SPECTRUM OF ENGINEERING SCIENCES
ISSN (E) 3007-3138 (P) 3007-312X VOLUME 4, ISSUE 3, 2026

THE ROLE OF ICT IN THE RURAL AREA OF PAKISTAN: A REVIEW

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DOI: https://doi.org/10.5281/zenodo.23591708

Keywords
Information Communication Technology (ICT) (HES) (SME) (iot)

Article History
Received: 01 January 2026
Accepted: 16 March 2026
Published: 31 March 2026

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Abstract
In order to understand ICT needs, gauge the growth in ICT demand, assess the performance of the HES in relation to ICT, and comprehend how the HES manages ICT implementation challenges, this study examined the difficulties the Pakistani higher education system (HES) faced in integrating information and communication technology (ICT). The role of ICT in education is covered in this article. At this time, information and communication technology (ICT) have an impact on every element of human life. In the workplace, in business, in education, and in entertainment, they are playing important roles. Additionally, a lot of individuals perceive ICT s as change agents, bringing about transformations in working circumstances, information management and exchange, educational strategies, scientific research, and information access. The Digital Divide is one of the most prevalent divisions in today's globe, which in turn has spawned or is deepening other economic and social divisions. More people suffer today than use technology to their advantage. In an effort to close the global digital divide, this article promotes the significance and necessity of international cooperation for the use and promotion of information and communication technologies for development. No nation can progress without incorporating and concentrating on regional and global development perspectives, as the idea of the "Information Society" has made clear. The desire for educational reform based on the use of ICT has increased as a result of the information technology era (ICT). To accomplish the intended results, it is necessary to have clear instructions, compelling objectives, the mobilization of resources, and political commitment at all levels of the nation.

INTRODUCTION

daily life and has changed societies all over the world. Empirical and theoretical investigations have shown that ICT has a substantial impact on social and economic growth. ICT have altered the way we live by lowering expenses and waiting times, removing barriers to travel, and enhancing access to information and education. People who have access to knowledge and information are empowered because it increases their potential for learning, for thought, and for teamwork. ICT networks that combine and streamline payment alternatives improve households and businesses. For sustainable development and per-capital GDP

growth, ICT is a major driver. ICT diffusion's socioeconomic effects include a considerable boost to economic development and a dramatic impact on people's attitudes regarding education, transportation, and quality of life. (Khan, Ju, and Hassan 2019).

Agriculture is important to humanity because it gives industry access to raw materials, food, and workers. Other benefits include a source of income, foreign exchange, reforestation, the ability to provide shelter, and regional growth. The majority of the rural population in developing nations depends on agriculture. Natural resources, which are necessary for production but are rapidly running out, are posing a serious threat to the agriculture sector. However, there are more prospects for manufacturers to sustain and raise their level of living due to the rising demand for agricultural products. ICTs are essential for pinpointing these provocations and enhancing the standard of living for rural communities. The urgent need for research into the application of cutting-edge technology in agriculture necessitates the conversion of agricultural scientists' expertise into computer-understandable representation. (Imran 2019)

Learning settings like learner-centered environments, where students actively learn and construct knowledge instead of receiving it, have replaced the conventional learning and teaching environment. ICT promotes the use of interactive and collaborative technology in team-centered pedagogy, although the major focus is on choosing the best learning environment and method. Information and communication technology availability are receiving more attention as the country attempts to meet the change of emerging as a knowledge economy. Pakistan's economic standing and social standing are currently falling due to the political environment and the war against terrorism. Due to the initiative's successful start and the community's good welcome, we are currently increasing the scope of our operations by strengthening our current facilities and services. (Rahim 2014)

Literature Review

Information and communication technology (ICT) are a term that is frequently used to refer to modern technologies like computers, the internet, and phones due to its role in the transfer of information. Additionally, it is said to encompass media outlets including radio, television, and libraries. The Information Society denotes a period in which information is more important than ever for enterprises, regions, and countries' productivity and competitiveness. In the modern global economy, its production, processing, and dissemination represent the most significant economic activity. Children in elementary school are aware of the relationship between ICT and how they learn when they are in a setting where a school has been very successful in integrating ICT into the curriculum. The advantage of include instructors in the research design is that it makes it easier for participants to recall specific learning experiences, which is beneficial for gaining insights into the teaching and learning dynamic with children this age. The ICT curriculum is focused on integrating ICT into the learning and teaching process, while teachers mostly concentrate on the improvement of technical ICT abilities. A school-based ICT curriculum's advantage is that it "translates" the national ICT curriculum into an ICT plan that is a component of the entire school policy. (Oliveira and Oliver 2020)

