

**A Study of Cost-Effectiveness of Information and Communications Technologies (ICT) Centers in Western Maharashtra With Respect To Rural Development: Using the Delphi Technique**

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**ABSTRACT**

This urban study center was aimed to spot the effectiveness of rural information and communications technologies (ICT) centers in rural communities of Satara district, geographic region. Rural data and communication technology (ICT) centers play a vital role in rural development throughout e-governance in rural areas. The study utilized an urban center technique, Delphi out by participation of ICT consultants to 1st confirm indicators of effectiveness. Supported the known indicators, effectiveness of rural ICT centers were assessed utilizing structured interviews with form. Results indicated that a majority of rural used net services despite its handiness. ICT centers conjointly showed to possess low effectiveness up household's financial gain, employment rate, diffusion of agricultural data, and e-commerce. They were found to be effective, up to some extent, in preventing migration to urban areas and decreasing variety of daily journeys to close cities still as facilitating communication needs and up e-governance.

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**Key words:** E-governance, Information and communications technologies (ICT) center

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**Introduction**

The role of ICT is element change within the advanced task of economic condition reduction by power the effects on earnings opportunities, on academic and health services, on good governance and on promoting democracy. Since information exchange is a component of nearly each part of the economy, the impact of enhancements within the capability for information exchange can rely critically on however the remainder of the economy functions. This implies the spatial relation of a holistic approach in evaluating the impact of ICT. For instance, the impact of improved ICT access on farm earnings through enlarged knowledge of market costs are going to be soft if there aren't any roads to carry crops to markets, or there are not markets due to an unreformed agricultural sector. (C. Kenny, Web draft April 2001). ICT can make stronger the part of every governance pillar in rural development and poverty reduction. It can encourage fast, transparent, responsible, proficient and compelling

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collaboration between the general population, subjects, business and different organizations. This is not just pushes better organization and betters the earth, however likewise spares time and cash in transactions expenses of government operations (IICD (The International Institute for Communication and Development) 2001: Research Brief, No. 1, March 2001) .Despite the fact that information technology and communication technology were produced freely, they are significantly molded to create another information environment usually alluded to as Information and Communication Technology (ICT) in the created world, the ICT upset has influenced each circle of life and has been of huge profit to the individuals. In India for instance, data trade by electronic means has revitalized the part of expansion administrations in giving data, instruction and choice making aid to agrarian makers. The utilization of ICT could subsequently supplement the accepted farming augmentation strategies in country ranges in Ghana much the same as India.

### **Literature Review**

M.S. Boateng One of the methods for enhancing access to ICT in the rural areas in Ghana is through the advancement of group ICT Centers. This has the playing point of mass use, upkeep, the security of both service and equipment and the less demanding accumulation of charges. Singular groups ought to be helped to manufacture their information focuses where indigenous learning is joined together with exogenous knowledge to improve livelihoods. (Boateng, 2012)

Charru Malhotra, V. M. Chariar, L.K. Das and P. V. Ilavarasan. The author clearly stated that in titled project “ICT for Rural Development: An Inclusive Framework for e-Governance. Computer Society of India.”.The principle issues are absence of freedom of substance for rural groups and lacking support of country groups in outline of regional ICT activities. The relationship between the utilization of conventional information and rural improvement can likewise be mulled over utilizing a detailed analysis approach. The effect of this comprehensive structure could be examined by gauging top legislation pointers prior and then afterward the execution of the same. Some of these influence markers could be build in for every capita income, health indices, and status of education. (Charru Malhotra)

Ajantha Hapuarchchi.The author explore in their research title “Application of ICT in Rural Development in Srilanka”. These are focuses which permit individuals to have access to numerous ICT administrations which incorporate email, phones, fax, photocopy, web and also computer training classes. The focuses administrations are long term and are viable with respect to social and economic development, peace building and poverty reduction in rural areas. (Hapuarchchi, December 2011)

Anita Kelles-Viitanen. It has been argued by author in research title “The Role of ICT in Governing Rural Development” that ICT can help contribute to poverty reduction, in the event that it is customized to the needs of the poor and on the off chance that it is utilized as a part of the right path for right purposes and supplemented with obliged changes. Like all advances, ICT offers instruments and applications however no results. The answers for the issue of hardship are what they have dependably been: monetary development, empowering framework, the production of livelihoods, social capital, instruction and human services, and sufficiently just government to guarantee that financial profits are not cornered by the effective elites. (Kelles-Viitanen, 15 to 17 November 2005-11-14)

