

MIDLANDS STATE UNIVERSITY

**WIRELESS REVOLUTION AND ITS RURAL DEVELOPMENT IMPLICATIONS: A CASE FOR MBERENGWA EAST
WARD 2 IN ZIMBABWE**

BY

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DECLARATION

I, *Tofara Rugara*, declare to the best of my knowledge that this is my original work and affirm that it has not been submitted to this or any application for a post ,degree or any other qualification. The correctness of the information contained herein depended on the credibility of the responses received from various individuals and other sources consulted.

Signature.....Date.....

Supervisor.....Date.....

DEDICATION

To my dearest wife Chiedza Theresa and sons, Keith Rufaro and Sincere Anesu who remained supportive and endured loneliness and financial constraints when I was carrying out the project.

ABSTRACT

A study on rural development implications of the wireless revolution was conducted in Mberengwa East ward 2, as technology is becoming a powerful force in all facets of life. Gradually the wireless connections are penetrating the rural villages and making an impact in their lives hence the need to verify on how these connections are changing the way of people in the rural areas. Various authorities made their contributions in this study and it was guided by the livelihood framework. A qualitative approach to research was used in this study. The study interviewed key informants and gatekeepers and also solicited for data through questionnaires with open ended questions from other members in the area. The study revealed that the sources of income within the area varied and the participants recognize the benefits associated with wireless connections. The wireless revolution enhances grassroots participation. Other sectors such as agriculture, health and education stand to benefit, however challenges are met in acquiring these technologies. The study concluded that Mberengwa East ward 2 may benefit from emerging wireless connections. The world is getting a global village. The wireless revolution can contribute to poverty reduction and enhance participation if it is tailored to the needs of the rural poor people and used in the right manner and for the right purpose.

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Acronyms

E-Mail-Electronic Mail

ICT-Information and Communication Technologies

LAN-Local Area Network

NGO-Non Governmental Organisation

VSAT-Very Small Aperture Terminal

WAN-Wide Area Network

Chapter 1

Problem and Its setting

1.0 Introduction

Technology is becoming a powerful force in all facets of life. The recent developments in wireless networking are raising new hopes for sustainable development in rural communities which has been behind in terms of technological advancement. This study seeks to investigate the development implications of wireless revolution in Mberengwa East, Zimbabwe. The following chapter concentrate on the background of the study, gives a brief statement of the problem, research questions, outlines the purpose of the study, justify why the study was conducted, raises the study assumptions, the limitations and delimitations, defines key terms and the proposed outline of the study.

1.2 Background of the study

Rural Zimbabwe has been lagging behind in terms of development since independence in 1980. Little progress has been achieved. People in rural areas live in harsh and unstable environments and hence are susceptible to various difficulties such as poverty , food , insecurity , hunger and degradation (Ley , 1996).Generally they lack adequate amenities and services and indeed there is no significant change in most rural areas ,however , the wireless are gradually getting into the rural communities. Sarrocco (2002) admits that generation of wireless technologies is poised to have an impact in the delivery of internet services in the developing world.

The Wi-Fi networks have experienced extraordinary growth since 1997. The new wireless technologies offer exciting opportunities for addressing the lack of connectivity in rural Zimbabwe. The new breed of wireless allows nations to leapfrog the first generation of internet access technologies much like mobile telephony has allowed leapfrogging of traditional telecommunication networks. Internet offers unique opportunities to overcome a variety of informational deficits that handicap people, businesses and communities in poor nations (Castells, 1999, Rodriguez and Wilson, 2000).

The growth of mobile communications technology is creating opportunities for economic, social empowerment and grassroots innovation in developing countries. They provide access to information, markets, and services to people. The World Bank (2002) reveals that mobile phones can reduce waste, make delivery more efficient and forge closer links between farmers and consumers. The mobile communications have become the world's most common way of transmitting voice, data, and services.

In response to development of mobile communication, Zimbabwe's rural tele density has risen. It is also an indicator of economic development (The Zimbabwean, 2012). This has facilitated mobile banking an opportunity for the 'unbanked' Zimbabwean lot. Ndlovu and Ndlovu (2013) maintain that unbanked people are far the majority in most developed countries, are in fact a heterogeneous group, including people who may have adequate incomes but from an informal source as well as poor rural dwellers. Rural branches banking have increasingly become the solution for rural areas in the developing world. The Zimbabwe Ecocash banking concept is an example and is becoming popular among the unbanked Zimbabwe folk.

The global internet provides access to a plethora of agricultural and rural development information and discussion services (<http://www.fao.org>). The internet represents a vast global library of information that can become available to rural and remote residents of developing nations. As revealed earlier the internet can be used for rural communication to increase participation, disseminate information and share knowledge and skills (Manuel, Calvelo, Rios, 1996). This can also sensitize urban policy makers to the realities and the needs of rural populations. The World Bank (1996) maintains that the information revolution offers Africa a dramatic opportunity to leapfrog the future, breaking out of decades of stagnation or decline. Africa must seize this opportunity quickly if African countries cannot take advantage of the information revolution and surf this great wave of technological change.

Technology can bridge the gap between development professionals and rural people by initiating interaction and dialogue, new alliances, interpersonal networks and cross sectional links between organisations. It creates mechanisms that enable the bottom up approach articulation and sharing of local knowledge. According to Cypher and Dietz (2008) technological progress reduces costs, increases productive efficiency, conserves society's resources and establish the capacity for a higher standard of living. Slower technological progress means, *ceteris paribus*, slower economic growth and reduced possibilities for augmenting or creating the social mechanisms that promote greater equity and the higher level of human development that technological progress makes feasible.

Interaction and dialogue, new alliances, interpersonal networks and cross sectional links between organisations. It creates mechanisms that enable the bottom up approach articulation and sharing of local knowledge.

The area under study is Mberengwa East. Mberengwa East Constituency is found in Midlands Province and precisely in Mberengwa District. The constituency consists of Buchwa, Munene, Ngungumbani and Mupandashango among other well known places. The area has been mining minerals like iron-ore, asbestos, chrome, beryl and high grade limestone. Mberengwa East is a hot and dry area most suitable for cattle rearing. Residents' livelihoods is farming and mining activities. Gold panning, though illegal has continued to be a source of livelihood for many and also a major environmental degrading factor. The constituency is generally poor with the poverty incidence level pegged at 72% in 2003(Zimbabwe Parliament Research, 2011).

The constituency still has a very high poverty incidence level and is not making much progress. It is clear that there is under-utilisation of the abundant mineral resources and with gold panning rife, meaningful development is nowhere near. People in the area live in poverty. Poverty can lead to exploitation of the environment until it has lost its accountability to sustain life. The environment reaches the level of failing to sustain life, and then poorer people become poorer. Exploitation of the exhausted environment continues which in turn fails to meet their livelihoods (UNEP,1995).This shows that there is need to improve rural areas so as to improve the people's livelihood and attain sustainable development.

Development is about poverty reduction, increase employment and equality. Participation helps initiate sustainable development through the involvement of all local government structures such as chiefs, councilors, headman, village heads and other important actors in rural communities. Mararike (1999) argues that local leadership helps to manage resources available to them in order to shape their own world, socially and politically as well as economically. Thus structures already in place in rural areas are coordinated so as to strengthen sustainable use of resources.

Gaidzanwa (2001:165) reveal that, “impediments may also lie with the grassroots people who may be apathetic about the importance of participation in development programmes as a result of education and training programmes necessary to increase awareness on the part of the grassroots. Education and training can also foster a spirit of participation. Through the wireless systems mass education and training can now be facilitated. Lifelong learning programmes can be intensified if such resources has been made available, hoping that the wireless revolution does not end in urban but would stretch to the rural areas.

Participatory development according to Makumbe (1996) will enhance self reliance and developing of internal self sustaining process of development, besides this improves the standard of living and sustainable development within the society. Chenje etal. (1998) posits that, the primary goal of the Zimbabwe government’s strategic plan since 1996 was sustainable development of rural areas. This meant integrating various groups within communities to become a complete, interdependent and interactive system. This can be facilitated by availability of effective networks recognizing the role of different components in the rural development process. This necessitates timely dissemination of information and the feedback is sent instantly. In the same vein there could be deviation from a top down approach and adopt a more responsive approach to rural development where beneficiaries are engaged from project planning to the end of a project.

The mobile networks are dominating in rural areas in Zimbabwe. Satellite networks are also going rural and other services becoming available to the rural populace. The challenge may be a lack of knowledge on how to use but gradually technology is set to improve the rural livelihood. Significant gains can be obtained from employing these technologies. Some services can be

brought on the door step reducing unnecessary travelling expenses that may be incurred by the rural people to urban areas for such services. In the same vein the rural urban network can improve as result of the existing networks. Rural population is afforded an opportunity to increase the social capital through the available social networks online. The rural populations also are kept informed of what is happening national and at global level. Current awareness service is one critical element in updating people on what is happening hence keeping the people informed and be prepared to meet day to day challenges.

Indeed rural Zimbabwe may benefit immensely from the adoption of wireless networks. This may not be a panacea for a development but it brings new information resources and can open up new channels for rural communication. It is against this background that a study on the wireless revolution and the rural development implications was conducted and explore on how best technology can be tapped and used effectively in developing vulnerable rural communities.

1.3 Statement of the problem

The emergence of wireless technologies across the world has reduced the distance between nations and the world is becoming a global village. In Africa particularly rural Zimbabwe which has been affected by the digital divide is gradually coming out of hibernation and slowly joining the global village. This study sought to establish the implications of the wireless revolution, a powerful global development force and its implications in growth and prosperity.

1.4 Purpose of the study

The purpose of the study was to investigate on the rural development implications of wireless revolution in rural Zimbabwe focusing in Mberengwa East. Rural Zimbabwe has started

benefitting from technological advancement. They help reach, connect and empower people and brought other benefits which are yet to be realized by the rural people. It is in view of this that a study has to be conducted which may unpack the development implications of the wireless revolution. The study may be a good starting point on encouraging usage and adoption of wireless technologies in rural Zimbabwe. It may also help policy makers in coming with investor friendly policies that may encourage increased rural penetration by service providers. Academics may be encouraged by this study to investigate further on how this development may benefit the rural population. In addition the study may contribute much to the current body of knowledge.

1.5 Research Questions

- What rural development opportunities are associated with wireless networks?
- What challenges do rural Zimbabwe face in adopting wireless technologies?
- How can these challenges be minimized?

1.6 Justification of the study

The study was carried out in response to current wave of technological development, the emergence of wireless technologies shaping the lives of people. This study may be an eye opener to rural residents and development practitioners on the role of wireless technologies in development. It may also raise the rural populace from the digital divide a challenge currently predominant in rural Africa and to be specific Zimbabwe as a nation with the majority of people in rural areas. The challenges faced in implementing wireless networks may also be exposed and

how these can be addressed. The study may also encourage the rural population to participate in development activities affecting their areas and also share skills with the world at large.

1.7 Assumptions

- The digital divide retarded rural Zimbabwe development.
- Adoption of wireless networks may bring positive change in rural Zimbabwe.
- Rural Zimbabwe is gradually receiving wireless technologies.

1.8 Limitations

The researcher faced a number of challenges in conducting this study. Such problems included high travelling expenses from Gweru to Mberengwa. Without sufficient motivation the rural folk had challenges in contributing. The study was also done during the time when political temperature was high, this affected mobility of the researcher and access to the respondents. The study population had challenges in giving responses that can make the study a success. The concept of wireless technologies appeared complex to them although they often use wireless technologies in one way or the other. In response an explanatory was given before interviews and administering questionnaires in order to concietize communities on what wireless technologies are.

1.9 Delimitations

The study was carried out in Mberengwa East ward 2 which is in the Midlands province with a population of five thousand three hundred and eleven people. Conceptually the study focused on

the development implications of the wireless revolution in rural development focusing on Mberengwa East ward 2. The study did not concentrate on the technical aspects of wireless networks rather focus on socio economic development implications.

1.10 Definition of Terms

Civil Society

These consist of formal and informal networks organisations and institutions. Akerlund (2005) regards them as autonomous societal groups that interact within state but delimit and constrain its actions that prevent the state from dominating and atomising the rest of the society. People organise themselves on the basis of their common interests or needs, religious affiliations or so. Civil society is an extremely wide concept which is much more than civil society organisations (CSOs).

Development

Chambers (2002) viewed development as a notion for good change. According to Sen (1999) development is a process of expanding real freedoms that people enjoy. Most developed nations would define a measure of a country's freedom by its gross national product (GNP), this perspectives is limited in scope. Personal income provides means to expand freedoms, but Sen (1999) expands this notion by including determinants of freedom, such as health care, education, political and civil rights. Development therefore requires the eradication of sources of oppression such as gender and racial discrimination, social and economic deprivation, and neglect of public facilities, intolerance and over activity of repressive states. When these sources of oppression are eradicated individual freedoms are expanded.

Digital Divide

This is viewed as the differential capabilities of entire social groups to access and utilize electronic forms of knowledge (Straub,2003)The digital divide can be categorized as global, regional or national (Rao,2005).Clear tendencies of concentration of information flows to urban and central areas defines the digital divide.

Planning

Stone (1995) defines planning as the process of establishing goals and suitable courses of action for achieving these goals. Simply put across planning is the process of deciding what to do, when and who to carry out the activities. In this context the concept development planning shall be considered/adopted. Indeed development planning describes the various planning guidance for a particular area or country. These are intended to provide a consistent basis for determining planning applications and to introduce certainty about where and what kinds of development may or may not be allowed over a number of years, otherwise as the 'plan period'.

Rural communities

This refers to non urbanized and peri-urban areas. These are often poor-the lifestyle of the community depends mainly on agriculture and livestock farming. Infrastructural development and service provision and poverty and unemployment levels are often very high (UNDP, 2000).

Rural development

According to Mknadla (1997) is a strategy designed to improve the economic and social life of the rural poor, mostly peasant farmers, destitute persons and others who seek a living in the rural

areas be they communal or commercial. In reiteration to the foregoing Chambers(2002) claims that rural development is a strategy to enable a specific group of people, poor rural women and men, to gain for themselves and their children more of what they want and need. It involves helping the poorest among those who seek a livelihood in the rural areas to demand and control more of the benefits of rural development

Information and Communication Technologies (ICT)

This is a generic term referring to technologies which are being used for collecting, storing, editing and passing on of information in various forms (SER, 1997).