In order to reduce poverty, encourage economic and social growth, and bridge the so-called "digital divide," several governments and development organizations in developing nations are concentrating on extending telecommunications services to rural areas. However, little is known about how modern telecommunications services benefit rural people and what effects they have on their daily lives and companies. The purpose of this research is to correct the balance by looking at the effect of mobile phones in long-term poverty reduction among the rural poor. Therefore, it is crucial to comprehend that the factors influencing growth in the industrialized and developing worlds may differ. Studies have always indicated that businesses in countries with higher

income/productivity levels have greater incentives to invest in ICT that increases productivity than businesses in countries with lower income levels. The choice to invest in ICT is influenced by a variety of factors. High costs, a lack of competition, and a lack of the skills required for effective ICT use could all act as inhibitors. According to studies, there is a big connection between education levels and the adoption of ICT. It was found that restrictions on the labor and product markets affected the volume of investment in ICT. Before making any recommendations for public policy on the use of mobile phones in the long-term fight against rural poverty, let's look at some of the benefits (or impacts) that come with the availability of readily available mobile phone service. Despite the fact that mobile telephony, as we have demonstrated, is an important driver of economic advancement, the effects of mobile phones on economic development and sustainable poverty reduction have received comparatively little in-depth research. In order to learn lessons for long-term development, this section attempts to compile a few of the extant impact evaluation studies. (Information, Gist, and Chiu 2008)

Education can help to raise living standards and improve the quality of life for everyone by providing vital opportunities. Many countries have recognized education as a human right through international accords and commitments. Education is more important than ever in the modern, fast-paced society. Countries need more highly educated and skilled populations, and individuals need more knowledge and skills in order to compete and succeed in the face of rising globalization, rapid democratic spread, technological innovation, the emergence of new market economies, and shifting public/private roles. The focus of research is on the role that ICT plays in creating a positive learning environment. He contends that one benefit of ICT has been to make learning more flexible by removing time and location barriers. He believes that ICT has given students a great lot of flexibility in their quest for information. He adds that in addition to real-time learning, ICT is beneficial in creating chances for people to collaborate across geographic boundaries. Mathew and claim to have additionally worked on "Analyzing student satisfaction with instructional technology strategies". When the use and application of ICT in developing nations are examined, it is typically concluded that the majority of these nations used printed materials as a study resource and paid very little attention to radio and television, as well as to a very small extent audio and videocassettes, which are used as supplementary material. Additionally, to a lesser extent, tutorial help is provided by fax and phone. (Shah 2017)

In order to address problems with personnel service quality, information and communication technology (ICT) is essential. The staff's demeanor, disposition, and communication skills are indicators of the quality of the service they provide. However, a better information communication technology (ICT) system enhances e-logistic performance by offering a good communication system and portraying a pleasant image to clients. Information communication technology (ICT) allows for the creation of websites and improved information accessibility both of which improve the quality of service provided by employees. Staff information quality, a strong system, and customer satisfaction all have an impact on e-commerce usage. Information and communication technology (ICT) offer staff members a better system for communicating with clients, improving the quality of the service. Customer happiness is influenced by service quality. Thus, one sign of good e-logistic performance is satisfied customers, which may be obtained through high-quality staff services. However, field force automation (FFA) apps are a type of information and communication technology (ICT) that connects distant workers to different company operations, enhancing the caliber of staff services. All of these problems can be resolved with the aid of information and communication technology (ICT). The Pakistani government is aiming to promote the use of information and communication technologies. Recent years have seen a significant increase in the logistic industry's use of internet technologies. Because information and communication

technology are essential to addressing the issues with staff service quality and e-payment, the efficiency of e-logistics is automatically improved. (Khaliq et al. 2018)