Oye, N. D, Noorminshah, A., NorZairah Ab. Rahim. The study examines the effect of technology acceptance model on ICT usage in Nigerian tertiary institutions. shows that performance expectancy, effort expectancy and facilitating condition have a significant positive influence and impact on the behavioral intention to accept and use ICT, by the university academic staff. This shows that university academic staff will intend to use ICT that they believe will improve their job performance, are easy to use and facilitating conditions such as appropriate hardware, software, training and support should be in place by the management. (Oye, October 2011)

### **Scope of study**

This study focus on to reveal the Cost-effectiveness of information and communications technologies (ICT) centers with respect to rural development. By finding out the relation, researchers can reveal the ways to learn the various concepts of the organization at their own place through electronically. Also global a concept of the theories and practical's which has located at remote level would access through ICT.

### **Objectives**

1. To discover the Cost-effectiveness of information and communications technologies (ICT) centers in Western Maharashtra
2. To understand the role of ICT in rural development.

### **Materials and Methods**

The study's design was a descriptive survey, which focused on a population of 6,218 rural household in Satara district. A sample of 367 rural households was selected through a stratified random sampling. Data were collected in two phases. The first stage utilized a Delphi technique with 15 ICT experts participating to identify indicators needed in determining effectiveness of rural ICT centers (MS-CIT).

Delpet al. (1977) described the Delphi technique as a group process used to solicit, collate, and direct expert responses toward reaching consensus. (Delp P, 1977) Helmer (1966) also described this technique as a method of securing and refining group opinions and substituting computed consensus for an agreed-upon majority opinion. (O, 1966) Noted that Delphi technique was especially effective in obtaining consensus from a purposively selected group of experts. The study employed a series of three self-completing postal questionnaires. The first round used a questionnaire with this open-ended question: "What are major indicators for assessing effectiveness of rural ICT centers?" This question produced a wide array of response categories. Responses were then categorized in 28 categories to produce items for the second round questionnaire, in which respondents were asked to rate the items identified in round one using a five-point Likert-type scale (1 = strongly disagree, 2 = disagree, 3 = uncertain, 4 = agree, 5 = strongly agree). Responses from this step produced a list of categories, which later were reduced to 25 items. In the last step of Delphi technique, participants were asked to provide a dichotomous indication of whether they agreed or disagreed that each of the listed items could be regarded as indicator of effectiveness. Results showed a consensus on 22 statements. The second phase utilized a structured interview using a questionnaire developed based on findings of the first stage using Delphi technique. The purpose of this stage was to determine effectiveness of rural ICT centers. To establish the content and face validity of the survey instrument, a panel of experts containing academic staff of the Faculty of management in Shivaji University was established, which revised the instrument afterwards. Reliability of the instrument was measured by selecting a sample of 30 rural households, later excluded from the study. Cronbach's coefficient (for the variables related to the effectiveness construct) was measured to be 0.77, which meant the instrument being reliable to measure effectiveness. Data were then coded and analyzed using the statistical package for the social sciences (SPSS).

**Table 1:** Delphi technique- round one: level of agreement towards effectiveness indicators (n=15)

Indicator	Agree (%)
E-commerce	89.6
Filling leisure times of rural youth	87.1
Improving postal services	84.2
Reducing trips to urban areas	83.6
Improving employment opportunity via job searching	82.3
Increasing access to telephone	81.8
Facilitating official registrations by Internet	80.2
Reducing rural-urban migration	78.8
Developing crop insurance	77.1
Providing business services	76.2
Growing the number of community businesses	75.5
Improving access health and hygiene information	73.2
Providing access to information on rural cooperatives	72.5
Increasing agricultural sales value	71.4
Providing access to information about agricultural markets	69.8
Providing access to information about agricultural inputs	67.5
Providing access to information on weather	66.1
Providing awareness on events in the country	65.5
Reducing cost of information and communication	65.4
Reducing time of access to information and communication	64.9
Providing access to information on input and output prices	46.1
Changing household income	63.9