E-learning

This encompasses learning at all levels both formal and non formal that uses an information network, the internet and intranet (LAN) or extranet (WAN)

Information superhighway

Is usually used to mean a broadband network capable of transferring very large amounts of information, including video, still images, audio and text, at high speed between remote users (Bocij, Greasley and Hickie, 2008).

Integrated rural development

The integration means putting different groups together or separate parts. Palmer (1995) defines integration as making one, complete, interdependent and interactive system. Integrated rural development brings together rural people, the government experts and donor community and

make a productive system. It is a socially acceptable, economically viable and ecologically sustainable development undertaking.

Sustainable development

This is defined by chenje etal. (1998) development as the activities that meet the needs of the present generation without compromising the ability of future generations to meet their own needs. Sustainable development should strike a balance between the needs and desires of the present generation while on the other hand protecting the carrying capacity of the earth for future generations. It is any development with a lasting impact.

1.12 Organisation of the study

The study adopted the following the following structure:

1.12.1 Chapter 1: The problem and its setting

This chapter introduced the problem or gap and situated it in Mberengwa East ward 2. The researcher described the existing situation based on experiences and other sources. The rationale and significance of the study was also given. An introductory statement which reflects the problem was raised. The researcher identified challenges faced and the scope of the study taking note of the conceptual and geographical boundaries. Also key terms were defined in this section.

1.12.2 Chapter 2: Review of related literature

The section focused on reviewing related literature which included research findings, published or unpublished literature. A theoretical framework was also given which is the livelihood

framework. The chapter also introduced various themes focusing on rural development implications of the wireless revolution Mberengwa East ward 2.

1.12.3 Chapter 3: Research Methodology

The chapter introduced the methodology for the study. It looked at the research design, population and sample, data collection instruments which are questionnaires and semi structured interviews also justifying why these were selected. The data collection procedure and analysis plan was raised. The part examined the ethical considerations observed in the study

1.12.4 Chapter 4: Data Presentation, Analysis, Discussion and Interpretation

The major focus is on presenting, analyzing and interpreting collected data from Mberengwa East .The researcher adopted a thematic approach to data presentation because the data collected was of qualitative nature. In the same vein the researcher constantly invited literature to support or deny the findings hence facilitating a comprehensive discussion of findings. Also the researcher's voice was added as a way of interpreting the findings.

1.12.5 Chapter 5: Summary, Conclusions and Recommendations

The section concentrated on summarizing the findings of the study. The researcher also made conclusions and recommendations. Conclusions were drawn basing on how the research problem was addressed, what has been learnt from the results, how can knowledge be used and what are the shortcomings of the research or methodology used. The researcher made recommendations directing them to different stakeholders.

1.13 Summary

The chapter described the existing and prevailing problem justifying the need to research on this problem. A link between the background of the study and the problem was made. An introductory statement reflecting the main problem under study was given as a statement of the problem. The chapter raised the purpose of the study, research objectives, research questions, assumptions, justification on why the study should be conducted, challenges faced and scope of the study that the conceptual and geographical delimitation of this study has been outlined. A proposed outline of the structure was also given. Finally the researcher defined key terms providing direction in this study. The next chapter reviews related literature on the rural development of wireless revolution in Zimbabwe.

Chapter 2

Review of Related Literature

2.0 Introduction

Rural Zimbabwe started benefitting from wireless technologies. These developments are raising some hope for sustainable development in rural Zimbabwe which has been behind for decades and decades. Gradually the rural populace is accepting wireless technologies facilitating communication among the communities and the world at large. In other words the rural communities are joining the global village at a slower pace however. It remains unclear whether these communities stand to benefit from this undertaking or not. This is the thrust of this study to unpack the benefits likely to be accrued through adoption of wireless technologies by rural Zimbabwe. The following shall be a review of related literature. The researcher shall be guided by a theoretical framework which shall assist in shaping the review.

2.1 Theoretical framework: Livelihood Model

The study shall be guided by the livelihood model as propounded by Soussan et al (2000) it captures the factors that influence the livelihood strategies of the rural poor. It considers the main factors that affect peoples' livelihoods and the relationship between these factors. The framework attempts to raise complexities of poverty. The rural poor people are at the centre of a web of interrelated influences. The list include natural resources, technologies, their skills, knowledge and capacity, their health, access to education, sources of credit or networks of social support. According to Ellis(2000) natural capital covers land, water and biological resources used by men for survival, social capital such as networks, member of groups, relationships and

access to wider societal institutions, human capital or the skills, knowledge, ability to labour and good health, physical capital such as transport, shelter, roads and energy

The technological environment is a fundamental factor that affects the livelihood strategies of any community. Technology must be compatible with natural, human and financial resources and correspond to the cultural practices of users. It is argued that sustainable livelihoods technology should be appropriate and relevant which has great potential of improving community productivity and opening new livelihood opportunities for the people hence empower them.

2.2 Rural communities in Zimbabwe

Zimbabwe rural communities are characterized by poverty where the majority of people lack basic necessities for a physical healthy existence. This has been described as rural poverty. Andrew (2001) claims that the rural areas are characterized by low income level, extreme poverty, poor sanitation and water supply facilities, poor infrastructure, high death rates and extreme climatic conditions.

Generally the Zimbabwe populace struggle to survive, heavily dependent on subsistence agriculture which is not sustainable. For those getting some surplus after harvesting do sell their products cheaply due to poor market conditions. This is a result of poor commodity chain which severely exploits the producer. Agricultural products are transported to urban areas for resale by the urban elites at relatively higher prices hence exploiting the producer.

The producer is exploited as a result of ignorance or lack of knowledge, lack of transport and rather weak knowledge of marketing opportunities. Rural Zimbabwe is lagging behind in terms

of advancement. It has been severely affected by the digital/technological divide although a number of schools received computers. These computers are not connected, there are just for typing purpose. In retaliation to the digital divide the mobile has become a powerful development instrument in Zimbabwe.

Mobile phones are going rural affording the rural people an opportunity to participate in development of their own areas .In other words the mobile technology is facilitating participatory development. In response to the foregoing Unwin and Potter (2008) admit that the mobile phones and the internet can help those who are in marginal locations to communicate with family, establish and run business or indeed study by distance learning programmes. The same authority claims that mobile phones has reduced communication costs and facilitated mobile banking services for example the Zimbabwe Ecocash facilitated by Econet wireless.

In addition the mobile phones brought internet to the once behind rural folk thereby bridging the digital divide once existed. Development entails empowerment of people; hence the rural folk is empowered through involvement and participation. In light of this background the rural folk are afforded an opportunity to realize and improve their knowledge and skills. If properly employed the once marginalized rural folk can get out of hibernation and consequently enjoy improved living standards.

2.3 Rural participation

Participation in matters concerning one's area of interest and concern is a fundamental right and therefore an end per ser (Conyers and Hill, 1991).Any meaningful development can take place in rural areas when grassroots participation has been encouraged. Most African governments

encourage participation of the rural poor in areas of development (Turkman,1981).The 1975 Dag Hammarskjold Report also argues that villagers are required to own ,control and run at least some of the economic activities in their villages communally and to organize productive activities on that basis.

The argument rose from the fact that long ago most development projects came from the top and village were passive recipients of projects initiated by government. In view of this the community lacked control of these projects hence they did not own them. Such projects have a history of not lasting as a result of the top down approach. In certain circumstances these projects were initiated without the knowledge of beneficiaries, their way of life and the available resources within the area.

In response Fuggle (1999) maintains that top down approach result in disinterest in project activity on the part of the rural people. Majority of the people concerned may loose interest in such development projects. Popular participation is a fundamental ingredient in project planning and implementation (Morrish, 1988).People needs to be involved from the planning to the last stage of the project which is evaluation in order to achieve meaningful development. It is our assumption that now due to improvement in communication systems the rural poor can be involved throughout the whole programme.

The rural input can be continuously solicited in order to come up with responsive projects which addresses the needs of the poor people, where they had reconciled with the central government's views and possibilities. The participation of government in rural development comes in many folds that include project approval, environmental impact assessment, and environmental audits.

“The expressed needs of the rural population and grassroots born development proposals have brought up to district and provincial level” (Makumbe 1996:35). Thus development should be initiated at grassroots rather than from the top.

The presence of technology has facilitated effective decentralization of government functions. This is a result of the ability to communicate with people in different parts of the country. Decentralization in other way facilitating participation of the rural poor. Gaidzanwa (2001) admits that in order to maximize the participation of local community, the government has decentralized its function. This makes it easier for the people to identify their community development needs and priorities them through grassroots structures. Conyers and Hills (1991) reveal that decentralization was adopted to encourage government participation, reduce bureaucracy and the possibility of development projects being imposed on the people. Projects can be implemented expeditiously and can also be people oriented and directed. Development of communication technology enables this process.

In the same vein technology may facilitate effective project planning for rural areas. Makumbe (1996) says that participatory planning calls for development planning with people rather for the people. Emphasis is on the need to involve the people concerned rather than imposing programmes on them. In view of this background Gaidzanwa (2001:28) says “many people who are recipients of welfare would do better as economically empowered citizens through access to land, water, business loans and other resources”. It becomes clear that empowering the rural poor economically is a worthwhile effort. The wireless revolution may empower the people in one way or the other if used appropriately.

2.4 Poverty reduction

Ley (1996) views rural development as the all round qualitative improvement of rural people's lives especially the rural poor, landless people and small scale farmers who eke a living from marginal activities. According to Chambers (1983) rural development is a strategy that enables a specific group of people, poor rural women and men, to gain for themselves and their children of what they need. Singh (1999) maintains that rural development is a process leading to sustainable improvement in the quality of life of rural people, especially the poor. People in rural areas live in harsh and unstable environments and hence are susceptible to various difficulties such as poverty, food security, hunger and degradation, hence rural development should concentrate on reducing poverty among the rural populace.

Poverty in this regard is seen as the lack of basic necessities to sustain a physical healthy existence. It goes beyond a lack of income, and opportunities for tolerable life, and often encompasses a lack of basics for survival such as food, clothing, shelter, medical care, education and employment. Carr (2004) reveals that people in many rural areas exist on incomes below the subsistence level and remain impoverished due to a lack of access to basic infrastructure enabling economic growth and development.

Available literature suggests that the rural population suffer from poverty. Poverty in rural Zimbabwe is indeed a threat to development. The people in many rural areas exist on incomes below the subsistence level and remain impoverished due to a lack of access to basic infrastructure (Carr, 2004). Rural poverty in this regard encompasses the denial of choices and opportunities for a tolerable life and a lack of basic necessities for survival such as food,

clothing, shelter, medical care, education and employment. Matunhu (2008) claims that an effective rural poverty reduction strategy is better supported by a robust infrastructure and also extending cellular networks and internet services to the rural poor people. Digital technologies are fundamental to integration and inclusion (Car, 2004). Availability of these technologies is a positive step towards addressing the challenge of the digital divide which is currently dominant in developing nations.

Wireless technologies do assist the rural poor in their daily lives, specifically when it comes to practical matters like communicating during a crisis, keeping in contact with family, retrieving information and doing business. They increase empowerment and give voice to rural communities (Car, 2004).

Development is all about empowerment; hence wireless technologies can be handy in addressing this challenge. In response to current wave of technological advancement a number of online services are now available. For example the rural banking has been introduced allowing rural peasants access to cash in their rural settings. The rural farmers can have access to necessary agricultural information while at home. With a robust communication network, farmers are able to access expert advice from their fields (Matunhu, 2008). Putting emphasis on what has been revealed earlier, ICTs can certainly assist in improving the livelihoods of the rural poor by helping them in their daily life, giving them voice, however ICTs need to be available, affordable and accessible.

It should also be noted that ICTs cannot magically cure poverty and hunger rather form the indispensable fuel for development engine. Information can be transformed into knowledge,

which in turn can empower communities. The right information at the right time can assist in finding a solution a problem. Proper use of ICTs or wireless technologies can help reduce rural poverty. Richardson (2009) says any ICT intervention that improves the livelihoods of poor rural families will likely to have significant direct and indirect impacts on enhancing agricultural production, marketing and post harvest activities, which can in turn, can contribute to poverty reduction. Calvelo (1996) maintains that modern communication technologies when systematically applied and adapted to conditions in rural areas of developing countries can be used for rural communication; disseminate information, share knowledge and skills. From the foregoing it becomes apparent that wireless technologies if used appropriately can address rural poverty by also involving the rural poor in developing their own areas. This implies adopting a sustainable approach to development.

2.5 Rural information needs

Information is a very crucial element in rural development. An informed population is an enlightened one. Hikwa (2011) posits that information has become a major driver of economic change, restructuring business affecting skills and employment, contributing to growth and facilitating the opening of markets through wider flow of information and knowledge. Rural people should stay informed, however before the wireless revolution the rural population relied on traditional means that is the radio and a few had access to the television. Wireless revolution as indicated in this review facilitated the use of versatile and powerful ICTs (Lucey, 2005).The revolution has been accompanied with the emergence of the internet which is the global network connecting millions of computers and databases. The internet timeously relay information across the world and is now reaching the most disadvantaged people in rural areas. Lucey (2005)

maintains that the internet has opened up numerous possibilities for doing business at local and global level. Access to internet by rural dwellers may also help improve their livelihoods.

Hikwa (2011) admits that information and communication activities are fundamental element of any rural development activity. The author maintains the rural poor typically lack access to information vital to their livelihoods. Availing information to the rural poor is a form of empowering with the potential to transform their lives. Chapman and Slymaker (2002) concur with the foregoing by saying that ICTs also have the potential to transform the landscape of social and economic development of poor people and break the vicious cycle of poverty and segregation put emphasis on rural communities.

Rural information needs include agricultural information, health, political, community development and educational information (Momodu, 2002). Improved access to information among the poor is indeed a necessity. Information about market opportunities, human rights, emerging agricultural trends and technology enabling the rural poor cope with the demands of the day.

2.6 Wireless Technologies

Wireless technologies connect a large number of computers and devices together without wires (Pinda, 2009) Wireless technologies reduce demand for large quantities of infrastructure as signals are sent through wireless networks. Labour costs in digging are reduced also minimizing maintenance costs of wired networks. Wireless technologies are facilitating wireless communication .Laudon, Laudon and Dass (2010) claim that wireless communication helps rural business easily stay in touch with customers, suppliers and employees. Common examples of

wireless technologies available include the cell phones, cordless telephone sets, smart phones and personal digital assistants.