SME' s have recently become important parts of the world economic engine. These insignificant components act as a catalyst for a variety of outcomes, including the elimination of poverty, an increase in GDP, a strengthening of the nation's economic foundation, the creation of jobs, better skill development, and the encouragement of cross-border trade. All of these benefits, however, could not be attained in this digital and competitive era without adequate ICT integration in the SME sector. SME' s are under increasing pressure to integrate advanced ICT solutions within their companies as (ICT) spreads globally and the cost of communication channels continues to reduce. Furthermore, SME s in industrialized nations, and most likely large corporations, are already reaping the benefits of technology, whereas SME s in emerging countries, such as India, are still catching up. Many business owners and managers are unable to invest in ICT tools and equipment for better administration of their company due to the inadequate financial resources and human capital. Additionally, a number of elements, including economic, competitive, innovative, and personnel perspectives, have an impact on businesses that employ ICT tools and practical applications to protect the integrity of their operations. Since it has also been noted that SME s in urban areas of Sindh benefit from advantage geographic locations, those areas have adequate ICT infrastructure, a skilled IT workforce, and are implementing cutting-edge ICT applications. As a result, only a small proportion of SME s are sound and stable in technological aspects. In contrast, SME s in less fortunate regions of the nation. (Pathan et al. 2017)

Expected Findings

The main finding of this study is that access to and use of ICT are crucial for increasing students' educational effectiveness. This shows that having access to ICT in the classroom helps students develop their learning abilities and that the most recent ICT advancements enable students to better prepare for their assignments and projects. The findings also demonstrate that ICT can support students in acquiring knowledge that is useful for their academic pursuits. According to our research, when IC becomes more widely used and available in the educational setting, student productivity will correspondingly rise. ICT are assisting Pakistan in resolving a number of developmental issues. The Pakistani underprivileged population benefits greatly from the use of ICT for a variety of objectives. It has decreased the obstacles that the poor faced before it emerged, including those related to access, availability, and cost to essential financial services. Basic healthcare services in Pakistan are nevertheless hampered by poor infrastructure, alack of funding, and a shortage of qualified medical personnel. ICT are being used in Pakistan's health industry to address peoples' healthcare demands. The use of ICT in rural education throughout developing nations has been addressed in this article. Additionally, it has discussed various helpful strategies and difficulties in putting ICT - based learning into reality. It was discovered that mobile technology, notably smartphones, is widely used and can improve teaching and learning. Women encounter significant barriers to economic self-empowerment while utilizing ICT, much as they do in other sectors of development including agriculture, health, and education. Due to its role as a hub for information dissemination, extensive communication capabilities, and increased accessibility to technology and knowledge, ICT offers development potential. ICT implementation, in general, confronts a number of people and infrastructure issues. ICT -related technical issues, instructor technical proficiency, equipment accessibility, pricey Internet connection, a lack of information exchange, and poor ICT integration abilities are a few of them. According to the present study's findings, the manufacturing and service industries and big data have a very good association. Last but not least, the performance of the manufacturing and services industries (textile industry and logistics sector) was

looked at. The performance of both the textile and logistics industries has been proven to be significantly improved by better goods and services. Economic development, better management, and better financing are all benefits of challenges.

Conculision

The adoption and management of ICT in several public universities of Pakistan, were the main subjects of this study. The overall outcomes met the study's goals and provided an evaluation of the use of ICT at different levels. The results of the first objective showed that a basic ICT infrastructure was already in place, but that it needed to be upgraded and maintained. The results of objective two showed that while older people are somewhat reticent to using ICT, younger staff members are more open to it. It was advised that these older people receive training and receive incentives to encourage their use. The timely dissemination of information needed by farmers has been shown to be particularly successful using electronic media. According to the survey, the majority of respondents believed that the internet and mobile devices may be helpful sources of agricultural information, although a sizeable percentage were unsure about whether "agricultural helplines can be a beneficial source of agricultural information." While 65.6% of the respondents were unsure if TV broadcasts and programmers offered adequate agricultural information and had a beneficial impact on agricultural productivity. The respondents' ages and how they used information from radio and TV were shown to be significantly correlated. The overall findings of this study are positive in that they show that students, including those enrolled in distance education programs, considerably profit from a variety of ICT tools. Additionally, the fact that ICT is primarily used by students for educational reasons is encouraging. Through the creation of jobs, foreign investment, and tax money for the government, the ICT industry is aiding Pakistan's economic growth. In addition, the sector supports a number of other industries, such as the health services industry. Exports of IT-related goods are rising, and the rise of the e-Commerce industry is encouraging for fostering business-related endeavors. To fully use the potential of ICT enabled services, the government should take decisive action. It is important to realize that farmers and agricultural workers shouldn't be viewed as just consumers of knowledge and information that is available to everyone. A robust, well-established learning community that includes farmers' associations, women's groups, cooperatives, and many other organizations is 75 needed in the agricultural region in order to advance rural development. In order to promote sustainable rural development, this study examined possible IoT uses in agriculture. It has demonstrated the commercial advantages that several age-related areas may obtain from IoT. These fields include forecasting the weather, managing water resources, managing wildlife, managing diseases in plants and animals, managing finances, forestry, storing and transporting agricultural supplies, providing extension services, etc. It is evident that the widespread use of mobile phones does have a beneficial, multifaceted influence on the long-term fight against poverty. Therefore, it will continue to be crucial to make the mobile phone as affordable and accessible as feasible in the future. ICT s have a critical role in the development of economic, social, cultural, behavioral, and educational aspects of society as well. Additionally, there are certain broad conceptions that ICT s may enhance teaching and learning. Effective, efficient, and successful integration of ICT in community learning resources centers requires better strategy and planning with strong community support, directives from volunteers, a sense of responsibility from leaders, strong financial support with a partnership strategy with NGO s, the government, and other responsible organizations, the best assessment and monitoring system, and committed youth for creating a collaborative learning environment. The majority of respondents had adequate access to ICT tools, such as laptops and personal computers, in their homes and universities, but there were fewer printing and computer-based scanning facilities in homes than