First phase of this research sought to identify major indicators of assessing effectiveness of rural ICT centers. Table 1 contains a summarized list of indicators identified till round three. As showed in Table 1, panel members agreed that 22 items constituted major indicators of assessing rural ICT centers' effectiveness. The highest level of agreement was reached on e-commerce (89.6%). Over 80% of panel members agreed that six additional categories were also important indicators of effectiveness. These six indicators were: 1) filling spare times of rural youth, 2) improving postal services, 3) reducing trips to urban areas, 4) improving employment opportunities, 5) increasing access to telephone, and 6) facilitating official registrations. Some additional indicators were also listed in Table 1. Perceptions of sample rural household heads regarding the effectiveness of rural ICT centers are shown in Table 2. Overall, ICT centers were perceived as somewhat effective by rural people (M=2.55, SD=0.87). Respondents revealed that rural ICT centers were only effective in terms of two

indicators; namely increasing access to telephone (Mean=4.21; on a scale where 5=very effective and 1=not effective), and facilitating official registrations via internet (Mean=3.58). As identified in Table 2, level of ICT centers effectiveness was perceived to be very low based on changes in household income, e-commerce, access to information about agricultural input and output prices, awareness of national events, increasing value of agricultural sales, growing number of community business, business services, developing crop insurance, access to agricultural weather information, access to information concerning agricultural inputs, access to information about agricultural markets, access to information on rural cooperatives, and improving employment opportunities via job searching. These centers were to some extent effective in the rest of indicators (Table 2).

Table 2. Effectiveness level of ICT centers as perceived by rural household heads (n=367).

<b>Indicator SD</b>	<b>Mean</b>
Increasing access to telephone 0.89	4.21
Official registrations by Internet 0.97	3.58
Reducing trips to urban areas 0.99	3.38
Improving postal services 0.87	3.22
Reduction in monetary cost to obtain information and communication 0.98	3.19
Reduction in time to obtain information and communication 0.87	2.99
Reduction in rural-urban migration 0.84	2.75
Filling leisure times of rural youth 0.78	2.73
Access to improved health and hygiene information 0.86	2.68
Improving employment opportunities via job searching 0.84	2.42
Access to rural cooperatives information 0.88	2.41
Access to information about agricultural markets 0.87	2.31
Access to information about agricultural inputs 0.99	2.28

Table 2 Continued.....

Access to agricultural weather information	2.27
0.89	
Developing crop insurance	2.23
0.86	
Business services	2.13
0.88	
Growth in the number of community businesses	1.96
0.78	
Increasing value of agricultural sales	1.93
0.85	
Awareness of events in the country	1.88
0.85	
Access to information about agricultural input and output prices	1.84
0.84	
E-commerce	1.83
0.99	
Changes in household income	1.79
0.89	

Scale: 1=not effective, 2=of little effectiveness, 3=somewhat effective, 4=effective, 5=very effective.

### Summary

Therefore this research was conducted to analyze the effectiveness of such ICT centers. It tried to identify the most important indicators of assessing rural ICT centers effectiveness. Overall, rural communities and households evaluated the centers effective to some extent. However, this effectiveness was mostly as a result of increased access to telephone and facilitated official registrations rather than services envisaged by the authorities in the Ministry of Information and Communications Technology. Establishing rural ICT centers has been one of the most basic Indian national policies in order to provide information and communication technology services to rural communities. Along these lines this exploration was directed to analyze the feasibility of such ICT focuses. It attempted to distinguish the most top markers of evaluating country ICT focuses capability. In general, country groups and families assessed the focuses powerful to some degree. Be that as it may, this adequacy was basically as an aftereffect of expanded access to phone and encouraged authority enlistments instead of administrations imagined by the commanding voices in the Ministry of Information and Communications Technology. For example, from the rural household's point of view, these centers made little impact on household income improvement, e-commerce, and access to information regarding agricultural input and output prices. Rural ICT centers

need to be reshaped towards undertaking critical duties in the process of rural development; such as e-commerce, providing and disseminating crucial information to rural communities. They can also be empowered to provide information concerning agricultural production and marketing, agricultural subsidies, cooperatives, insurance, finances, and public credits. Providing relevant training courses for rural ICT centers' staff and rural households could improve the effectiveness. Training courses could be in the subjects such as philosophy, purpose, and nature of ICTs; types of services that these centers can provide; and even their cultural and social consequences. Rural communities and households should be involved in participatory planning and management of rural ICT centers, including both financial investment and decision making. Further and continuous evaluation studies could help policy makers understand social and economic outcomes of rural ICT centers.

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