Laudon et al. (2010) reveal that cell phones and smart phones have become all purpose devices for digital data transmission. In addition to voice communication, mobile phones are now used for transmitting text and e-mail messages, instant messaging, digital photos and short video clips for playing music and games for surfing the web.

The wireless revolution brought various ICTs for use which are contributing to economic and social change, however ICTs lack in rural Zimbabwe. This is supported by Conrad (2003) who admits that rural areas lag behind in terms of ICT access as a result of a number of factors including illiteracy, lack of computer skills and low household incomes. Quality and costs are other barriers.

2.7 Wireless Networks

Wireless networks will be the first viable infrastructure to serve the rural and underdeveloped areas. Cecchini and Christopher (2003) say that affordable wireless broadband access has the power to transform an emerging economy by inducing investment and innovation in the e-commerce-education, telecommuting, e-health, e-agriculture, e-entertainment, e-government and almost every socio- economic activity.

2.7.1 Wireless Fidelity

This permits connectivity to the internet from virtually anywhere at speeds up to 54mbps. The Wi-Fi enabled devices use radio technologies based on the IEEE 802.11 standard to communicate data anywhere within the range of access point.

2.7.2 VSAT

VSAT stands for 'very Small Aperture Terminal', which has a very small satellite transmitting and receiving station that will be transferring data video and voice via satellite. This is capable of providing commercially viable connectivity even in the most remote parts of a country. VSAT utilizes very small satellite transmitting and receiving station that transfers data, video and voice via satellite. This technology is very useful in geographically dispersed areas and in places where there is no established infrastructure. Recent technological advances in VSATs have reduced antenna size, simplified installation, lowered space requirements and reduced hardware costs.

2.7.3 WIMAX

This stands for Worldwide Interoperability for Microwave Access. WIMAX is a standard based technology enabling the delivery of last mile wireless broadband access. The most popular type of WIMAX deployment would be providing backhaul for Wi-Fi APs and also serves as backhaul between conventional cellular towers.

2.7.4 Radio Links

Radio communication devices, generally operating in the SW/HF/VHF (1-100 MHz) bands, have been very popular in rural regions due to its ease of use and low-cost, robust technology.

While radio remains the most practical and affordable means of broadcasting and distributing information, the use of radio for 2-way communication of digital data has been very limited due to relatively low bandwidth and a lack of standard hardware. In addition, the design of small, efficient, long-distance antennas at these frequencies is not currently feasible.

2.7.5 Cellular Phone/Wireless Local Loop (WLL)

Given the great success of cellular phone technology in urban areas around the world, it has been interesting to consider the use of this technology in rural areas as well. While the cost of portable communication devices has decreased significantly in the past decade, the cost of the wireless infrastructure requires (Pentland and Hasson, 2009).

2.8 Information and communication technologies and the wireless revolution

The emergence of the wireless revolution is accompanied with the use of various ICTs. ICTs are viewed as technologies which are being used for collecting, storing, editing and passing on of information in various forms (SER,1997).ICTs have become part of development and they have the potential to bring changes in how people live and survive. For example the mobile phone which has infiltrated rural Zimbabwe and facilitated speedy communication among people. In addition the rural people's access to the market, health and education has so far improved. The mobile revolution has enabled the rural folk join the global village. Cecchini and Scott (2003) strongly admit that ICTs can empower the poor by the use of government services and reduce risks by widening access to microfinance. They maintain that ICTs has development applications in education, governance, environmental monitoring, health, human rights promotion, economic growth and other areas. Cypher and Deutz (2008) reveal that it is primarily due to technological

advances that humankind has been able to progress so rapidly since the industrial revolution. Nations are adopting technology at different rates.

Technology determinists believe that technology is the sole or prime cause in any society and has the ability to transform it at every level be it individual, institutional or social (Biriwasha, 2011).In support of the foregoing. Rao (2011) reveals that ICT usage has the potential to improve economic growth in such areas like tourism, agriculture and handicrafts. The use of technological tools such as computers, mobile phones and the internet reduce communication costs and remove geographical borders (Poku and Vlosky, 2010).This means of communication has facilitated international marketing by availing trade information sources not previously accessed by general populace.

Access to internet among the rural population has gone a long way in empowering and capacitating them. As revealed earlier, they become information rich than they were before the technological revolution. The capacity to acquire and communicate is severely enhanced by this development. The global market place is made available online facilitating development of stronger relationships, competitiveness and mass customization.

2.9 Technology and Development

It is primarily due to technological advances that humankind has been able to progress so rapidly since the industrial revolution (Cypher and Deutz, 2008).ICT technologies can potential serve rural areas and increase the capacity to acquire and communicate knowledge.

Technology is the foundation of development that empowers people and communities. Development is all about empowerment. In this regard that is empowering the vulnerable poor

people in the information economy and the development of e-business itself offers many possibilities for wealth creation, particularly for small and micro enterprises. In reiteration wood(2004) defines the greatest benefit that access to ICTs provides developing countries is opportunity that is access to ICTs developing nations fosters economic opportunities for all. Rao (2001) maintains that the internet access has the potential to foster economic growth in sectors such as tourism, agriculture and handicrafts. Technological determinists believe that technology is the sole or prime cause of change in any society and has the ability to transform it at every level, be it individual, institutional or social (Biriwasha, 2011 In the Financial Gazette).

Digital technologies are at the core of the present technological revolution, forming the heart of productive systems in contemporary society and changing main production processes and service deliver (Car,2004).Kaur in Bhatia and Sharma (2010) admits technology can improve productivity, soil and water conservation. The rapid spread of ICTs in developing countries has brought benefits to business and governments (Gould, 2008).

Computers, modern telecommunications and the internet all reduce communication costs breakdown geographical borders (Poku and Vlosky, 2010).ICTs serve as powerful tools for international marketing as their application allow users direct access to a number of trade information sources that are useful in doing market research and preparing trade promotions. In the same vein ICTs can be an important driver in poverty reduction and human empowerment.

They serve rural areas and increase the capacity to acquire and communicate knowledge. Internet offers access to huge amount of information and expert advice on various subjects. The worldwide web creates an opportunity to access the global market place. It allows for mass

customization, the building of stronger relationships, a greater degree of channel coordination, improved communication with stakeholders and team corporate value and competitiveness as part of an areas' strategic value.

2.11 Rural development opportunities associated with wireless connections

Recent developments in wireless networking are raising new hopes for sustainable internet diffusion in rural areas of the developing world (Galperin, 2005). It is widely accepted that new ICTs can be used to alleviate a wide range of obstacles for economic and social development in the developing world (Sarrocchio, 2002). Literature suggests that wireless connections may much to the once deprived rural communities. Sachs (2002) revealed that the explosion of information and communication technologies (ICT) especially mobile phones, has transformed the development landscape of rural Africa. According to Sachs, although overoptimistic, the spread of ICTs is broadly associated with economic growth and poverty reduction.

The World Bank report (1996) claims that the internet is not a panacea for development, but it does not bring new information resources and can open up new channels for rural communities. It offers a means for bridging the gaps between development professionals and people by initiating interaction and dialogue, new alliances, interpersonal networks and cross sectoral links between organizations. The wireless revolution can create mechanisms that enable the bottom up articulation and sharing of local knowledge (worldbank, 1996). Cypher and Dietz (2008) further admits that technological progress reduces costs, increases productive efficiency, conserves society's resources and establishes the capacity for a higher standard of living for greater number of persons. Slower technological progress means *ceteris paribus*, slower economic growth and

reduced possibilities for augmenting or creating the social mechanisms that promote greater equity and the higher level of human development that technological progress makes feasible.

Today, poor countries have access to the most recent technologies of the most advanced economies in the world (Lindhahl, 2005).The authority maintains that the ability to emulate, copy, utilize these technologies is the basis for growth and creation of wealth at national and individual level. It is also the underlying reason why key human equality of life indicators such as longevity and child mortality rates have improved so much more dramatically in developing countries than they did at the time when industrialized countries developed.

The information age revolution manifested in the use of personal computers, mobile telephones and the internet is dramatically changing the socio economic positions of developing nations (Vyleder,2007).The most powerful underlying driving force behind what we call globalization is the development of technology that has enabled international communications to become faster and faster. Great developments within ICT over the years have led to further decrease in the cost of communications. Vyleder (2007) maintains that the marginal cost of sending e-mails and other information around the world is virtually zero. The internet is a multipurpose tool, a medium of communication and perhaps the most flexible medium currently available. It has become a people's network today (Calvelo Rios,1996) .Modern communication technologies when systematically applied and adapted to conditions in rural areas of developing countries, can be used for rural communication to increase participation, disseminate information, share knowledge and skills (calvelo Rios,1996).

2.12 Mobile Technologies

The 21st century saw a sharp rise in mobile ownership. In Zimbabwe the Zimbabwean reporter Rebecca Moyo (2013) revealed that the Zimbabwe's tele density reaches 100%, the mobile penetration stands at 97%. according to statistics, Econet wireless, the largest telecommunication company had 8 014 055 subscribers for the 1st quarter of 2012. Telecel had 2 582 154 subscribers while Netone had 2 017 726 subscribers. According to Qiang (2012) the dynamic growth of mobile communications technology is creating opportunities for economic social empowerment and grassroots innovation in developing countries.

Mobile communications provide access to information, a markets, and services to millions of rural inhabitants. The mobile phones can reduce waste, make delivery more efficient and forge closer links between farmers and consumers. The mobile communication has become the world's most common way of transmitting voice, data and services. The advent of the mobile phone is stimulating a revolution in rural connectivity for small scale rural producers in developing countries. The mobile phone is enhancing communication information exchange and innovation in service delivery (Donner,2009,Tickner,2009,Parikh,et al.2007). Mobile phone based services have proliferated in recent years providing new ways to access price and market information, coordinate input/output resources including transport, logistics, finance and production techniques (Qiang et al,2011). Personal use of mobile phone has also enabled rural producers to interact directly with end user markets, traders, suppliers, extension services and with each other.

In addition mobile communications has facilitated rural branchless banking, which has increasingly become a solution for rural areas in the developing world .Ndlovu and Ndlovu

(2013) claims that mobile banking offers an opportunity to serve the unbanked only 20% of African families have a bank account. Unbanked people are by far the majority in most developed countries, are in fact a heterogeneous group, including people may have adequate incomes but from informal sources as well as poor rural dwellers.

2.13 Wireless Networks Sectoral benefits

2.13.1 Agriculture and the wireless revolution

The emergence of wireless networks may afford rural communities an opportunity to address different sectoral challenges. Such areas like Agriculture, Health and education stand to benefit if the resources are employed calculatively.

Arrival of information and communication technologies is well timed. Agriculture is the mainstay of rural economy. The World Bank (2008) claims that agriculture is around four times more effective at raising incomes among the poor than other sectors. It becomes apparent that improved agriculture has a direct impact on hunger and malnutrition. Agriculture is considered the most vital sector in rural communities hence it should benefit from the wireless revolution. Various authorities suggest that wireless revolution has strongly implications in agricultural development. Motes (2010) suggests that wireless networks can contribute to improved access to price information, access to agricultural information, access to national and international markets, increased production efficiency and creating a conducive policy environment. The revolution is indeed a pervasive one with a potential to transform existing social and economic relations into an information society thereby becoming one of the key driving and main vehicles for the development process.

Growth in agricultural sector maybe accelerated by availability of information and the ability to communicate. The Economist (2010) reveals that in July 2010, the number of mobile subscriptions surpassed the five billion mark. The poor and the rich have access to mobile phone. Mobile phones, despite their recent entry into the agrarian communities are already helping those communities improve their agricultural activities. Small holder farmers can now have access to the market since networks are expanding .Mobile phones have become affordable, they are constantly increasing in sophistication and ease of use and a number of applications can be done using the mobile phone ranging from text messaging services to increasingly advance software applications that enhance livelihood improvements and real time public services (<http://www.ictinagriculture.org>).

The mobile phones are being used to help raise farmers' incomes, lowering information costs, reducing transport costs and providing a platform to deliver services and to be innovative. In other words wireless technologies facilitate communication convenient communication regardless of where one is and time. Farmers and agricultural producers can more easily access relevant and timely information which may range from acquisition of quality seeds, credit, insurance, water supply for irrigation, to livestock care and market prices (Asian Development Bank, 2003).The wireless revolution can sustain rural agricultural activities. In the same vein it helps rural people become aware of and articulates their position, exchange knowledge and skills to take control of their lives, reach consensus and manage conflicts (Bassette, 2004).Furthermore availability of wireless networks can spearhead the creation of employment opportunities for the rural population. They can also help monitor food security related issues such as weather and

droughts, crop failures as well as alerting on natural disasters and climatic change (Worldbank, 2001).

2.13.2 Educational opportunities associated with technological advancement

As revealed earlier, rural development is the resultant of many interacting forces, education being one of them. Education should create a literate and informed society. Both the young and aged should be afforded the opportunity to learn and grow intellectually. Coombs (1974) identifies the educational needs for rural development as general or basic education, family improvement education and occupational education designed to develop particular skills. Family improvement education primarily focus on imparting knowledge and skills necessary in improving the quality of family life in such areas like health, nutrition, homemaking, child care, home repairs and family planning. The general or basic education attempts to create a literate community imparting necessary numerical skills and elementary understanding of one's environment.

In view of this background various authorities attempt to relate education and technology. The emergence of technology has changed the way people learn. It has changed the way we live, work, think and learn. Veeramani (2010) admits that the explosive growth of the internet opens up opportunities to support demographic, technological and lifestyle changes and offer quality education to those who would otherwise have no access to it. The internet has brought e-learning promoting interactivity and participation with the hope at one point the facility can reach the poor rural citizens.

