate basic information about the actual and potential applications of ICTs and also to have a clear understanding of the specific policy environments. Adoption and diffusion issues need some kind of measurement. Considering the fact that ICT environments in most African countries are still developing, diffusions may be difficult to measure without proper awareness of the current realities on the ground. As Lefebvre and Lefebvre said from their research conducted in (OECD) countries, 'reaping the full benefits of IT adoption and diffusion requires full understanding of IT applications, their potential and a readiness to change'. Therefore, there should first be an effort to collect basic data on the existence of quite simple applications in the first phase of any ICT development, and an investigation into how skills involved in the use of such simple applications might be developed to make more sophisticated use of ICTs.

The World Bank (2000) argues that the right mix of national and supranational policies and programmes can enable some countries to move from being victims to beneficiaries, but only if networking development moves up the hierarchy of development priorities. The purpose of this report is to show that the impact of the networking revolution on the developing world can be understood, and the most effective policies and programmes implemented. However, the networking revolution will remain predominantly a developed world phenomenon. Nevertheless, the impacts of new networking in the developing world will be significant, even though the mechanisms and manifestations will differ. The authors found that there were a magnitude of the threats and opportunities that co-exist for developing countries as a consequence of the networking revolution. There are also basic policies and programmes needed to prepare for these threats and opportunities, even though these policies and programmes will often be challenging, unpalatable and complex to implement. Some of the ways new networking will accelerate development include: improved economic efficiency and competitiveness; more efficient and effective education; healthcare and public administration; opportunities to exploit low factor costs in international markets; opportunities to increase social capital; and opportunities to bypass failing domestic institutions.

In summary, drawing from Mansell & When (1998:115), not all development problems can be addressed simultaneously in the face of competing claims on scarce resources. However, the poor countries that take action on both technological and human resource challenges will be better positioned to benefit from ICT applications and reduce the impact of exclusion from the information economy. In addition, the authors warn that emphasis should not only be on expansion of telecommunication systems ('accesses to links in information highways'), but must also consider development needs, affordability and skills development.

### **THE GOVERNMENT AND DEVELOPMENT THROUGH E-GOVERNANCE**

Often, private provision is feasible, but neglects the spill over benefits that it creates, in which government subsidization may be socially beneficial. For example, primary education has private economic benefits that people are willing to pay for, but it can also have substantial non-economic benefits to the individual and to others in the society (improved understanding, ability to make sound judgments, political decision-making capacity, and so on). Additional roles of government that are important to bring out are in redistribution to achieve equity objectives, and in regulation of private activities through licensing and certification. In both cases, the government also uses economic resources, and IT has a potential role in increasing the efficiency of government. The following are the threats that force a government to design and implement IT solutions.

- World is converging and shrinking.
- Industry barriers are collapsing enabling major brands to enter new markets.
- The internet is transforming the business landscape.
- The nature of competition has become global.
- The rate of change is accelerating out of control.
- Margins are being eroded.
- People are impacted by education and awareness through the international media coming through television.

**FIGURE - RELATIONSHIP OF RURAL SECTOR, GOVERNMENT GOVERNANCE,  
ECONOMIC DEVELOPMENT**

<b>Rural Sector</b>	<b>Government &amp; e-governance</b>	<b>Economic Development</b>
Understanding rural requirements	Enhance the quality of Life	Business growth
Meet the rural expectations	Impact through E-governance	Education and awareness
Deliver value to the rural people	Technological solutions	People station and prosperity

For both government and private provision, one of its main direct benefits is in increasing efficiency by economizing on resource use in the operations of firms as well as in market transactions. Information that would otherwise be conveyed through face-to-face contact, post, courier, print delivery, telegraph or telephone may instead be communicated in digital electronic form via the Internet. Efficiency gains from Internet use are not automatic: the telephone, in particular, is an efficient means of communication for many types of information. IT also requires new investment, so the benefits of trips, time and paper saved must be weighed against the costs of installing and maintaining the new infrastructure. Efficiency benefits of IT are not restricted to the communication itself. IT can improve the efficiency of the telephone network, and it can make possible to track and analyze communications. Word processing, maintaining accounts, inventory management, and other such activities that may not require long-distance communications are also made more efficient by IT.

Experience with Internet use in developed countries suggests that information exchange related to the completion of market transactions is especially valuable. The ability of IT-based communications (combined with storage and processing) to bring together buyers and sellers more effectively represents major potential gains. These gains can come about through lower search costs, better matching of buyers and sellers, and even the creation of new markets. The successes of auction and employment websites design the gains for people in any economy. In the rural Indian context, farmers selling their crops and buying inputs, parents seeking matrimonial alliances for their children, and job seekers are all potential users of Internet-based matching services can make the rural population comfortable with the internet basics.

Efficiency gains of IT can also come about through the enabling of new goods and services. In many cases, the new good is related to something available earlier, but is presented in a form that reduces costs and expands the size of the market. For example, recorded music is a mass-consumption item, whereas only a small minority of the population could afford or have access to live performances by the highest quality musicians. Educational material is another example where recording and duplication can replace more expensive, skilled-labour-intensive

alternatives for delivery. The possibilities for interactivity with IT-based educational materials illustrate the advantages of IT over older technologies based only on recording and duplication. Interactivity also implies personalization, in that an individual can select the precise content that he or she wishes to see. This feature also distinguishes IT-based content from what was available through previous technologies. Finally, the sheer volume of information that is accessible through IT is much greater than before and this also allows new kinds of services to be provided at a cost that is affordable to larger segments of the population.