there were in universities. However, these facilities could still be accessed by students at the university. Most students reported using ICT to do various duties, including planning lessons more effectively, preparing assignments, and participating in class activities. Students' computer-based competences are enhanced via the use of ICT, and these competencies may be highly helpful in enhancing students' organizational behaviour in practical sectors. E-governance deployment in the healthcare industry has the potential to boost productivity, accountability, and transparency. Many obstacles must be overcome for e-governance to be successfully implemented in the health sector. Government policies, institutional changes, and public acceptance are required for the effective implementation of e-governance in the health sector and should not be the exclusive focus of studies on e-health.

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Problem DefInItIon

ICT, or information and communications technology (or technologies), refers to the framework and elements that make contemporary computing possible. Although there isn't a single, agreed-upon definition of ICT, it is generally understood to refer to all hardware, software, networking elements, applications, and systems that collectively enable people and organizations (such as companies, nonprofits, governments, and criminal organizations) to communicate and collaborate online. Information and communication technologies (ICT s) are a broad range of technical resources and techniques used to

transmit, save, produce, share, or exchange information.

Problem Statements

Many rural poor people reside in places with minimal agricultural potential, little arable land, frequent droughts, and environmental deterioration. Additionally, access to fundamental human rights, like clean water and sanitation, education, and healthcare, is far less common in rural communities. Low productivity, under investment in rural agricultural and non-farm jobs, inadequate infrastructure, unsafe workplace conditions, and limited or no access to services, particularly financial services, are all common obstacles to maximizing the potential of rural communities.

MotIvatIon Statement

The development of new economic possibilities, better access to healthcare and educational resources, and the encouragement of a more effective and fair form of government. Technologies (ICT) Adoption of ICT is influenced by factors like income, social infrastructure, and physical infrastructure, as we've already seen. As the economy grows, ICT use will definitely increase.

Research Question

1. How ICT can help in the rural area of Pakistan?

Research Objective

1. To explore the key role of ICT in rural areas of Pakistan.

Contribution

By giving millions of individuals in Pakistan better access to services like financial and medical care, ICT s play a key role in progressing society. The moment has come to use social media as a voice for social causes since it has become an essential component of everyday life in order to raise awareness.

Scope

The ICT sector in Pakistan is expanding quickly since it is demonstrating strong export revenues through services exports and is also boosting other industries, such as digital health services. It is the integration of telephone and computer networking over a single cable system with simplicity in data storage, manipulation, management, and retrieval. It dealt with database administration, computer programming, and software development.

Methodology

According to reviewed literature, this research would be quantitative and questioner will be used to find important factors and corresponding solution by using ICT.

This approach is cost-effective, allowing for the use of several survey methodologies to collect both quantitative and qualitative data, and it predicts speedy results at little cost. This kind of survey also makes it feasible to develop relationships with respondents.

In-depth interviews and discussions with farmers were done to get visual clues for those acts that the director noted when the farmer got apprehensive to talk in order to gather more detailed information. Using the system with a handbook for gathering and organizing data is provided in an examination configuration.

The essential information for the test was gathered through a previously completed survey. The information that will be gleaned from doctoral postulations, publications, papers, trustworthy sources, and other sources is regarded as optional.