Rural areas generally have poor educational resources to meet diverse needs of the rural people; hence they can make use of available e-learning opportunities. People of all ages learn informally and acquire most of the skills necessary in life. Coombs (1974) suggest this promotes lifelong learning. The authority also maintains that the process of lifelong learning facilitates discovery, innovativeness, leading to self help and self management. All forms of education may benefit from the advent of wireless technologies. These forms include the informal or lifelong education, formal education system and the non formal education system, hence concietize, empower and liberate the rural people (Kassam, 2000).This is supported by Nyerere's education for reliance. The purpose of education according to Nyerere (1978:22-28)“.....is the liberation of man from the restraints and limitations of ignorance and dependency. Education has to increase men's mental freedom, to increase their control over themselves, their own lives and the environment in which they live...”

The foregoing reveals that education is key in rural development; indeed the sector can also utilize the wireless opportunities available. Men should be capacitated in order to develop himself or herself. The various ICT tools can help men negotiate his or her way and manipulate the environment for the benefit of many. The World Bank (1996) reiterates that modern technologies improve access to a huge variety of information, training, research and educational services.FAO (2010) maintains that the internet already represents a vast global library of information that can become easily available to rural remote residents of developing countries. Mago in the Herald (2013) emphasizes that the internet will be used in e-learning and keeping abreast with modern technologies and techniques in all areas of interest encouraging active participation in world technological advancement. Anytime, anywhere type of education is the

result of the emergence of technology in rural remote areas being extended to the once forgotten adult learner. In view of this adult learning opportunities have been expanded. Nyerere (1973) admits that education is something that all of us should continue to acquire from the time we are born until the time we die. He emphasizes that “to live is to learn; and to learn is to try to live better” (Nyerere, 1973:138). This should lead to improvement in rural life. Chambers (1983) supported that rural development enable poor rural women and men gain for themselves and their children more of what they need and want.

The educational process should help the poor seek a better livelihood in view of technological advancement, the wireless revolution and mobile phone rural dominance. Behrman (2000) maintains that computer technology is rapidly transforming our society. The 21st century requires that individuals be technological literate. The authority emphasizes that the internet allows for the development and creation of learning communities that provide access to knowledge that was once difficult to obtain, indeed technology creates and supports more effective learning environments. Technology has become a crucial component in educational provision noting that all groups of learners may benefit from this development. It has a significant role in equalizing educational opportunities for marginalized groups and communities.

2.13.3 Technology and Health

Availability of sufficient health facilities and services is an indicator of development. People should have access to health facilities and services. Sometimes it does not need one to travel to the clinic or hospital to seek services rather consultations can be done online. Hanna (2010) reveals that the health sector is changing due to ICT enabled technological advances. Advances

in telecommunications are enabling health professionals in rural areas receive information and specialized knowledge and to keep track of disease outbreaks. In light of this development prescriptions can be done over the telephone or online. Patients' response to medical treatment can be monitored online. Some authorities raised the tele medicine concept which appears to be a very convenient means of helping patients.

2.14 Digital Divide

As revealed earlier digital divide is the gap between individuals, households, business and geographic areas at socio-economic levels with regard both to their opportunities to access information and communication technologies. The divide reflects various differences among and within countries. The ability of individuals and individuals to take advantage of the internet varies significantly (Payton, 2010). In response the World bank, (2001) reveals that development policies and programmes characteristically information technology to advance modernization, unfortunately the global divide has become a stigma for developing countries because it prevents them from being part of the modern world. Rao (2005) further admits that at national level there is an urban –rural digital divide. Gould (2008) maintains that the rural population, the poor and women tend to be marginalized from ICTs. Zimbabwe phenomenon of the internet is urban biased. Biriwasha (2011) in the Financial Gazette admits that while ICT has long been acknowledged as an enormous engine of development many people in Zimbabwe are simply excluded from this space not by choice but by circumstances. Mobile phones are slowly penetrating the rural Zimbabwe. Access to basic telecommunication infrastructure is fundamental to begin untangling the digital divide as well as the problem of information underclass.

The world is getting globally. Every nation has a desire to join the global village. Globalisation has an impact on all aspects of life. This is the process whereby countries and regions of the world become more and more interconnected and interdependent (Graff,2011). Globalisation can be defined as a world-sweeping arrangement based upon:“...a creed of lower trade barriers; an end to exchange controls; freer movement of investment capital; and the displacement of public sector capital by the private sector.”(Fontana 1999, 367)

Globalisation has been understood to entail a homogenous set of economic forces impinging on every country, wherein nations are engulfed in a whirlwind-like global market, and induced to cut public expenditure and encourage private enterprise (Young 1998, 52).The countries of the world become part of a broader pattern which is an integrated whole. This is a way of describing the spread and connectedness of production, communication and technologies across the world.

2.15 Rural Zimbabwe and the Digital Divide

Rural Zimbabwe is lagging behind in terms of technological advancement. A number of schools received computers but the computers are not connected to the global village. Mobile phones are going rural but the majority of rural populace lack access to the rest of the world, hence they suffer from the digital divide. These are the people who should participate in the development of their communities but they are excluded from community development activities. Kiely (1990) in Potter (2008) noted that 80% of the world’s population still lacked access to most basic communication technologies and nearly 50 countries had fewer than one telephone line per 100 people, however in Zimbabwe the internet has revolutionized with the way people with access to it communicate (Zook, 2005 and Dicksen, 2007) in Potter (2008).Mobile phones are becoming

powerful agents of change. Unwin and de bastion (2008) in Potter (2008) maintains that it is undoubtedly the case that mobile phones and the internet can help those who are in marginal locations to do their shopping, communicate with family, establish and run business or indeed, gain education by distance learning programmes.

Mobile phones reduce communication costs, increase labour mobility, and afford enhanced access to banking facilities and information on market prices (Potter, 2008). In bridging the digital divide mobile phones in Zimbabwe are becoming handy but still low to make productive use of services especially in empowering themselves. ICTs increase empowerment and give voice to rural communities (Fourie, 2008). The rural poor will not be able to reap benefits and enjoy positive impacts on their livelihoods if ICTs are not available, accessible and affordable and indeed training and instruction are crucial requirements in order to benefit from ICTs. Development entails providing disadvantaged people the opportunity to realize and improve their knowledge and skills to utilize, sustain and improve productivity of available resources within their environment in order to enhance the quality of their life and the society where they belong. Therefore ICTs can provide a panacea to underdevelopment and marginalization that is bedeviling most rural communities if they are properly employed to enhance the knowledge and skills of people which are salient in improving their standards of living.

2.16 Women participation in Development

Women immensely contribute to the development of rural communities. The majority of the people in rural areas are women who are members of different development projects. In addition some are into buying and selling and some full time small scale farmers. Women play an

essential role in food production and the great work they do dictates the need to integrate women in development programmes at all levels. Roussos (1988) admits that the knowledge that women have must be recognized and valued as they have made considerable contributions to the economy and the social life. Family status can thus improve upon realizing the importance of women who are key to rural economies. Rural food production task in Zimbabwe has been regarded as women domain making them a good partner in integrated rural development. Women can thus be networked in order to make this a success. The existing networks should recognize the role and position of Zimbabwean rural women. They should have access to the mobile phone so that they don't meet challenges when communicating with development partners, suppliers and the market of their products.

Women in light of the wireless revolution can possibly be capacitated technologically so that they use the networks for the benefit of the communities. Tevera and Moyo (2000) posit that most projects initiated by women have been successful indeed women should not be left behind in development of their communities. Sometimes men have a tendency of discriminating against women. Integrating women in development increases chances of these projects to succeed and at the same time uplifting the women and family's standard of living. It becomes clear that in light of this background that women should benefit from the wireless revolution. In other words this can capacitate the women and expand rural development opportunities.

2.17 Common property resource management

Most resources which lie under this category are forest, grazing lands, minerals and water. Fuggle and Rabie (1999) claims that under Zimbabwe's Tribal Land act, communal people

are the custodian of their tribal land and its resources. The implication is that resources belong to the community and it is the responsibility of community to manage its resources.

Purohit (2004) et al. says “Man enjoys a dominant position over living and non living world around him since prehistoric time”. In view of the foregoing, knowledge of human ecology in rural development becomes indispensable, as there is a tendency to abuse the dominant position in communities. Purohit (2004) further maintains that the egocentricity of man, that made him feel the master of nature to use it the way he liked. Genesis 1:28 says “and God blessed them and said to them “be fruitful and multiply and fill the earth and subdue it; and have domination over the fish of the sea and over the birds of the air and over every living things that moves on earth”.

In the light of the biblical evidence provided, men can take advantage and monopolise everything, resulting in disintegration of harmony between world population, per capita demand and environmental resources. This can cause inadequate living standards in respect of food, water, clothing, shelter and medicare. The fate of man depends largely on whether he can succeed in achieving a new equilibrium between the natural environments he has conquered and the civilization he has. Purohit (2004) reveals that the major environmental dilemmas are human population explosion which is challenging the ecological balance and human population growth is the primary source of environmental damage.

Studies of ecosystems typically consider relationships between species and nature. Humans, however, are sometimes purposefully left out of the scope. Some studies want to ensure a pure ecosystem study. Human ecology, on the other hand, promotes the idea that humans are not to be

excluded as an unnatural part of a natural ecosystem. They recognize that humans have the largest influence on ecosystem changes happening today.

Humans are distinctive from all other species. Human ecology teaches that humans are complex beings who express conscious goals via the natural world. A person's behavior is influenced by knowledge plus values, beliefs, and conscious goals. Developing cultures and emerging societies construct their values and goals relative to nature. Conflicts, as well as working together, contribute to an elaborate set of interactions among individuals and groups.

Human ecology also explores how the environment influences humans. The environment often forces human behavior to invent, then adapt to, coping and survival strategies. This vein of ecological study asks how efforts to preserve the environment, for example, can include human values and societies' value differences. It is a way of seeing the world synergistically.

In response to foregoing Miller and Spoolman (2004) admits that communities should respond well to changing environmental conditions, changing structure, and composition in response to changing environmental conditions such as fire, climate or clearing of forests to plant crops. The gradual change in species composition of a given area is called ecological succession. The environmental problems mentioned above are common in rural areas and the newly resettled areas, so the need to consietize the rural populace of the need to understand the concept of human ecology in order to enhance sustainable rural development in the sense that there is a sustainable resource base, sustainable livelihoods, reducing vulnerabilities, enabling empowerment, increasing equality and increasing self reliance.

The report of the World Commission on Environment and Development (1987) views sustainable development as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. In view of this if the vegetation is destroyed for example in resettled areas then future generations are bound to suffer. Mineral deposits are randomly exploited, people now have the technology to identify mineral rich areas; then no deposits are left for the future generations. Young (1974) says human ecology expands functionalism from ecology to human mind. Peoples' perception of a complex world is a function of their ability to be able to comprehend beyond the immediate, both in time and space. He raised this slogan in this regard "Promoting sustainability think global, act local, community as a place, community of collective action".

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This discussion raises the fact that it is necessary for human beings to study conditions which govern the life in a given situation. Kupper (1983) reveals that human beings are surrounded by many conditions which affect human life and development of rural communities. The rural population may lack the knowledge that there must be proper interaction with the environment and why that has to be there. The urban counterparts may come in and exploit the available natural resources for example minerals and fruits indiscriminately, this renders such places unsuitable for human habitation.

The emergence of the wireless revolution may help communities take care of their resources. In view of this Chenje etal (1998) views accountability, institution and security tenure as critical sustainable management of common property resources in rural areas.

Like other creatures humans are affected by changes in the environment, by climate change, availability of resources and the presence or absence of pollutants (Calvert and Calver,1999).Maintenance of the natural environment, artificial, social and psycho-social environment is indeed a necessity in a way improving human survival conditions. That becomes rural development process which Jha and Jha (2008) described as the process of developing and utilizing natural and human resources, technologies, infrastructural facilities, institutions and organisations, government policies and programmes to encourage and speed up economic growth in rural areas, to provide jobs and to improve the quality of rural life.

Proper interaction of humans and environment may create self employment for locals, sustainable resource base for the community thereby enhancing self reliance and autonomy within the communities, thus reiterating that human society cannot exist without its natural environment, hence calling for environmentally friendly lifestyle (Mkandla,1997).An example of a unfriendly environmental lifestyle includes overstocking which leads to overgrazing, indiscriminate cutting down of trees and uncontrolled veld fires.

According to Spoolman (2009) overgrazing occurs when too many animals graze for too long and exceed the carrying capacity of the area. Veld fires are mainly caused by farmers using fire to open new arable land, deliberate lighting of fire, smoking out bees, sparks from moving steam engines, careless throwing away of lit cigarette stubs, hunting and careless disposal of hot ash. The long term effects of veld fires are a reduction of biodiversity through destruction of flora and fauna, reduction in soil fertility and increased erosion rate and decreased infiltration, which lead to less water for livestock, irrigation, fish, wildlife and people. Systematic ecological and localized environmental degradation is becoming highly prominent as a result of uncontrolled

fires. In the same vein communities should manage and sustain forests in order to avoid deforestation, a situation affecting the newly resettled farmers who are indiscriminately cutting down trees in their areas for sale as wood.

Furthermore there is a need to manage mineral resources sustainably as revealed earlier in the discussion so as to reserve some for the future generations as well as continuously developing the rural areas where the deposits are located. Manjengwa in Muphree(1996) admits that people centred conservation currently enjoys international popularity and environmental philosophy that seeks to link conservation concerns with local needs and governance. An effective environmental management driven by local initiative and participation should provide the key to reducing rural poverty, as well as conserving the natural resource base (Woodhouse,2000 in Muphree,2009).

Muphree (2009) identifies what are called pool resources; the green space and natural capital. A concept tragedy of the commons exist in this regard, where there is overuse or misuse of certain resources because they are commonly owned. In view of this communities should be sensitized of the need to understand the relationship between humans and the environment in order to avoid the tragedy of the commons, hence communities develop as a result. Human societies are increasingly placed under stress as the ecological commons is diminished through an accounting that has incorrectly assumed the nature is a fixed indestructible capital asset (Eagerton,2007).In response common resources can be maintained for the development of the area. Rural areas have necessary resources to sustain them if used accordingly, thus there should be positive relationship between human population and nature. Human ecologists believe people are intergrated into the ecosystem.