### **CHALLENGES AND THE BARRIERS FOR THE IMPLEMENTATION OF INFORMATIONAL TECHNOLOGY**

Though information technology impacts the life of the people and makes they happen in an easier way but it is difficult for the Indian rural economy because of the basic problems of installation and investment. The basic challenges are:

- High investment cost
- High technical knowledge required
- Lack of training
- Lack of education and awareness
- Lack of trust and faith in the services
- Basic resistance to change

### **THE GOVERNMENT AND E-SERVICES**

The government can control the total country through e-governance where most of the facilities will be given online and the taxation provisions will be online. The policy decision of the government can impact the life of people, if services of are delivered through the e-governance policies. The potential for rural IT has to analyse the supply and demand perspectives. On the supply side the government has to examine the technical and organizational issues that arise for delivering IT-based services to the rural population. On the demand side, it has examined the potential benefits that IT can bring to these populations, if the implementation is successful.

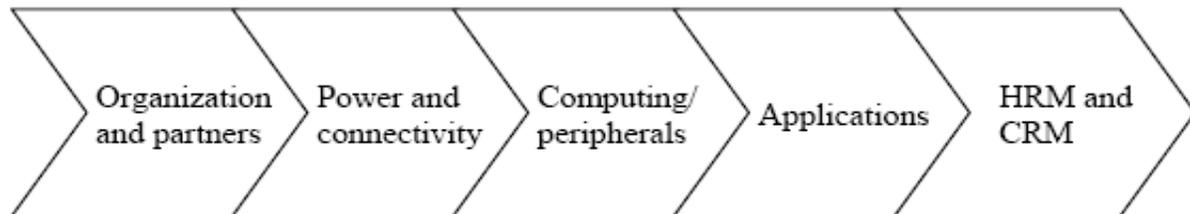
The input decisions on part of the government include material inputs such as seeds, fertilizer and pesticides; and capital inputs such as tractors and land as well as the credit required for such purposes. The focus of analysis will be market transactions for inputs. In all cases, there is a potential for benefiting through improved information about prices, quality and availability. Labour is also an important input, but the labour market has special characteristics that reduce the importance of such information in rural contexts. Operations include decisions with respect to quantity and timing of inputs. A crucial aspect of agricultural operations is risk management, as both the weather and pest incidence are extremely variable. The marketing of outputs

primarily requires price information. Increasingly, producing for sale also requires knowledge of quality requirements in different markets. Selling of produce provides income for consumption, investment and inputs, as well as generating information that affects input and production decisions.

### **THE VALUE CHAIN OF THE INFORMATION TECHNOLOGY SERVICES**

The quality of the government decisions can affect the decision-making of the government and the public can be impacted by having services to get the good quality of life. The value chain of IT services can include the organisation and partners of the government in terms of the policy making and the financial institutions giving the funding for the operations. The connectivity can only be generated if there is proper electricity supply and the people are able to understand the basic applications. To promote education programs and the development of infrastructure, the government has connected the rural sector with the mainstream. Turning to the supply side, we can illustrate the various stages of decision-making and delivery of IT-based services in terms of a typical value chain. At each stage of the chain, the IT components include a mix of hardware and software application. It is also critical to recognize that innovation is required to sell the consumer goods in rural areas. The second stage of the supply chain in Figure-3 concerns access to electric power and Internet connectivity. In both cases, a major constraint is the failure of the public sector to deliver adequate power and telecommunications to rural India. Privatization has helped in the case of telecommunications, as has technological change. In fact, innovation in digital communications technologies is the foundation of all rural IT-based service delivery. While conventional telephone connectivity has often proved inadequate for Internet access in rural areas, because the quality of existing voice lines is too poor to sustain data transmission, several innovations provide alternatives that are likely to be cost effective. The major challenges for connectivity are likely to be regulatory, having to do with interconnection to the main stream sector.

Electric power is more of a problem, and this is true throughout India. Battery backups are a very partial solution to the lack of reliable power supplies and solar technologies may be more promising in the near future. They are already in use in existing rural IT efforts. The difficulty is that having to rely on these alternatives and backups unnecessarily raise costs of operation. Of course this is true for all of India's economy. It is well recognized that the power sector is the major bottleneck, with capacity well short of demand, and the quality of transmission and distribution remaining poor. The standardization of components of desktop computing and peripherals, rapid technological improvements, falling costs of production, and, most recently, price reductions resulting from changes in tariffs on imported hardware is important for the promotion of development.

**FIGURE - VALUE CHAIN OF THE INFORMATION TECHNOLOGY SERVICE**

There appears to be enough evidence now, that it is commercially feasible to use IT to deliver services to rural populations either at costs that are lower than previous delivery methods, or in ways that make it possible to achieve delivery where none was earlier cost effective or feasible. Initially, the static savings from reductions in transaction costs may be of the order of a few percent of value added. However, the benefits from enabling new transactions should be an order of magnitude greater. In the long run, bringing rich information to the population of rural India, whether in the form of education, market prices, market opportunities, and more, can only have positive impacts on the material well being of rural masses.

## CONCLUSION

The rural development of the county is possible only through the information technology. The life of the people can be impacted by the technology and the government can resort to the policy issues of development through e-governance. The basic facilities of life like education, health and connectivity can be managed by the e-connectivity opening the new dimensions of growth and development. The information technology is the basis of any development so the government has to connect the rural sector to the urban markets in order to foster the growth for the economy. The large masses of people in the rural sector are waiting to connect to get the exposure of better life.

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