Many colleges and institutions in Pakistan provided the researchers with the data they needed for this investigation. The data was collected in KPK, Sindh, Baluchistan, and Punjab, four well-known provinces of Pakistan.

The sites were picked because of how many colleges and institutions are nearby. Using the convenience sample approach, the responses from various students in schools and colleges, as well as from teaching staff and non-teaching staff, have been gathered.

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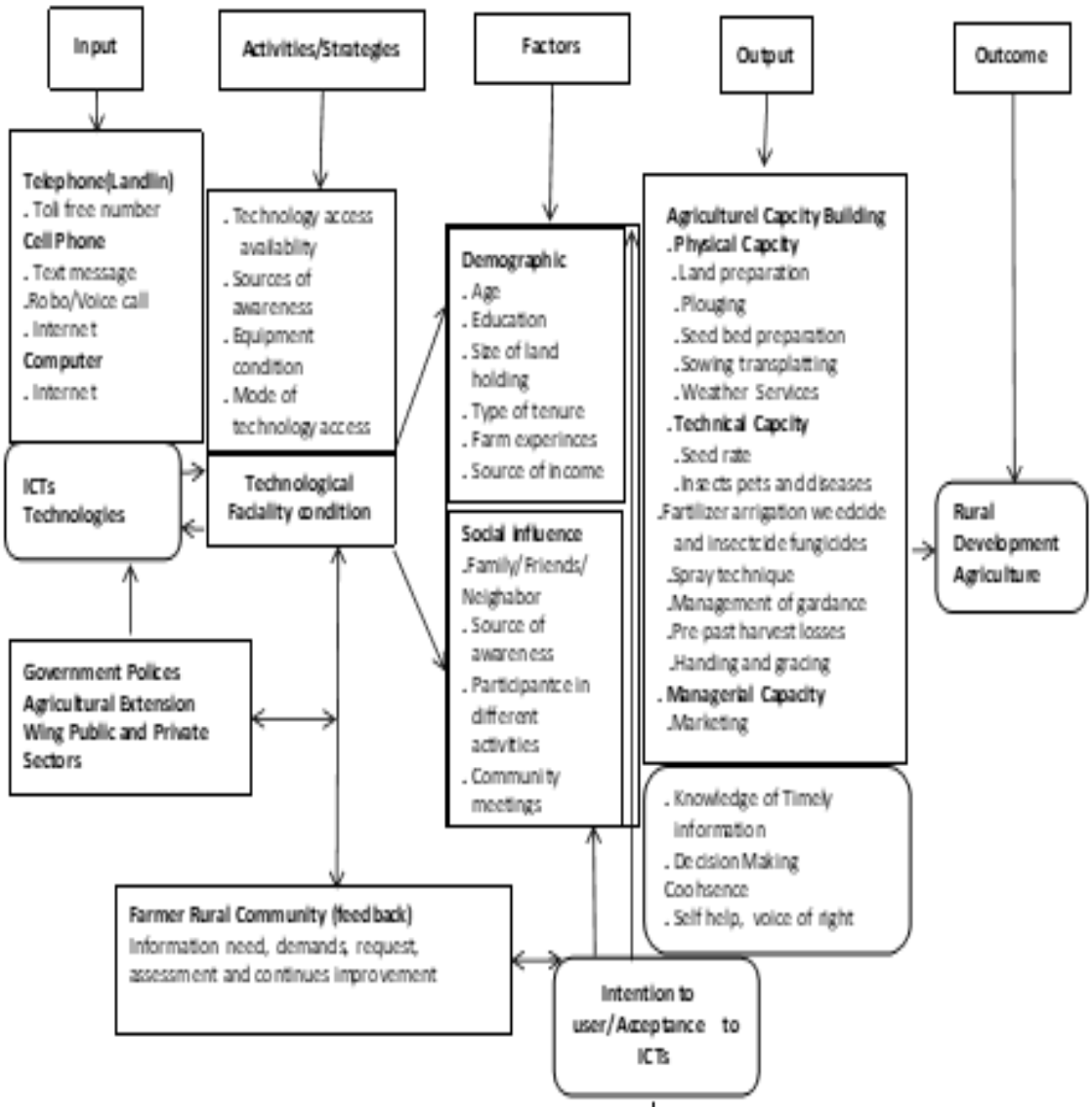