Environmental problems threaten the health of people. For example the problem of water pollution is a threat to human survival. Sapru (1994) admits that the hundreds of people are threatened by contaminated drinking water and inadequate sanitation. Water pollution from human waste matters more in developing countries. Echoing the same sentiments Ghosh (2009) says the health of the environment is considered an important indicator for future rural growth pattern. The authority raises ten most critical areas which are:

- Soil erosion and degradation
- Ground water depletion
- Surface water pollution
- Loss of forest cover
- Endangered species and ecosystems
- Loss of wetlands and coral reefs
- Changing air quality
- Solid waste and hazardous substances
- Lack of sanitation and health care
- Violation of extant laws

By focusing on the human aspects of environmental management, a human ecology research group observes interaction between people in an ecosystem. Particular areas of study may focus on sustainability of crops, harvesting methods, or biodiversity in forests of politically charged nations. By working with local communities in all parts of the world, human ecology aims for plans that benefit humans and non-humans alike. Human beings are surrounded by many

conditions which affect human life. It is essential to study the conditions which govern the life in a given situation before undertaking the programme of improvement (Suppe,1987).

This is done in order to attract ecological balance and reduce detrimental environmental problems such as pollution of air, water and soil, deforestation, and biodiversity crisis among others. All this is done in order to facilitate sustainable rural development where resources are used with the future in mind, hence the need to concietize the rural population of human ecology which is a critical component in rural development.

This can be enhanced by availability of effective communication systems and also the ability to share wider world how such resources are managed. It is important to invite other groups's experiences on how they manage their common property resources in order to attain sustainable development. Common property resources management should be guided by international and national standards. Chiwandamira and Mbengo (1999) admit that common resource management should be guided by the desire to conserve, the spirit of stewardship and responsibility. People in rural areas have a tendency to abuse these resources but if there is common understanding of the importance of these resources they can be sustainably conserved.

2.18 Challenges associated with adoption of wireless technologies

Access to wireless technologies is a 21st century requirement; however the general African continent has not managed total access. Gradually the wireless networks are finding their way in African rural and urban communities. In view of this development various challenges are experienced in adopting wireless technologies. These challenges differ from one authority to the other. External interests such as Multinational companies have a stake in preserving control over

their own technological knowledge (Cypher and Dietz,2008).Technology is coming from the west, penetrating the African continent in phases. Some argue that developing nations' technological adoption pace is dictated by the west. For example the mobile phone which most Zimbabweans afforded after dollarization. Africa has been for long been affected by the digital divide. Africa has suffered from the effects of the globalization from above resulting in slow technological development hence deeply affecting the rural areas.

Adoption of wireless technologies is also affected by policies of the state. These are the macro economic policies. They either encourage or discourage private entrepreneurs to innovate and change. Cypher and Dietz (2008) maintains that these policies affect the economy and they do have an important impact on technology adoption. In response nations are encouraged to develop policies in which the private sector are enabled and encouraged to produce and invest in technological acquisition. Nations are also encouraged to have policies that help keep inflation rates and balance of payments in check that would contribute to growth, national technological change and development.

Giddens (2009) cites other factors such as gender, social, class, ethnicity and religious affiliation as detrimental in technology adoption. He raises the cultural elements of recipients emphasizing on how people survive. People have a way of life and some are resistant to change hence the whole process of technology adoption is affected. Some regard the current technology as disturbing or destroying the cultural values of people or a process of westernizing indigenous cultures hence some traditional communities have adopted a very rigid stance. Haralambos (2008) admits that electronic communications such as the internet change the nature of the social groups with which the individual can interact, making geographical location much less

important. He views technological adoption as a move towards a global culture where the world is becoming more homogenous.

Giddens (2009) further purports that globalisation which is closely linked to the wireless revolution is fundamentally changing the nature of our everyday experiences. The current age affords individuals more opportunity to shape their own lives; hence some are aligned to this kind of change. In a bid to protect their cultures they shun technology. It becomes apparent adoption of technology is indeed affected by peoples' background and their cultural values.

Other challenges affecting developing nations are telecommunication infrastructure, general literacy, less knowledge of technologies, gaps, erratic or no power supply, income and the existing inequalities (Odeniyi et al,2013).As alluded earlier information technology sector growth is non uniform thereby excluding other nations per se.

2.19 Summary

The foregoing focused on the rural development implications of the wireless revolution in Zimbabwe. Focus was on what wireless connections are, how they can contribute to rural development and wireless opportunities available globally. Wireless tools in place and challenges and rural shortcomings in adopting wireless connections. The next chapter focuses on research methodology adopted in this study.

Chapter 3

Research Methodology

3.0 Introduction

The section revealed the methodology that was adopted in this study. This included the design that was used, the population, sample and sampling procedure. The instruments used in collecting data were also shown justifying why these were considered appropriate in order to enhance validity and reliability. The methodology revealed how data was to be collected and the ethical considerations taken into account. Finally the section raised the data analysis plan for the study.

3.1 Research Design

A research design is the structure or format that the researcher uses when conducting research. It is seen by Macmillan and Schumacher (1993:31) as “the plan and structure of investigation used to obtain evidence to answer the research question”. Makore-Rukuni (2001) also defines a research design as a plan or structure for investigation. The research design for this study required a methodology that is both comprehensive and descriptive. The researcher used case study research design.

Robson (2002:178) defines a case study as a ‘strategy for defining research which involves and empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence’. In other words a case study is an in depth analysis of

scenario. Within these parameters, both qualitative and quantitative paradigms are considered appropriate.

Qualitative research techniques involve the identification and exploration of a number of often mutually related variables that give insight in human behaviour (motivations, opinions, attitudes), in the nature and causes of certain problems and in the consequences of the problems for those affected. 'Why', 'What' and 'How' are important questions. In this study qualitative data is gathered through open ended questions.

Qualitative research sought to answer predefined set of questions, collected evidence, and produced findings that were applicable beyond the immediate boundaries of the study. The instruments used were more flexible and iterative. The study design was iterative, that is data collection and research questions were adjusted according to what is learnt. The study hence collected qualitative data from respondents.

3.2 Population

Diversity characterized the population studied. The population included school going children, young adults and adults. The occupations of these groups also varied. The study considered the people with some technological skills as the population for the study.

3.3 Sample

This is regarded as representative of the whole population (Breakwell and Fife Schaw, 2006). The researcher reduced the number of participants in the study to manageable size. The researcher was guided by the fact that the sample size of a qualitative study should not be too large so that

thick and rich data can be extracted. In the same vein the sample should not be too small that it is difficult to achieve data saturation (Flick, 1998). In response the researcher was guided by Charmaz (2006) and Ritchie et al. (2003). Charmaz (2006) suggested that 25 participants are adequate for smaller projects. Ritchie et al (2003) revealed that qualitative samples often lie under 50. In light of this background the study considered a sample of 40 as representative. Among the forty, ten were key informants and thirty other members of the community.

3.4 Sampling Method

The researcher purposively selected ten key informants in the area. Key informants included heads of schools, Councillor, headman and extension officers within the area. Purposive sampling was adopted in this regard to avoid excluding key people spearheading development in the area. The rest of the respondents were selected using the snowball sampling approach. The method was used because of the nature of the population, so the sample was built through referrals.

One member from each village was identified who introduced the researcher to the other until the required sample was met. He also relied on reputational contacts where people identified significant others in a micro network (Cohen and Manion, 2011). Researcher used social networks and personal contacts for gaining access to people.

The researcher targeted respondents who are had the skills on of using wireless technologies hence snowball approach was used. The method also enabled the researcher identify participants who are particularly influential, important and worth contact. The researcher however noted some weaknesses associated with snowball sampling that is it can be prone to biases of the

influence of the initial contact and problem of volunteer only samples. In other words snowball sampling is influenced by the researchers' initial points of contact and can lead to oversampling of cooperative groups or individuals.

3.5 Data collection Instruments

Various data collection instruments can be used in data gathering depending with the nature of the study and the design adopted. This study is a qualitative one hence adopted relevant tools that addressed the problem which were considered valid and reliable. There are various means of getting data from people. The researcher identified interviews and questionnaires as appropriate tools for the study. These were the tools that the researcher employed in collecting data from the field.

3.6 Interviews

The study interviewed ten key informants in Mberengwa East ward 2. Key informants comprised of Councilors, Chief, headman, heads of schools, pastors in the area and agricultural extension officers. A semi structured interview which gave respondents an opportunity to express themselves fully was used. A semi structured schedule was designed to guide the researcher, also affording the respondent room for clarification. The interview also obtained qualitative data quickly. The interview had limitations however. This involved personal interaction and cooperation was essential. Interviewers sometimes were unwilling or uncomfortable in sharing all that the interviewer hoped to explore. The interviewees sometimes may have had very good reasons for not saying the truth. These were some of the shortcomings however did not disturb progress with the study.

3.7 Questionnaire

The research study made use of the questionnaire because of its ability to be accessed by all respondents in the sample as well as to gather adequate data. According to Leedy (1993:187) a questionnaire is “a common place instrument for observing data beyond the physical reach of the observer... deep within the minds or attitudes, feelings or reactions of man and woman”. An open ended questionnaire was developed to capture a wide variety of data including demographic data, access, use and ownership of wireless technologies, available infrastructure, and socio economic impact.

The questionnaire comprised of open ended questions to attract brief and detailed responses, qualitative data. The questionnaire included general questions. demographic data, access, use and ownership, available infrastructure, socio economic impact and other open ended questions requiring further data on wireless revolution development implications.

In this research, the questionnaire was used to solicit information the researcher could not easily get using other means as it had a high degree of anonymity. It proved to be an effective way of gathering information because respondents were able to respond in threat free atmosphere with privacy of the highest order or confidentiality. It was noted that for the study to fetch enough information, the questionnaire was needed as it bore many advantages as an instrument of data collection. Its administration was not time consuming and in addition it has the capacity to gather information beyond the reach of other. It enabled the researcher to collect as much information as possible from the chosen sample with very little human and financial resource input since the researcher preferred to administer the questionnaires personally.

Furthermore because of its assurance on matters of anonymity and confidentiality, the questionnaire did not scare the respondents thereby affording them a free atmosphere for responding to questions without fear or bias.

A major shortcoming in the questionnaire was that it demanded a high level of understanding implying that the researcher took sometime explaining to respondents on some challenging areas. Despite this the questionnaire was used for data collection.

3.8 Data collection procedure

The basis of carrying out an interpretive study is setting up and carrying out fieldwork. This involved choosing style of involvement, gaining, maintaining access and collecting field data (Welshman, 2004). Entry into the identified villages was gained through assistance from gatekeepers, the village headman and the councilor .

The researcher made appointments with key informants before interviews were conducted. After this the researcher personally administered interviews and questionnaires concurrently. During interviews the researcher recorded responses on paper verbatim in English due to Zimbabwe's high literacy rate in the continent. Some questions emerged during the interviews as follow up questions to interview responses. The respondents filled in their responses on the questionnaires and assistance was given to those who sought help in putting answers down. The researcher was guided by the following process: gathering data, extracting themes and proposing taxonomies

The researcher attempted to derive data through direct interaction with problem studied. Meaning was sought within the context and multiple meanings were accommodated

3.9 Ethical considerations

It was noted that the researcher had to be ethical in order to ensure that the study is authentic, valid and reliable. Some ethical principles guided the researcher throughout the whole study. The researcher considered these as moral guidelines or dos and don'ts of research, hence observed the following among others:

The researcher informed participants on why the study was conducted. In this regard the researcher was guided by the principle of informed consent which views it unethically to collect data from people without informing them why the study was conducted. The researcher gave a fair explanation of the procedures to be followed and their purposes, a brief description of the benefits reasonably to be expected and the instruction that the person is free to withdraw consent and discontinue participation in the project anytime. In order to address this, respondents were asked to fill in an informed consent form.

Respondents were not forced to participate, they voluntarily contributed and they were given the room to withdraw if ever they decide so during the process of data collection.

The names of participants remained anonymous and data collected was treated confidential. No names were written on the questionnaires and during interviews, however the names that were used are not respondents' real names.

After the research was done the researcher shared the results of the study with the community concerned. This was done to concietize the participants on why such a study was done and what could be the benefits from such an undertaking.

3.10 Data analysis plan

Collected data was presented, analysed and interpreted accordingly. An interpretive approach was adopted. The method involved analyzing the gathered that is through reading the data repeatedly and engaging in activities of breaking data down and building it up again in novel ways (Terre Blanche and Kelly, 1999). This is a process of thematising and categorizing data. The researcher came up with themes and attempted to draw a picture of the experiences of participants. Bodgan and Biklen (2003) describe the process as working with data that is organizing it, as revealed earlier breaking into manageable units, coding and synthesizing the data. The researcher concentrated on the whole data first and later categorized it.

3.11 Summary

The foregoing attempted to come up with a proper research methodology for this study. The chapter covered the research design, defined the population sample and sampling procedure. Justification on why these are included was made. The research instruments which were used are interviews and questionnaires. The next chapter focuses on data presentation, analysis, interpretation and discussion.

Chapter 4

Data presentation, Analysis, Discussion and Interpretation

4.0 Introduction

The chapter focuses on presentation, analysis, discussion and interpretation of data collected. A systematic and orderly presentation according to themes derived from research questions and other emerging issues shall be done. In view of this the researcher focused on particular views of the rural development implications of the wireless revolution being guided the following themes:

- Sources of income
- Access, use and ownership of wireless technologies
- Wireless revolution and rural live hood
- Rural participation
- Poverty reduction
- Rural information needs
- Mobile Technology use in rural area
- Wireless revolution and Agriculture, Education and Health
- Digital divide
- Women participation in rural in development area
- Challenges associated with adoption wireless network in rural area

4.1 Biographical description of participants

The study interviewed ten community key informants who included the two primary school heads, two secondary school heads, two ministers of religion, one agricultural extension officer and the traditional chief. Other participants contributed by responding to the questionnaire, a total of thirty questionnaires were distributed and twenty five were returned. The questionnaires were distributed in five villages which were Chaderopa, Mhepo, Murambi, Zijena and Manhanda in Mberengwa East Ward 2. A total number of twenty males and fifteen females contributed to this study.

4.2 Sources of income

A question was put forward on how Mberengwa east people raise income for survival. Both key informants and other respondents revealed that their major source for income was small scale agriculture. A few were into informal trade and mining. Some were into formal employment; these were teachers, agricultural extension officers, and health personnel who were based in Mberengwa East Ward 2. Generally not much economic activity is being conducted within the area.

The sources of income can however be expanded by capacitating the rural poor people so that they can diversify their sources of income. In a study of a similar nature conducted by Hugo in 2006 on household incomes by source in Masvingo province, Zimbabwe, it is acknowledged that rural Zimbabwe heavily depends on agriculture although some other sources may contribute to household income. Crops and home gardens bring cash to the rural populace which is a form of agriculture and also livestock rearing contributes a significant portion. Goods and services from

the ecosystem contributed something in addition to the wage labour, home industries income and remittances. The poorest in the area heavily depend on environmental income. In light of this background rural Mberengwa East may be slightly different from site used but there are more similarities than differences.

Agriculture and the environment are the major sources of income within the area. In light of this the following question sought to establish on sustainability of these sources of income the respondents revealed that the sources are affected by natural disasters such as droughts like the last year season no rains were received and there is an acute water shortage in the area, hence the people are struggling as they have nothing to sell. The livestock in the area has also been affected by drought as the grazing land can no longer cope with the population of beasts in Mberengwa East ward 2. The people can no longer sell the beasts because there are far below buyer expectations. From the responses obtained it was made clear that droughts are popular phenomenon in the area. One participant said that they remain poor regardless of their efforts to be self sustaining.

4.3 Access, use and ownership of wireless technologies

The respondents showed that all had access to the mobile phone and a few had access to a computer connected to the internet. Such a development indicates that the rural Mberengwa East is gradually receiving wireless technologies. In the same vein the respondents revealed that they communicate through the mobile phone and a few use internet, e-mail and SMS.

The major mobile service providers in the area are Econet and Netone. In view of this they have some internet access over the phone for those with smart phones. The rural urban divide is

gradually going as a result of the proliferation of mobile phones in the rural which are also facilitating access to the internet. Rebecca Moyo (2013) of the Zimbabwean reported that there is a sharp rise in mobile ownership as mobile penetration stands at 97%. This can be supported by the responses obtained whereby all participants revealed that they had mobile phones although some however did not have access to the internet. Simple communication is facilitated. Gurira an Economist at the University of Zimbabwe revealed in the Chronicle (2013) that access to information and communication technologies is now considered a basic human right and the mobile phones have offered the best opportunity to reduce the digital divide. In addition the rural folk are kept updated on what is happening local or globally.

The need for travelling has also been reduced and they can have access to cash while in the rural areas through the ecocash facility. Ndlovu and Ndlovu (2013) admit that the mobile phone has facilitated rural branchless banking whereby the rural folk without bank accounts can receive and send cash. Mobile banking according to the Chronicle could be a platform for rapid financial inclusion of people that now only need mobile phones to access a certain range of essential financial services they never used to get. The rural people access small amounts of money and this add up to a healthy rural economy.

In light of this background it becomes apparent that the rural Mberengwa East people are benefitting from the emergence of wireless networks. The business community in the area can now make their orders over the phone and ensure that they have adequate supplies to meet the demand of the community.

4.4 Rural livelihood and wireless networks

In response to the above theme, interviewed respondents indicated that the benefits are many. Significant quotes included.

“Now we can chat with other family members who are not based here in Mberengwa without challenges”

The second respondent said:

“We have since joined the global village and enjoying the benefits associated with it. Information is power; we can make informed decisions now as a result of this development”

The third respondent:

“We can now receive cash without going to town through the Ecocash facility, thanks to Econet wireless”

The population was full of excitement due to the emergence of the wireless revolution. Interview and Questionnaire responses supported each other. They showed a high degree of appreciation revealing that communication has improved. Sending a simple message has been made easier. The rural population has access to global market trends as a result of a free flow of information. The rural population can now receive cash without getting into town through the Ecocash facility. It does not take time to receive cash from urban areas as this can be done instantly. According to the respondents interviewed, that is a very positive development helping rural people solve day to day financial challenges while in their areas.

The small scale entrepreneurs revealed that the wireless revolution came at the right time linking small business with the global village. Small scale enterprises (SMEs) in rural areas employ the

rest of the rural population. SMEs support rural economy strongly. These enterprises are based at rural service centres in Zimbabwe. Such enterprises need infrastructural support for them to achieve their goals and objectives. Apart from the general infrastructure such as roads, there is a need for technological support on their day to day activities. They need technology that can facilitate communication with customers and suppliers. Also there is a need to be aware of how their products are trading at the global market. Some form of a network is required to facilitate this.

Ledriz (2012) admits that SMES require reliable, affordable and accessible infrastructure so as to reduce costs of doing business and connect poor people to the rest of the world. In the same vein small business can be linked to large firms through value chains and systems. The wireless revolution may address the gap that existed before, allowing these to access the international markets easily. SMES in response can now access information through the internet, e-mails and voice calls.

Chimhowu (2010) admits that information and communication technologies (ICTs) are now acknowledged to be enablers of social and economic development hence improving the livelihood of the rural population. The technological enrolment is fundamental factor that affect the livelihood strategies of any community. In view of this technology must be compatible with natural, human and financial resources (Bliss, 2000) and correspond to the cultural practices of users. Relevant and appropriate technology has the potential to mobilize livelihood resources which are categorized as vital capitals that one needs to achieve a sustainable livelihood (Carney, 1999).

ICTs do assist the rural poor in their daily lives, specifically when it comes to practical matter like communicating during crisis retrieving information and doing business. They increase empowerment to rural communities (Carr, 2004). In other words the wireless revolution may bring sustainable development which is pro poor, pro jobs and pro nature. This can help in poverty reduction, creation of productive employment; facilitate social integration and environmental regeneration. Poverty in Zimbabwe's rural communities is indeed a threat to development as people survive below the poverty datum line. Available literature suggests rural population suffer from lack of basic necessities such as clothing, shelter, medical care, education and employment. In addressing this Matunhu (2008) believes that an effective rural poverty reduction strategy is better supported by robust infrastructure and also extending wireless facilities to the rural poor people. The technologies facilitate integration and inclusion of rural communities into mainstream societies.

The foregoing reveals that wireless revolution has a potential to drive the rural population towards sustainable rural livelihoods if used appropriately. In the light of this the research, it is noted that wireless networks are coming at the right time and can be very handy. This is relevant and appropriate technology with great potential to develop the rural folk by addressing various rural needs without hassles. They can empower the rural folk and give them a voice.

The World Bank (1996) however argues that the internet is not a panacea for rural development, but it does bring new information resources and can open up new communication channels for rural communities. It offers a means for bridging the gaps between development professionals

and rural people by initiating interaction and dialogue, new alliances, interpersonal networks and cross sectional links between organizations. The benefits derived from wireless connections according to the World Bank (1996) include increased efficiency in the use of development resources, less duplication of activities, reduced communication costs and global access to information and human resources.

Taking note of the world Bank' s other side of its argument it is however said that technological revolution brings mixed blessings. In strong terms Pillai (1999) claims that it is introduced in an admixture of hype and hope encapsulated in the certainty of still unproven manna. The authority says the technological revolution is coloured by the superficial hyperactive assumption of its goodness. Cypher and Dietz (2008) however maintains that technological progress reduces costs, increases productive efficiency, conserves society's resources and establishes the capacity for higher standard of living and slower technological progress meaning slower economic growth and reduced possibilities for augmenting and creating the social mechanisms that promote equity and human development. They raised what they refer to as a "technological strategy of development". A strategy realizing the importance of technology in development.

4.5 Rural participation in development

In view of the above theme the respondents revealed that the rural people can be involved in rural development planning. They are consulted when coming up with self-help projects. Some said development now is initiated by the poor in rural areas .wireless networks enables rural areas to make informed decisions.

The responses given indicated that due to technological advancement especially dominance of the mobile phone rural communications have become part of team in developing their own area which was previously dictated by the central government. The wireless revolution has necessitated speedy communication between central government and the people hence enabling participatory development planning. Conyers and Hill (1991) admit participation in matters concerning one's area of interest and concern is a fundamental right.

Meaningful development can take place in rural areas when grassroots participation has been encouraged. This was in response to the top-down approach previously adopted and depriving the recipient from the benefits of rural development. In the same vein feedback is sent back to the people instantly. The emergence of the wireless revolution reduces the urban-rural divide once existed in Zimbabwe. People need to be involved from planning to evaluation through implementation in order to bring meaningful development to rural communities. Technology has been changing so rapidly, it is changing the way we live , the way we work and the way we direct our lives (<http://www.exforsys.com.tutorials>).

Development organisations need to adapt to the changing technological landscape. They are not operating in vacuum rather in the global village and indeed the need to share global strategic planning experiences. Such a move bring conformity to global standards in strategic planning, failure organisations are inclined to perform below these standards

Chambers (1983) criticized the top down approach which he regarded as imposing development ideas on the people. In view of this the rural periphery became marginalized, thus he coined the new professionalism in order to address the top down approach with a bottom up approach. Agrawal (2006) earlier on revealed that development, as a process is meant to empower the people, reduce exploitation and oppression by those having economic, social and political power.

4.5 Agriculture and wireless revolution

The question asked on how the agricultural sector can benefit from the wireless revolution. A

Summary of responses offered included:

- Facilitate access to the market
- Prices of input are assessed easily
- Avail weather information
- Access to extension services
- Market links
- Access to information
- Access to finance
- Better recording
- Access sources of credit
- Improves accounting

The above is a summary of benefits associated with the wireless revolution and agricultural sector. Rural agriculture can improve as a result of the emergence of wireless networks opening

flexible communication channels and also reducing the distance between farmers and buyer, farmer and the source of inputs. Majority of the responses reiterated that the wireless technologies greatly facilitate access to agricultural markets and world prices of agricultural products. Agricultural information is necessary. Sources of credit and distribution links should also be known in order to successfully run agricultural enterprises.

Motes (2010) admits that wireless networks can contribute to improved access to price information, access to agricultural information, access to national and international markets increased production efficiency and creating a conducive policy environment. Agricultural sector growth is enhanced by availability of information and the ability to communicate. The mobile phone penetrated the agricultural sector and is already helping those communities improve agricultural activities.

The Asian development Bank (2003) supports that the wireless revolution can sustain rural agricultural activities helping the rural people to become aware of and articulate their position, exchange knowledge and skills to take control of their lives reach consensus and manage conflicts. The World Bank (2001) maintains that the wireless can also help monitor food security related issues such as weather and droughts, crop failures as well as alerting on natural disasters and climatic change. Ledriz (2012) maintains that agriculture contributes to development as an economic activity, as a livelihood and as a provider of environmental services. Matunhu and Mago (2013) admit that the Zimbabwean rural economy is mainly agricultural driven and the majority of people in these areas are peasant farmers.

In view of the foregoing the researcher noted various agricultural opportunities associated with wireless revolution exist and hence rural communities can take advantage of this scenario. Agricultural sector can thus be stimulated as a result of this development. Rural Zimbabwe relies on agriculture. Rural population derive livelihood from small scale agriculture. In light of the emergence of wireless networks small scale agriculture is supported and the household earning improve as a result.

Agriculture currently faces a number of challenges such as price shocks, climate change and continued deficiencies and a lack of infrastructure in rural areas hence the emergence of the wireless revolution can be handy in addressing these challenges. Timely and updated information can now be made available for example issues related to new varieties, fake seed. New threats such as diseases, weather forecast, pricing, control and warning alerts.

4.6 Educational opportunities associated with wireless networks

The respondents identified the educational opportunities associated with wireless revolution. The following are the responses:

“Wireless services can bring a literate society and informed society”.

“Wireless revolution facilitates lifelong learning among the rural population and also help the disabled achieve educationally”.

A summary of other responses raised included that wireless revolution facilitates online learning, e-learning, continuous education, anywhere and anytime type of education that empowers the rural people with relevant education.

The above responses admitted that wireless revolution, has got a strong educational relevance. This can address the traditional form which has been considered to be very rigid and to be conducted in class hence technology facilitates self-directed learning which is not confined to the class, it has brought a flexible education system which has been extended further to the rural areas. Anytime, anywhere type of education is the result of the emergence of technology in rural remote areas being extended to the once forgotten adult learner.

Adult education opportunities have been expanded as a result. Nyerere (1973) admits that education is something that all of us should continue to acquire from the time we are born until the time we die, indeed contributing to the improvement of rural life. The educational process should help the poor seek a better livelihood in view of the wireless revolution.

As the Zimbabwean society becomes more technological and complex, the role of Information Communication Technologies (ICTs) as prestigious tools for teaching and learning has never become obvious. Information and Communication Technologies (ICTs) permeates the whole society and its use seems to assume ever increasing importance in the educational sector. Various studies have shown that ICTs are used in different educational settings the world over. Nafiz

(2010) maintains that educational systems around the world are under increasing pressure to use the new information and communication technologies to teach adult learners the knowledge and skills they need in the 21st century.

The issue of integrating ICTs in education is increasingly becoming adopted. Selwyn, Gorard and Furlong(2006) assert that Compact Disk Read Only Memory(CDROM), digital resources and the internet offer a wealth of material that can be matched to adults individual needs and enable them to develop a higher level of skill in thinking and handling information. The same authorities claim that those in favour of ICT as an educational resource in emerging learning society talk of opportunities for learning offered by different forms of ICT. In view of this the researcher notes that an adult learner is a self directed learner and favours experiential learning, thus institutions of higher learning are responding to the needs of adults by integrating the curriculum with technology, hence the use of ICTs as aids to teaching and learning.

Perez Crejo (2002) says that in particular using technology to deliver education on any place, any pace basis arguably frees adult education courses from the barriers that previously prevented participation. Tinio (2002) claims that the emergence of this new global economy has serious implications for the nature and purpose of educational institutions. The claims that there is need to promote “learning to learn” that is the acquisition of knowledge that make possible continuous learning over lifetime. Alvin Toffler in David (2000) maintains that “the illiterate of the 21st century will not be those who cannot read and write but those who cannot learn, unlearn and relearn”.

Carlson (2002) posits that the use of technology effectively opens the door to all kinds of new educational opportunities for both the facilitator and learner and downstream economic opportunities for graduating adults and their nations. He claims the fundamental aim is to give the learners the opportunity to become critical thinkers, problem solvers, information literate citizens, knowledge managers and finally team members. Learning skills (2002) further reveals that ICT and technology based learning have quickly become the centre of attention in the adult learning arena over the last decade. ICT based learning is seen as a particularly dynamic means of adult education offering increased reach, motivation, impact and value for money. In this regard ICTs are used to support traditional forms of learning. These technologies include computers, internet, broadcasting technologies (radio and television, telephony, videos, VCRs, cable and satellite communication). The list of hot technologies available for educational purposes goes on and on.