Figure: 1.2 ICT in rural development

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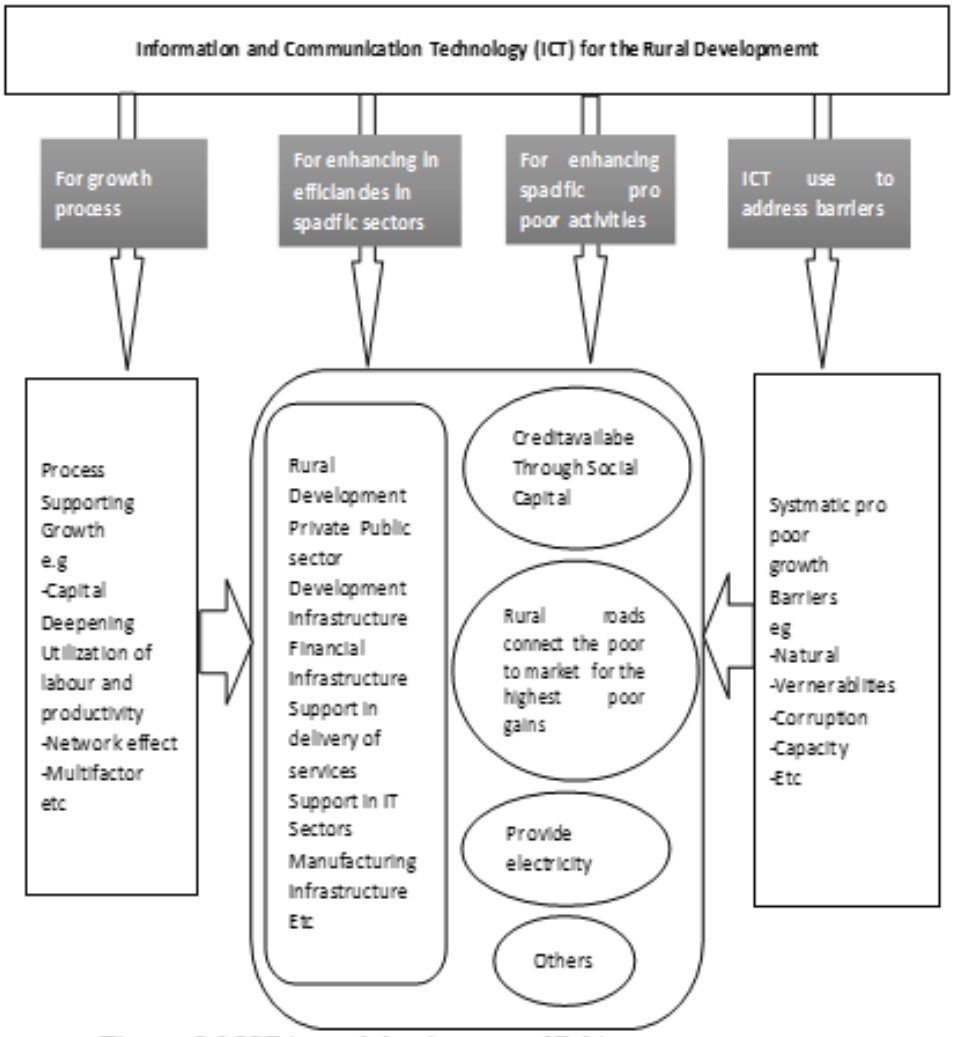


Figure: 1.2 ICT in rural development of Pakistan

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S No	Questions	Agree (%)	Dis Agree(%)	Don't know (%)
1	I am comfortable using technology in the foreign language classes.	74.4	18.6	7
2	I think that getting information from ICT is better than using printed material/textbook.	18.6	60.5	20.9
3	I think that ICT allows me to learn more in the time I have for studies.	39.5	25.6	34.9
4	I think that ICT improve my learning.	76.8	20.9	2.3

5	I think that the use of ICT allows me to take greater control of my language learning.				65.1 20.9 14
6	I use ICT to create my own digital learning resources (Web-pages, blogs, and mind map.				18.6 51.2 30.2
7	I use ICT to communicate with international peers on topics of personal interest.			53.5	41.9 4.6
8	I use ICT to communicate with international peers on education related matters.			39.5	55.8 4.7
9	ICT (e.g. internet) permits access to current learning material.		79.1	11.6	9.3
10	I would like to use ICT more in languages learning.	37.2	46.5	16.3	

Figure: 1.3 Questionaries' of survey

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