In support of the foregoing Tinio (2002) admits that ICTs which include radio and television as well as other technologies such as computers and the internet are viewed as potentially powerful enabling tools for educational change and reform. Tinio (2002) maintains that when used properly, different ICTs help expand access to education, strengthen the relevance of education in the increasingly digital workplace and raise educational quality by helping make teaching and learning into an engaging active process and connected to real life.

Bransford (2003) reveal that research has shown that the appropriate use of ICTs can catalyze the paradigmatic shift in both content and pedagogy that is at the heart of education reform in the 21st century. In the same vein Tinio (2002) further admits that if designed and implemented properly ICT supported education can promote the acquisition of the knowledge and skills that

will empower students for lifelong learning. When used properly, ICTs especially computers and internet technologies enable new ways of teaching and learning rather than simply allow teachers and students to do what they have done before in a better way.

In a related study conducted at the University of Botswana, University of Mauritius, University of Namibia, University of Daresalam, Eduardo Modlane University and Mekerere University college Olukoshi (2002) reported that respondents that they enjoyed unlimited access to ICTs and virtual all respondents in this study applauded the positive impact of ICT on knowledge production, access and above all communication. There is a strong belief that a solid and reliable ICT infrastructure can serve as panacea to many of the problems and ills of scientific communication (Tefera in Zeleza 2002)

Zeleza (2002) acknowledges that the development and usage of ICT in the developed world has intensified , African colleges and universities are major consumers, brokers and producers of knowledge and there are witnesses to technological changes cropping up, however the extent and scope of utilization of ICT by universities or colleges, how it affects research, teaching and other scholarly activities, remain an area which needs to be studied .Zeleza (2002) further maintains that the capabilities of information and communication technologies(ICTs) have been propounded at various forums and in several publications. The capabilities are a challenge to institutions of higher learning in their struggle to provide and disseminate scholarly information.

Tinio (2002) posits that ICTs can enhance the quality of education in several ways: by increasing learner motivation and engagement, by facilitating the acquisition of basic skills and by enhancing training. In the same vein Haddad and Sonia (2002) claim ICTs are also

transformational tools which, when used appropriately, can promote the shift to a learner centered environment. The World Bank (2000) further reveals that ICTs greatly facilitate the acquisition and absorption of knowledge, offering developing countries unprecedented opportunities to enhance educational systems.

The new communications technologies promise to reduce that sense of isolation to open access knowledge in many ways. Kok (2006) maintains that ICTs are of great significance within the educational fraternity. Kok (2006) cites the benefits as propounded by Hepp et.al. (2004) as new society requires new skills. The fact that ICTs are the preeminent tools for information processing, new generations and the old need to become competent users, thus they should have access to ICTS and networks; a quest for quality learning in order to revise present teaching practices and resources to create more effective learning environments and improve lifelong learning skills and learner habits.

Kok (2006) further admits that ICTs enhance motivation and creativity, there is greater disposition to research and problem solving focused on real situations, more comprehensive assimilation of knowledge in the interdisciplinary ICT environment, systematic encouragement of collaborative work between individuals and groups, ability to generate knowledge, capacity to cope with rapidly changing, complex and uncertain environments and new skills and abilities fostered through technological literacy.

In response Baron (2002) cites the following benefits of integrating technology. ICTs promote learning, promotes critical thinking, offers diversity and self paced learning and individual growth, motivates and inspires learners by making learning exciting and relevant, provide

flexibility for learners with special needs, promote cooperative learning and increase learner interaction, enhance communication skills, supplies information through multi-sensory channels(supporting students with various learning styles and help to build cultural bridges.

Valdez (2004) as cited by Kajuna (2009) reiterates the foregoing by claiming that technology offers many opportunities to improve learning and it has the potential to provide people in their own homes and work settings with access to knowledge and learning resources. The writer further proclaims that ICTs have the potential to make everyone the producer of original knowledge that can be shared with the world at a very little cost. Blankson (2004) strongly admits that ICTs in education may promote new learning environments in which enquiry and problem solving increase learner achievement. Instructors may use ICTs to assist learners to develop deeper understanding of concepts by engaging learners in active learning practices. Against this background ICT applications place new demands on higher education establishments and hold important implications for their teaching and research functions, especially in light of growing importance placed upon lifelong learning and upon more flexible forms of higher education delivery.

Behrman (2000) reveals that the 21st century requires that individuals be technological literate. The internet allows for the development and creation of learning communities that provides access to knowledge that was once difficult to obtain. Technology creates and supports more effective learning environments hence becoming a very crucial component in educational provision. In the same vein technology can enable people with disabilities to interact better with the society, opening up educational opportunities for them. This would help reduce a sense of isolation and allow open access to knowledge. Technological revolution has led to the emergence

of a knowledge economy. Knowledge through education and training has been central concern of rural development. Recent developments in ICTs offer great potential to support and enhance education and training for development (Chapman, 2002).

From this discussion it became apparent that technology has a great potential of developing educational provisions in the rural areas. Various opportunities exist for the once marginalized rural people that are from school going age to adult population. The internet provides a conducive learning platform supported by relevant literature. In addition there are no restrictions in terms of time, venue and tutor. For adults learning has to be a continuous activity. Learning does not end until death; people keep on acquiring new knowledge. Knowledge is power. An informed person can make informed decisions hence the need for lifelong learning which is self-directed.

4.7 Rural Health and the Wireless Revolution

The responses obtained in relation to the Wireless revolution and health was as follows:

- Technology facilitates tele-health
- Provides access to necessary health information
- Enable sharing of health related information
- Allow sick people to call hospitals before going there
- Allow doctors to monitor patient's response to treatment

The other group of respondents supported the foregoing by emphasizing that wireless revolution:

- Reduce health care costs

- Increasing access to health information
- Improve quality of health care
- Increasing access to health care

The above were some of the responses given in view of rural health in the technological age. The emergence of the wireless revolution may bring a number of benefits to the rural population and health administrators. This may facilitate online services or consultations through the mobile phone. Relevant health information can also be made available to the rural population. Mobile technology can now provide data on patient information to remote clinics and help track supplies and logistics (Chimhowu, (2010).

Hanna (2010) reveals that the health sector is changing due to ICT enabled technological advances. The advancement of technology allows rural health professionals receive information and specialized knowledge and keep track of disease outbreaks. Hanna (2010) maintains that health sector is changing due to ICT enabled technological advances .The authority further reveals that ICT applications span health education and training diagnostics, telemedicine, telecare, medical records and information management, patient administration and almost all aspects of health policy, research and delivery. Rural health professionals can now receive real time health information and specialized knowledge. These are also keeping them informed and help them track diseases.

Emergence of the wireless networks may bring change on how health service is managed. It can be an opportunity for rural health to improve and also improve the general welfare of rural people.

Majority of the respondents who contributed to this study admitted that the wireless networks may bring positive development in the rural health service provision. The researcher noted that communities should utilize such opportunities for the betterment of the people's lives. ICT applications can significantly improve service delivery in the health sector. From the responses obtained it can be noted that there is a change in the health sector in terms of service delivery.

The mobile technology is dominating hence making communication easier among the rural people and their urban counterparts. Before the wireless revolution the communication was difficult and patients were required to physical visit health centers even if they needed a very simple explanation. In view of this the access to rural health services has since improved and essential health information can be relayed across the area.

4.8 Rural Women Participation

The respondents raised the following responses:

“Women can now join the rest of the world; they can also participate in rural development process”

“Women can now be seen and recognized, their voices be heard. Also they can easily sell their wares without incurring unnecessary travel expenses”

Some of the significant quotes raised above can be supported by other short responses which are follows:

- Rural women have access to market information.
- The wireless networks has improved the position of rural women
- They facilitate continuous learning, knowledge, sharing and improved social links hence empowering the poor rural women.

Women contributions to rural development are indispensable. The majority of projects in rural areas are run by women hence they should have contacts and they should establish strong linkages. Tevera and Moyo (2000) reveals that most projects initiated by women have been successfully so the need to empower the women population. The existing networks should recognize the role of Zimbabwe rural women. In view of this development rural women should have access to the mobile phone so that they have less challenge when communicating development partners.

Gender and development concepts are inseparable. Development interventions tend to exclude certain groups of people within the community. Kabeer (1994) admits that it is now well recognized that women experience development and social change differently from men. The literature has shown, for example, that when it comes to poverty alleviation, women have less from various development interventions than their male counterparts. Women remain disadvantaged in terms of their access to paid employment, property, credit, inheritance, political, power, education and health care (Ruthberger, 1990).

The current discourse and practice of development rest on the assumption that participation is an essential component of efforts to foster sustainable livelihoods promote good governance and alleviate poverty across the global south (Cleaver, 2001). Across the world women are treated unequally and less value is placed on their lives because of gender. Women's differential access to power and control of resources is central to this discrimination in all institutional spheres. "Not all women are poor but women suffer from discrimination" (Kabbeer, 1996:20). In view of gender discrimination.

Within the household, women and girls can face discrimination in the sharing out of household resources including food, sometimes leading to higher malnutrition and mortality indicators for women. At its most extreme, gender discrimination can lead to son preference, expressed in sex selective abortion or female feticide. In the labour market, unequal pay, occupational exclusion or segregation into low skill and low paid work limit women's earnings in comparison to those of men of similar education levels. Women's lack of representation and voice in decision making bodies in the community and the state perpetuates discrimination, in terms of access to public services, such as schooling and health care, or discriminatory laws.

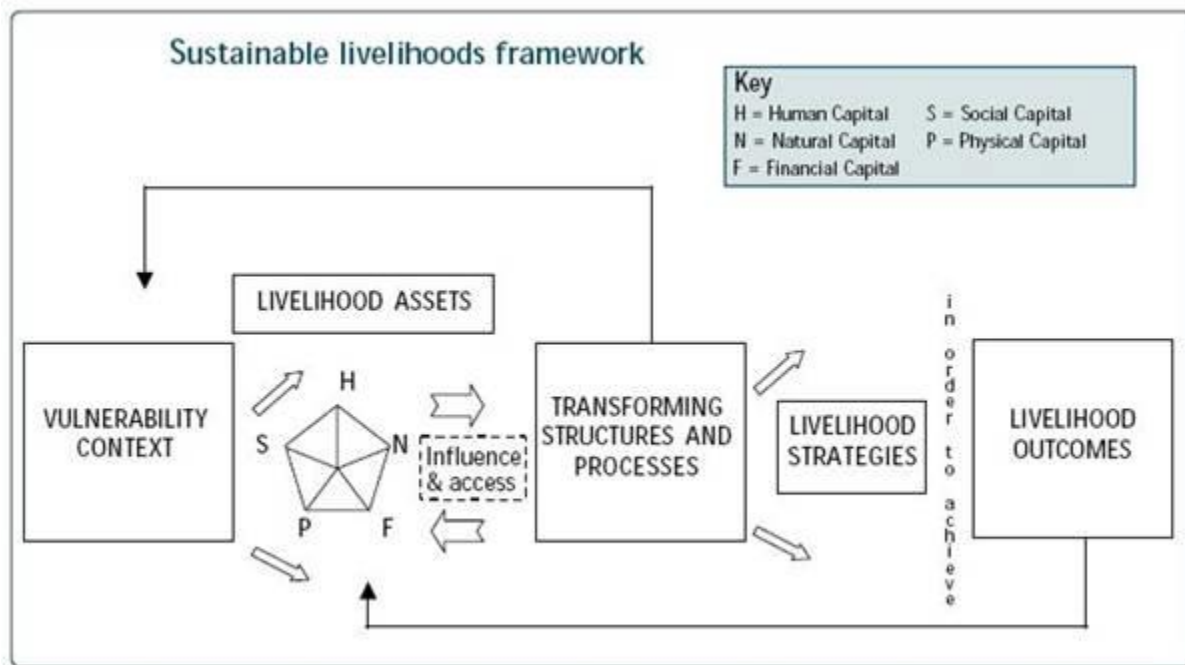
Technology may address the challenges faced by women and girls connecting them across the globe and opening favourable opportunities for them.

4.9 Sustainable livelihoods

The foregoing revealed a number of benefits associated with the emergence of the wireless revolution. According to responses obtained various groups may benefit as a result. The theoretical framework of the study was the livelihood framework which according to Soussan et al (2000) captures the factors that influence the livelihood strategies of the rural poor. The

approach focuses on the fact that the people are directly affected by poverty and attempts to alleviate it in order to make a living creating and embracing new opportunities. In view of this wireless technologies must be compatible with natural, human, financial and social resources. In light of this technology should be appropriate and relevant to the people concerned. A simple livelihoods framework demonstrated below:

Figure 2



Source:

http://www.fao.org/ag/againfo/programmes/en/lead/alive_toolkit/pages/pageB_livelihoods.html

The responses raised indicate that the emergence wireless technologies may capacitate the rural population in different ways. To sum up the financial assets of the rural poor people may be increased. The emergence of rural branchless banking may enable circulation of cash in rural

areas thereby raising the financial capital of rural areas. In the same vein rural professionals are constantly updated while in their areas of operation. The geographical boundaries are reduced as a result of the emergence of wireless networks. In addition the rural people may begin to have access about the natural resources available and social networking is indeed facilitated, however challenges are experienced as shall be shown in the ensuing.

4.11 Challenges associated with adoption of wireless technologies in rural Zimbabwe

A number of challenges in response to the foregoing were raised. These include:

- Cost
- Lack of confidence
- Technophobia
- Lack of training opportunities
- Digital divide
- Ambivalence
- Resistance to change
- Lack of proper planning

Gradually Zimbabwean rural communities are benefitting from the development of wireless networks; however a number of challenges are faced and are derailing the whole process. As revealed by respondents the whole process lacks proper planning by relevant stakeholders. Chimhowu etal (2010) reveals that the major impediment to internet usage in many developing countries like Zimbabwe is cost. Because of the scarcity of broadband, most internet access is

dial up which is being replaced by the wireless networks with a potential to transform rural economies. Apart from this other challenges like lack of training, lack of confidence and resistance to change also affect the pace of adopting wireless connections in the once deprived rural areas. In addition adoption of wireless technologies pace has been influenced by the west coming to developing countries in phases.

Most African countries suffered from the digital divide or digital slavery in other words. Biriwasha (2011) maintains that while ICT has long been acknowledged as an enormous engine of development, many people in Zimbabwe are simply excluded from this space not by choice but by circumstances. Molawa (2009) reveals that the larger areas of Africa have a challenge of access to the internet due to poverty and lack of resources, lack of infrastructure and bandwidth challenges for telecommunication and internet access, limited or no access to electricity and low levels of literacy. Kiely in Potter (2008) revealed that 80 % of the worlds' population still lacked access to most basic communication technologies however the situation in Zimbabwe has since changed due the 2009 dollarisation. Majority of the people have mobile phones and some do have access to internet on mobile phones.

Adoption of wireless technologies was also affected by state policies that are the macro-economic policies. These either encourage or discourage adoption of such technologies. State policies promote or encourage private players to take part rather some nations have retrogressive policies denying private players in the communication field. In the same vein nations constantly affected by inflation will have challenges in acquiring and deploying wireless infrastructure.

Rural areas lag behind in terms of ICTs' access; factors contributing to this include illiteracy. Lack of computer skills and household income are some factors (Conradie et al, 2013).

Major factors preventing rural regions from benefiting from ICTs are quality and cost. Cypher and Dietz (2008) cite external interests such as MNCs certainly have a stake in preserving control over their own technological knowledge. Policies of the state affect the economy and how important is the impact on the level of technology adoption are policies which create an environment in which private players are unable and encouraged to produce and interest in technological acquisition. Micro-economic policies can either encourage or discourage private entrepreneurs to innovate and charge. Other policies that help to keep inflation rates and balance of payment in check also be expected to contribute to growth national technological change and developments.

Giddens (2009) raises other factors such as gender, social, class, ethnicity and religious affiliation as detrimental in technology adoption. The authority raises cultural element of recipients emphasizing on how people survive. In view of this people have a way of life and some are resistant to change affecting technology adoption. People's background and culture affects technology adoption. Other challenges are availability of telecommunication infrastructure, literacy, erratic or no power supply, income and existing inequalities.

The respondents also revealed that while the wireless revolution may be beneficial to the rural communities it may also be detrimental if technology is not used accordingly. Some indicated

that this is about westernizing the rural people as western culture is considered modern. Others raised the issue of e-imperialism as the outcome of adopting the wireless technologies. In light of this Potter et al. (2008) maintains that others have warned that without care, where it is available the internet may well serve to westernize the global south. ICTs has been prime as the ultimate savior for reaching the millennium development goals but they are more of an enabler (Odeniyi et al 2013). They should be used accordingly responding to the needs of communities concerned.

The foregoing reveals a number of challenges are encountered in adopting and deploying wireless networks. Some challenges emanate from the internal environment and some are external factors. Various players' efforts are necessary to reduce these challenges. The stakeholders include the people from the Mberengwa East ward 2, local leadership, the government, corporate world and donor community.

4.12 Digital divide

The digital divide can have detrimental effects to the rural livelihood. Respondents revealed that the divide isolated the rural livelihood. Respondents revealed that the divide isolated the rural population from the rest of the world. The divide created a permanent boundary between urban and rural. It deprived the rural population from accessing or meeting the rural information needs and attends to day to day demands of the global village. Poor people suffer from high communication costs due to geographical remoteness (Rhodes, 2004).

According to Fourie (2008) technology increase empowerment and give voice to rural communities. The rural poor should enjoy the benefits associated with technological advancement. Development entails empowering the rural poor people, eliminating isolation and marginalization thus enhancing rural livelihood. According to Potter et al (2004) it involves economic growth, modernization, increase in consumption, providing basic needs, increasing participation, enhancing human rights, enhancing freedoms, expanding choices, empowerment, expanding human capabilities, increasing human well being, increasing material goods and increasing incomes. According to Potter et al (2004) these are viewed as changing conceptions of development hence if the rural population does not have access to wireless technologies they may have challenges in reaching full potential. The rural Mberengwa East ward 2 remains isolated from the rest of the world and out of touch with national affairs although technology is gradually creeping into the area.

4.13 Addressing Challenges and rural divide

The respondents raised a number of ways that can be associated with wireless adoption and the digital divide. These included:

- Making the wireless networks affordable
- Rural concietization programmes
- Training rural people
- Responsive planning
- Encouraging private participation
- Develop responsive macroeconomic policies

- Manage inflation at national levels
- Rural education programmes

The above is a summary of responses given. The respondents suggested a number of ways that can address challenges related to adoption of wireless technologies. Warschuer(2003) suggested that the key enablers of closing the digital gap include the physical resources which are access to computers and telecommunications, digital material that is available online, human resources focusing on literacy and education, social resources catering for community, institutional and societal structures that support access to information and communication technologies. In view of this an information society can be created. Bodafelli (2002) regards this as a society every individual is informed. In light of this the researcher noted various actors can combine efforts in the fight against the digital gap which is detrimental to rural progress and development. State policies should enable investment in wireless connections. The space should be open to all interested stakeholders so that wireless transmission can be everywhere. The current scenario in Zimbabwe is characterized by a lot of suspicion hence private player participation is limited.

4.14 Summary

The foregoing focused on presenting, analyzing and interpreting the data collected. A thematic approach was adopted in this study. General data was analyzed qualitatively. The chapter focused on implications of the wireless revolution on rural livelihood, rural participation in development, agriculture, education and health benefits associated with the emergence of wireless networks. A focus was also taken on how rural women participation in development can be enhanced, the challenges associated with adoption of these technologies including the digital divide and how these challenges can be addressed. The next chapter concentrates on

summarizing the whole study and its findings, conclusions made and recommendations made by the researcher.

Chapter 5

Summary, Conclusions and Recommendations

5.0 Introduction

The chapter focused on summary of major findings, conclusions and recommendations on the rural development implications of wireless revolution in Mberengwa East ward 2.

5.1 Summary

The researcher went to examine the wireless revolution and its rural development implications, a case for Mberengwa East Constituency Ward 2 in Zimbabwe. These developments are raising some hope for sustainable development in rural Zimbabwe. The thrust of the study was to unpack the benefits likely to be accrued through adoption of wireless technologies. The researcher was guided by the livelihood framework which considered the main factors affecting people's livelihoods and the relationship between factors. The framework placed the rural poor people at the centre of a web of interrelated influences. The study reviewed related literature focusing on rural communities in Zimbabwe, rural participation, poverty reduction, rural information needs, the wireless technologies information technologies and the wireless revolution, technology and development, rural development opportunities associated with wireless connections, mobile technologies, benefits in agriculture, education, health, women participation in development, digital divide and the challenges associated with rural adoption of the wireless networks. Various authorities contributed to this discussion.

The study adopted a qualitative approach to research. A case study research design was used. The data was collected using questionnaires and semi structured interviews. Ten key informants were interviewed and thirty other participants responded to the questionnaire. A snowball

sampling approach was used to select respondents, one member from each village introducing the researcher to the next until the required sample was met. Entry into villages was gained through assistance from gatekeepers. During data collection the researcher observed relevant ethical considerations.

5.2 Summary of the major findings

- The sources of income for the people in rural Mberengwa east constituency ward 2 include farming, formal employment, small scale enterprises, informal trade, livestock sales, mining and pension. Agriculture and the environment dominate as sources of income although affected by droughts and dry spells.
- Rural Mberengwa East people recognize the opportunities associated with wireless networks however the access is still limited to the mobile phone.
- They revealed that the wireless revolution has a potential to improve the standard of living. Respondents were drawn from different sectors such as health, education, agriculture and small scale enterprises who all admitted that they stand to benefit if the wireless technologies became available.
- The wireless revolution can enhance rural participation in development. The participants revealed that through the mobile telephone there are consulted in a number of projects

affecting their lives. Grassroots participation brings meaningful development. Rural agriculture can improve as a result of the emergence of wireless revolution.

- In Zimbabwe rural communities, the mobile phone is dominating hence facilitating timely access to information and speedy communication between government and the people, the people and other stakeholders in development.
- Majority of respondents revealed that wireless technologies greatly facilitate access to agricultural information and markets.
- Educational provision improves as a result of the emergence of wireless revolution. Technology enhances online education, e-learning and lifelong learning. In addition wireless networks allow self directed learning among the rural populace which is flexible and not classroom based. Adult education opportunities expand as a result of technological advancement. In the same vein the quality of human capital in rural areas improves as a result.
- Rural health services greatly benefit from wireless revolution. Necessary health information is relayed across the catchment area.

- The presence of can now be felt and they can make their contributions to rural development clear. Rural women can thus be empowered and capacitated by technology.
- Various challenges affect adoption of wireless technologies in rural Mberengwa East. Some are internal and others are external, however the technologies are gradually penetrating the area.
- The effects of the digital divide are detrimental to rural enhancement. The area remains isolated from the rest of the world, thereby depriving it from accessing relevant information.
- Wireless connections can be made available to the rural Mberengwa after managing the challenges experienced.

5.3 Conclusions

The researcher arrived at the following conclusions after conducting the study:

- The mobile phone as a wireless device dominates rural Mberengwa east ward 2.
- Econet and Netone are the major mobile service providers
- Wireless networks can enhance rural participation in development
- The agriculture sector strongly benefit from the wireless revolution.
- The wireless revolution opens various educational opportunities for the rural population .It promotes flexible and self directed learning among adults.

- Advancement of technology allows improvement in rural health provision.
- Rural women participation in development has also been widened.
- Technological adoption is taking place at slow pace due to a number of challenges.
- The digital divide severely affected rural development process.
- Technology is not a panacea to rural problems rather it can help the rural people learn how to assist themselves.

5.4 Recommendations

In the light of the foregoing the researcher recommended the following:

- Proper training on the use of internet in rural areas should be done. In response to this there is a need for collaborative effort of community, corporate government, Government and NGOs.
- There is need to equip rural communities with wireless technologies to allow improvement in service provision.
- Mobilisation of wireless resources for rural communities from various sources is necessary.
- Technology literacy is a necessity in the 21st century.
- Rural communities must fully utilize agricultural, educational and health opportunities associated with the wireless revolution.
- There is a need to fight against the digital divide and a holistic approach should be adopted.

- It is the observation of the researcher that the study did not exhaust all issues which needed to be fully studied on .It only acted as a springboard upon which further investigations and studies into the areas can be done.

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Appendix A Questionnaire

I am **Tofara Rugara** a **Master of Arts in Development studies** student at **Midlands State University** conducting a study on **Wireless revolution and its rural development Implications: A case of Mberengwa East in Zimbabwe**. Your community has been selected to participate in this important exercise. You are therefore kindly asked to answer the following questions. The information you provide will be treated confidentially and is used for academic purposes only.

Section A: Demographic data

Gender.....

Age.....

Occupation.....

Level of education.....

General Information

Village.....

Ward.....

District.....

Section B

What wireless tools do you have access to?

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What is your source of income?

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How sustainable is your source of income?

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How can the wireless revolution improve your livelihood?

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How does the wireless revolution enhance rural participation in development?

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What rural development opportunities exist in view of the emergence of wireless networks?

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What contributions dose the mobile technologies bring to rural communities?

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How do the following sectors benefit from the emergence of wireless networks?

Agriculture

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Health

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Education

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What socio-economic benefits are associated with emergence of the wireless revolution?

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How do rural women benefit from the emergence of wireless networks?

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What challenges are associated with adoption of wireless technologies by the rural communities?

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What effects does the digital divide have on rural enhancement?

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How can the rural digital divide be eliminated?

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What are negative impacts of the wireless revolution on rural communities?

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What are your concluding remarks in relation to the emergence of wireless networks ?

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Appendix B: Interviews for key informants

I am **Tofara Rugara** a **Master of Arts in Development studies** student at **Midlands State University** conducting a study on **Wireless revolution and its rural development implications: A case for Mberengwa East ward 2 in Zimbabwe**. Your community has been selected to participate in this important exercise. You are therefore kindly asked to answer the following questions. The information you provide will be treated confidentially and is used for academic purposes only.

Semi Structured Interview

Interview questions for key Informants

What is the major source of income for the rural people in your area?

How can wireless technologies help in improving the livelihoods of people in this area?

What wireless services are available in the area?

What challenges are met by inhabitants of this area in accessing wireless technologies?

What sectors of development can genuinely benefit from the wireless revolution? Explain how each sector will benefit.

How can the community mobilize wireless resources?

How can the poor rural farmer benefit from technological advancement?

How has the communities responded to the wireless revolution?

What opportunities for women have been realized as a result of the emergence of the wireless revolution?

What other comments can you make in relation to the emergency of wireless technologies and rural livelihood?

Appendix C

Informed Consent Form

I, the undersigned, confirm that (please tick where appropriate)

I have read and understood the information about the research to be done

The opportunity to ask questions was given

I voluntarily agree to participate in this study

I understand I can withdraw at any time without giving reasons and I will not be harassed or questioned on why I have withdrawn

Procedures regarding confidentiality have been clearly explained

The researcher explained on the use of data in research, publications, sharing and archiving

I along with the researcher, agree to sign and this informed consent form

Participant

.....

Name

Signature

Date

Researcher

.....

.....

.....

Name

Signature

Date

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OFFICE OF THE CHAIRPERSON
DEPARTMENT OF DEVELOPMENT STUDIES
MIDLANDS STATE UNIVERSITY

20 September 2013

To: Whom it may Concern

REF: RUGARA TOFARA

This serves to introduce Mr. Rugara, a student in the Master of Arts in Development Studies (MADS) degree programme at the Midlands State University. He is in his final year of study and is carrying out a study in partial fulfillment of his programme of study. The title of his study is "Wireless Revolution and its Rural Development Implications: a case of Mberengwa East in Zimbabwe." Kindly assist him to collect data for his dissertation. The student is well grounded in Research Ethics.

For further information about the student and any of our degree programmes, feel free to contact the undersigned on matunhu@msu.ac.zw

Yours faithfully,

Dr Jephias Matunhu
Cell 00263733809555
Acting Chairperson of Dept of Development Studies
Midlands State University

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KINDLY COOPERATE WITH RUGARA TOFARA
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